BIOSTAR®



2023 PRODUCT GUIDE

Innovate Beyond Boundaries

ABOUT BIOSTAR

BIOSTAR is a professional brand dedicated to the production of motherboards, graphics cards, SSD, memory modules, intelligent computing solutions, AIoT, HPC, and green energy solutions.

Since its establishment in 1986, BIOSTAR has become a major supplier in the IT industry. In order to pursue the best quality and aesthetic design, BIOSTAR has invested heavily in ID design, global marketing as well as R&D. With a constant emphasis on innovation, BIOSTAR always seeks to beyond better, racing to the future.

Beyond Better

Innovative

Obligated

Sporty

Trendy

Aesthetic

Race to the future

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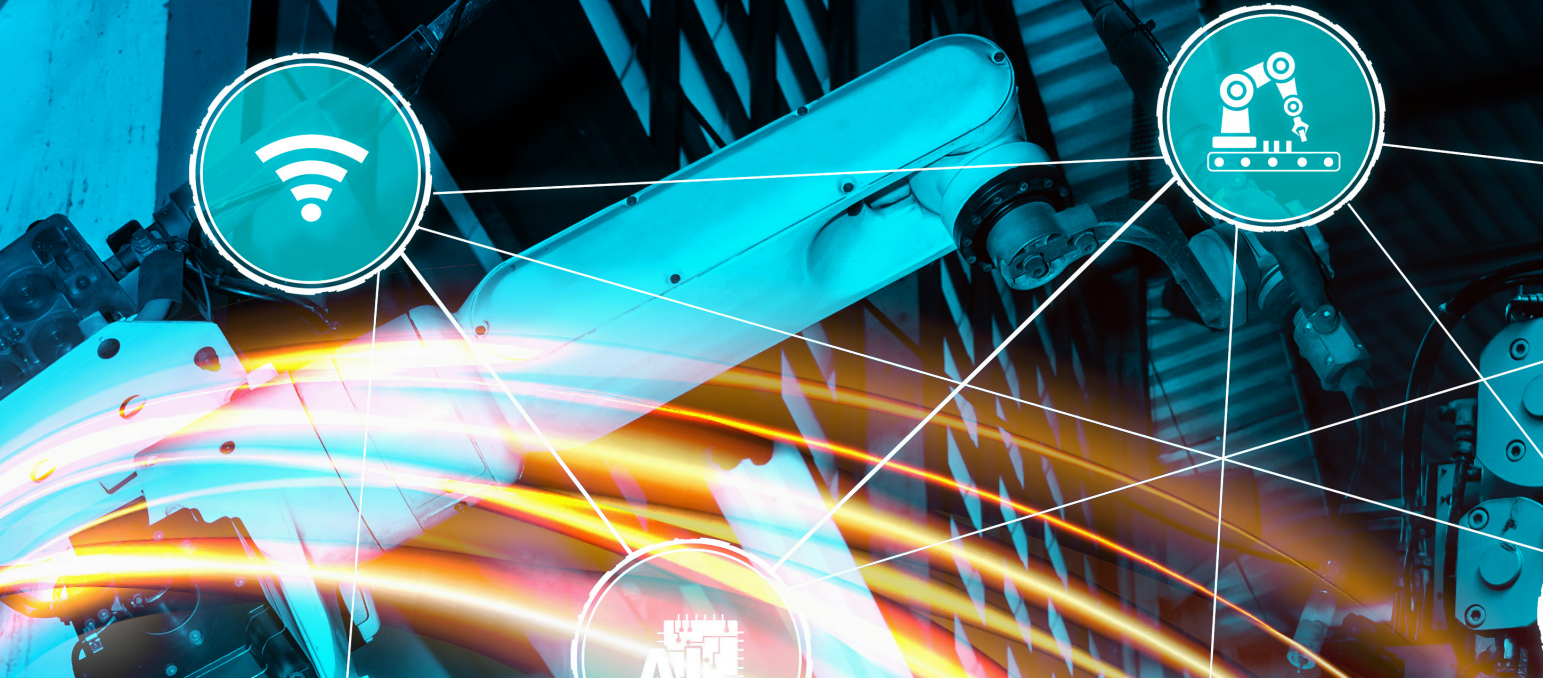
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SYSTEMS AND MOTHERBOARDS



INTELLIGENT SYSTEM

MINI PRO









Model Name	MP-J4125	MS-N3160	MP-J6412
CPU	Intel Celeron J4125 (QC, TDP 10W)	Intel Celeron N3160 (QC, TDP 6W)	Intel® Elkhart Lake J6412 (QC, TDP 10W)
Chipset	N	N	N
Graphic	1 x HDMI 1 x VGA	1 x HDMI 1 x VGA	1 x HDMI 1 x VGA
Memory	DDR4 2400Mhz SO-DIMM up to 8GB	Onboard DDR3L 1600MHz 4GB DRAM	DDR4 3200Mhz SO-DIMM up to 32GB
Expansion Slot	N	Mini PCIE (PCIEx1+USB2.0)	1 x full size Mini PCI-E, support PCIe + USB2.0 or mSATA by BOM option 1 x M.2 (key B 2242/3042/3052) with PCIe + USB3.1 or SATA + PCIe signal by BOM option 1 x PCIex4 Slot with PCIex2 Signal 1 x SIM Slot
Storage	1 x SATAIII	1 x mSATA 1 x SATA	1 x SATAIII
Serial Port	1 x RS232 (COM1)	1 x RS232/422/485 (COM1) 5 x RS232 (COM2~COM6)	2 x RS232/422/485 (COM1/COM2) 2 x RS232 (COM3~COM4)
USB	2 x USB3.1 4 x USB2.0	4 x USB3.1 2 x USB2.0	2 x USB3.0 4 x USB2.0
Ethernet	1 x RTL8111H-CG GbE LAN	2 x GbE	2 x RTL8111H-CG GbE LAN
Audio	Audio Codec: ALC887	N	Audio Codec: ALC897
External I/O	1 x DC 12V Jack 1 x HDMI connector 1 x VGA connector 1 x PS/2 Keyboard/ Mouse Port 1 x RJ45 connectors, support GbE 1 x Line-out Audio Jack 1 x Power Led / 1 x HDD Led 1 x Earphone & MIC Jack 1 x Power Key	1 x DC 9~24V Jack 1 x Power Button (w/LED) 1 x VGA 1 x HDMI 1 x EXT 2 x WIFI (Optional)	1 x DC 9~24V Jack 1 x HDMI 1 x VGA 2 x RJ45 (GbE) 1 x Audio Jack (Line-out) 1 x Power LED / 1 x HDD LED 1 x Earphone & MIC Jack 1 x Power Key
Dimension (L x W x H)	235 x 185 x 70 mm 235 x 192 x 100 mm (w/Foot stand)	154.6 x 148 x 48.8 mm	235 x 185 x 70 mm 235 x 192 x 100 mm (w/Foot stand)
Operating Temperature	0 ℃ ~ 40 ℃	0 ℃ ~ 60 ℃	0 ℃ ~ 40 ℃ Humidity: 5% ~ 90%
OS Support	Windows 10 Pro Linux Ubuntu 20.04	Windows 10 64-bit Linux Ubuntu 20.04	Windows 10 Pro Linux Ubuntu 20.04
Accessory	1 x 60W adapter 1 x power cord 1.5m (Option) 1 x SATA cable 1 x Foot stand 1 x Quick Installation Guide	1 x 60W adapter 1 x power cord 1.5m (Option) 1 x SATA cable 1 x Foot stand 1 x Quick Installation Guide	1 x 60W adapter 1 x power cord 1.5m (Option) 1 x SATA cable 1 x Foot stand 1 x Quick Installation Guide







Model Name	MT-J6412	MT PRO-J6412	MS-J6412
CPU	Intel Elkhart Lake J6412 (QC, TDP 10W)	Intel Elkhart Lake J6412 (QC, TDP 10W)	Intel Elkhart Lake J6412 (QC, TDP 10W)
Chipset	N	N	N
Graphic	1 x HDMI 1 x VGA	1 x HDMI 1 x VGA	1 x HDMI 1 x VGA
Memory	DDR4 3200Mhz SO-DIMM up to 32GB	DDR4 3200Mhz SO-DIMM up to 32GB	DDR4 3200Mhz SO-DIMM up to 32GB
Expansion Slot	1 x full size Mini PCI-E, support PCIe + USB2.0 or mSATA by BOM option 1 x M.2 (key B 2242/3042/3052) with PCIe + USB3.1 or SATA + PCIe signal by BOM option 1 x PCIex4 Slot with PCIex2 Signal 1 x SIM Slot	1 x full size Mini PCI-E, support PCIe + USB2.0 or mSATA by BOM option 1 x M.2 (key B 2242/3042/3052) with PCIe + USB3.1 or SATA + PCIe signal by BOM option 1 x PCIex4 Slot with PCIex2 Signal 1 x SIM Slot	1 x M.2 (key B, 3042/3052) with PCIE + USB3.0, support 4G/5G 1 x SIM slot 1 x M.2 (Key M 2242/2280) with PCIe x2, support NVMe/ SATA SSD 1 x Full size Mini-PCIe with USB 2.0 & PCIe
Storage	1 x SATAIII	1 x SATAIII	1 x SATAIII
Serial Port	2 x RS232/422/485 (COM1/COM2) (Option) 2 x RS232 (COM3~COM4) (Option)	2 x RS232/422/485 (COM1/COM2) 4 x RS232 (COM3~COM6)	2 x RS232/422/485 (COM1/COM2) 4 x RS232 (COM3~COM6)
USB	2 x USB3.0 4 x USB2.0	2 x USB3.0 4 x USB2.0	2 x USB3.0 4 x USB2.0
Ethernet	2 x RTL8111H-CG GbE LAN Support PXE boot form LAN, wake on LAN	2 x RTL8111H-CG GbE LAN Support PXE boot form LAN, wake on LAN	2 x RTL8111H-CG GbE LAN
Audio	Audio Codec: ALC897	Audio Codec: ALC897	Audio Codec: ALC897
External I/O	1 x DC 9~24V Jack 1 x HDMI 1 x VGA 2 x RJ45 (GbE) 1 x Audio Jack (Line-out) 1 x Power LED / 1 x HDD LED 1 x Earphone & MIC Jack 1 x Power Key	1 x DC 9~24V Jack 1 x HDMI 1 x VGA 2 x RJ45 (GbE) 1 x Audio Jack (Line-out) 1 x Power LED / 1 x HDD LED 1 x Earphone & MIC Jack 1 x Power Key	1 x DC 9~24V Jack 1 x HDMI 1 x VGA 2 x RJ45 (GbE) 1 x Audio Jack (Line-out) 1 x Power LED / 1 x HDD LED 1 x Earphone & MIC Jack 1 x Power Key
Dimension (L x W x H)	196.5 x 193 x 45 mm	200 x 200 x 50 mm	160 x 120 x 50 mm
Operating Temperature	0 ℃ ~ 40 ℃ Humidity: 5% ~ 90%	0 ℃ ~ 40 ℃ Humidity: 5% ~ 90%	0 ℃ ~ 40 ℃ Humidity: 5% ~ 90%
OS Support	Windows 10 Pro Linux Ubuntu 20.04	Windows 10 Pro Linux Ubuntu 20.04	Windows 10 Pro Linux Ubuntu 20.04
Accessory	1 x 60W adapter 1 x power cord 1.5m (Option) 1 x SATA cable 1 x Foot stand 1 x Quick Installation Guide	1 x 60W adapter 1 x power cord 1.5m (Option) 1 x SATA cable 1 x Foot stand 1 x Quick Installation Guide	1 x 60W adapter 1 x power cord 1.5m (Option) 1 x SATA cable 1 x Foot stand 1 x Quick Installation Guide

intel

VALKYRIE SILVER

ENGINEERED FOR EXCELLENCE

intel CORE — Supports 12th Gen Intel® Core™ Processors

intel CORE — Supports 13th Gen Intel® Core™ Processors

intel CHIPSET Z790

intel CHIPSET H610

intel CHIPSET B760

INTEL SERIES MOTHERBOARDS



LGA 1700







Model Name	Z790 VALKYRIE	Z790A-SILVER	B760A-SILVER	B760M-SILVER	B760T-SILVER
Chipset	Z790	Z790	B760	B760	B760
Form Factor	ATX 305*244 mm	ATX 305*244 mm	ATX 305*244 mm	uATX 244*244 mm	Mini-ITX 170*170 mm
VRD	20 Phases	17 Phases	17 Phases	12 Phases	9 Phases
Solid Cap	All	All	All	All	All
Memory	4 x DDR5 up to 7200+ (OC) Mhz	4 x DDR5 up to 7200+ (OC) Mhz	4 x DDR5 up to 6400+ (OC) Mhz	4 x DDR5 up to 6400+ (OC) Mhz	2 x DDR5 up to 6400+ (OC) Mhz
PCI-E x 16 Slot	3	2	2	2	1
PCI-E x 1 Slot	N	2	2	1	N
PCI Slot	N	N	N	N	N
(m)DP	Y	Y	Y	Y	N
HDMI	Y	Y	Y	Y	N
DVI-D	N	N	N	N	N
VGA	N	N	N	N	N
M.2	1 x M Key, support PCI-E 5.0 SSD (128Gb/s), 3 x M Key, support PCI-E 4.0 SSD (64Gb/s), 1 x M Key, support SATA 6Gb/s, PCI-E 3.0 SSD (32Gb/s), 1 x E Key, supports type 2230 WiFi/BT module and Intel CNVi	2 x M Key, support PCI-E 4.0 SSD (64Gb/s), 1 x M Key, support SATA 6Gb/s, PCI-E 4.0 SSD (64Gb/s), 1 x E Key, supports type 2230 WiFi/BT module and Intel CNVi	2 x M Key, support PCI-E 4.0 SSD (64Gb/s), 1 x M Key, support SATA 6Gb/s, PCI-E 4.0 SSD (64Gb/s), 1 x E Key, supports type 2230 WiFi/BT module and Intel CNVi	1 x M Key, support PCI-E 4.0 SSD (64Gb/s), 1 x M Key, support SATA 6Gb/s, PCI-E 4.0 SSD (64Gb/s), 1 x E Key, supports type 2230 WiFi/BT module and Intel CNVi	1 x M Key, support PCI-E 4.0 SSD (64Gb/s), 1 x M Key, support SATA 6Gb/s, PCI-E 4.0 SSD (64Gb/s), 1 x E Key, supports type 2230 WiFi/BT module and Intel CNVi
SATA	8	6	4	6	4
USB (F/R)	USB 3.2 Gen 2x2 Type C: 1+1 USB 3.2 Gen 2 Type C: 0+1 USB 3.2 Gen 2: 2+6 USB 2.0: 4+0	USB 3.2 Gen 2 Type C: 1+1 USB 3.2 Gen 2: 0+5 USB 3.2 Gen 1: 2+0 USB 2.0: 4+2	USB 3.2 Gen 2 Type C: 1+1 USB 3.2 Gen 2: 0+5 USB 3.2 Gen 1: 2+0 USB 2.0: 4+2	USB 3.2 Gen 2 Type C: 1+1 USB 3.2 Gen 2: 0+5 USB 3.2 Gen 1: 2+0 USB 2.0: 4+2	USB 3.2 Gen 2 Type C: 1+1 USB 3.2 Gen 2: 0+3 USB 3.2 Gen 1: 2+0 USB 2.0: 2+2
PS2	0	0	0	0	1
AUDIO	ALC1220-7.1Ch (5 ports+SPDIF)	ALC1220-7.1Ch (3 ports)	ALC1220-7.1Ch (3 ports)	ALC1220-7.1Ch (3 ports)	ALC1220-7.1Ch (3 ports)
LAN	2.5GbE (Intel I226-V)	2.5GbE (RTL8125B)	2.5GbE (RTL8125B)	2.5GbE (RTL8125B)	2.5GbE (RTL8125B)
Printer / COM	N/Y	N/Y	N/Y	N/Y	N/N
LED Header	3 (12V*1/5V*2)	3 (12V*1/5V*2)	3 (12V*1/5V*2)	3 (12V*1/5V*2)	2 (12V*1/5V*1)
Dual BIOS	Y	N	N	N	N







Model Name	B760MZ-E PRO	B760MX2-E	B760MX-E	B760NH-E	B760NH-E D4
Chipset	B760	B760	B760	B760	B760
Form Factor	uATX 244*244 mm	uATX 208*236 mm	uATX 208*236 mm	Mini-ITX 170*170 mm	Mini-ITX 170*170 mm
VRD	10 Phase	10 Phase	10 Phase	9 Phases	9 Phases
Solid Cap	All	All	All	All	All
Memory	4 x DDR5 up to 6000+ (OC) Mhz	2 x DDR5 up to 6000+ (OC) Mhz	2 x DDR5 up to 6000+ (OC) Mhz	2 x DDR5 up to 6000+ (OC) Mhz	2 x DDR4 up to 4500+ (OC) Mhz
PCI-E x 16 Slot	2	1	1	1	1
PCI-E x 1 Slot	1	1	1	N	N
PCI Slot	N	N	N	N	N
(m)DP	Y	N	N	N	N
HDMI	Y	Y	Y	N	N
DVI-D	Y	Y	Y	N	N
VGA	Y	Y	Y	N	N
M.2	2 x M Key, support PCI-E 4.0 SSD (64Gb/s), 1 x E Key, supports type 2230 WiFi/BT module and Intel CNVi	1 x M Key, support SATA 6Gb/s, PCI-E 4.0 SSD (64Gb/s), 1 x E Key, supports type 2230 WiFi/BT module and Intel CNVi	1 x M Key, support SATA 6Gb/s, PCI-E 4.0 SSD (64Gb/s), 1 x E Key, supports type 2230 WiFi/BT module and Intel CNVi	1 x M Key, support SATA 6Gb/s, PCI-E 4.0 SSD (64Gb/s), 1 x E Key, supports type 2230 WiFi/BT module and Intel CNVi	1 x M Key, support SATA 6Gb/s, PCI-E 4.0 SSD (64Gb/s), 1 x E Key, supports type 2230 WiFi/BT module and Intel CNVi
SATA	4	4	4	4	4
USB (F/R)	USB 3.2 Gen 2 Type C: 1+0 USB 3.2 Gen 1: 2+3 USB 2.0: 4+2	USB 3.2 Gen 1: 2+2 USB 2.0: 4+4	USB 3.2 Gen 1: 2+2 USB 2.0: 4+4	USB 3.2 Gen 2 Type C: 1+0 USB 3.2 Gen 2: 0+2 USB 3.2 Gen 1: 2+1 USB 2.0: 2+2	USB 3.2 Gen 2 Type C: 1+0 USB 3.2 Gen 2: 0+4 USB 3.2 Gen 1: 2+0 USB 2.0: 2+2
PS2	1	1	1	1	1
AUDIO	ALC897-7.1Ch (3 ports)	ALC897-7.1Ch (3 ports)	ALC897-7.1Ch (3 ports)	ALC1220-7.1Ch (3 ports)	ALC1220-7.1Ch (3 ports)
LAN	2.5GbE (RTL8125B)	2.5GbE (RTL8125B)	GbE (i219V)	2.5GbE (RTL8125B)	2.5GbE (RTL8125B)
Printer / COM	N/Y	N/Y	N/Y	N/N	N/N
LED Header	3 (12V*1/5V*2)	N	N	N	N
Dual BIOS	N	N	N	N	N

COMING SOON







Model Name	B760MX-E PRO D4	B760MX2-E D4	B760MX-E D4	B760MH D4
Chipset	B760	B760	B760	B760
Form Factor	uATX 244*244 mm	uATX 208*236 mm	uATX 208*236 mm	uATX 208*236 mm
VRD	10 Phase	10 Phase	10 Phase	10 Phase
Solid Cap	All	All	All	All
Memory	4 x DDR4 up to 4600+ (OC) Mhz	2 x DDR4 up to 4400+ (OC) Mhz	2 x DDR4 up to 4400+ (OC) Mhz	2 x DDR4 up to 4400+ (OC) Mhz
PCI-E x 16 Slot	1	1	1	1
PCI-E x 1 Slot	3	1	1	1
PCI Slot	N	N	N	N
(m)DP	Y	N	N	N
HDMI	Y	Y	Y	Y
DVI-D	N	Y	Y	N
VGA	Y	Y	Y	Y
M.2	2 x M Key, support PCI-E 4.0 SSD (64Gb/s), 1 x E Key, supports type 2230 WiFi/ BT module and Intel CNVi	1 x M Key, support SATA 6Gb/s, PCI-E 4.0 SSD (64Gb/s), 1 x E Key, supports type 2230 WiFi/ BT module and Intel CNVi	1 x M Key, support SATA 6Gb/s, PCI-E 4.0 SSD (64Gb/s), 1 x E Key, supports type 2230 WiFi/ BT module and Intel CNVi	1 x M Key, support SATA 6Gb/s, PCI-E 4.0 SSD (64Gb/s),
SATA	8	4	4	4
USB (F/R)	USB 3.2 Gen 2 Type C: 1+0 USB 3.2 Gen 1: 2+3 USB 2.0: 6+2	USB 3.2 Gen 1: 2+2 USB 2.0: 4+4	USB 3.2 Gen 1: 2+2 USB 2.0: 4+4	USB 3.2 Gen 1: 2+2 USB 2.0: 4+4
PS2	1	1	1	1
AUDIO	ALC897-7.1Ch (3 ports)	ALC897-7.1Ch (3 ports)	ALC897-7.1Ch (3 ports)	ALC897-7.1Ch (3 ports)
LAN	GbE (i219V)	2.5GbE (RTL8125B)	GbE (i219V)	GbE (i219V)
Printer / COM	N/Y	N/Y	N/Y	N/Y
LED Header	3 (12V*1/5V*2)	N	N	N
Dual BIOS	N	N	N	N







Model Name	Z690 VALKYRIE	Z690A VALKYRIE	RACING Z690GTA	Z690A-SILVER	RACING B660GTA
Chipset	Z690	Z690	Z690	Z690	B660
Form Factor	ATX 305*244 mm	ATX 305*244 mm	ATX 305*244 mm	ATX 305*244 mm	ATX 305*244 mm
VRD	20 Phases	20 Phases	17 Phases	17 Phases	17 Phases
Solid Cap	All	All	All	All	All
Memory	4 x DDR5 up to 6000+ (OC) Mhz	4 x DDR4 up to 5000+ (OC) Mhz	4 x DDR4 up to 5000+ (OC) Mhz	4 x DDR4 up to 5000+ (OC) Mhz	4 x DDR4 up to 5000+ (OC) Mhz
PCI-E x 16 Slot	3	3	2	2	2
PCI-E x 1 Slot	N	N	2	2	2
PCI Slot	N	N	N	N	N
(m)DP	Y	Y	Y	Y	Y
HDMI	Y	Y	Y	Y	Y
DVI-D	N	N	Y	Y	Y
VGA	N	N	N	N	N
M.2	3 x M Key, support PCI-E 4.0 SSD (64Gb/s), 1 x M Key, support SATA 6Gb/s, PCI-E SSD (32Gb/s), 1 x E Key, supports type 2230 WiFi/BT module and Intel CNVi	3 x M Key, support PCI-E 4.0 SSD (64Gb/s), 1 x M Key, support SATA 6Gb/s, PCI-E SSD (32Gb/s), supports Intel Optane 1 x E Key, supports type 2230 WiFi/BT module and Intel CNVi	2 x M Key, support PCI-E 4.0 SSD (64Gb/s), 1 x M Key, support SATA 6Gb/s, PCI-E SSD (32Gb/s), supports Intel Optane 1 x E Key, supports type 2230 WiFi/BT module and Intel CNVi	2 x M Key, support PCI-E 4.0 SSD (64Gb/s), 1 x M Key, support SATA 6Gb/s, PCI-E SSD (32Gb/s), supports Intel Optane 1 x E Key, supports type 2230 WiFi/BT module and Intel CNVi	2 x M Key, support PCI-E 4.0 SSD (64Gb/s), 1 x M Key, support SATA 6Gb/s, PCI-E SSD (32Gb/s), supports Intel Optane 1 x E Key, supports type 2230 WiFi/BT module and Intel CNVi
SATA	8	8	8	8	8
USB (F/R)	USB 3.2 Gen 2x2: 1+1 USB 3.2 Gen 2: 2+7 USB 2.0: 4+0	USB 3.2 Gen 2x2: 1+1 USB 3.2 Gen 2: 2+7 USB 2.0: 4+0	USB 3.2 Gen 2 Type C: 1+1 USB 3.2 Gen 2: 0+5 USB 3.2 Gen 1: 2+0 USB 2.0: 4+2	USB 3.2 Gen 2 Type C: 1+1 USB 3.2 Gen 2: 0+5 USB 3.2 Gen 1: 2+0 USB 2.0: 4+2	USB 3.2 Gen 2 Type C: 1+1 USB 3.2 Gen 2: 0+5 USB 3.2 Gen 1: 2+0 USB 2.0: 4+2
PS2	1	1	1	1	1
AUDIO	ALC1220-7.1Ch (5 ports+SPDIF)	ALC1220-7.1Ch (5 ports+SPDIF)	ALC1220-7.1Ch (3 ports)	ALC1220-7.1Ch (3 ports)	ALC1220-7.1Ch (3 ports)
LAN	2.5GbE (RTL8125B)	2.5GbE (Intel I225-V)	2.5GbE (RTL8125B)	2.5GbE (RTL8125B)	2.5GbE (RTL8125B)
Printer / COM	N/Y	N/Y	N/Y	N/Y	N/Y
LED Header	3 (12V*1/5V*2)	3 (12V*1/5V*2)	3 (12V*1/5V*2)	3 (12V*1/5V*2)	3 (12V*1/5V*2)
Dual BIOS	Y	Y	N	N	N







Model Name	RACING B660GTQ	RACING B660GTN	B660M-SILVER	B660MX-E PRO	B660MXC PRO
Chipset	B660	B660	B660	B660	B660
Form Factor	uATX 244*244 mm	Mini ITX 170*170 mm	uATX 244*244 mm	uATX 244*244 mm	uATX 244*244 mm
VRD	12 Phases	9 Phases	12 Phases	10 Phases	10 Phases
Solid Cap	All	All	All	All	All
Memory	4 x DDR4 up to 5000+ (OC) Mhz	2 x DDR4 up to 5000+ (OC) Mhz	4 x DDR4 up to 5000+ (OC) Mhz	4 x DDR4 up to 4600+ (OC) Mhz	4 x DDR4 up to 4600+ (OC) Mhz
PCI-E x 16 Slot	2	1	2	2	4
PCI-E x 1 Slot	1	N	1	1	N
PCI Slot	N	N	N	N	N
(m)DP	Y	Y	Y	N	N
HDMI	Y	Y	Y	Y	Y
DVI-D	Y	N	Y	Y	Y
VGA	N	N	N	Y	Y
M.2	1 x M Key, support PCI-E 4.0 SSD (64Gb/s), 1 x M Key, support SATA 6Gb/s, PCI-E 4.0 SSD (64Gb/s), supports Intel Optane 1 x E Key, supports type 2230 WiFi/BT module and Intel CNVi	1 x M Key, support PCI-E 4.0 SSD (64Gb/s), 1 x M Key, support SATA 6Gb/s, PCI-E 4.0 SSD (64Gb/s), supports Intel Optane 1 x E Key, supports type 2230 WiFi/BT module and Intel CNVi	1 x M Key, support PCI-E 4.0 SSD (64Gb/s), 1 x M Key, support SATA 6Gb/s, PCI-E 4.0 SSD (64Gb/s), supports Intel Optane 1 x E Key, supports type 2230 WiFi/BT module and Intel CNVi	1 x M Key, support PCI-E 4.0 SSD (64Gb/s), 1 x M Key, support SATA 6Gb/s, PCI-E 4.0 SSD (64Gb/s), supports Intel Optane 1 x E Key, supports type 2230 WiFi/BT module and Intel CNVi	1 x M Key, support PCI-E 4.0 SSD (64Gb/s), 1 x M Key, support SATA 6Gb/s, PCI-E SSD (32Gb/s), supports Intel Optane 1 x E Key, supports type 2230 WiFi/BT module and Intel CNVi
SATA	4	4	4	4	8
USB (F/R)	USB 3.2 Gen 2 Type C: 1+1 USB 3.2 Gen 2: 0+5 USB 3.2 Gen 1: 2+0 USB 2.0: 4+2	USB 3.2 Gen 2: 0+4 USB 3.2 Gen 1: 2+0 USB 2.0: 2+2	USB 3.2 Gen 2 Type C: 1+1 USB 3.2 Gen 2: 0+5 USB 3.2 Gen 1: 2+0 USB 2.0: 4+2	USB 3.2 Gen 1: 2+4 USB 2.0: 4+2	USB 3.2 Gen 2: 0+4 USB 3.2 Gen 1: 2+0 USB 2.0: 6+2
PS2	1	1	1	1	1
AUDIO	ALC1220-7.1Ch (3 ports)	ALC1220-7.1Ch (3 ports)	ALC1220-7.1Ch (3 ports)	ALC897.1Ch (3 ports)	ALC897.1Ch (3 ports)
LAN	2.5GbE (RTL8125B)	2.5GbE (RTL8125B)	2.5GbE (RTL8125B)	GbE (i219V)	GbE (i219V)
Printer / COM	N/Y	N/Y	N/Y	N/Y	N/Y
LED Header	3 (12V*1/5V*2)	2 (12V*1/5V*1)	3 (12V*1/5V*2)	3 (12V*1/5V*2)	3 (12V*1/5V*2)
Dual BIOS	N	N	N	N	N







Model Name	B660MX-E	H610MH D5	H610MX-E	H610MH	H610MHP
Chipset	B660	H610	H610	H610	H610
Form Factor	uATX 208*236 mm	uATX 208*236 mm	uATX 208*236 mm	uATX 208*236 mm	uATX 208*236 mm
VRD	10 Phases	10 Phases	10 Phases	10 Phases	8 Phases
Solid Cap	All	All	All	All	All
Memory	2 x DDR4 up to 4000+ (OC) Mhz	2 x DDR5 up to 5600 (OC) Mhz	2 x DDR4 up to 3200 Mhz	2 x DDR4 up to 3200 Mhz	2 x DDR4 up to 3200 Mhz
PCI-E x 16 Slot	1	1	1	1	1
PCI-E x 1 Slot	1	1	1	1	1
PCI Slot	N	N	N	N	N
(m)DP	N	N	N	N	N
HDMI	Y	Y	Y	Y	Y
DVI-D	Y	N	Y	N	N
VGA	Y	Y	Y	Y	Y
M.2	1 x M Key, support SATA 6Gb/s, PCI-E SSD (32Gb/s), 1 x E Key, supports type 2230 WiFi/BT module and Intel CNVi	1 x M Key, support SATA 6Gb/s, PCI-E SSD (32Gb/s)	1 x M Key, support SATA 6Gb/s, PCI-E SSD (32Gb/s), supports Intel Optane 1 x E Key, supports type 2230 WiFi/BT module and Intel CNVi	1 x M Key, support SATA 6Gb/s, PCI-E SSD (32Gb/s), supports Intel Optane	1 x M Key, support SATA 6Gb/s, PCI-E SSD (32Gb/s),
SATA	4	4	4	4	4
USB (F/R)	USB 3.2 Gen 1: 2+2 USB 2.0: 4+4	USB 3.2 Gen 1: 2+2 USB 2.0: 4+4	USB 3.2 Gen 1: 2+2 USB 2.0: 4+4	USB 3.2 Gen 1: 2+2 USB 2.0: 4+4	USB 3.2 Gen 1: 2+2 USB 2.0: 4+4
PS2	1	1	1	1	1
AUDIO	ALC897-7.1Ch (3 ports)	ALC897-7.1Ch (3 ports)	ALC897-7.1Ch (3 ports)	ALC897-7.1Ch (3 ports)	ALC897-7.1Ch (3 ports)
LAN	GbE (i219V)	GbE (i219V)	GbE (i219V)	GbE (i219V)	GbE (i219V)
Printer / COM	N/Y	N/Y	N/Y	N/Y	N/Y
LED Header	N	N	N	N	N
Dual BIOS	N	N	N	N	N

LGA 1200







Model Name	H610MT	Z590 VALKYRIE	Z590I VALKYRIE	RACING Z590GTA	RACING B560GTQ
Chipset	H610	Z590	Z590	Z590	B560
Form Factor	uATX 216*228 mm	ATX 305*244 mm	Mini-ITX 170*170 mm	ATX 305*244 mm	uTX 244*244 mm
VRD	8 Phases	22 Phases	10 Phases	14 Phases	12 Phases
Solid Cap	All	All	All	All	All
Memory	2 x DDR4 up to 3200 Mhz	4 x DDR4 up to 5000+ (OC) Mhz	2 x DDR4 up to 5000+ (OC) Mhz	4 x DDR4 up to 5000+ (OC) Mhz	4 x DDR4 up to 5000+ (OC) Mhz
PCI-E x 16 Slot	1	3	1	2	2
PCI-E x 1 Slot	1	N	N	2	1
PCI Slot	N	N	N	N	N
(m)DP	Y	Y	Y	Y	Y
HDMI	Y	Y	Y	Y	Y
DVI-D	N	N	N	Y	Y
VGA	N	N	N	N	N
M.2	1 x M Key, support PCI-E SSD (32Gb/s)	1 x M Key, support PCI-E 4.0 SSD (64Gb/s), 2 x M Key, support SATA 6Gb/s, PCI-E SSD (32Gb/s), supports Intel Optane 1 x E Key, supports type 2230 WiFi/BT module and Intel CNVi	1 x M Key, support PCI-E 4.0 SSD (64Gb/s), 1 x M Key, support SATA 6Gb/s, PCI-E SSD (32Gb/s), supports Intel Optane 1 x E Key, supports type 2230 WiFi/BT module and Intel CNVi	1 x M Key, support PCI-E 4.0 SSD (64Gb/s) 1 x M Key, support SATA 6Gb/s, PCI-E SSD (32Gb/s), supports Intel Optane 1 x M Key, support PCI-E SSD (32Gb/s), supports Intel Optane 1 x E Key, supports type 2230 WiFi/BT module and Intel CNVi	1 x M Key, support PCI-E 4.0 SSD (64Gb/s) 1 x M Key, support SATA 6Gb/s, PCI-E SSD (32Gb/s), 1 x E Key, supports type 2230 WiFi/BT module and Intel CNVi
SATA	4	6	4	6	6
USB (F/R)	USB 3.2 Gen2: 1(C)+0 USB 3.2 Gen1: 2+1	USB 3.2 Gen 2x2: 1+1 USB 3.2 Gen 2: 0+5 USB 3.2 Gen 1: 2+2 USB 2.0: 4+0	USB 3.2 Gen 2x2: 0+1 USB 3.2 Gen 2: 0+2 USB 3.2 Gen 1: 2+3 USB 2.0: 2+2	USB 3.2 Gen 2x2: 0+1 USB 3.2 Gen 2: 0+2 USB 3.2 Gen 1: 2+3 USB 2.0: 4+2	USB 3.2 Gen 2x2: 0+1 USB 3.2 Gen 2: 0+2 USB 3.2 Gen 1: 2+3 USB 2.0: 4+2
PS2	1	1	1	1	1
AUDIO	ALC897-7.1Ch (3 ports)	ALC1220-7.1Ch (5 ports+SPDIF)	ALC1220-7.1Ch (3 ports)	ALC1220-7.1Ch (3 ports)	ALC1220-7.1Ch (3 ports)
LAN	GbE (RTL8111H)	2.5GbE (RTL8125B)	2.5GbE (RTL8125B)	2.5GbE (RTL8125B)	2.5GbE (RTL8125B)
Printer / COM	N/Y	N/Y	N/N	N/Y	N/Y
LED Header	N	3 (12V*1/5V*2)	2 (12V*1/5V*1)	3 (12V*1/5V*2)	3 (12V*1/5V*2)
Dual BIOS	N	Y	N	N	N







Model Name	B560M-SILVER	B560MX/E PRO	B560MH/E PRO	B560MHP 2.0	H510MX/E 2.0
Chipset	B560	B560	B560	B560	H510
Form Factor	uATX 244*244 mm	uATX 244*244 mm	uATX 244*244 mm	uATX 185*226 mm	uATX 208*236 mm
VRD	12 Phases	10 Phases	10 Phases	5 Phases	8 Phases
Solid Cap	All	All	All	All	All
Memory	4 x DDR4 up to 5000+ (OC) Mhz	4 x DDR4 up to 4000+ (OC) Mhz	4 x DDR4 up to 4000+ (OC) Mhz	2 x DDR4 up to 3200+ (OC) Mhz	2 x DDR4 up to 3200 Mhz
PCI-E x 16 Slot	2	2	2	1	1
PCI-E x 1 Slot	1	1	1	2	1
PCI Slot	N	N	N	N	N
(m)DP	Y	N	N	N	N
HDMI	Y	Y	Y	Y	Y
DVI-D	Y	Y	N	N	Y
VGA	N	Y	Y	Y	Y
M.2	1 x M Key, support PCI-E 4.0 SSD (64Gb/s) 1 x M Key, support SATA 6Gb/s, PCI-E SSD (32Gb/s), 1 x E Key, supports type 2230 WiFi/BT module and Intel CNVi	1 x M Key, support PCI-E 4.0 SSD (64Gb/s) 1 x M Key, support SATA 6Gb/s, PCI-E SSD (32Gb/s), 1 x E Key, supports type 2230 WiFi/BT module and Intel CNVi	1 x M Key, support PCI-E 4.0 SSD (64Gb/s) 1 x M Key, support SATA 6Gb/s, PCI-E SSD (32Gb/s), 1 x E Key, supports type 2230 WiFi/BT module and Intel CNVi	1 x M Key, support SATA 6Gb/s, PCI-E SSD (32Gb/s),	1 x M Key, support SATA 6Gb/s, PCI-E SSD (32Gb/s), 1 x E Key, supports type 2230 WiFi/BT module and Intel CNVi
SATA	6	4	4	4	4
USB (F/R)	USB 3.2 Gen 2x2: 0+1 USB 3.2 Gen 2: 0+2 USB 3.2 Gen 1: 2+3 USB 2.0: 4+2	USB 3.2 Gen 1: 2+4 USB 2.0: 4+2	USB 3.2 Gen 1: 2+4 USB 2.0: 4+2	USB 3.2 Gen 1: 2+2 USB 2.0: 4+2	USB 3.2 Gen 1: 2+2 USB 2.0: 4+4
PS2	1	2	2	2	1
AUDIO	ALC1220-7.1Ch (3 ports)	ALC897-7.1Ch (3 ports)	ALC897-7.1Ch (3 ports)	ALC897-7.1Ch (3 ports)	ALC897-7.1Ch (3 ports)
LAN	2.5GbE (RTL8125B)	GbE (i219V)	GbE (i219V)	GbE (i219V)	GbE (i219V)
Printer / COM	N/Y	N/Y	N/Y	N/Y	N/Y
LED Header	3 (12V*1/5V*2)	N	N	N	N
Dual BIOS	N	N	N	N	N

LGA 1151 LGA 1150 LGA 1155







Model Name	H510MH/E 2.0	H510MH 2.0	H310MHP 3.0	H81MHV3 2.0	H61MHV3
Chipset	H510	H510	H310	H81	H61
Form Factor	uATX 208*236 mm	uATX 208*236 mm	uATX 226*171 mm	uATX 190*170 mm	uATX 190*170 mm
VRD	8 Phases	8 Phases	5 Phases	3 Phases	2 Phases
Solid Cap	All	All	All	All	All
Memory	2 x DDR4 up to 3200 Mhz	2 x DDR4 up to 3200 Mhz	2 x DDR4 up to 2666 Mhz	2 x DDR3 up to 1600 Mhz	2 x DDR3 up to 1600 Mhz
PCI-E x 16 Slot	1	1	1	1	1
PCI-E x 1 Slot	1	1	2	1	1
PCI Slot	N	N	N	N	N
(m)DP	N	N	N	N	N
HDMI	Y	Y	Y	Y	Y
DVI-D	N	N	N	N	N
VGA	Y	Y	Y	Y	Y
M.2	1 x M Key, support SATA 6Gb/s, PCI-E SSD (32Gb/s), 1 x E Key, supports type 2230 WiFi/BT module and Intel CNVi	1 x M Key, support SATA 6Gb/s, PCI-E SSD (32Gb/s),	N	N	N
SATA	4	4	4	4	4
USB (F/R)	USB 3.2 Gen 1: 2+2 USB 2.0: 4+4	USB 3.2 Gen 1: 2+2 USB 2.0: 4+4	USB 3.2 Gen 1: 2+2 USB 2.0: 2+4	USB 3.2 Gen 1: 0+2 USB 2.0: 4+2	USB 2.0: 4+4
PS2	1	1	2	2	1
AUDIO	ALC897-7.1Ch (3 ports)	ALC897-7.1Ch (3 ports)	ALC897-7.1Ch (3 ports)	ALC897-7.1Ch (3 ports)	ALC897-7.1Ch (3 ports)
LAN	GbE (i219V)	GbE (i219V)	GbE (RTL8111H)	GbE (RTL8111H)	GbE (RTL8111G)
Printer / COM	N/Y	N/Y	N/Y	N/Y	N/Y
LED Header	N	N	N	N	N
Dual BIOS	N	N	N	N	N

CPU ON-BOARD










Model Name	J4125NHU	J4125TH	J4105NHU	J4105TH	J4025NHU	J3060NH	J1800NH3	J1800MH2
Chipset	J4125	J4125	J4105	J4105	J4025	J3060	J1800	J1800
Form Factor	Mini-ITX 170*170 mm	Mini-ITX 170*170 mm	Mini-ITX 170*170 mm	Mini-ITX 170*170 mm	Mini-ITX 170*170 mm	Mini-ITX 170*170 mm	Mini-ITX 170*170 mm	Micro-ATX 226*188 mm
VRD	1 Phase	1 Phase	1 Phase	1 Phase	1 Phase	2 Phases	1 Phase	2 Phases
Solid Cap	All	All	All	All	All	All	All	All
Memory	2 x DDR4 up to 2400 Mhz	1 x DDR4 up to 2400 Mhz	2 x DDR4 up to 2400 Mhz	1 x DDR4 up to 2400 Mhz	2 x DDR4 up to 2400 Mhz	2 x DDR3/L up to 1600 Mhz	2 x DDR3/L up to 1333 Mhz	2 x DDR3/L up to 1333 Mhz
PCI-E x 16 Slot	1	N	1 (x1)	N	1	N	N	1 (x1)
PCI-E x 1 Slot	N	N	N	N	N	1	1	2
PCI Slot	N	N	N	N	N	N	N	N
(m)DP	N	N	N	N	N	N	N	N
HDMI	Y	Y	Y	Y	Y	Y	Y	Y
DVI-D	N	N	N	N	N	N	N	N
VGA	Y	N	Y	N	Y	Y	Y	Y
M.2	1 x M Key, supports SATA 6Gb/s, PCI-E SSD (10Gb/s)	1 x M Key, supports PCI-E SSD (10Gb/s) 1 x E Key, supports type 2230 WiFi/BT module and Intel CNVi	1 x M Key, supports SATA 6Gb/s, PCI-E SSD (10Gb/s)	1 x M Key, supports PCI-E SSD (10Gb/s) 1 x E Key, supports type 2230 WiFi/BT module and Intel CNVi	1 x M Key, supports SATA 6Gb/s, PCI-E SSD (10Gb/s)	N	N	N
SATA	2	1	2	1	2	2	2	2
USB (F/R)	USB 3.2 Gen 1: 0+2 USB 2.0: 4+2	USB 3.2 Gen 1: 0+4 USB 2.0: 1+2	USB 3.2 Gen 1: 0+2 USB 2.0: 4+2	USB 3.2 Gen 1: 0+4 USB 2.0: 1+2	USB 3.2 Gen 1: 0+2 USB 2.0: 4+2	USB 3.2 Gen 1: 2+2 USB 2.0: 4+2	USB 3.2 Gen 1: 0+1 USB 2.0: 4+4	USB 3.2 Gen 1: 0+1 USB 2.0: 4+2
PS2	1	N	1	N	1	2	2	2
AUDIO	ALC887-2Ch (3 ports)	ALC887-2Ch (2 ports)	ALC887-8Ch (3 ports)	ALC887-2Ch (2 ports)	ALC887-2Ch (3 ports)	ALC662-6Ch (3 ports)	ALC662-6Ch (3 ports)	ALC662-6Ch (3 ports)
LAN	GbE (RTL8111H)	GbE (RTL8111H)	GbE (RTL8111H)	GbE (RTL8111H)	GbE (RTL8111H)	GbE (RTL8111H)	GbE (RTL8111G)	GbE (RTL8111G)
Printer / COM	Y/Y	N/N	Y/Y	N/N	Y/Y	Y/ Y	Y/ Y	Y/ Y
LED Header	N	2 (12V)	N	2 (12V)	N	N	N	N
Dual BIOS	N	N	N	N	N	N	N	N

AMD

VALKYRIE
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Designed to Dominate

AMD SOCKET AM5 | X670E
AMD SOCKET AM5 | B650E
AMD SOCKET AM5 | B650
AMD SOCKET AM5 | A620

AMD Series Motherboards



AMD RYZEN 7000 Series

AM5






Model Name	X670E VALKYRIE	B650EGTQ	B650M-SILVER	B650MXC PRO
Chipset	X670E	B650E	B650	B650
Form Factor	ATX 305*244 mm	Micro-ATX 244*244 mm	Micro-ATX 244*244 mm	Micro-ATX 244*244 mm
VRD	22 Phases	14 Phases	14 Phases	10 Phases
Solid Cap	All	All	All	All
Memory	4 x DDR5 up to 6000+ (OC) MHz	4 x DDR5 up to 6000+ (OC) MHz	4 x DDR5 up to 6000+ (OC) MHz	4 x DDR5 up to 6000+ (OC) MHz
PCI-E x 16 Slot	3 (x16, x8, x4)	2 (x16, x4)	2 (x16, x4)	4 (x16, x1, x1, x1)
PCI-E x 1 Slot	N	1	1	N
PCI Slot	N	N	N	N
(m)DP	Y	Y	Y	Y
HDMI	Y	Y	Y	Y
DVI-D	N	N	N	N
VGA	N	N	N	N
M.2	Total support 4 x M.2 Socket: 2 x M Key, support PCIe 5.0 x 4 (128Gb/s) / 4.0 x 4 (64Gb/s) 2 x M Key, support PCIe 4.0 x 4 (64Gb/s) 1 x E Key, supports 2230 type Wi-Fi & Bluetooth module	Total support 3 x M.2 Socket: 2 x M Key, support PCIe 5.0 x 4 (128Gb/s) / 4.0 x 4 (64Gb/s) 1 x M Key, support PCIe 4.0 x 4 (64Gb/s) 1 x E Key, supports 2230 type Wi-Fi & Bluetooth module	Total support 2 x M.2 Socket: 2 x M Key, support PCIe 4.0 x 4 (64Gb/s) 1 x E Key, supports 2230 type Wi-Fi & Bluetooth module	Total support 2 x M.2 Socket: 2 x M Key, support PCIe 4.0 x 4 (64Gb/s) 1 x E Key, supports 2230 type Wi-Fi & Bluetooth module
SATA	6	4	4	8
USB (F/R)	USB 3.2 Gen 2x2: 1 (C) +1 (C) USB 3.2 Gen 2: 2+9 USB 2.0: 4+0	USB 3.2 Gen 2x2: 0 +1 (C) USB 3.2 Gen 2: 2+3 USB 3.2 Gen 1: 0+2 USB 2.0: 4+2	USB 3.2 Gen 2x2: 0 +1 (C) USB 3.2 Gen 2: 2+1 USB 3.2 Gen 1: 0+2 USB 2.0: 4+2	USB 3.2 Gen 2: 1 (C) +2 (A+C) USB 3.2 Gen 2: 2+4 USB 2.0: 4+2
PS2	N	N	N	1
AUDIO	ALC1220 (5 ports+SPDIF), 7.1 Channels, High Definition Audio, Hi-Fi	ALC1220 (3 ports), 7.1 Channels, High Definition Audio, Hi-Fi	ALC1220 (3 ports), 7.1 Channels, High Definition Audio, Hi-Fi	ALC897 (3 ports), 7.1 Channels, High Definition Audio, Hi-Fi
LAN	2.5GbE (i225V)	2.5GbE (RTL8125B)	2.5GbE (RTL8125B)	2.5GbE (RTL8125B)
Printer / COM	N/Y	N/Y	N/Y	N/Y
LED Header	3 (12V*1/5V*2)	3 (12V*1/5V*2)	3 (12V*1/5V*2)	3 (12V*1/5V*2)
Dual BIOS	Y	N	N	N





COMING SOON

COMING SOON

Model Name	B650MP-E PRO	A620MP-E PRO	A620MT2	A620MT
Chipset	B650	A620	A620	A620
Form Factor	Micro-ATX 244*244 mm	Micro-ATX 244*244 mm	Micro-ATX 221*235mm	Micro-ATX 221*235mm
VRD	10 Phases	10 Phases	8 Phases	8 Phases
Solid Cap	All	All	All	All
Memory	4 x DDR5 up to 6000+ (OC) MHz	4 x DDR5 up to 6000+ (OC) MHz	2 x DDR5 up to 5600+ (OC) MHz	2 x DDR5 up to 5600+ (OC) MHz
PCI-E x 16 Slot	1	1	1	1
PCI-E x 1 Slot	3	3	1	1
PCI Slot	N	N	N	N
(m)DP	Y	Y	Y	Y
HDMI	Y	Y	Y	Y
DVI-D	N	N	N	N
VGA	N	N	N	N
M.2	Total support 2 x M.2 Socket: 2 x M Key, support PCIe 4.0 x 4 (64Gb/s) 1 x E Key, supports 2230 type Wi-Fi & Bluetooth module	Total support 1 x M.2 Socket: 1 x M Key, support PCIe 4.0 x 4 (64Gb/s) 1 x E Key, supports 2230 type Wi-Fi & Bluetooth module	Total support 1 x M.2 Socket: 1 x M Key, support PCIe 4.0 x 4 (64Gb/s)	Total support 1 x M.2 Socket: 1 x M Key, support PCIe 4.0 x 4 (64Gb/s)
SATA	4	4	4	4
USB (F/R)	USB 3.2 Gen 2: 1 (C) +2 (A+C) USB 3.2 Gen 2: 2+4 USB 2.0: 4+2	USB 3.2 Gen 2: 1 (C) +0 USB 3.2 Gen 2: 2+4 USB 2.0: 4+2	USB 3.2 Gen 2: 1 (C)+0 USB Gen 1: 2+4 USB 2.0: 4+2	USB 3.2 Gen 2: 1 (C)+0 USB Gen 1: 2+4 USB 2.0: 4+2
PS2	1	1	N	N
AUDIO	ALC897 (3 ports), 7.1 Channels, High Definition Audio, Hi-Fi	ALC897 (3 ports), 7.1 Channels, High Definition Audio, Hi-Fi	ALC897 (3 ports), 7.1 Channels, High Definition Audio, Hi-Fi	ALC897 (3 ports), 7.1 Channels, High Definition Audio, Hi-Fi
LAN	2.5GbE (RTL8125B)	2.5GbE (RTL8125B)	2.5GbE (RTL8125B)	GbE (RTL8111H)
Printer / COM	N/Y	N/Y	N/Y	N/Y
LED Header	3 (12V*1/5V*2)	3 (12V*1/5V*2)	N	N
Dual BIOS	N	N	N	N

AM4







Model Name	RACING B550GTQ	B550M-SILVER	B550T-SILVER	B550MXC PRO	B550MX/E PRO
Chipset	B550	B550	B550	B550	B550
Form Factor	Micro-ATX 244*244 mm	Micro-ATX 244*244 mm	Mini-ITX 170*170mm	Micro-ATX 244*244 mm	Micro-ATX 244*244 mm
VRD	10 Phases	10 Phases	8 Phases	10 Phases	10 Phases
Solid Cap	All	All	All	All	All
Memory	4 x DDR4 up to 4933+(OC) MHz	4 x DDR4 up to 4933+(OC) MHz	2 x DDR4 up to 4933+(OC) MHz	4 x DDR4 up to 4933+(OC) MHz	4 x DDR4 up to 4933+(OC) MHz
PCI-E x 16 Slot	2 (x16, x4)	2 (x16, x4)	1	4 (x16, x1, x1, x1)	2 (x16, x4)
PCI-E x 1 Slot	2	1	N	N	1
PCI Slot	N	N	N	N	N
(m)DP	Y	Y	Y	N	N
HDMI	Y	Y	Y	Y	Y
DVI-D	Y	Y	N	N	Y
VGA	N	N	N	N	Y
M.2	Total support 2 x M.2 Socket: 2 x M Key, support PCIe 4.0 x 4 (64Gb/s) / 3.0 x 4 (32Gb/s) & SATA III (6Gb/s) *PCIe 4.0 supports Ryzen Gen 3rd Matisse and 4th Vermeer	Total support 2 x M.2 Socket: 2 x M Key, support PCIe 4.0 x 4 (64Gb/s) / 3.0 x 4 (32Gb/s) & SATA III (6Gb/s) *PCIe 4.0 supports Ryzen Gen 3rd Matisse and 4th Vermeer 1 x E Key, supports 2230 type Wi-Fi & Bluetooth module	Total support 1 x M.2 Socket: 1 x M Key, support PCIe 4.0 x 4 (64Gb/s) / 3.0 x 4 (32Gb/s) & SATA III (6Gb/s) *PCIe 4.0 supports Ryzen Gen 3rd Matisse and 4th Vermeer 1 x E Key, supports 2230 type Wi-Fi & Bluetooth module	Total support 2 x M.2 Socket: 1 x M Key, support PCIe 4.0 x 4 (64Gb/s) / 3.0 x 4 (32Gb/s) & SATA III (6Gb/s) 1 x M Key, support PCIe 3.0 x 4 (32Gb/s) & SATA III (6Gb/s) *PCIe 4.0 supports Ryzen Gen 3rd Matisse and 4th Vermeer 1 x E Key, supports 2230 type Wi-Fi & Bluetooth module	Total support 2 x M.2 Socket: 1 x M Key, support PCIe 4.0 x 4 (64Gb/s) / 3.0 x 4 (32Gb/s) & SATA III (6Gb/s) 1 x M Key, support PCIe 3.0 x 4 (32Gb/s) & SATA III (6Gb/s) *PCIe 4.0 supports Ryzen Gen 3rd Matisse and 4th Vermeer 1 x E Key, supports 2230 type Wi-Fi & Bluetooth module
SATA	6	6	4	8	4
USB (F/R)	USB 3.2 Gen 2: 0+2 (A+C) USB 3.2 Gen 1: 2+4 USB 2.0: 4+2	USB 3.2 Gen 2: 0+2 (A+C) USB 3.2 Gen 1: 2+4 USB 2.0: 4+2	USB 3.2 Gen 2: 0+2 (A+C) USB 3.2 Gen 1: 2+4 USB 2.0: 2+0	USB 3.2 Gen 2: 0+2 (A+C) USB 3.2 Gen 1: 2+4 USB 2.0: 4+2	USB 3.2 Gen 1: 2+4 USB 2.0: 4+2
PS2	1	1	1	1	1
AUDIO	ALC1150 (3 ports), 7.1 Channels, High Definition Audio, Hi-Fi	ALC1150 (3 ports), 7.1 Channels, High Definition Audio, Hi-Fi	ALC897 (3 ports), 7.1 Channels, High Definition Audio, Hi-Fi	ALC897 (3 ports), 7.1 Channels, High Definition Audio, Hi-Fi	ALC897 (3 ports), 7.1 Channels, High Definition Audio, Hi-Fi
LAN	GbE (RTL8118AS)	2.5GbE (RTL8125B)	2.5GbE (RTL8125B)	GbE (RTL8111H)	GbE (RTL8111H)
Printer / COM	N/Y	N/Y	N/N	N/Y	N/Y
LED Header	3 (12V*1/5V*2)	3 (12V*1/5V*2)	2 (12V*1/5V*1)	3 (12V*1/5V*2)	N
Dual BIOS	N	N	N	N	N






Model Name	B550MH	B550MT2	B550MT	A520MT
Chipset	B550	B550	B550	A520
Form Factor	Micro-ATX 244*208 mm	Micro-ATX 216*228 mm	Micro-ATX 216*228 mm	Micro-ATX 216*228 mm
VRD	8 Phases	6 Phases	6 Phases	6 Phases
Solid Cap	All	All	All	All
Memory	2 x DDR4 up to 4933+(OC) MHz	2 x DDR4 up to 4933+(OC) MHz	2 x DDR4 up to 4933+(OC) MHz	2 x DDR4 up to 4600+(OC) MHz
PCI-E x 16 Slot	1	1	1	1
PCI-E x 1 Slot	2	2	2	2
PCI Slot	N	N	N	N
(m)DP	N	Y	Y	Y
HDMI	Y	Y	Y	Y
DVI-D	N	N	N	N
VGA	Y	N	N	N
M.2	Total support 1 x M.2 Socket: 1 x M Key, support PCIe 4.0 x 4 (64Gb/s) / 3.0 x 4 (32Gb/s) & SATA III (6Gb/s) *PCIe 4.0 supports Ryzen Gen 3rd Matisse and 4th Vermeer	Total support 1 x M.2 Socket: 1 x M Key, support PCIe 4.0 x 4 (64Gb/s) / 3.0 x 4 (32Gb/s) & SATA III (6Gb/s) *PCIe 4.0 supports Ryzen Gen 3rd Matisse and 4th Vermeer	Total support 1 x M.2 Socket: 1 x M Key, support PCIe 4.0 x 4 (64Gb/s) / 3.0 x 4 (32Gb/s) & SATA III (6Gb/s) *PCIe 4.0 supports Ryzen Gen 3rd Matisse and 4th Vermeer	Total support 1 x M.2 Socket: 1 x M Key, support PCIe 3.0 x 4 (32Gb/s) & SATA III (6Gb/s)
SATA	4	4	4	4
USB (F/R)	USB 3.2 Gen 1: 4+4 USB 2.0: 4+2	USB 3.2 Gen 2: 1 (C)+0 USB 3.2 Gen 2: 2+4 USB 2.0: 4+2	USB 3.2 Gen 2: 1 (C)+0 USB 3.2 Gen 2: 2+4 USB 2.0: 4+2	USB 3.2 Gen 2: 1 (C)+0 USB 3.2 Gen 2: 2+4 USB 2.0: 4+2
PS2	2	N	N	N
AUDIO	ALC897 (3 ports), 7.1 Channels, High Definition Audio, Hi-Fi	ALC897 (3 ports), 7.1 Channels, High Definition Audio, Hi-Fi	ALC897 (3 ports), 7.1 Channels, High Definition Audio, Hi-Fi	ALC897 (3 ports), 7.1 Channels, High Definition Audio, Hi-Fi
LAN	GbE (RTL8111H)	2.5GbE (RTL8125B)	GbE (RTL8111H)	GbE (RTL8111H)
Printer / COM	N/Y	N/Y	N/Y	N/Y
LED Header	N	N	N	N
Dual BIOS	N	N	N	N

AM4







Model Name	B450MX	B450MX-S	B450MH	B450MHP	A320MH
Chipset	B450	B450	B450	B450	A320
Form Factor	Micro-ATX 244*244 mm	Micro-ATX 244*244 mm	Micro-ATX 198*244 mm	Micro-ATX 174*226 mm	Micro-ATX 174*226 mm
VRD	10 Phases	10 Phases	6 Phases	5 Phases	5 Phases
Solid Cap	All	All	All	All	All
Memory	4 x DDR4 up to 4333+ (OC) MHz	4 x DDR4 up to 4333+ (OC) MHz	2 x DDR4 up to 3200 (OC) MHz	2 x DDR4 up to 3200 (OC) MHz	2 x DDR4 up to 2933 MHz
PCI-E x 16 Slot	2 (x16, x4)	2 (x16, x4)	1	1	1
PCI-E x 1 Slot	1	1	2	2	2
PCI Slot	N	N	N	N	N
(m)DP	N	N	N	N	N
HDMI	Y	Y	Y	Y	Y
DVI-D	Y	N	N	N	N
VGA	Y	N	Y	Y	Y
M.2	Total support 1 x M.2 Socket: 1 x M Key, support PCIe 3.0 x 4 (32Gb/s) & SATA III (6Gb/s)	Total support 1 x M.2 Socket: 1 x M Key, support PCIe 3.0 x 4 (32Gb/s) & SATA III (6Gb/s)	Total support 1 x M.2 Socket: 1 x M Key, support PCIe 3.0 x 4 (32Gb/s) & SATA III (6Gb/s)	N	N
SATA	4	4	4	4	4
USB (F/R)	USB 3.2 Gen 1: 2+4 USB 2.0: 4+2	USB 3.2 Gen 1: 2+4 USB 2.0: 4+2	USB 3.2 Gen 1: 2+4 USB 2.0: 4+2	USB 3.2 Gen 1: 2+2 USB 2.0: 4+4	USB 3.2 Gen 1: 2+2 USB 2.0: 4+4
PS2	1	1	1	1	1
AUDIO	ALC887 (3 ports), 7.1 Channels, High Definition Audio	ALC887 / 897 (3 ports), 7.1 Channels, High Definition Audio	ALC887 / 897 (3 ports), 7.1 Channels, High Definition Audio	ALC897 (3 ports), 7.1 Channels, High Definition Audio, Hi-Fi	ALC897 (3 ports), 7.1 Channels, High Definition Audio, Hi-Fi
LAN	GbE (RTL8111H)	GbE (RTL8111H)	GbE (RTL8111H)	GbE (RTL8111H-VB)	GbE (RTL8111H)
Printer / COM	N/Y	N/Y	N/Y	N/Y	N/Y
LED Header	N	N	N	N	N
Dual BIOS	N	N	N	N	N

CPU ON-BOARD

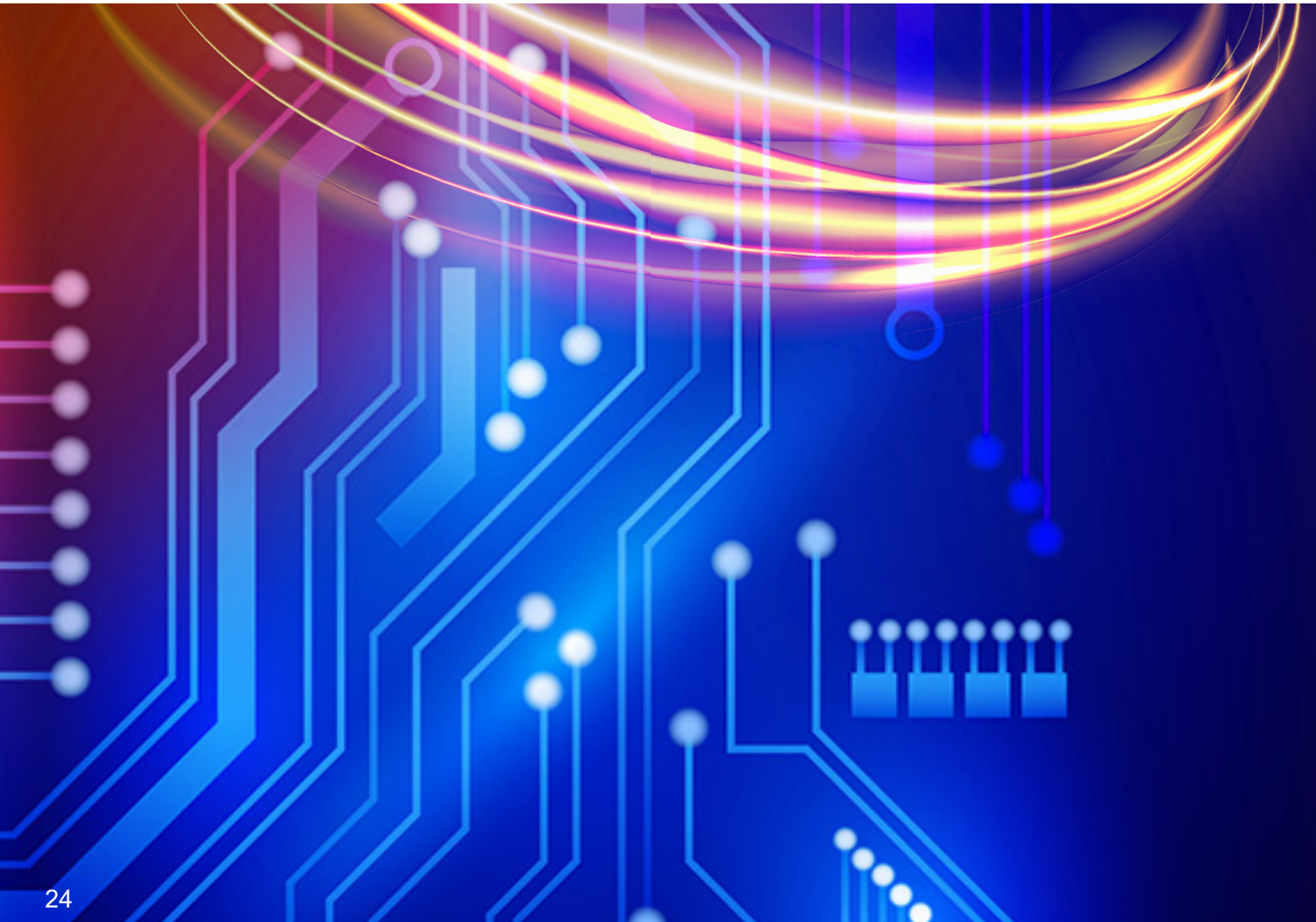




Model Name	A68N-5600E	A68N-2100K 2.0	A68N-2100K
Chipset	PRO A4-3350B	E1-6010	E1-6010
Form Factor	Mini-ITX 170*170mm	Mini-ITX 170*170 mm	Mini-ITX 170*170 mm
VRD	2 Phases	2 Phases	2 Phases
Solid Cap	All	All	All
Memory	2 x DDR3/L up to 1600/1333 MHz	2 x DDR3L up to 1333 MHz	2 x DDR3L up to 1333 MHz
PCI-E x 16 Slot	1 (x4)	1 (x4)	1 (x4)
PCI-E x 1 Slot	N	N	N
PCI Slot	N	N	N
(m)DP	N	N	N
HDMI	Y	Y	Y
DVI-D	N	N	N
VGA	Y	Y	Y
M.2	N	N	N
SATA	2	2	2
USB (F/R)	USB 3.2 Gen 1: 0+2 USB 2.0: 4+2	USB 3.2 Gen 1: 0+2 USB 2.0: 4+2	USB 3.2 Gen 1: 0+2 USB 2.0: 4+2
PS2	2	2	2
AUDIO	ALC887 (3 ports), 7.1 Channels, High Definition Audio	ALC887 (3 ports), 7.1 Channels, High Definition Audio	ALC887 (3 ports), 7.1 Channels, High Definition Audio
LAN	GbE (RTL8111H)	GbE (RTL8111H)	GbE (RTL8111H)
Printer / COM	Y/ Y	Y/Y	Y/Y
LED Header	N	N	N
Dual BIOS	N	N	N



GRAPHICS CARDS
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AMD RADEON SERIES GRAPHICS CARDS

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RX 7000 Series





Model Name	VA7906AMF4	VA7906XM00	VA7606RM81	VA69T6AEP2	VA68T6TMP2	VA6806LEP2	VA6756TML9
GPU	RADEON RX7900XTX	RADEON RX7900XT	RADEON RX7600	RADEON RX6900XT	RADEON RX6800XT	RADEON RX6800	RADEON RX6750XT
Game / Boost CLK	2269/2499Mhz	2025/2394Mhz	2250/2655Mhz	2015/2250Mhz	2015/2250Mhz	1815/2105Mhz	2495/2600Mhz
MEM CLK	20Gbps	20Gbps	18Gbps	16Gbps	16Gbps	16Gbps	18Gbps
MEM	24GB GDDR6	20GB GDDR6	8GB GDDR6	16GB GDDR6	16GB GDDR6	16GB GDDR6	12GB GGDR6
MEM bus	384bit	320bit	128bit	256bit	256bit	256bit	192bit
Output	3DP2.1+HDMI	3DP2.1+HDMI	3DP2.1+HDMI	3DP+HDMI	3DP+HDMI	3DP+HDMI	3DP+HDMI



Model Name	VA67S6TML9	VA67T6TML9	VA6656TM81	VA66T6TM81	VA6606RM81	VA65X6RA46	VA6406RA46
GPU	RADEON RX6700XT OC	RADEON RX6700XT	RADEON RX6650XT	RADEON RX6600XT	RADEON RX6600	RADEON RX6500XT	RADEON RX6400
Game / Boost CLK	2548/2622Mhz	2424/2581Mhz	2410/2635Mhz	2359/2589Mhz	2044/2491Mhz	2610/2815Mhz	2039/2321Mhz
MEM CLK	16Gbps	16Gbps	17.5Gbps	16Gbps	14Gbps	18Gbps	16Gbps
MEM	12GB GDDR6	12GB GDDR6	8GB GDDR6	8GB GDDR6	8GB GDDR6	4GB DDR6	4GB GDDR6
MEM BUS	192bit	192bit	128bit	128bit	128bit	64bit	64bit
OUTPUT	3DP+HDMI	3DP+HDMI	3DP+HDMI	3DP+HDMI	3DP+HDMI	DP+HDMI	DP+HDMI



Model Name	VA57T6XM82	VA5815RV82	VA5705RV82	VA5615RF41	VA5515RF41	VA5515RF21
GPU	RADEON RX5700XT	RADEON RX580 2048SP	RADEON RX570	RADEON RX560	RADEON RX550	RADEON RX550
Game / Boost CLK	1755/1905Mhz	1164/1284Mhz	1168/1244Mhz	1175/1275Mhz	1019/1071Mhz	1100/1183Mhz
MEM CLK	14Gbps	7Gbps	7Gbps	6Gbps	7Gbps	7Gbps
MEM	8GB GDDR6	8GB GDDR5	8GB GDDR5	4GB GDDR5	4GB GDDR5	2GB GDDR5
MEM bus	256bit	256bit	256bit	128bit	128bit	128bit
Output	3DP + HDMI	DVI + 3DP + HDMI	DVI + 3DP + HDMI	DVI + DP + HDMI	DVI + DP + HDMI	DVI + DP + HDMI

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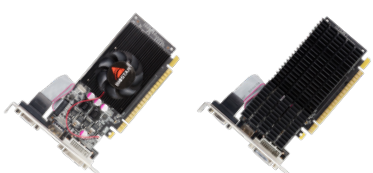




Model Name	VN3806RMT3	VN3706RM82	VN3606RML9	VN3506RM81	VN2066RF82	VN1666TF69	VN1666SF69
GPU	GeForce RTX 3080	GeForce RTX 3070	GeForce RTX 3060	GeForce RTX 3050	GeForce RTX 2060 SUPER	NVIDIA GTX1660 Ti	NVIDIA GTX1660 SUPER
Game / Boost CLK	1440/1770Mhz	1500/1725Mhz	1320/1777Mhz	1515/1755Mhz	1470/1650Mhz	1500/1770Mhz	1530/1785Mhz
MEM CLK	19Gbps	14Gbps	15Gbps	14Gbps	14Gbps	12Gbps	8Gbps
MEM	10GB GDDR6	8GB GDDR6	12GB GDDR6	8GB GDDR6	8GB GDDR6	6GB GDDR6	6GB GDDR6
MEM bus	320bit	256bit	192bit	128bit	256bit	192bit	192bit
Output	3DP+HDMI	3DP+HDMI	3DP+HDMI	3DP+HDMI	DVI+DP+HDMI	DVI+DP+HDMI	DVI+DP+HDMI



Model Name	VN1656SF41	VN1655XF41	VN1035TBX6	VN1034TB46	VN7313THX1	VN7313THX6
GPU	NVIDIA GTX1650 SUPER	GeForce GTX1650	GeForce GT1030	GeForce GT1030	GeForce GT730	GeForce GT730
Game / Boost CLK	1530/1725hz	1485/1665Mhz	1228/1468Mhz	2100Mhz	700Mhz	902Mhz
MEM CLK	12Gbps	8Gbps	6000Mhz	1152Mhz	1333Mhz	1300Mhz
MEM	4GB GDDR6	4GB GDDR5	2GB DDR5	4GB DDR4	4GB DDR3	2GB DDR3
MEM bus	128bit	128bit	64bit	64bit	128bit	64bit
Output	DVI+DP+HDMI	DVI + DP + HDMI	DVI + HDMI	DVI + HDMI	DVI + VGA + HDMI	DVI + VGA + HDMI



Model Name	VN6103THX6	VN2103NHG6
GPU	GeForce GT610	GeForce G210
Game / Boost CLK	700Mhz	589Mhz
MEM CLK	1300Mhz	1333Mhz
MEM	2GB DDR3	1GB DDR3
MEM bus	64bit	64bit
Output	DVI + VGA + HDMI	DVI + VGA + HDMI

LIGHT UP YOUR STORAGE

P500 Portable Series SSD with RGB Lighting

PCI EXPRESS

nvm EXPRESS

RGB Smart





P500-1TB (RGB)
P500-512GB (RGB)



Model Name	P500 1TB (RGB)	P500 512GB (RGB)
Capacity	1TB	512GB
Flash	TLC	TLC
Max. Read	1000MB/s	1000MB/s
Max. Write	900MB/s	900MB/s
Interface	USB 3.2 Gen 2	USB 3.2 Gen 2

GO SPEED UP

PCI EXPRESS

nvm EXPRESS




Model Name	M800 1TB	M800 512GB
Capacity	1TB	512GB
Flash	TLC	TLC
Max. Read	5000MB/s	5000MB/s
Max. Write	4450MB/s	2550MB/s
Interface	PCI-E Gen 4x4	PCI-E Gen 4x4






Model Name	M760 1TB	M760 512GB	M760 256GB	M700 128GB
Capacity	1TB	512GB	256GB	128GB
Flash	TLC	TLC	TLC	TLC
Max. Read	3200MB/s	2800MB/s	3200MB/s	1800MB/s
Max. Write	2650MB/s	1700MB/s	1300MB/s	500MB/s
Interface	PCI-E Gen 3x4	PCI-E Gen 3x4	PCI-E Gen 3x4	PCI-E Gen 3x4





BRING YOUR DATA TO LIFE

SATA 3 6Gb/s



Model Name	S100 512GB	S100 480GB	S100 256GB	S100 240GB	S100 128GB	S100 120GB
Capacity	512GB	480GB	256GB	240GB	128GB	120GB
Flash	TLC	TLC	TLC	TLC	TLC	TLC
Max. Read	530MB/s	520MB/s	520MB/s	510MB/s	460MB/s	460MB/s
Max. Write	465MB/s	450MB/s	400MB/s	400MB/s	340MB/s	320MB/s
Interface	SATA3	SATA3	SATA3	SATA3	SATA3	SATA3



Model Name	S160 1TB	S160 512GB	S160 256GB	S160 240GB	S160 128GB	S160 120GB	S160L 480GB
Capacity	1TB	512GB	256GB	240GB	128GB	120GB	480GB
Flash	TLC	TLC	TLC	TLC	TLC	TLC	QLC
Max. Read	550MB/s	550MB/s	550MB/s	550MB/s	550MB/s	550MB/s	550MB/s
Max. Write	500MB/s	485MB/s	470MB/s	490MB/s	430MB/s	430MB/s	510MB/s
Interface	SATA 3	SATA 3	SATA 3	SATA 3	SATA 3	SATA 3	SATA 3



ENJOY BLAZING FAST SPEEDS

RGB DDR4 GAMING X




Series Name	Gaming X	
Memory	DDR4	DDR5
SPEC	UDIMM	UDIMM
Capasity	8GB / 16GB	16GB
Speed	3600 / 3200Mhz	6000Mhz
Feature	Single / Dual Ch.	On-die ECC
Heatsink	RGB	RGB
Voltage	1.35V	1.35V
CL	18 / 19	30



Series Name	Storming V
Memory	DDR4
SPEC	UDIMM
Capasity	8GB / 16GB
Speed	3600 / 3200Mhz
Feature	Single Channel
Heatsink	Heatsink
Voltage	1.35V
CL	16 / 18




Memory	DDR4	DDR5
SPEC	UDIMM	UDIMM
Capasity	8GB / 16GB	16GB
Speed	3600 / 3200Mhz	4800Mhz
Feature	Single Channel	On-die ECC
Voltage	1.2V	1.1V
CL	16 / 18	40



INDUSTRIAL COMPUTING

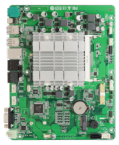








Model Name		RAPL-D3LA	BIH11-IHP	BIH17AHA
Processor Options		Intel® Atom x5-E3950/E3940 (Apollo Lake)	6th/7th Generation Intel® Core™ Processors (Skylake-S/ Kabylake-S), LGA1151	6th/7th Generation Intel® Core™ Processors (Skylake-S/ Kabylake-S), LGA1151
Chipset		N	Intel H110/Q170 Express Chipset	Intel H110/Q170/H170 Express Chipset
BIOS		AMI 64Mbit SPI Flash ROM BIOS	AMI 64Mbit/128M (Q170) SPI Flash ROM BIOS	AMI 64Mbit SPI Flash ROM BIOS
Form factor		146 x 120 mm	170 x 170 mm	305 x 220 mm
System Memory	Sockets	1 x DDR3L 1866 MHz SO-DIMM	2 x DDR4 2133 Mhz SO-DIMM	4 x DDR4 2133 Mhz LONG-DIMM
	Max. Capacity	Up to 8G	Up to 32G	Up to 32G
USB 2.0	USB 2.0 Internal	2 x USB2.0	3 x USB 2.0	2 x USB 2.0
	USB 2.0 External	N	2 x USB 2.0	4 x USB 2.0
USB 3.0	USB 3.0 Internal	N	2 x USB 3.0	2 x USB 3.0
	USB 3.0 External	4 x USB3.0	2 x USB 3.0	2 x USB 3.0
Expansion Slot		1 x Full-size MiniPCIE, supports PCI-E and USB2.0 for wireless module	1 x PCI-E x16 slot 1 x half size miniPCIE connector, supports wireless module 1 x Full size miniPCIE connector, supports mSATA	1 x PCI-E x16 slot 1 x PCI-E x4 slot (H170/Q170 support, H110 only supports PCI-E x1) 1 x PCI-E x1 slot 1 x M.2 M KEY socket, supports SATA SSD
Storage	Expansion	2 x SATAIII	3 x SATAIII	5 x SATAIII (H110 only supports 3 x SATAIII)
Networking	LAN	2 x GbE, RJ45 connectors	2 x GbE, RJ45 connectors	2 x GbE, RJ45 connectors
	Controller	2 x Realtek RTL8111H	2 x Realtek RTL8111H-CG	1 x Intel I211-AT 1 x Intel I219-V
Audio	Codec	ALC887	ALC897	ALC892
	IO connector	1 x Audio header, supports Line-in/out, Mic-in	1 x Audio Jack 3in1 (Line-in, Line-out, Mic-in jack) 2 x 1*2 pin 2.0 pitch wafer box pin headers for speakers	1 x Audio Jack 3in1 (Line-in, Line-out, Mic-in jack) 1 x 2*5 pins audio header (Line-out, Mic-in)
Serial Interface	Serial Standard	4 x COM: 2 x 2*10 pins headers, support RS232	6 x COM: 1 x D-sub 9 pin connector, supports RS232/ RS422/RS485 5 x 2*5 pins headers, support RS232 (5 x COM)	6 x COM: 1 x D-sub 9 pin connector, supports RS232 1 x D-sub 9 pin connector, supports RS232/ RS422/RS485 4 x 2*5 pins headers, support RS232 (4 x COM)
Others IO	Others IO (internal)	1 x 1*3 pin CPU Fan header 1 x 1*2 pin clear CMOS header 2 x HDD/Power LEDs	2 x PS/2 2 x 1*4 pin (2.54) CPU/System fan (Smart Fan) headers 1 x 2*7 pins TPM module header 1 x 1* 3 pin (2.0) clear CMOS header 1 x 2*5 pins front panel header	1 x PS/2 1 x 2*10 pins TPM 1.2 box header 1 x 2*5 pins front panel header 1 x 2*13 pins Parallel port box header 1 x 1*4 pin CPU PWM Smart Fan header 2 x 1*3 pin system DC Fan headers 1 x Buzzer
Digital I/O		N	8 bit	8 bit
Display	Interface	1 x LVDS 1 x HDMI	1 x VGA, D-sub 15 pin connector 1 x DVI 1 x HDMI 1 x LVDS	1 x VGA, D-sub 15 pin connector 1 x DVI
TPM	Support / Not	N	Supports TPM 2.0 module	Supports TPM 1.2 module
Power supply	DC power	1 x 12V DC Jack	N	N
	ATX power	N	Supports 1 x ATX power 20 pin header 1 x 12V ATX 4P connector	Supports 1 x ATX power 24 pin header 1 x 12V ATX 4P connector
Edge IO		2 x RJ45 1 x HDMI 4 x USB3.0 2 x LEDs 1 x DC 12V Jack	2 x PS/2 (keyboard, mouse) 1 x D-sub 9 pin connector (RS232/422/485) 1 x HDMI 1 x VGA 1 x DVI 2 x RJ45 (GbE) 2 x USB2.0 2 x USB3.0 1 x 3 in 1 Audio Jack	1 x PS/2 (keyboard, mouse) 4 x USB2.0 2 x USB3.0 1 x VGA, D-sub 15 pin connector 1 x DVI 2 x D-sub 9 pin connector (1 x RS232, 1 x RS232/422/485) 2 x RJ45 (GbE) 1 x 3 in 1 Audo Jack
OS Support		Windows 10	Windows 10, Windows 8.1, Windows 7	Windows 10, Windows 8.1, Windows 7







Model Name		BIBDA-SBP	EIBD-IAS	EIH81-IHP
Processor Options		Intel® Celeron® processor J1900 (Baytrail-D)	Intel® Celeron® processor J1900 (Baytrail-D)	4th Generation Intel® Core™ Processors (Haswell), LGA 1150
Chipset		N	N	Intel H81 Express Chipset
BIOS		AMI 64Mbit SPI Flash ROM BIOS	AMI 64Mbit SPI Flash ROM BIOS	AMI 64Mbit SPI Flash ROM BIOS
Form factor		207 x 159 mm	170 x 170 mm	170 x 170 mm
System Memory	Sockets	1 x DDR3L 1333 MHz SO-DIMM	2 x DDR3 1333 MHz SO-DIMM	1 x DDR3L 1333/1600 MHz SO-DIMM
	Max. Capacity	Up to 8G	Up to 8G	Up to 16G
USB 2.0	USB 2.0 Internal	4 x USB2.0	4 x USB2.0	4 x USB2.0
	USB 2.0 External	4 x USB2.0	4 x USB2.0	2 x USB2.0
USB 3.0	USB 3.0 Internal	N	1 x USB3.0	N
	USB 3.0 External	N	N	2 x USB3.0
Expansion Slot		1 x M.2 M key slot (supports mSATA and SATAII) for 2260/2280	1 x Full-size Mini PCI-E slot, supports mSATA+PCI-E (WIFI)+USB (3G) 1 x SIM slot 1 x PCI-E x1 (option)	1 x Half size Mini PCI-E connector, supports WIFI/BT module 1 x Full size Mini PCI-E connector, supports 3G module
Storage	Expansion	1 x SATAII	2 x SATAII (One port share with Mini PCI-E slot)	2 x SATAIII
Networking	LAN	1 x GbE, RJ45 connector	1 x GbE, RJ45 connector	1 x GbE, RJ45 connector
	Controller	Realtek RTL8111G-CG	Realtek RTL 8111G	Realtek RTL 8111G
Audio	Codec	ALC897	ALC897	ALC897
	IO connector	1 x Line-out Jack 1 x 1*4pin header, supports 2ch with 3W speaker	1 x Line-out Jack 2 x 2*2 pins wafer, support 2ch with 3W speaker	2 x 1*2 pin wafer, support 2ch with 2W speaker 1 x 1*4 pin wafer for Line out 1 x 1*3 pin wafer for Mic-In
Serial Interface	Serial Standard	4 x COM: 2 x RJ50, support RS232, with 5V/12V/RI 2 x 2*5pins headers, support RS232	6 x COM: 1 x D-sub 9 pin connector colay with 2*5 pins header, supoorts RS232 5 x 2*5 pins headers, support RS232 All COM port support RI/5/12V	4 x COM: 1 x RJ50, supports RS232 with 5V/12V/RI 3 x internal headers, support RS232 with 5/12V
Others IO	Others IO (internal)	1 x 2*5 pins front panel wafer, supports power button, LED1, LED2 1*3 pin for System FAN 1 x Buzzer	1 x Buzzer 1 x 1*3 pin DC-Fan header 1 x 2*5 pins front panel header, supports power/reset/LED 1 x 1*6 pin PS/2 pin header 1 x 2*6 pins MSR (with USB/PS2 pin define) 1 x 2*13 pins parallel header for printer 1 x 1*3 pin, RJ11 cash drawer 12/24V switch	1 x 2*13 pins parallel port header 1 x front panel header 1 x 1*4 pin CPU Fan header 2 x 1*3 pin system fan headers 1 x 1*6 pin PS/2 KB/MS header 1 x 1*3 pin RJ11 12/24V header
Digital I/O		N	8 bit	8 bit
Display	Interface	1 x VGA, D-sub 15 pin connector 1 x eDP or LVDS	1 x VGA, D-sub 15 pin connector (colay 1 x 2*8pins header) 1 x 40P LVDS	1 x VGA, D-sub 15 pin connector (1920x1200) with 2*8 pins internal header 1 x LVDS (1920x1200)
TPM	Support / Not	N	N	N
Power supply	DC power	1 x 12V 4P DC Jack with Green color (DIN-422)	1 x 12V 4P DC Jack 1 x 2*2 pins 12V DC power (ATX connector)	1 x 12V 4P DC Jack colay with 2*2 pins DC Jack
	ATX power	N	N	N
Edge IO		1 x DC 12V Jack 1 x DC Jack for DC 12V ouput 1 x VGA, D-sub 15 pin connector 2 x RJ50 (COM1~2) 2 x USB 2.0 Dual stack connectors 1 x RJ45 (Gigabit LAN) 1 x Line-out	1 x 12V 4P DC Jack 1 x VGA, D-sub 15 pin connector 4 x USB2.0 1 x RJ45 (GbE) 1 x COM (D-sub 9 pin connector, supports RS232) 1 x Audio Jack (Line out)	1 x 4 pin DC Jack 1 x RJ11 (Cash drawer, supports 12/24V) 1 x VGA, D-sub 15 pin connector 2 x USB3.0 2 x USB2.0 1 x RJ45 (GbE) 1 x RJ50 (COM Port, RS232)
OS Support		Windows 7, Windows 8.1, Windows 10, POS Ready 7	Windows 7, Windows 8, Windows 8.1, Windows 10	POS Ready 7, Windows 7 Embedded, Windows 8.1, Windows 10







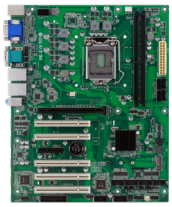
Model Name		BICMA-IHP	BIALA-PBS	BIWLA-IHT
Processor Options		10th/11th Generation Intel® Core™ Processors (Comet Lake-S/Rocket Lake-S), LGA1200	Intel® Atom x5-E3950/E3940 (Apollo Lake)	Intel® 4305UE/i3-8145UE/i5-8365UE/ i7-8665UE (Whiskey Lake-U)
Chipset		Intel Q470E/H420E Express Chipset	N	N
BIOS		AMI 256Mbit SPI Flash ROM BIOS	AMI 64Mbit SPI Flash ROM BIOS	AMI 128Mbit SPI Flash ROM BIOS
Form factor		170 x 170 mm	150 x 130 mm	170 x 170 mm
System Memory	Sockets	2 x DDR4 2666 MHz SO-DIMM	1 x DDR3L 1866 MHz SO-DIMM	2 x DDR4 2400 MHz SO-DIMM
	Max. Capacity	Up to 64G	Up to 8G	Up to 64G
USB 2.0	USB 2.0 Internal	N	4 x USB2.0	4 x USB2.0
	USB 2.0 External	N	N	N
USB 3.0	USB 3.0 Internal	N	N	N
	USB 3.0 External	4 x USB3.0	2 x USB3.0	4 x USB3.0
Expansion Slot		1 x PCI-E x4 slot 1 x M.2 (key M, 2242/2260/2280) with PCI-E x4 and SATA for NVME 1 x M.2 key E type 2230 with PCI-E x1 and USB2.0 for Intel CNVI support	1 x full size Mini PCI-E, supports PCI-E and USB2.0 1 x M.2 2280 (key B, 2280), supports PCI-E and USB for 3/4G module or Intel Movidius module 1 x Micro SIM slot	1 x M.2 (key M, 2242/2260/2280) with PCI-E x4 and SATA for NVME 1 x M.2 (key B, 3042), supports PCI-E and USB for 3/4G 1 x Micro SIM socket, connected to M.2 key B 1 x M.2 key E type 2230 with PCI-E x1 and USB2.0 for wireless and Intel CNVI support
Storage	Expansion	2 x SATAIII	2 x SATAIII	2 x SATAIII
Networking	LAN	2 x GbE, RJ45 connectors	1 x GbE, RJ45 connector 4 x POE+GbE, RJ45 connectors	2 x GbE, RJ45 connectors
	Controller	1 x I211-AT 1 x I219-LM	5 x I211-AT	1 x Intel I211 1 x Intel I219-LM
Audio	Codec	ALC897	ALC897	ALC897
	IO connector	2 x Audio Jack, support Line out/Mic in 1 x 1*4 pin 2.0 pitch wafer box for 2 x 2W/4ohm speakers	2 x Audio Jack, support Line-out/Mic 1 x 1*4 pin 2.0 pitch wafer box for 2 x 2W/4ohm speakers	1 x 1*4 pin 2.0 pitch wafer box pin header for speaker out. 2 x Audio Jack (Line-out and Mic-In)
Serial Interface	Serial Standard	4 x COM: 1 x 2*5 pins header, supports RS232/RS422/RS485 3 x 2*5 pins headers, support RS232	4 x COM: 2 x D-sub 9 pin connector, support RS232/RS422/RS485 2 x 2*5 pin headers, support RS232	6 x COM: 2 x 2*5 pins headers, support RS232/422/485 4 x 2*5 pins headers, support RS232
Others IO	Others IO (internal)	1 x 1*4pin (2.54) CPU fan header 1 x 2*7pins TPM module header 1 x 1*3pin (2.0) clear CMOS header 1 x 2*5 pins front panel header 1 x Buzzer	1 x Power button 1 x Reset button 2 x HDD/Power LEDs 1 x 1*4 (2.54) pin Smart Fan header 1 x1*3 pin (2.0) clear CMOS header 1 x 2*5 pins front panel header 1 x Buzzer	1 x 1*4 pin CPU Fan header 1 x 2*13 pins, supports parallel port 1 x 1*6 pin header for PS/2 1 x 1*2 pin clear CMOS header 1 x 2* 5 pins front panel header 1 x Buzzer
Digital I/O		8bit	8bit	8 bit
Display	Interface	1 x DP 1 x LVDS or eDP 1 x HDMI	1 x DP 1 x eDP 1 x HDMI	1 x LVDS 1 x HDMI 1 x DP 1 x VGA
TPM	Support / Not	Supports TPM 2.0 module	Supports TPM 2.0 module	Supports TPM 2.0 module
Power supply	DC power	1 x 12V DC Jack (2.5) 1 x 2*2 pins 12V DC power (ATX connector)	1 x Therminal block power connector, supports DC-IN 12~24V 1 x 2*2 pins 12V DC power (ATX connector)	1 x 12~28V DC Jack (2.5) 1 x 2*2 pin 12V DC power (ATX connector)
	ATX power	N	N	N
Edge IO		2 x RJ45 (GbE) 1 x HDMI 1 x DP 4 x USB3.0 1 x DC 12V Jack 2 x Audio Jack (Mic-in, Line-out)	Front: 5 x RJ45 (GbE/PoE) 1 x HDMI 1 x Power button 1 x Reset button 2 x USB3.0 2 x HDD Leds Rear: 2 x D-sub 9 pin connector 1 x Micro SIM slot 1 x DP connector 1 x Therminal block power connector 1 x Digital IO connector 2 x Audio Jack (Line-out, Mic-in)	1 x 12~28V DC Jack (2.5) 2 x RJ45 1 x HDMI 1 x DP 4 x USB3.0 2 x Audio Jack (Mic-in/Line-out)
OS Support		Windows 10, Linux Ubuntu	Windows 10, Ubuntu	Windows 10, Ubuntu







Model Name		BIELK-IHT	EIB7B-AXI	EIQ37-ANT
Processor Options		Intel® J6412/J6413/J6426/X6413E (Elkhart Lake)	3rd Generation Intel® Core™ Processors (Ivy Bridge), LGA 1155	8th / 9th Generation Intel® Core™ Processors (Coffee lake-s), LGA1151
Chipset		N	Intel B75	Intel® Q370
BIOS		AMI 256Mbit SPI Flash ROM BIOS	AMI 64Mbit SPI Flash ROM BIOS	AMI 256 Mbit SPI Flash ROM BIOS
Form factor		170 x 170 mm	305 x 220 mm	170 x 198 mm
System Memory	Sockets	2 x DDR4 3200 MHz SO-DIMM	4 x DDR3L 1333/1066 LONG-DIMM	2x DDR4 2666 SO-DIMM
	Max. Capacity	Up to 32G	Up to 32G	Up to 32G
USB 2.0	USB 2.0 Internal	4 x USB2.0	5 x USB2.0	4 x USB2.0
	USB 2.0 External	2 x USB2.0	4 x USB2.0	N
USB 3.0	USB 3.0 Internal	N	N	N
	USB 3.0 External	2 x USB3.0	2 x USB3.0	6 x USB3.2 Gen1
Expansion Slot		1 x full size Mini PCI-E, support PCIe+USB2.0 or SATA BOM option. 1 x M.2 (key B 2242/3042/3052) with PCIe+USB3.1 or SATA+PCIe signal by BOM option. 1 x PCIex4 Slot with PCIex2 Signal	1 x PCI-E X16 Slot 1 x PCI-E X4 Slot 5 x PCI Slot	1 x MXM Slot (Type B plus) 1 x M.2 (M key 2280), support PCIex 4+ SATA 1 x M.2 (B key 3042/3052), support PCIe + USB3 or PCI-Ex2 interface by BOM option. 1 x Mini PCI-E Full slot, support PCIe + USB interface 1 x Nano SIM connector
Storage	Expansion	1 x SATAIII	5 x SATAII, 1 x SATAIII	2 x SATAIII
Networking	LAN	2 x GbE, RJ45 connectors	2 x GbE, RJ45 connectors	2 x GbE, RJ45 connectors
	Controller	2 x RTL8111H-CG	2 x Intel I211-AT	1 x Intel I211-AT 1 x I219 LM
Audio	Codec	ALC897	ALC897	ALC897
	IO connector	1 x 2*5-pin box header for Mic-in, Line-in, SPK-out 1 x Audio Jack (Line-out)	1 x 2*5 pins wafer, support Line-out, Mic-in. 3 x Audio Jack, support Line-in/ Line-out / Mic-in.	1 x 1*4 pin wafer, support 3W speaker 2 x Audio Jack(Line-out & Mic-in)
Serial Interface	Serial Standard	6 x COM: 1 x D-sub 9 pin connector, support RS232/422/485 with RI/5V/12V 1 x 2*5 pins headers, support RS232/422/485 with RI/5V/12V 4 x 2*5 pins headers, support RS232 with RI/5V/12V	6 x COM: 2 x D-sub 9 pin connector, support RS232/ RS422/RS485, mode with 0/5V/12V 4 x 2*5 pins headers, support RS232 with RI/5V/12V	2 x COM: 2 x 2*5 pins headers, support RS232
Others IO	Others IO (internal)	1 x eDP or LVDS 1 x 2*40 pin LVDS 1 x 2*8 pin header, Support VGA display 1 x 2*7 front panel 1 x 2*5 8-bit DIO 1 x Buzzer	1 x 2*5 pins front panel header 1 x 2*13 pins Parallel port box-header 4 x 1*3pin header, support 5V/ 5V dual switch for USB function 1 x 1*3 pin header, support 5V/ 5V dual switch for PS/2 function 1 x 1*2 pin header, support VGA Dummy Load 4 x 2*5 pins , 4 COM box-header (4 x RS-232 with jumper select for 5V/12V @ pin 10) 1 x 1*4 pins , CPU Smart-FAN header 2 x 1*3 pins , System DC-FAN header 2 x power LEDs 1 x 1*3 pin, clear CMOS 1 x Buzzer	1 x eDP or LVDS 3 x 1*4 headers for CPU/GPU/System fan (Smart Fan) 1 x 2*5 DIO header 1 x 1*2 clear CMOS header 1 x 2* 5 pins front panel header 1 x Buzzer
Digital I/O		8 bit	8 bit	8-Bit
Display	Interface	1 x LVDS or eDP 1 x HDMI 1 x VGA	1 x VGA, D-sub 15 pin connector 1 x DVI	2 x DP 1 x edp or LVDS
TPM	Support / Not	Support TPM 2.0 module	Support TPM 1.2 module	Support TPM 2.0 module
Power supply	DC power	DC-IN 9~20V (9-24 by option) 1 x 2*2 pin 12V DC power (ATX connector)	N	1 x 19V 4P DC Jack
	ATX power	N	Supports 1 x ATX power 24 pin header 1 x 12V ATX 4P connector	N
Edge IO		1 x DC 9~20V Jack 1 x HDMI 2 x USB3.0 2 x USB2.0 2 x RJ45 1 x Audio Jack (Line-out)	1 x PS/2 1 x VGA, D-sub 15 pin connector 1 x DVI-D 2 x COM (D-sub 9 pin connector, supports RS232/422/485) 4 x USB2.0 2 x USB3.0 2 x RJ45 3 x Audio Jack (Line-in/ Line-out / Mic)	2 x LAN (RJ 45) 2 x DP 6 x USB3.1 Gen2 2 x Audio jack (Line-out/Mic-in) 1 x 19V 4P DC Jack
OS Support		Windows 10, Linux Ubuntu	Windows7, Windows 10	Windows 10 , Linux Ubuntu







Model Name		BIH11-AHB	BIELK-PAT	BIH60-IHP
Processor Options		6th / 7th Generation Intel® Core™ Processors (Skylake-S/ Kabylake-S), LGA1151	Intel® Celeron® Processor J6412 (TDP:10W)	12th Generation Intel® Core™ Processors (Alder Lake-S), LGA1700
Chipset		Intel H110 Express Chipset	N	Intel H610 Express Chipset
BIOS		AMI 64Mbit SPI Flash ROM BIOS	AMI 128Mbit SPI Flash ROM BIOS	AMI 256Mbit SPI Flash ROM BIOS
Form factor		305 x 244 mm	146 x102 mm	170 x 170 mm
System Memory	Sockets	2 x DDR4 2400 Long-DIMM	2 x DDR4 3200 SO-DIMM	2 x DDR4 3200 MHz SO-DIMM
	Max. Capacity	Up to 32GB	Up to 32GB	Up to 64G
USB 2.0	USB 2.0 Internal	4 x USB 2.0	2 x USB2.0	1 x USB2.0
	USB 2.0 External	2 x USB 2.0	2 x USB2.0	4 x USB2.0
USB 3.0	USB 3.0 Internal	N	N	N
	USB 3.0 External	4 x USB 3.0	2 x USB3.0	2 x USB3.0
Expansion Slot		1 x PCI-E X16 Slot 1 x PCI-E X4 Slot 5 x PCI Slot 1 x M.2 (KEY M 2242/2260/2280)socket for SATA SSD (share with 1x SATA)	1 x M.2 (key B, 3042/3052) with PCIE + USB3.0, support 4G/5G 1 x SIM slot 1 x M.2 (Key M 2242/2280) with PCIe x2 or SATA option, support NVMe/ SATA SSD 1 x Full size Mini-PCIe with USB 2.0 & PCIe for wireless module	1 x PCIEX16 Slot 1 x Mini-PCIe, support USB 2.0 + 1 x PCIex1 + SATA3 signal by BOM option: BOM SKU1: SATA+PCIe for SSD BOM SKU2: USB3.0+PCIe for WIFI/BT module 1 x M.2 (key B 2242/3042/3052) with PCIEx2, SATA3.0, USB3.1 signal by BOM option: BOM SKU1: PCIe+USB2.0 for 4G/5G module BOM SKU2: SATA+USB2.0 for SSD storage 1 x M.2 (key E 2230)with PCIEx1 and USB2.0 Intel CNVI support. (For WIFI/BT) 1 x SIM slot
Storage	Expansion	4 x SATA III	1 x SATAIII	1 x SATAIII
Networking	LAN	1 x 2.5 GbE RJ45 connector 1 x GbE, RJ45 connector	2 x 2.5 GbE LAN connectors	1 x 2.5 GbE LAN connector 1 x GbE, RJ45 connector
	Controller	1 x INTEL I225-V 1 x INTEL I219-V	2 x Intel® I225V	1 x Intel® i219V 1 x Intel® i225V
Audio	Codec	ALC897	ALC897	ALC897
	IO connector	3 x Audio Jack (Line in/Line-out/Mic) 1 x 2*5 pin headers, support Line-out & Mic-in	1 x 2*5-pin wafer, support Line-out/MIC/Line-in 1 x 1*4-pin wafer, support 2 x 2W speakers	1 x 2*5-pin 2.0mm wafer box for Line-In, Speaker 2 x Audio jacks (Line-out/Mic-in)
Serial Interface	Serial Standard	6 x COM: 1 x D-sub 9 pin connector, support RS232/ RS422/RS485 with RI/5V/12V 1 x D-sub 9 pin connector, support RS232 with RI/5V/12V 4 x 2*5 pins headers, support RS232 with RI/5V/12V	4 x COM: 2 x D-sub 9 pin connector, support RS232/ RS422/RS485 with 0V/5V/12V 2 x 2*5 pins headers, support RS232	4 x COM: 1 x D-sub 9 pin connector, support RS232/ RS422/RS485 with RI/5/12V. 1 x D-sub 9 pin connector, support RS232 2 x 2*5 pin header, support RS232
Others IO	Others IO (internal)	1 x 2*5 pins front panel header 1 x 2*5 8-bit DIO 1 x 2*13 pins Parallel port box-header 1 x 1*4 pins , CPU PWM-Smart FAN header 2 x 1*3 pins , System DC-FAN header 1 x Buzzer	1 x 1*3-pin DC FAN 1 x 2*5 8-bit DIO 1 x 3-pin Clear CMOS Jumper 1 x 1*3-pin select AT/ATX mode 1 x 6-pin PS/2 (Keyboard&Mouse) 1 x 2*5-pin Front panel header 1 x Buzzer	1 x 1*4pin CPU fan (Smart Fan) 1 x 1*3pin SYSTEM fan (Smart Fan) 1 x 2*5-pin audio (Mic-in, Line-In, speaker) 1 x Buzzer 1 x1*3 pin clear CMOS 1 x 2*7 pin header power button, Reset button, HDD Led, power LED
Digital I/O		8-Bit	8-Bit	8 bit
Display	Interface	1 x VGA, D-sub 15 pin connector 1 x HDMI 1 x DP++	1 x LVDS 1 x HDMI 1 x VGA, D-sub 15 pin connector	1 x eDP or LVDS 1 x DP 1 x HDMI 1 x VGA, D-sub 15 pin connector
TPM	Support / Not	Support SLB9670 TPM 2.0 on board Module (option)	N	Support SLB9670 TPM 2.0 on board Module (option)
Power supply	DC power	N	1 x 1*2-pin 9~24V DC-in power connector or 1 x 1*4-pin DC-in power connector (either one)	None
	ATX power	Supports 1 x ATX power 24 pin header 1 x 12V ATX 4P connector	N	Supports 1 x ATX power 24 pin header 1 x 12V ATX 4P connector
Edge IO		1 x PS/2 Keyboard 1 x VGA D-sub 15 pin connector 1 x DP++ 1 x HDMI 2 x COM (D-sub 9 pin connector, supports 1 x RS232/RS422/RS485, 1 x RS232) 4 x USB 3.0 2 x USB 2.0 2 x Lan 3 x Audio Jack (Line in/Line-out /Mic)	1 x HDMI 2 x USB3.0 2 x USB2.0 2 x RJ45 connectors 1 x VGA, D-sub 15 pin connector	2 x LAN(RJ45) 4 x USB2.0 2 x Audio Jack (Line-out/Mic-in) 1 x DP + 2 x USB3.0 1 x HDMI 1 x VGA, D-sub 15 pin connector 2 x COM (D-sub 9 pin connector, support RS232/422/485)
OS Support		Windows 7, Windows 8.1,Windows 10	Windows 10, Linux Ubuntu	Windows 10, Linux Ubuntu



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Model Name		BIH61-IHP	BIQ67-AHP	BIADN-IHT
Processor Options		12th Generation Intel® Core™ Processors (Alder Lake-S), LGA1700	12th Generation Intel® Core™ Processors (Alder Lake-S), LGA1700	Intel® Alder Lake-N CPU
Chipset		Intel H610 Express Chipset	Intel Q670 Express Chipset	Intel® Processor N50/N97/N200/i3-N305
BIOS		AMI 256Mbit SPI Flash ROM BIOS	AMI 256Mbit SPI Flash ROM BIOS	AMI 256Mbit SPI Flash ROM BIOS
Form factor		170 x 170 mm	305 x 244 mm	170 x 170 mm
System Memory	**Sockets**	2 x DDR4 3200 MHz SO-DIMM	4 x DDR4 3200 MHz U-DIMM	1 x DDR4 1600 MHz SO-DIMM
	Max. Capacity	Up to 64G	Up to 128G	Up to 16GB
USB 2.0	**USB 2.0 Internal**	3 x USB2.0	4 x USB2.0	4 x USB2.0
	USB 2.0 External	2 x USB2.0	N	2 x USB2.0
USB 3.0	**USB 3.0 Internal**	N	1 x USB3.2 Gen1	2 x USB3.2 (colay with M.2 keyB)
	USB 3.0 External	2 x USB3.0	6 x USB3.2 Gen2	2 x USB3.2 Gen2
Expansion Slot		1 x PCIEX16 slot 1 x Mini-PCIe, support USB 2.0 + 1 x PCIex1 + SATA3 signal by BOM option: BOM SKU1: SATA+PCIe for SSD BOM SKU2: USB3.0+PCIe for WIFI/BT module 1 x M.2 (key B 2242/3042/3052) with PCIEx2, SATA3.0, USB3.1 signal by BOM option: BOM SKU1: PCIe+USB2.0 for 4G/5G module BOM SKU2: SATA+USB2.0 for SSD storage 1 x M.2 (key E 2230)with PCIEx1 and USB2.0 Intel CNVI support. (For WIFI/BT) 1 x SIM slot	1 x PCI-E Gen4x 16 (PCI-E share to PCI-E Gen4 x8 slot) 1 x PCI-E Gen4x 8 3 x PCIex4 2 x PCI slot 1 x M.2 (key M 2242/2280)with PCIE Gen4x4 and SATAIII 1 x M.2 (key B 3042/3052)with PCIe x1 + USB3.0 w/ SIM card slot 1 x M.2 (key E 2230)with PCIEx1 and USB2.0 Intel CNVI support. (For WIFI/BT)	1 x M.2 key E type 2230 w/ 1x USB 2.0 + 1 x PCIex1, support Intel CNVi 1 x M.2 key B type 3042/3052/2280 with PCIex1+USB3.2 & SIM Card Slots (by ME to PIC-Ex2), colay with internal 2x USB3.2 Gen1(default is M.2 key B PCIex1 + USB3.2) 1 x M.2 Key M type 2242/2280 w/ PCIex1, SATA or PCIEx2 ,SATA (opt) (cloay with 1x HDD SATA) (Screw M.2 key M 2242 colay M.2 key B 2230.)
Storage	**Expansion**	1 x SATAIII	3 x SATAIII	1 x SATAIII (by BOM opt.)
Networking	**LAN**	1 x 2.5 GbE LAN connector 1 x GbE, RJ45 connector	1 x 2.5 GbE LAN connector 1 x GbE, RJ45 connector	2 x GbE, RJ45 connectors
	Controller	1 x Intel® i219V 1 x Intel® i225V	1 x Intel® i219LM 1 x Intel® i226LM	2 x RTL8111H-CG GbE LAN
Audio	**Codec**	ALC897	ALC897	ALC897
	IO connector	1 x Audio jacks(Line out) 1 x 2*5-pin wafer box, support Line-In/Mic in/ Speaker.	3 x Audio jack (Line in/Line out//Mic in) 1 x 2*5 front audio, support Mic-in/ Line out	1 x Audio jacks(Line out) 1 x 2*5-pin wafer box, support Line-In/Mic in/ Speaker(1.5W/ 3W/5W/ 10W by BIOS)
Serial Interface	**Serial Standard**	4 x COM: 1 x D-sub 9 pin connector, support RS232/ RS422/RS485 with RI/5/12V. 3 x 2*5 pin header, support RS232"	6 x COM: 2 x D-sub 9 pin connector, support RS232/ RS422/RS485 with RI/5/12V. 4 x 2*5 pin header, support RS232 with RI/5/12V.	6 x COM: 2 x 2*5 pin header, support RS232/RS422/ RS485 with RI/5/12V. 4 x 2*5 pin header, support RS232 with RI/5/12V.
Others IO	**Others IO (internal)**	1 x 1*4 pin-header for CPU fan (Smart Fan) 1 x 1*3 pin SYSTEM fan (Smart Fan) 1 x 1*3 pin clear CMOS 1 x SIM slot 1 x 2*6 front panel pin header 1 x Buzzer	1 x 1*4pin CPU smart fan 3 x 1*4pin System smart fan 1 x 2*10 DIO header 1 x 1*3 pin clear CMOS 1 x 2*5 pin header, supports power button, Reset button, HDD Led, power LED , Reset LED 1 x Buzzer	1 x 1*4 pin-header for CPU fan (Smart Fan) 1 x 1*3 pin SYSTEM fan (Smart Fan) 1 x 1*3 pin clear CMOS 1 x SIM slot 1 x 2*7 front panel pin header 1 x Buzzer 1 x 1*5pin box header for Smbus
Digital I/O		8 bit	16 bit	8 bit
Display	**Interface**	1 x eDP or LVDS 2 x HDMI 1 x VGA (2*8pin wafer Box header)	1 x DP++ 2 x HDMI 1 x VGA	1 x eDP or LVDS 2 x HDMI 1 x TypeC (support TypeC full function)
TPM	**Support / Not**	Support SLB9670 TPM 2.0 on board Module (option)	Support SLB9670 TPM 2.0 on board Module (option)	Support SLB9670 TPM 2.0 on board Module (option)
Power supply	**DC power**	DC-IN 12~24V 1 x 2*2 pin 12V DC power (ATX connector)	N	DC-IN 9~24V or Type C PD (9-20V)(either one)
	ATX power	N	1 x 24 pin ATX power connector 1 x 2*4 pin ATX power connector	N
Edge IO		1 x DC 12~24V Jack 2 x HDMI 2 x USB3.1 2 x LAN (RJ45) 1 x COM (D-sub 9 pin connector, support RS232/422/485) 1 x Audio Jack (Line-out) 2 x USB2.0	2 x LAN(RJ45) 6 x USB3.2 1 x PS2 1 x VGA, D-sub 15 pin connector 2 x HDMI 1 x DP++ 2 x COM (D-sub 9 pin connector, support 2 x RS232/422/485) 3 x Audio Jack (Line-in / Line-out / Mic-in)	1 x DC 9~24V Jack 2 x HDMI 1 x TypeC(USB/PD/DP) 2 x USB3.2 Gen2 2 x LAN (RJ45) 1 x Audio Jack (Line-out) 2 x USB2.0
OS Support		Windows 10, Linux Ubuntu	Windows 10	Windows 10, Linux Ubuntu



BIOSTAR®

Taiwan HQ
BIOSTAR MICROTECH INT'L CORP.
Tel +886-2-2218-0150
Fax +886-2-2218-1552
Email sales@biostar.com.tw
Web www.biostar.com.tw

Netherlands
BIOSTAR MICROTECH Netherlands B.V.
Tel +31-858-770-228
Email sales@biostar-europe.com
Web www.biostar-europe.com

China
JXPOWERFUL
Tel +86-755-2108-4208
Fax +86-755-2108-4348
Email sales@biostar.cn
Web www.biostar.com.cn

U.S.A
BIOSTAR MICROTECH (USA) CORP.
Tel +1-909-444-3785
Fax +1-909-444-3786
Email sales@biostar-usa.com
Web www.biostar-usa.com

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