



PRODUCT GUIDE

ABOUT BIOSTAR

BIOSTAR is a professional brand dedicated to the production of motherboards, graphics cards, SSD, memory modules, application systems, 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 an unceasing focus on enriching lives, BIOSTAR consistently strives to pioneer a fresh future, bringing solutions into reality.

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CHIPSET
Z790

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CHIPSET
B760



LGA 1700



Model Name	Z790 VALKYRIE	Z790A-SILVER	B760A-SILVER	B760M-SILVER
Chipset	Z790	Z790	B760	B760
Form Factor	ATX 305*244 mm	ATX 305*244 mm	ATX 305*244 mm	Micro-ATX 244*244 mm
VRD	20 Phases	17 Phases	17 Phases	12 Phases
Solid Cap	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
PCIe x 16 Slot	3	2	2	2
PCIe x 1 Slot	N	2	2	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	1 x M Key, supports PCIe 5.0 SSD (128Gb/s), 3 x M Key, support PCIe 4.0 SSD (64Gb/s), 1 x M Key, supports SATA 6Gb/s, PCIe 3.0 SSD (32Gb/s), 1 x E Key, supports type 2230 WiFi/BT module and Intel CNVi	2 x M Key, support PCIe 4.0 SSD (64Gb/s), 1 x M Key, supports SATA 6Gb/s, PCIe 4.0 SSD (64Gb/s), 1 x E Key, supports type 2230 WiFi/BT module and Intel CNVi	2 x M Key, support PCIe 4.0 SSD (64Gb/s), 1 x M Key, supports SATA 6Gb/s, PCIe 4.0 SSD (64Gb/s), 1 x E Key, supports type 2230 WiFi/BT module and Intel CNVi	1 x M Key, supports PCIe 4.0 SSD (64Gb/s), 1 x M Key, supports SATA 6Gb/s, PCIe 4.0 SSD (64Gb/s), 1 x E Key, supports type 2230 WiFi/BT module and Intel CNVi
SATA	8	6	4	6
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
PS2	0	0	0	0
AUDIO	ALC1220-7.1Ch (5 ports+SPDIF)	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)
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

LGA 1700



Model Name	B760T-SILVER	B760MZ-E PRO	B760MXC PRO	B760MX2-E
Chipset	B760	B760	B760	B760
Form Factor	Mini-ITX 170*170 mm	Micro-ATX 244*244 mm	Micro-ATX 244*244 mm	Micro-ATX 208*236 mm
VRD	9 Phases	10 Phases	10 Phases	10 Phases
Solid Cap	All	All	All	All
Memory	2 x DDR5 up to 6400+ (OC) Mhz	4 x DDR5 up to 6000+ (OC) Mhz	4 x DDR5 up to 6000+ (OC) Mhz	2 x DDR5 up to 6000+ (OC) Mhz
PCIe x 16 Slot	1	2	4	1
PCIe x 1 Slot	N	1	0	1
PCI Slot	N	N	N	N
(m)DP	N	Y	N	N
HDMI	N	Y	Y	Y
DVI-D	N	Y	Y	Y
VGA	N	Y	Y	Y
M.2	1 x M Key, supports PCIe 4.0 SSD (64Gb/s), 1 x M Key, supports SATA 6Gb/s, PCIe 4.0 SSD (64Gb/s), 1 x E Key, supports type 2230 WiFi/BT module and Intel CNVi	2 x M Key, support PCIe 4.0 SSD (64Gb/s), 1 x E Key, supports type 2230 WiFi/BT module and Intel CNVi	2 x M Key, support PCIe 4.0 SSD (64Gb/s), 1 x E Key, supports type 2230 WiFi/BT module and Intel CNVi	1 x M Key, supports SATA 6Gb/s, PCIe 4.0 SSD (64Gb/s), 1 x E Key, supports type 2230 WiFi/BT module and Intel CNVi
SATA	4	4	8	4
USB (F/R)	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	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 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
PS2	1	1	1	1
AUDIO	ALC1220-7.1Ch (3 ports)	ALC897-7.1Ch (3 ports)	ALC897-7.1Ch (3 ports)	ALC897-7.1Ch (3 ports)
LAN	2.5GbE (RTL8125B)	2.5GbE (RTL8125B)	2.5GbE (RTL8125B)	2.5GbE (RTL8125B)
Printer / COM	N/N	N/Y	N/Y	N/Y
LED Header	2 (12V*1/5V*1)	3 (12V*1/5V*2)	3 (12V*1/5V*2)	N
Dual BIOS	N	N	N	N



Model Name	B760MX-E	B760NH-E	B760MXC PRO 2.0	B760MX2-E PRO D4	B760MX-E PRO D4
Chipset	B760	B760	B760	B760	B760
Form Factor	Micro-ATX 208*236 mm	Mini-ITX 170*170 mm	Micro-ATX 244*244 mm	Micro-ATX 244*244 mm	Micro-ATX 244*244 mm
VRD	10 Phases	9 Phases	10 Phases	10 Phases	10 Phases
Solid Cap	All	All	All	All	All
Memory	2 x DDR5 up to 6000+ (OC) Mhz	2 x DDR5 up to 6000+ (OC) Mhz	4 x DDR4 up to 4600+ (OC) Mhz	4 x DDR4 up to 4600+ (OC) Mhz	4 x DDR4 up to 4600+ (OC) Mhz
PCIe x 16 Slot	1	1	4	1	1
PCIe x 1 Slot	1	N	0	3	3
PCI Slot	N	N	N	N	N
(m)DP	N	N	N	Y	Y
HDMI	Y	N	Y	Y	Y
DVI-D	Y	N	Y	N	N
VGA	Y	N	Y	Y	Y
M.2	1 x M Key, supports SATA 6Gb/s, PCIe 4.0 SSD (64Gb/s), 1 x E Key, supports type 2230 WiFi/BT module and Intel CNVi	1 x M Key, supports SATA 6Gb/s, PCIe 4.0 SSD (64Gb/s), 1 x E Key, supports type 2230 WiFi/BT module and Intel CNVi	1 x M Key, supports PCIe 4.0 SSD (64Gb/s), 1 x M Key, supports SATA 6Gb/s, PCIe 4.0 SSD (64Gb/s) 1 x E Key, supports type 2230 WiFi/BT module and Intel CNVi	2 x M Key, support PCIe 4.0 SSD (64Gb/s), 1 x E Key, supports type 2230 WiFi/BT module and Intel CNVi	2 x M Key, support PCIe 4.0 SSD (64Gb/s), 1 x E Key, supports type 2230 WiFi/BT module and Intel CNVi
SATA	4	4	8	8	8
USB (F/R)	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 : 0+4 USB 3.2 Gen 1: 2+0 USB 2.0: 6+2	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 2 Type C: 1+0 USB 3.2 Gen 1: 2+3 USB 2.0: 6+2
PS2	1	1	1	1	1
AUDIO	ALC897-7.1Ch (3 ports)	ALC1220-7.1Ch (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)	2.5GbE (RTL8125B)	GbE (i219V)
Printer / COM	N/Y	N/N	N/Y	N/Y	N/Y
LED Header	N	N	3 (12V*1/5V*2)	3 (12V*1/5V*2)	3 (12V*1/5V*2)
Dual BIOS	N	N	N	N	N

LGA 1700



Model Name	B760MX2-E D4	Z690 VALKYRIE	Z690A VALKYRIE	RACING Z690GTA	Z690A-SILVER
Chipset	B760	Z690	Z690	Z690	Z690
Form Factor	Micro-ATX 208*236 mm	ATX 305*244 mm	ATX 305*244 mm	ATX 305*244 mm	ATX 305*244 mm
VRD	10 Phases	20 Phases	20 Phases	17 Phases	17 Phases
Solid Cap	All	All	All	All	All
Memory	2 x DDR4 up to 4400+ (OC) Mhz	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
PCIe x 16 Slot	1	3	3	2	2
PCIe x 1 Slot	1	N	N	2	2
PCI Slot	N	N	N	N	N
(m)DP	N	Y	Y	Y	Y
HDMI	Y	Y	Y	Y	Y
DVI-D	Y	N	N	Y	Y
VGA	Y	N	N	N	N
M.2	1 x M Key, supports SATA 6Gb/s, PCIe 4.0 SSD (64Gb/s), 1 x E Key, supports type 2230 WiFi/BT module and Intel CNVi	3 x M Key, support PCIe 4.0 SSD (64Gb/s), 1 x M Key, supports SATA 6Gb/s, PCIe SSD (32Gb/s), 1 x E Key, supports type 2230 WiFi/BT module and Intel CNVi	3 x M Key, support PCIe 4.0 SSD (64Gb/s), 1 x M Key, supports SATA 6Gb/s, PCIe SSD (32Gb/s), supports Intel Optane, 1 x E Key, supports type 2230 WiFi/BT module and Intel CNVi	2 x M Key, support PCIe 4.0 SSD (64Gb/s), 1 x M Key, supports SATA 6Gb/s, PCIe SSD (32Gb/s), supports Intel Optane, 1 x E Key, supports type 2230 WiFi/BT module and Intel CNVi	2 x M Key, support PCIe 4.0 SSD (64Gb/s), 1 x M Key, supports SATA 6Gb/s, PCIe SSD (32Gb/s), supports Intel Optane, 1 x E Key, supports type 2230 WiFi/BT module and Intel CNVi
SATA	4	8	8	8	8
USB (F/R)	USB 3.2 Gen 1: 2+2 USB 2.0: 4+4	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
PS2	1	1	1	1	1
AUDIO	ALC897-7.1Ch (3 ports)	ALC1220-7.1Ch (5 ports+SPDIF)	ALC1220-7.1Ch (5 ports+SPDIF)	ALC1220-7.1Ch (3 ports)	ALC1220-7.1Ch (3 ports)
LAN	2.5GbE (RTL8125B)	2.5GbE (RTL8125B)	2.5GbE (Intel I225-V)	2.5GbE (RTL8125B)	2.5GbE (RTL8125B)
Printer / COM	N/Y	N/Y	N/Y	N/Y	N/Y
LED Header	N	3 (12V*1/5V*2)	3 (12V*1/5V*2)	3 (12V*1/5V*2)	3 (12V*1/5V*2)
Dual BIOS	N	Y	Y	N	N



Model Name	RACING B660GTA	RACING B660GTO	RACING B660GTN	B660M-SILVER	B660MX-E PRO
Chipset	B660	B660	B660	B660	B660
Form Factor	ATX 305*244 mm	Micro-ATX 244*244 mm	Mini-ITX 170*170 mm	Micro-ATX 244*244 mm	Micro-ATX 244*244 mm
VRD	17 Phases	12 Phases	9 Phases	12 Phases	10 Phases
Solid Cap	All	All	All	All	All
Memory	4 x DDR4 up to 5000+ (OC) 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 4600+ (OC) Mhz
PCIe x 16 Slot	2	2	1	2	2
PCIe x 1 Slot	2	1	N	1	1
PCI Slot	N	N	N	N	N
(m)DP	Y	Y	Y	Y	N
HDMI	Y	Y	Y	Y	Y
DVI-D	Y	Y	N	Y	Y
VGA	N	N	N	N	Y
M.2	2 x M Key, support PCIe 4.0 SSD (64Gb/s), 1 x M Key, supports SATA 6Gb/s, PCIe SSD (32Gb/s), supports Intel Optane, 1 x E Key, supports type 2230 WiFi/BT module and Intel CNVi	1 x M Key, supports PCIe 4.0 SSD (64Gb/s), 1 x M Key, supports SATA 6Gb/s, PCIe 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, supports PCIe 4.0 SSD (64Gb/s), 1 x M Key, supports SATA 6Gb/s, PCIe 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, supports PCIe 4.0 SSD (64Gb/s), 1 x M Key, supports SATA 6Gb/s, PCIe 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, supports PCIe 4.0 SSD (64Gb/s), 1 x M Key, supports SATA 6Gb/s, PCIe 4.0 SSD (64Gb/s), supports Intel Optane, 1 x E Key, supports type 2230 WiFi/BT module and Intel CNVi
SATA	8	4	4	4	4
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 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
PS2	1	1	1	1	1
AUDIO	ALC1220-7.1Ch (3 ports)	ALC1220-7.1Ch (3 ports)	ALC1220-7.1Ch (3 ports)	ALC1220-7.1Ch (3 ports)	ALC897-7.1Ch (3 ports)
LAN	2.5GbE (RTL8125B)	2.5GbE (RTL8125B)	2.5GbE (RTL8125B)	2.5GbE (RTL8125B)	GbE (i219V)
Printer / COM	N/Y	N/Y	N/Y	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)	3 (12V*1/5V*2)
Dual BIOS	N	N	N	N	N

LGA 1700



Model Name	B660MXC PRO	B660MX-E	H610MX2-E D5	H610MHD D5	H610MH D5
Chipset	B660	B660	H610	H610	H610
Form Factor	Micro-ATX 244*244 mm	Micro-ATX 208*236 mm	Micro-ATX 208*236 mm	Micro-ATX 208*236 mm	Micro-ATX 208*236 mm
VRD	10 Phases	10 Phases	10 Phases	8 Phases	10 Phases
Solid Cap	All	All	All	All	All
Memory	4 x DDR4 up to 4600+ (OC) Mhz	2 x DDR4 up to 4000+ (OC) Mhz	2 x DDR5 up to 5600 Mhz	2 x DDR5 up to 5600 Mhz	2 x DDR5 up to 5600 Mhz
PCIe x 16 Slot	4	1	1	1	1
PCIe x 1 Slot	N	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	Y	Y	Y	N
VGA	Y	Y	Y	N	Y
M.2	1 x M Key, supports PCIe 4.0 SSD (64Gb/s), 1 x M Key, supports SATA 6Gb/s, PCIe SSD (32Gb/s), supports Intel Optane, 1 x E Key, supports type 2230 WiFi/BT module and Intel CNVi	1 x M Key, supports SATA 6Gb/s, PCIe SSD (32Gb/s), 1 x E Key, supports type 2230 WiFi/BT module and Intel CNVi	1 x M Key, supports SATA 6Gb/s, PCIe SSD (32Gb/s), 1 x E Key, supports type 2230 WiFi/BT module and Intel CNVi	1 x M Key, supports SATA 6Gb/s, PCIe SSD (32Gb/s)	1 x M Key, supports SATA 6Gb/s, PCIe SSD (32Gb/s)
SATA	8	4	4	4	4
USB (F/R)	USB 3.2 Gen 2: 0+4 USB 3.2 Gen 1: 2+0 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	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)	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)	N	N	N	N
Dual BIOS	N	N	N	N	N



Model Name	H610MX-E	H610MH	H610MHP	H610MS	H610MT-E
Chipset	H610	H610	H610	H610	H610
Form Factor	Micro-ATX 208*236 mm	Micro-ATX 208*236 mm	Micro-ATX 208*236 mm	Micro-ATX 216*228 mm	Micro-ATX 216*228 mm
VRD	10 Phases	10 Phases	8 Phases	8 Phases	8 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 3200 Mhz	2 x DDR4 up to 3200 Mhz	2 x DDR4 up to 3200 Mhz
PCIe x 16 Slot	1	1	1	1	1
PCIe x 1 Slot	1	1	1	1	1
PCI Slot	N	N	N	N	N
(m)DP	N	N	N	Y	Y
HDMI	Y	Y	Y	Y	Y
DVI-D	Y	N	N	N	N
VGA	Y	Y	Y	N	N
M.2	1 x M Key, supports SATA 6Gb/s, PCIe SSD (32Gb/s), supports Intel Optane, 1 x E Key, supports type 2230 WiFi/BT module and Intel CNVi	1 x M Key, supports SATA 6Gb/s, PCIe SSD (32Gb/s), supports Intel Optane	1 x M Key, supports SATA 6Gb/s, PCIe SSD (32Gb/s)	1 x M Key, supports PCIe SSD (32Gb/s)	1 x M Key, supports PCIe SSD (32Gb/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 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+1 USB 2.0: 4+4	USB 3.2 Gen 2: 1(C)+0 USB 3.2 Gen 1: 2+1 USB 2.0: 4+4
PS2	1	1	1	1	1
AUDIO	ALC897-7.1Ch (3 ports)	ALC897-7.1Ch (3 ports)	USB 3.2 Gen 1: 2+2 USB 2.0: 4+4	ALC897-7.1Ch (3 ports)	ALC897-7.1Ch (3 ports)
LAN	GbE (i219V)	GbE (i219V)	GbE (i219V)	GbE (RTL8111H)	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

LGA 1700

LGA 1200



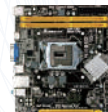
Model Name	H610MHP-E	H610MHP 2.0	Z590MHP	H510MHP 2.0	H510MHP-E
Chipset	H610	H610	Z590	H510	H510
Form Factor	Micro-ATX 208*236 mm	Micro-ATX 198*228 mm	Micro-ATX 185*226 mm	Micro-ATX 185*226 mm	Micro-ATX 185*235 mm
VRD	8 Phases	8 Phases	5 Phases	5 Phases	5 Phases
Solid Cap	All	All	All	All	All
Memory	2 x DDR4 up to 3200 Mhz	2 x DDR4 up to 3200 Mhz	4 x DDR4 up to 4000+ (OC) Mhz	4 x DDR4 up to 3200 Mhz	2 x DDR4 up to 3200 Mhz
PCIe x 16 Slot	1	1	1	1	1
PCIe x 1 Slot	1	1	2	2	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, supports SATA 6Gb/s, PCIe SSD (32Gb/s), 1 x E Key, supports type 2230 WiFi/BT module and Intel CNVi	1 x M Key, supports PCIe SSD (32Gb/s)	1 x M Key, supports SATA 6Gb/s, PCIe SSD (32Gb/s)	1 x M Key, supports SATA 6Gb/s, PCIe SSD (32Gb/s)	1 x M Key, supports SATA 6Gb/s, PCIe SSD (32Gb/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 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: 2+2 USB 2.0: 2+4	USB 3.2 Gen 1: 2+2 USB 2.0: 2+2
PS2	1	1	2	2	2
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 (RTL8111H)	GbE (i219V)	GbE (i219V)	GbE (RTL8111H)
Printer / COM	N/Y	N/N	N/Y	N/Y	N/Y
LED Header	N	N	N	N	N
Dual BIOS	N	N	N	N	N

LGA 1151

LGA 1150

LGA 1155

CPU ON-BOARD



Model Name	H510MHP-E 3.0	H310MHP 3.0	H81MHV3 2.0	H61MHV3	J4125NHU
Chipset	H470	H310	H81	H61	J4125
Form Factor	Micro-ATX 185*235 mm	Micro-ATX 226*171 mm	Micro-ATX 190*170 mm	Micro-ATX 190*170 mm	Mini-ITX 170*170 mm
VRD	5 Phases	5 Phases	3 Phases	2 Phases	1 Phase
Solid Cap	All	All	All	All	All
Memory	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	2 x DDR4 up to 2400 Mhz
PCIe x 16 Slot	1	1	1	1	1
PCIe x 1 Slot	1	2	1	1	N
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, supports SATA 6Gb/s, PCIe SSD (32Gb/s) 1 x E Key, supports type 2230 WiFi/BT module and Intel CNVi	N	N	N	1 x M Key, supports SATA 6Gb/s, PCIe SSD (10Gb/s)
SATA	4	4	4	4	2
USB (F/R)	USB 3.2 Gen 1: 2+2 USB 2.0: 2+2	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	USB 3.2 Gen 1: 0+2 USB 2.0: 4+2
PS2	2	2	2	1	1
AUDIO	ALC897-7.1Ch (3 ports)	ALC897-7.1Ch (3 ports)	ALC897-7.1Ch (3 ports)	ALC897-7.1Ch (3 ports)	ALC887-2Ch (3 ports)
LAN	GbE (RTL8111H)	GbE (RTL8111H)	GbE (RTL8111H)	GbE (RTL8111G)	GbE (RTL8111H)
Printer / COM	N/Y	N/Y	N/Y	N/Y	Y/Y
LED Header	N	N	N	N	N
Dual BIOS	N	N	N	N	N

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AMD **B650**
SOCKET
AM5





Model Name	X670E VALKYRIE	RACING B650EGTQ	B650M-SILVER	B650MP-E PRO	B650MT-E PRO
Chipset	X670E	B650E	B650	B650	B650
Form Factor	ATX 305*244 mm	Micro-ATX 244*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	10 Phases
Solid Cap	All	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	4 x DDR5 up to 6000+ (OC) MHz
PCIe x 16 Slot	3 (x16, x8, x4)	2 (x16, x4)	2 (x16, x4)	1	1
PCIe x 1 Slot	N	1	1	3	3
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	N	N
VGA	N	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 PCI-E 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, supports 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	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	4	4
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	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	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	ALC897 (3 ports), 7.1 Channels, High Definition Audio, Hi-Fi
LAN	2.5GbE (i225V)	2.5GbE (RTL8125B)	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	N	N	N	N



Model Name	B650MS2	B650MT	A620MP-E PRO	A620MT
Chipset	B650	B650	A620	A620
Form Factor	Micro-ATX 221*235 mm	Micro-ATX 221*235 mm	Micro-ATX 244*244 mm	Micro-ATX 221*235mm
VRD	8 Phases	8 Phases	10 Phases	8 Phases
Solid Cap	All	All	All	All
Memory	2 x DDR5 up to 5600+ (OC) MHz	2 x DDR5 up to 5600+ (OC) MHz	4 x DDR5 up to 6000+ (OC) MHz	2 x DDR5 up to 5600+ (OC) MHz
PCIe x 16 Slot	1	1	1	1
PCIe x 1 Slot	1	1	3	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 1 x M.2 Socket: 1 x M Key, supports PCIe 4.0 x 4 (64Gb/s)	Total support 1 x M.2 Socket: 1 x M Key, supports PCIe 4.0 x 4 (64Gb/s)	Total support 1 x M.2 Socket: 1 x M Key, supports 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, supports PCIe 4.0 x 4 (64Gb/s)
SATA	4	4	4	4
USB (F/R)	"USB 3.2 Gen 1: 2+4 USB 2.0: 4+2"	"USB 3.2 Gen 2: 1(C)+0 USB 3.2 Gen 1: 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 1: 2+4 USB 2.0: 4+2"
PS2	N	N	1	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)	GbE (RTL8111H)	2.5GbE (RTL8125B)	GbE (RTL8111H)
Printer / COM	N/Y	N/Y	N/Y	N/Y
LED Header	N	N	3 (12V*1/5V*2)	N
Dual BIOS	N	N	N	N



Model Name	A620MS	A620MH AURORA	B550M-SILVER	B550T-SILVER
Chipset	A620	A620A	B550	B550
Form Factor	Micro-ATX 221*235mm	Micro-ATX 221*235mm	Micro-ATX 244*244 mm	Mini-ITX 170*170mm
VRD	8 Phases	6 Phases	10 Phases	8 Phases
Solid Cap	All	All	All	All
Memory	2 x DDR5 up to 5600+ (OC) MHz	2 x DDR5 up to 5600+ (OC) MHz	4 x DDR4 up to 4933+(OC) MHz	2 x DDR4 up to 4933+(OC) MHz
PCIe x 16 Slot	1	1	2 (x16, x4)	1
PCIe x 1 Slot	1	2	1	N
PCI Slot	N	N	N	N
(m)DP	Y	N	Y	Y
HDMI	Y	Y	Y	Y
DVI-D	N	N	Y	N
VGA	N	Y	N	N
M.2	Total support 1 x M.2 Socket: 1 x M Key, supports PCIe 4.0 x 4 (64Gb/s)	Total support 1 x M.2 Socket: 1 x M Key, supports PCIe 4.0 x 4 (64Gb/s)	Total support 2 x M.2 Socket: 2 x M Key, support PCI-E 4.0 x 4 (64Gb/s) / 3.0 x 4 (32Gb/s) & SATA III (6Gb/s) *PCI-E 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, supports PCI-E 4.0 x 4 (64Gb/s) / 3.0 x 4 (32Gb/s) & SATA III (6Gb/s) *PCI-E 4.0 supports Ryzen Gen 3rd Matisse and 4th Vermeer 1 x E Key, supports 2230 type Wi-Fi & Bluetooth module
SATA	4	4	6	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 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
PS2	N	N	1	1
AUDIO	ALC897 (3 ports), 7.1 Channels, High Definition Audio, Hi-Fi	ALC897 (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
LAN	GbE (RTL8111H)	GbE (RTL8111H)	2.5GbE (RTL8125B)	2.5GbE (RTL8125B)
Printer / COM	N/Y	N/Y	N/Y	N/N
LED Header	N	3 (12V*1/5V*2)	3 (12V*1/5V*2)	2 (12V*1/5V*1)
Dual BIOS	N	N	N	N

AM4



Model Name	B550MXC PRO	B550MX/E PRO	B550MT	A520MT
Chipset	B550	B550	B550	A520
Form Factor	Micro-ATX 244*244 mm	Micro-ATX 244*244 mm	Micro-ATX 216*228 mm	Micro-ATX 216*228 mm
VRD	10 Phases	10 Phases	6 Phases	6 Phases
Solid Cap	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	2 x DDR4 up to 4600+(OC) MHz
PCIe x 16 Slot	4 (x16, x1, x1, x1)	2 (x16, x4)	1	1
PCIe x 1 Slot	N	1	2	2
PCI Slot	N	N	N	N
(m)DP	N	N	Y	Y
HDMI	Y	Y	Y	Y
DVI-D	N	Y	N	N
VGA	N	Y	N	N
M.2	Total support 2 x M.2 Socket: 1 x M Key, supports PCI-E 4.0 x 4 (64Gb/s) / 3.0 x 4 (32Gb/s) & SATA III (6Gb/s), 1 x M Key, supports PCI-E 3.0 x 4 (32Gb/s) & SATA III (6Gb/s) *PCI-E 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, supports PCI-E 4.0 x 4 (64Gb/s) / 3.0 x 4 (32Gb/s) & SATA III (6Gb/s), 1 x M Key, supports PCI-E 3.0 x 4 (32Gb/s) & SATA III (6Gb/s) *PCI-E 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, supports PCI-E 4.0 x 4 (64Gb/s) / 3.0 x 4 (32Gb/s) & SATA III (6Gb/s) *PCI-E 4.0 supports Ryzen Gen 3rd Matisse and 4th Vermeer	Total support 1 x M.2 Socket: 1 x M Key, supports PCI-E 3.0 x 4 (32Gb/s) & SATA III (6Gb/s)
SATA	8	4	4	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 1: 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	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	GbE (RTL8111H)	GbE (RTL8111H)	GbE (RTL8111H)	GbE (RTL8111H)
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	A520MS	B450MX-S	B450MH	B450MHP
Chipset	A520	B450	B450	B450
Form Factor	Micro-ATX 216*228 mm	Micro-ATX 244*244 mm	Micro-ATX 198*244 mm	Micro-ATX 174*226 mm
VRD	6 Phases	10 Phases	6 Phases	5 Phases
Solid Cap	All	All	All	All
Memory	2 x DDR4 up to 4600+(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
PCIe x 16 Slot	1	2 (x16, x4)	1	1
PCIe x 1 Slot	2	1	2	2
PCI Slot	N	N	N	N
(m)DP	Y	N	N	N
HDMI	Y	Y	Y	Y
DVI-D	N	N	N	N
VGA	N	N	Y	Y
M.2	Total support 1 x M.2 Socket: 1 x M Key, supports PCI-E 3.0 x 4 (32Gb/s) & SATA III (6Gb/s)	Total support 1 x M.2 Socket: 1 x M Key, supports PCI-E 3.0 x 4 (32Gb/s) & SATA III (6Gb/s)	Total support 1 x M.2 Socket: 1 x M Key, supports PCI-E 3.0 x 4 (32Gb/s) & SATA III (6Gb/s)	N
SATA	4	4	4	4
USB (F/R)	USB 3.2 Gen 2: 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
PS2	N	1	1	1
AUDIO	ALC897 (3 ports), 7.1 Channels, High Definition Audio, Hi-Fi	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
LAN	GbE (RTL8111H)	GbE (RTL8111H)	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

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Model Name	BIOSTAR A750 OC	BIOSTAR A380 ST
GPU	Intel Arc A750 Graphics	Intel Arc A380 Graphics
Intel XMV Engines	448	128
Engine Clock	2200MHz	2000MHz
Memory Clock	16Gbps	15.5Gbps
Memory Type	GDDR6	GDDR6
Memory Size	8GB	6GB
Memory Bus	256-bit	96-bit
Interface	PCI Express 4.0 x16	PCI Express 4.0 x8
Output	3 x DisplayPort 2.0 up to UHBR 10 1 x HDMI 2.0	3 x DisplayPort 2.0 with DSC 1 x HDMI 2.0
DirectX	12 Ultimate	12 Ultimate
OpenGL	4.6	4.6
Max Resolution	7680x4320@60Hz	7680x4320@60Hz
Multi-view	4	4



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Model Name	VN4716RML9	VN4616TM81	VN4616RM81	VN3806RMT3	VN3706RM82	VN3606TM82
GPU	GeForce RTX 4070	GeForce RTX 4060 Ti	GeForce RTX 4060	GeForce RTX 3080	GeForce RTX 3070	GeForce RTX 3060 Ti
Game/Boost CLK	1920/2535Mhz	2310/2535Mhz	1830/2460Mhz	1440/1770Mhz	1500/1725Mhz	1410/1665Mhz
MEM CLK	21Gbps	18Gbps	17Gbps	19Gbps	14Gbps	14Gbps
MEM	12GB GDDR6X	8GB GDDR6	8GB GDDR6	10GB GDDR6	8GB GDDR6	8GB GDDR6
MEM bus	192bit	128bit	128bit	320bit	256bit	256bit
Output	3DP+HDMI	3DP+HDMI	3DP+HDMI	3DP+HDMI	3DP+HDMI	3DP+HDMI



Model Name	VN3606RML9	VN3506RM81	VN2066RF82	VN1666TF69	VN1666SF69	VN1665XF69
GPU	GeForce RTX 3060	GeForce RTX 3050	GeForce RTX 2060 SUPER	GeForce GTX 1660 Ti	GeForce GTX 1660 SUPER	GeForce GTX 1660
Game/Boost CLK	1320/1777Mhz	1515/1755Mhz	1470/1650Mhz	1500/1770Mhz	1530/1785Mhz	1530/1785Mhz
MEM CLK	15Gbps	14Gbps	14Gbps	12Gbps	8Gbps	8Gbps
MEM	12GB GDDR6	8GB GDDR6	8GB GDDR6	6GB GDDR6	6GB GDDR6	6GB GDDR5
MEM bus	192bit	128bit	256bit	192bit	192bit	192bit
Output	3DP+HDMI	3DP+HDMI	DVI+DP+HDMI	DVI+DP+HDMI	DVI+DP+HDMI	DVI+DP+HDMI



Model Name	VN1656SF41	VN1655XF41	VN1656XF41	VN1055TF41	VN1055XF41	VN1035TBX6
GPU	GeForce GTX 1650 SUPER	GeForce GTX 1650	GeForce GTX 1650	GeForce GTX 1050Ti	GeForce GTX 1050	GeForce GT 1030
Game/Boost CLK	1530/1725Mhz	1485/1665Mhz	1410/1590Mhz	1291/1392Mhz	1354/1455Mhz	1228/1468Mhz
MEM CLK	12Gbps	8Gbps	12Gbps	7Gbps	7Gbps	6000Mhz
MEM	4GB GDDR6	4GB GDDR5	4GB GDDR6	4GB GDDR5	4GB GDDR5	2GB DDR5
MEM bus	128bit	128bit	128bit	128bit	128bit	64bit
Output	DVI+DP+HDMI	DVI+DP+HDMI	DVI+DP+HDMI	DVI+DP+HDMI	DVI+DP+HDMI	DVI+HDMI



Model Name	VN1034TB46	VN7315THX1	VN7313TG46	VN7313TH41 (LP)	VN7313THX1 (LP)
GPU	GeForce GT 1030	GeForce GT 730	GeForce GT 730	GeForce GT 730	GeForce GT 730
Game/Boost CLK	2100Mhz	700Mhz	902Mhz	700Mhz	700Mhz
MEM CLK	1152Mhz	800Mhz	1334Mhz	1333Mhz	1333Mhz
MEM	4GB DDR4	2GB GDDR5	4GB DDR3	4GB DDR3	2GB DDR3
MEM bus	64bit	128bit	64bit	128bit	128bit
Output	DVI+HDMI	DVI+VGA+HDMI	4HDMI	DVI+VGA+HDMI	DVI+VGA+HDMI



Model Name	VN7103THG6 (LP)	VN7103THX6	VN6103THX6	VN2103NHG6	VN2103NHG6
GPU	GeForce GT 710	GeForce GT 710 LP FAN	GeForce GT 610	GeForce G 210	GeForce G 210 Heatsink
Game/Boost CLK	954Mhz	954Mhz	700Mhz	589Mhz	589Mhz
MEM CLK	1300Mhz	1334Mhz	1300Mhz	1333Mhz	1000Mhz
MEM	1GB DDR3	2GB	2GB DDR3	1GB DDR3	1GB DDR3
MEM bus	64bit	64bit	64bit	64bit	64bit
Output	DVI+VGA+HDMI	DVI+VGA+HDMI	DVI+VGA+HDMI	DVI+VGA+HDMI	DVI+VGA+HDMI

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Model Name	VA7906AMF4	VA7906XM00	VA7806XMP2
GPU	RADEON RX 7900 XTX	RADEON RX 7900 XT	RADEON RX 7800 XT
Game/Boost CLK	2269/2499Mhz	2025/2394Mhz	2124/2430Mhz
MEM CLK	20Gbps	20Gbps	19.5Gbps
MEM	24GB GDDR6	20GB GDDR6	16GB GDDR6
MEM bus	384bit	320bit	256bit
Output	3DP2.1+HDMI	3DP2.1+HDMI	3DP2.1+HDMI



Model Name	VA78S6XMP2	VA7706XL92	VA77S6XML9	VA76S6RM81
GPU	RADEON RX 7800 XT OC	RADEON RX 7700 XT	RADEON RX 7700 XT OC	RADEON RX 7600 OC
Game/Boost CLK	2213/2520Mhz	2171/2544Mhz	2226/2584Mhz	2318/2726Mhz
MEM CLK	19.5Gbps	18Gbps	18Gbps	18Gbps
MEM	1GB DDR3	12GB GDDR6	1GB DDR3	8GB GDDR6
MEM bus	256bit	192bit	192bit	128bit
Output	3DP2.1+HDMI	3DP2.1+HDMI	3DP2.1+HDMI	3DP2.1+HDMI



Model Name	VA7606RM81	VA69T6AMP2	VA68T6TMP2	VA6806LMP2
GPU	RADEON RX 7600	RADEON RX 6900 XT	RADEON RX 6800 XT	RADEON RX 6800
Game/Boost CLK	2250/2655Mhz	2015/2250Mhz	2015/2250Mhz	1815/2105Mhz
MEM CLK	18Gbps	16Gbps	16Gbps	16Gbps
MEM	8GB GDDR6	16GB GDDR6	16GB GDDR6	16GB GDDR6
MEM bus	128bit	256bit	256bit	256bit
Output	3DP2.1+HDMI	3DP+HDMI	3DP+HDMI	3DP+HDMI



Model Name	VA6756TML9	VA67S6TML9	VA67T6TML9
GPU	RADEON RX 6750 XT	RADEON RX 6700 XT OC	RADEON RX 6700 XT
Game/Boost CLK	2495/2600Mhz	2548/2622Mhz	2424/2581Mhz
MEM CLK	18Gbps	16Gbps	16Gbps
MEM	12GB GDDR6	12GB GDDR6	12GB GDDR6
MEM bus	192bit	192bit	192bit
Output	3DP+HDMI	3DP+HDMI	3DP+HDMI



Model Name	VA6656TM81	VA66T6TM81	VA6606RM81
GPU	RADEON RX 6650 XT	RADEON RX 6600 XT	RADEON RX 6600
Game/Boost CLK	2410/2635Mhz	2359/2589Mhz	2044/2491Mhz
MEM CLK	17.5Gbps	16Gbps	14Gbps
MEM	8GB GDDR6	8GB GDDR6	8GB GDDR6
MEM bus	128bit	128bit	128bit
Output	3DP+HDMI	3DP+HDMI	3DP+HDMI



Model Name	VA65X6RA46	VA6406RA46
GPU	RADEON RX 6500 XT	RADEON RX 6400
Game/Boost CLK	2610/2815Mhz	2039/2321Mhz
MEM CLK	18Gbps	16Gbps
MEM	4GB GDDR6	4GB GDDR6
MEM bus	64bit	64bit
Output	DP+HDMI	DP+HDMI

Model Name	VA57T6XM82
GPU	RADEON RX 5700 XT
Base/Game/Boost CLK	1755/1905Mhz
MEM CLK	14Gbps
MEM	8GB GDDR6
MEM bus	256bit
Output	3DP+HDMI



Model Name	VA5815RV82	VA5815RC82	VA5815RQ82
GPU	RADEON RX 580 2048SP	RADEON RX 580 2048SP	RADEON RX 580 2048SP
Core CLK	1164/1284Mhz	1206MHz	1274MHz
MEM CLK	7Gbps	6Gbps	7Gbps
MEM	8GB GDDR5	8GB GDDR5	8GB GDDR5
MEM bus	256bit	256bit	256bit
Output	DVI+3DP+HDMI	6HDMI	2DP+HDMI



Model Name	VA5705RV82	VA5605XQ82	VA5615RF41
GPU	RADEON RX 570	RADEON RX 560 XT	RADEON RX 560
Core CLK	1168/1244Mhz	1073Mhz	1175/1275Mhz
MEM CLK	7Gbps	7Gbps	6Gbps
MEM	8GB GDDR5	8GB GDDR5	4GB
MEM bus	256bit	256bit	128bit
Output	DVI+3DP+HDMI	2DP+HDMI	DVI+DP+HDMI



Model Name	VA5515RF41	VA5505RG41	VA5515RF21
GPU	RADEON RX 550	RADEON RX 550	RADEON RX 550
Core CLK	1019/1071Mhz	1243Mhz	1100/1183Mhz
MEM CLK	7Gbps	6Gbps	7Gbps
MEM	4GB GDDR5	4GB	2GB GDDR5
MEM bus	128bit	128bit	128bit
Output	DVI+DP+HDMI	4HDMI	DVI+DP+HDMI

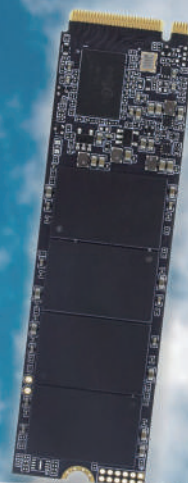
Easier to Carry

P500 Portable Series SSD with **RGB** Lighting



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

Conquer Every Challenge



Model Name	M800 2TB	M800 1TB	M800 512GB
Capacity	2TB	1TB	512GB
Flash	TLC	TLC	TLC
Max. Read	4800MB/s	5000MB/s	5000MB/s
Max. Write	4400MB/s	4450MB/s	2550MB/s
Interface	PCIe Gen 4x4	PCIe Gen 4x4	PCIe 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	PCIe Gen 3x4	PCIe Gen 3x4	PCIe Gen 3x4	PCIe Gen 3x4



Boost Your Speed



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	SATA3	SATA3	SATA3	SATA3	SATA3	SATA3	SATA3



Upgrade for Storming Performance



Series Name	Gaming X		Storming V	DDR4	DDR5
Memory	DDR4	DDR5	DDR4	DDR4	DDR5
Spec.	UDIMM	UDIMM	UDIMM	UDIMM	UDIMM
Capacity	8GB/16GB	16GB	8GB/16GB	8GB/16GB	16GB
Speed	3600/3200Mhz	6400Mhz	3600/3200Mhz	3200Mhz	4800Mhz
Features	Single/Dual Channel	On-die ECC	Single Channel	Single Channel	On-die ECC
Heatsink	RGB	RGB	RGB	1.2V	N
Voltage	1.35V	1.35V	1.35V	22	1.1V
CL	18/19	32	16/18	16/18	40



Industrial Solutions





Model Name		BIRPL-PAT	BIELK-PAT	BIMTL-PAT
Processor Options		Intel Raptor Lake P U300E/I5-1345UE/ I3-1315UE/I3-1315URE/I5-1345URE (-URE Support wide range temp.)	Intel J6412/J6413/J6426/X6413E (Elkhart Lake) (X6413E Support wide range temp.)	Intel Meteor Lake U Ultra 5 135U/Ultra 7 165U
Chipset		None	None	None
BIOS		AMI 256Mbit SPI Flash ROM BIOS	AMI 128Mbit SPI Flash ROM BIOS	AMI 256Mbit SPI Flash ROM BIOS
Form factor		148 x 102 mm	146 x 102 mm	148 x 102 mm
System Memory	Sockets	2 x DDR5 4800 MHz SO-DIMM	2 x DDR4 3200 SO-DIMM	2 x DDR5 4800 MHz SO-DIMM
	Max. Capacity	Up to 64GB	Up to 32GB	Up to 96GB
USB 2.0	USB 2.0 Internal	2 x USB 2.0	2 x USB 2.0	4 x USB 2.0
	USB 2.0 External	None	2 x USB 2.0	None
USB 3.0	USB 3.0 Internal	None	None	None
	USB 3.0 External	2 x USB 3.2 Gen2 2 x USB 3.2 Gen 2x2 (Type C, not support wide temp.)(opt.)	2 x USB 3.0	2 x USB 3.2 Gen2
Expansion Slots		1 x M.2 (B Key 3042/3052) with PCIe and USB 3.0 and SATA w/ SIM slot (for 3G/4G/5G) 1 x M.2 (M Key 2242/2260/2280) with PCIe x 4 (for storage) 1 x M.2 (E Key 2230) with USB 2.0 and PCIe x1, support CNVI (for WiFi/BT)	1 x M.2 (B Key 3042/3052) with PCIe and USB 3.0 w/ SIM slot (for 3G/4G/5G) 1 x M.2 (M Key 2242/2280) with PCIe x2 or SATA opt., support NVMe/SATA SSD 1 x Full size Mini-PCIe with USB 2.0 and PCIe for wireless module	1 x M.2 (E Key 2230) with 1 x USB 2.0 and 1 x PCIe x1 & Intel CNVI 1 x M.2 (M Key 2242/2260/2280) with PCIe x4 for SSD (Gen4)
Storage	Expansion	1 x SATAIII	1 x SATAIII	1 x SATAIII
	LAN	2 x 2.5GbE, RJ45 connectors	2 x 2.5GbE RJ45 connectors	2 x 2.5GbE, RJ45 connectors
Networking	Controller	1 x Intel i226-V 1 x Intel i226-LM 2 x i226-IT (for wide range temp.)	2 x Intel i226V LAN 2 x i226-IT (for X6413E wide range temp.)	1 x Intel i226-V 1 x Intel i226-LM
Audio	Codec	ALC897 (opt., not support wide temp.)	ALC897 (opt., not support wide temp.)	ALC897
	I/O Connector	1 x 2*5-pin header for Mic-in/Line-in/Line-out 1 x 1*4 pin wafer box for 2W Speaker	1 x 2*5-pin wafer, supports Line-in/Line-out/Mic-in (opt., not support wide temp.) 1 x 1*4-pin wafer, supports 2 x 2W speakers (opt., not support wide temp.)	1 x 2*5-pin header for Mic-in/Line-in/Line-out 1 x 1*4 pin wafer box for 2W Speaker
Serial Interface	Serial Standard	4 x COM: 3 x 2*5 pin headers, support RS232/RS422/RS485 with RI/5/12V 1 x 2*5 pin header, supports RS232 with RI/5/12V	4 x COM: 2 x 2*5 pins headers, support RS232/RS422/RS485 with RI/5/12V 2 x 2*5 pins headers, support RS232 with RI/5/12V	3 x COM: 3 x 2*5 pin headers, support RS232/RS422/RS485 with RI/5/12V
Other I/O	Other I/O (internal)	1 x 2*5 8-bit DIO pin header 1 x 1*4pin CPU fan (+12V) connector 1 x 1*3pin clear CMOS 1 x 1*3pin header, supports DIO PWR 12V/5V (default: 5V) 1 x 2*7 front panel pin header 1 x Power LED onboard for APCI power status 1 x 1*3 AT/ATX mode switch pin header (default: ATX) 1 x Buzzer (opt., not support wide temp.)	1 x Buzzer (opt., not support wide temp.) 1 x 2*5 8-bit DIO pin header 1 x 2*5 front panel pin header 1 x Power LED for motherboard Power-on display 1 x 1*3 AT/ATX mode switch pin header	1 x 2*5 8-bit DIO pin header 1 x 1*4pin CPU fan (+12V) connector 1 x 1*3pin clear CMOS 1 x 1*3pin header, supports DIO PWR 12V/5V (default: 5V) 1 x 2*7 front panel pin header 1 x Power LED onboard for APCI power status 1 x 1*3 AT/ATX mode switch pin header (default: ATX) 1 x Buzzer
Digital I/O		8 bit	8-Bit	8 bit
Display	Interface	1 x LVDS/eDP header (share with the same connector, LVDS/eDP switch mode by BIOS setting) 2 x DP 1.4 (up to 4096x2160@60Hz, from 2 x Type C port) (opt., not support wide temp.) 1 x DP 1.4++ (up to 4096x2160@60Hz) 1 x HDMI 2.0 (up to 4096x2160@60Hz)	1 x LVDS/eDP header (share with the same connector, LVDS/eDP switch mode by BIOS setting) 1 x HDMI 2.0 (up to 4096x2160@60Hz) 1 x VGA (opt., not support wide temp., up to 1920x1200 @60Hz)	1 x LVDS/eDP header (share with the same connector, LVDS/eDP switch mode by BIOS setting) 4 x HDMI 2.1 (up to 4096x2160@120Hz)
TPM	Support / Not	Support SLB9670 TPM 2.0 on board	None	Support SLB9670 TPM 2.0 on board
Power Supply	DC Power	DC-IN 9-24V	1 x 1*2-pin 9~24V DC-in power connector	DC-IN 9-24V or 12V noly (by BOM opt.)
	ATX Power	1 x 1*2pin terminal block	None	1 x 1*2pin terminal block
Edge IO		1 x HDMI connector 1 x DP connector 2 x Type C- combo with USB 3.2 Gen2 connectors (opt., not support wide temp.) 2 x RJ45 (GbE)	1 x HDMI 2 x USB 3.0 2 x USB 2.0 2 x RJ45 (GbE) 1 x VGA	4 x HDMI connectors 2 x USB 3.2 Gen2 2 x USB 2.0 2 x RJ45 (GbE)
Operating Temp.		0°C ~ 60°C Humidity: 5% ~ 90% (Wide Range Temp. -40°C ~ 85°C Humidity: 5% ~ 90% by function opt.)	0°C ~ 60°C Humidity: 5% ~ 90% (Wide Range Temp. -40°C ~ 85°C Humidity: 5% ~ 90% by function opt.)	0°C ~ 60°C Humidity: 5% ~ 90%
OS Support		Windows 10/Windows 11 Linux Ubuntu	Windows 10 Linux Ubuntu	Windows 10/Windows 11 Linux Ubuntu



Model Name		BIAS-PAT	RAPLD3DE	RSBC-MX1
Processor Options		Intel Amston Lake X7433RE (Support wide range temp.) / N97	Intel Atom x7-E3950 L2 Cache 2MB 1.6GHz (Burst Frequency 2.00 GHz, 4-core, 4 Threads)	MT8362AA CPU Quad-Core ARM Cortex 1.5GHz (BGA)
Chipset		None	SOC	SOC
BIOS		AMI 128Mbit SPI Flash ROM BIOS	AMI 64Mbit SPI Flash ROM BIOS	None
Form factor		148 x 102 mm	Micro-ATX 146 x 102 mm	91.19 x 124.20 mm
System Memory	Sockets	1 x DDR5 4800 MHz SO-DIMM	1 x DDR3L 1600/1866 (opt.) MHz	None
	Max. Capacity	Up to 16GB	Up to 4GB	2GB DDR4
USB 2.0	USB 2.0 Internal	2 x USB 2.0	1 x USB 2.0 header (each header supports 2 x USB 2.0 ports)	None
	USB 2.0 External	2 x USB 2.0	2 x USB 2.0	3 x USB 2.0 Type A
USB 3.0	USB 3.0 Internal	None	None	None
	USB 3.0 External	2 x USB 3.2 Gen1	4 x USB 3.2 (Gen 1)	None
Expansion Slots		1 x M.2 (B Key 3042/3052), PCIe x1 and USB 3.0, support 4G/5G, with 1 x SIM card slots) 1 x M.2 (M Key 2242/2280), PCIe x1 or SATA supports NVME SSD 1 x Mini-PCIe Full size, USB 2.0 and PCIe interface, support WiFi/BT	1 x Full-size MiniPCIe	1 x uSD slot Supports MINI PCIe with SIM card (USB 2.0 only)
Storage	Expansion	1 x SATAIII	2 x SATA 6.0Gb/s	32GB eMMC
Networking	LAN	2 x 2.5GbE, RJ45 connectors	2 x Realtek RTL81191 10/100/1000Mbps RJ45 Connectors	Realtek RTL8201FRI 10/100 Mb/s auto negotiation, 1 x RJ45 Connector
	Controller	2 x Intel I226-IT	None	None
Audio	Codec	ALC897 (opt., not support wide temp.)	ALC897	None
	I/O Connector	1 x 2*5-pin header for Mic-in/Line-in/Line-out 1 x 1*4 pin wafer box for 2W Speaker	1 x speaker header 1 x audio header	None
Serial Interface	Serial Standard	4 x COM: 2 x 2*5 pin headers, support RS232/RS422/RS485 with 0V/5/12V 2 x 2*5 pin headers, support RS232 with 0V/5/12V	4 x RS-232/RS-422/RS-485 (selectable) from COM 1/2/3/4	Supports 3 x RS232 3 x 2*5 pin headers, 2.0 pitch header
Other I/O	Other I/O (internal)	1 x 2*5 8-bit DIO pin header 1 x 1*4pin CPU fan (+12V) connector 1 x 1*3pin clear CMOS 1 x 1*3pin header, supports DIO PWR 12V/5V (default: 5V) 1 x 2*5 front panel pin header 1 x Power LED onboard for APCI power status 1 x 1*3 AT/ATX mode switch pin header (default: ATX) 1 x Buzzer (opt., not support wide temp.)	1 x I2C/SMBus header 1 x power switch header 1 x reset header 1 x SATA power header 1 x Clear CMOS header 2 x CAN Bus header (opt.) 1 x Power LED (Single color - Green light)	1 x SPI header 1 x I2C header Supports 3 x UART on 2 x 2*5 pin headers, 2.0 pitch header (3.3V TTL Tx/Rx x 1) (5V TTL Tx/Rx x 2)
Digital I/O		8 bit	1 x 8-bit general purpose input/output (3.3V level) header	Supports 1 x GPIO 2*5 pin header
Display	Interface	1 x LVDS/eDP header (share with the same connector, LVDS/eDP switch mode by BIOS setting) 1 x DP 1.4++ (up to 4096x2160@60Hz) 1 x HDMI 2.0 (up to 4096x2160@60Hz)	1 x LVDS header 1 x Backlight header 1 x LCD Panel Power Seclect Jumper	1 x 2*20 pin connector LVDS panel 1 x HDMI connector
TPM	Support / Not	None	Infineon TPM 2.0 (SLB 9665XT 2.0 on board)	None
Power Supply	DC Power	DC-IN 9-24V	1 x 2 pin 12V DC power connector (input)	1 x 2-Pin 12V DC-IN
	ATX Power	1 x 1*2pin terminal block	None	None
Edge IO		1 x HDMI connector 1 x DP connector 2 x RJ45 (GbE) 2 x USB 3.2 Gen1 2 x USB 2.0	1 x HDMI connector 2 x RJ45 (GbE) 4 x USB 3.2 Gen1 1 x DC Jack (opt.) 1 x Power LED/HDD LED (opt.)	USB_OTG1 port USB 2.0 port 2 x USB 2.0 ports JLAN1 10/100Mb/s RJ45 connector MSD1 port HDMI port
Operating Temp.		0°C ~ 60°C Humidity: 5% ~ 90% (Wide Range Temp. -40°C ~ 85°C Humidity: 5% ~ 90% by function opt.)	-40°C ~ 85°C	-40°C ~ 80°C (Relative Humidity: 10% ~ 90%)
OS Support		Windows 10/Windows 11 Linux Ubuntu	Windows 10 Enterprise 64-bit, IoT core Ubuntu	Yocto Android Ubuntu



Model Name		BIADN-IHT	BIH61-IHP	BIELK-IHT
Processor Options		Intel N97 CPU (Alder Lake N)	Intel Core 14th/13th/12th Gen. processors, LGA1700	Intel J6412/J6413/J6426/X6413E (Elkhart Lake)
Chipset		None	Intel H610 Express Chipset	None
BIOS		AMI 128Mbit SPI Flash ROM BIOS	AMI 256Mbit SPI Flash ROM BIOS	AMI 256Mbit SPI Flash ROM BIOS
Form factor		170 x 170 mm	170 x 170 mm	170 x 170 mm
System Memory	Sockets	1 x DDR4 3200 MHz SO-DIMM	2 x DDR4 3200 MHz SO-DIMM	2 x DDR4 3200 MHz SO-DIMM
	Max. Capacity	Up to 16GB	Up to 64GB	Up to 32GB
USB 2.0	USB 2.0 Internal	4 x USB 2.0	3 x USB 2.0	4 x USB 2.0
	USB 2.0 External	2 x USB 2.0	2 x USB 2.0	2 x USB 2.0
USB 3.0	USB 3.0 Internal	None	None	None
	USB 3.0 External	2 x USB 3.2 Gen1 1 x Type C USB 3.2 Gen2	2 x USB 3.0	2 x USB 3.0
Expansion Slots		1 x M.2 (M Key type 2242/2280) with PCIe and SATA (for storage) (Screw M.2 M Key 2242 colay M.2 B Key 2230) 1 x M.2 (B Key 3042/3052) with PCIe x1 and USB 3.2 w/ SIM card slots (for 3G/4G/5G) 1 x M.2 (E Key 2230) with USB 2.0 and PCIe x1, support Intel CNVi (for WiFi/ BT)	1 x PCIe x16 slot 1 x Mini-PCIe, supports SATA and PCIe or USB 3.0 and PCIe (by BOM opt.) 1 x M.2 (B Key 2242/3042/3052) with PCIe and USB 2.0 or SATA and USB 2.0 (by BOM opt.) 1 x M.2 (E Key 2230) with PCIe x1 and USB 2.0 Intel CNVi support (for WiFi/ BT) 1 x SIM slot	1 x full size Mini PCIe, supports PCIe and USB 2.0 or SATA (by BOM opt.) 1 x M.2 (B Key 2242/3042/3052) with PCIe and USB 3.1 or SATA and PCIe (by BOM opt.) 1 x PCIe x4 slot with PCIe x2 Signal 1 x SIM slot
Storage	Expansion	1 x SATAIII	1 x SATAIII	1 x SATAIII (by BOM opt.)
Networking	LAN	2 x GbE, RJ45 connectors	1 x 2.5GbE, RJ45 connector 1 x GbE, RJ45 connector	2 x GbE, RJ45 connectors
	Controller	2 x RTL8111H-CG GbE LAN	1 x Intel i219-V 1 x Intel i225-V	2 x RTL8111H-CG
Audio	Codec	ALC897	ALC897	ALC897
	I/O Connector	1 x Audio jack (Line-out) 1 x 2*5-pin wafer box, supports Line-in/ Mic-in/Line-out 1 x 1*4-pin wafer, supports 2 x 2W speakers	1 x Audio jacks (Line-out) 1 x 2*5-pin wafer box, supports Line-in/ Mic-in/Speaker	1 x 2*5-pin box header for Mic-in/Line-in/SPK-out 1 x Audio Jack (Line-out)
Serial Interface	Serial Standard	6 x COM: 2 x 2*5 pin headers, support RS232/ RS422/RS485 with RI/5/12V 4 x 2*5 pin headers, support RS232 with RI/5/12V	4 x COM: 1 x D-sub 9 pin connector, supports RS232/RS422/RS485 with RI/5/12V 3 x 2*5 pin headers, support RS232	6 x COM: 1 x D-sub 9 pin connector, supports RS232/422/485 with RI/5V/12V 1 x 2*5 pins header, supports RS232/422/485 with RI/5V/12V 4 x 2*5 pins headers, support RS232 with RI/5/12V
Other I/O	Other I/O (internal)	1 x 1*4pin header for CPU fan 1 x 1*3pin header for system fan 1 x 2*5 8-bit DIO pin header 1 x 2*3pin header for voltage select 1 x 1*4pin box header for I2C 1 x 2*7 front panel pin header 1 x 1*8pin wafer LVDS BKLT Control	1 x 1*4pin header for CPU fan (smart fan) 1 x 1*3pin system fan (smart fan) 1 x 1*3pin clear CMOS 1 x SIM slot 1 x 2*6 front panel pin header 1 x Buzzer	1 x 2*8pin header, supports VGA display 1 x 2*7 front panel 1 x 2*5 8-bit DIO 1 x Buzzer
Digital I/O		8 bit	8 bit	8 bit
Display	Interface	1 x LVDS 2 x HDMI 1.4 (4096x2160@30Hz) 1 x Type C (support DP 1.4, up to 4096x2160@60Hz)	1 x eDP or LVDS (Bom opt.) 2 x HDMI 1.4 (4096x2160@30Hz) 1 x VGA (2*8pin wafer box header, up to 1920x1200@60Hz)	1 x LVDS or eDP (Bom opt.) 1 x HDMI 1.4 (up to 4096x2160@30Hz) 1 x VGA (2*8pin wafer box header, up to 1920x1200@60Hz)
TPM	Support / Not	Support SLB9670 TPM 2.0 on board	Support SLB9670 TPM 2.0 on board	Support TPM 2.0 module
Power Supply	DC Power	DC-IN 9-24V Type C PD (20V 5A)	DC-IN 12~24V 1 x 2*2 pin 12V DC power (ATX connector)	DC-IN 9~20V (9-24 by opt.) 1 x 2*2 pin 12V DC power (ATX connector)
	ATX Power	None	None	None
Edge IO		1 x DC 9-24V Jack 2 x HDMI 1 x Type C (USB 3.2 Gen2/PD 5V 20A/ DP 1.4) 2 x USB 3.2 Gen1 2 x USB 2.0 2 x RJ45 (GbE) 1 x Audio Jack (Line-out)	1 x DC 12~24V Jack 2 x HDMI 2 x USB 3.1 2 x RJ45 (GbE) 1 x COM (D-sub 9 pin connector, support RS232/422/485) 1 x Audio Jack (Line-out) 2 x USB 2.0	1 x DC 9~20V Jack (9-24 by opt.) 1 x HDMI 2 x USB 3.0 2 x USB 2.0 2 x RJ45 (GbE) 1 x Audio Jack (Line-out)
Operating Temp.		0°C ~ 60°C Humidity: 5% ~ 90%	0°C ~ 60°C Humidity: 5% ~ 90%	0°C ~ 60°C Humidity: 5% ~ 90%
OS Support		Windows 10/Windows 11 Linux Ubuntu	Windows 10/Windows 11 Linux Ubuntu	Windows 10 Linux Ubuntu



Model Name		BICMA-IHP	BIWLA-IHT	BIH60-IHP
Processor Options		Intel Core 10th/11th Gen. processors (Comet Lake-S/Rocket Lake-S), LGA 1200	Intel 4305UE/i3-8145UE/i5-8365UE/i7-8665UE (Whiskey Lake U CPU)	Intel Core 14th/13th/12th Gen. processors, LGA1700
Chipset		Intel Q470E/H420E Express Chipset	None	Intel H610 Express Chipset
BIOS		AMI 256Mbit SPI Flash ROM BIOS	AMI 128Mbit SPI Flash ROM BIOS	AMI 256Mbit SPI Flash ROM BIOS
Form factor		170 x 170 mm	170 x 170 mm	170 x 170 mm
System Memory	Sockets	2 x DDR4 2933 MHz SO-DIMM	2 x DDR4 2400 MHz SO-DIMM	2 x DDR4 3200 MHz SO-DIMM
	Max. Capacity	Up to 64GB	Up to 64GB	Up to 64GB
USB 2.0	USB 2.0 Internal	5 x USB 2.0	4 x USB 2.0	1 x USB 2.0
	USB 2.0 External	None	None	4 x USB 2.0
USB 3.0	USB 3.0 Internal	None	None	None
	USB 3.0 External	4 x USB 3.0	4 x USB 3.0	2 x USB 3.0
Expansion Slots		1 x PCIe x4 slot 1 x M.2 (M Key 2242/2260/2280) with PCIe x4 and SATA for NVME 1 x M.2 (E Key 2230) with PCIe x1 and USB 2.0 for Intel CNVI support	1 x M.2 (M Key 2242/2260/2280) with PCIe x4 and SATA for NVME 1 x M.2 (B Key 3042), supports PCIe and USB w/ SIM card slots (for 3G/4G) 1 x M.2 (E Key 2230) with PCIe x1 and USB 2.0 for wireless and Intel CNVI support	1 x PCIe x16 slot 1 x Mini-PCIe, supports SATA and PCIe or USB 3.0 and PCIe signal (by BOM opt.) 1 x M.2 (B Key 2242/3042/3052) with PCIe and USB 2.0 or SATA and USB 2.0 signal (by BOM opt.) 1 x M.2 (E Key 2230) with PCIe x1 and USB 2.0 Intel CNVI support (for WiFi/BT) 1 x SIM slot
Storage	Expansion	2 x SATAIII	2 x SATAIII	1 x SATAIII
Networking	LAN	2 x GbE, RJ45 connectors	2 x GbE, RJ45 connectors	1 x 2.5GbE, RJ45 connector 1 x GbE, RJ45 connector
	Controller	1 x I211-AT 1 x I219-LM	1 x Intel I211 (colay I210) 1 x Intel I219-LM	1 x Intel i219-V 1 x Intel I225-V
Audio	Codec	ALC897	ALC897/888S	ALC897
	I/O 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	1 x 1*4 pin 2.0 pitch wafer box pin header fo SPK-out 2 x Audio Jack, support Line out/Mic in	1 x 2*5-pin 2.0 mm wafer box for Line-in/SPK-out 2 x Audio Jacks (Line-out/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	6 x COM: 2 x 2*5 pins headers, support RS232/422/485 4 x 2*5 pins headers, support RS232	4 x COM: 1 x D-sub 9 pin connector, supports RS232/RS422/RS485 with RI/5/12V 1 x D-sub 9 pin connector, supports RS232 2 x 2*5 pin headers, support RS232
Other I/O	Other I/O (internal)	1 x 1*4pin (2.54) CPU fan header 1 x 2*7pin TPM module header 1 x 1*3pin (2.0) clear CMOS header 1 x 2*5pin front panel header 1 x Buzzer	1 x 1*4pin CPU Fan header 1 x 1*6pin header for PS/2 1 x 1*2pin clear CMOS header 1 x 2*5pins 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 (Line-in/Line-in/ speaker) 1 x Buzzer 1 x 1*3pin clear CMOS 1 x 2*7pin header power button, reset button, HDD Led, power LED 1 x Buzzer
Digital I/O		8 bit	8 bit	8 bit
Display	Interface	1 x LVDS or eDP (Bom opt.) 1 x DP 1.4 (up to 4096x2304@60Hz) 1 x HDMI 1.4 (up to 4096x2160@30Hz)	1 x LVDS 1 x HDMI 1.4 (up to 4096x2160@30Hz) 1 x DP 1.4 (up to 3480x2160@60Hz) 1 x VGA (up to 1920x1200@60Hz), colay DP	1 x eDP or LVDS (Bom opt.) 1 x DP (4096x2304@60Hz) 1 x HDMI (4096x2160@30Hz) 1 x VGA (up to 1920x1200@60Hz)
	TPM	Supports TPM 2.0 module	Supports TPM 2.0 module	Support SLB9670 TPM 2.0 on board Module (opt.)
Power Supply	DC Power	1 x 12V DC Jack 1 x 2*2 pins 12V DC power (ATX connector)	1 x 12~28V DC Jack 1 x 2*2 pin 12V DC power (ATX connector)	None
	ATX Power	None	None	Supports 1 x ATX power 24 pin header 1 x 12V ATX 4P connector
Edge IO		2 x RJ45 (GbE) 1 x HDMI 1 x DP 4 x USB 3.0 1 x DC 12V Jack 2 x Audio Jack (Mic-in/Line-out)	1 x 12~28V DC Jack 2 x RJ45 (GbE) 1 x HDMI 1 x DP 4 x USB 3.0 2 x Audio Jack (Mic-in/Line-out)	2 x RJ45 (GbE) 4 x USB 2.0 2 x Audio Jack (Line-out/Mic-in) 1 x DP 2 x USB 3.0 1 x HDMI 1 x VGA (D-sub 15 pin connector) 2 x COM (D-sub 9 pin connector, support 1 x RS232/422/485, 1 x RS232)
Operating Temp.		0°C ~ 60°C Humidity: 5% ~ 90%	0°C ~ 60°C Humidity: 5% ~ 90%	0°C ~ 60°C Humidity: 5% ~ 90%
OS Support		Windows 10	Windows 10 Ubuntu	Windows 10/Windows 11 Linux Ubuntu



Model Name		BIH41-IHP	BIW68-AHP	BIQ67-AHP
Processor Options		Intel Core 10th/11th Gen. processors, LGA1700 (Comet Lake/Rocket Lake-S)	Intel 14th/13th/12th CPU for LGA1700 Socket CPU (Max. TDP at 125W)	Intel 14th/13th/12th CPU for LGA1700 Socket CPU (Max. TDP at 125W)
Chipset		Intel H410 Express Chipset	Intel W680 Express Chipset	Intel Q670 Express Chipset
BIOS		AMI 128Mbit SPI Flash ROM BIOS	AMI 256Mbit SPI Flash ROM BIOS	AMI 256Mbit SPI Flash ROM BIOS
Form factor		170 x 170 mm	ATX 305 x 244 mm	ATX 305 x 244 mm
System Memory	Sockets	2 x DDR4 2933 MHz SO-DIMM	4 x DDR4 3200 MHz U-DIMM, support ECC Function	4 x DDR4 3200 MHz U-DIMM
	Max. Capacity	Up to 64GB	Up to 128GB	Up to 128GB
USB 2.0	USB 2.0 Internal	1 x USB 2.0	4 x USB 2.0	4 x USB 2.0
	USB 2.0 External	4 x USB 2.0	None	None
USB 3.0	USB 3.0 Internal	None	2 x USB 3.2 Gen1	2 x USB 3.2 Gen1
	USB 3.0 External	2 x USB 3.0	6 x USB 3.2 Gen2	6 x USB 3.2 Gen2
Expansion Slots		1 x PCIe x16 slot 1 x PCI Express Mini card (For WiFi/BT) 1 x M.2 (B Key 2242/2280/3042/3052) PCIe x2, PCIe and SATA 3.0, PCIe and USB 3.1 interfaces by BOM opt. (Default is PCIe and USB 3.0) 1 x M.2 (E Key 2230) with PCIe x1 and USB 2.0 (For WiFi/BT)	1 x PCIe Gen4 x16 (PCIe share to PCIe Gen4 x8 slot) 1 x PCIe Gen4 x8 (by PCIe x16 slot) 3 x PCIe x4 (1 x PCIe x4 share with 4 x SATAIII) 2 x PCI slots 1 x M.2 (M Key 2242/2280) with PCIe Gen4 x4 (for storage) 1 x M.2 (B Key 3042/3052) with PCIe x1 and USB 3.0 w/ SIM card slot (for 3G/4G/5G) 1 x M.2 (E Key 2230) with PCIe x1 and USB 2.0 Intel CNVI support (for WiFi/BT)	1 x PCIe Gen4 x16 (PCIe share to PCIe Gen4 x8 slot) 1 x PCIe Gen4 x8 (by PCIe x16 slot) 3 x PCIe x4 (1 x PCIe x4 share with 4 x SATAIII) 2 x PCI slots 1 x M.2 (M Key 2242/2280) with PCIe Gen4 x4 (for storage) 1 x M.2 (B Key 3042/3052) with PCIe x1 and USB 3.0 w/ SIM card slot (for 3G/4G/5G) 1 x M.2 (E Key 2230) with PCIe x1 and USB 2.0 Intel CNVI support (for WiFi/BT)
Storage	Expansion	2 x SATAIII	8 x SATAIII (4 x SATAIII share with 1 x PCIe x 4)	8 x SATAIII (4 x SATAIII share with 1 x PCIe x 4)
Networking	LAN	2 x GbE, RJ45 connectors	2 x 2.5GbE, RJ45 connectors	2 x 2.5GbE, RJ45 connectors
	Controller	1 x Intel I219-V 1 x Intel I211-AT	1 x Intel i226-V 1 x Intel i226-LM	1 x Intel i226-V 1 x Intel i226-LM
Audio	Codec	ALC897	ALC897	ALC897
	I/O Connector	2 x Audio jacks (Line-out/Mic-in)	3 x Audio jack (Line-in/Line-out/Mic-in) 1 x 2*5 front audio, supports Mic-in/Line-out 1 x 1*4-pin wafer, supports 2 x 2W speakers	3 x Audio jack (Line-in/Line-out/Mic-in) 1 x 2*5 front audio, supports Mic-in/Line-out 1 x 1*4-pin wafer, supports 2 x 2W speakers
Serial Interface	Serial Standard	6 x COM: 1 x D-sub 9 pin connector, supports RS232/422/485 with RI/5V/12V 1 x D-sub 9 pin connector, supports RS232 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 connectors, support RS232/RS422/RS485 with RI/5/12V 4 x 2*5 pin headers, support RS232 with RI/5/12V	6 x COM: 2 x D-sub 9 pin connectors, support RS232/RS422/RS485 with RI/5/12V 4 x 2*5 pin headers, support RS232 with RI/5/12V
Other I/O	Other I/O (internal)	1 x 1*4pin CPU fan (smart fan) 1 x 1*3pin system fan (smart fan) 1 x Buzzer 1 x 1*3pin clear CMOS 1 x 2*7pin header power button, reset button, HDD Led, power LED 1 x Green LED for 5V standby power indicator	1 x 1*4pin CPU smart fan 1 x 1*4pin system smart fan 2 x 1*3pin system fans 1 x 2*13 pin parallel port (Multi-function with DIO), switch by BIOS control, default DIO 1 x 1*3pin clear CMOS 1 x 2*5pin header, support power button, reset button, HDD Led, power LED, reset LED 1 x Buzzer	1 x 1*4pin CPU smart fan 1 x 1*4pin system smart fan 2 x 1*3pin system fans 1 x 2*13 pin parallel port (Multi-function with DIO), switch by BIOS control, default DIO 1 x 1*3pin clear CMOS 1 x 2*5pin header, supports power button, reset button, HDD Led, power LED, reset LED 1 x Buzzer
Digital I/O		8 bit	16 bit	16 bit
Display	Interface	1 x eDP 1 x DP 1.4 (4096x2304@60Hz) 1 x HDMI 1.4 (4096x2160@30Hz) 1 x VGA (up to 1920x1200@60Hz)	2 x HDMI 2.0 (up to 4096x2160@60Hz) 1 x DP 1.4++ (up to 4096x2160@60Hz) 1 x VGA (up to 1920x1200@60Hz)	2 x HDMI 2.0 (up to 4096x2160@60Hz) 1 x DP 1.4++ (up to 4096x2160@60Hz) 1 x VGA (up to 1920x1200@60Hz)
TPM	Support / Not	Support SLB9670 TPM 2.0 on board Module (opt.)	Support SLB9670 TPM 2.0 on board	Support SLB9670 TPM 2.0 on board
Power Supply	DC Power	None	None	None
	ATX Power	Supports 1 x ATX power 24 pin header 1 x 12V ATX 4P connector	1 x 24 pin ATX power connector 1 x 2*4pin ATX power connector	1 x 24 pin ATX power connector 1 x 2*4pin ATX power connector
Edge IO		2 x RJ45 (GbE) 2 x USB 3.0 4 x USB 2.0 2 x Audio Jack (Line-out/Mic-in) 1 x DP 1 x HDMI 1 x VGA 2 x COM (D-sub 9 pin connector, support 2 x RS232/422/485, 1 x RS232)	2 x RJ45 (GbE) 6 x USB 3.2 Gen2 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)	2 x RJ45 (GbE) 6 x USB 3.2 Gen2 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)
Operating Temp.		0°C ~ 60°C Humidity: 5% ~ 90%	0°C ~ 60°C Humidity: 5% ~ 90%	0°C ~ 60°C Humidity: 5% ~ 90%
OS Support		Windows 10 Linux Ubuntu	Windows 10/Windows 11 Linux Ubuntu	Windows 10/Windows 11 Linux Ubuntu



Model Name		BIH61-AHA	BIH11-AHB
Processor Options		Intel 14th/13th/12th CPU for LGA1700 Socket CPU (Max. TDP at 125W)	Intel Core 8th/7th/6th Gen. processors (Skylake-S/ Kabylake-S), LGA 1151
Chipset		Intel H610 Express Chipset	Intel H110 Express Chipset
BIOS		AMI 256Mbit SPI Flash ROM BIOS	AMI 64Mbit SPI Flash ROM BIOS
Form factor		ATX 305 x 244 mm	ATX 305 x 244 mm
System Memory	Sockets	2 x DDR5 4800 MHz U-DIMM	2 x DDR4 2400 Long-DIMM
	Max. Capacity	Up to 96GB	Up to 32GB
USB 2.0	USB 2.0 Internal	4 x USB 2.0	4 x USB 2.0
	USB 2.0 External	2 x USB 2.0	2 x USB 2.0
USB 3.0	USB 3.0 Internal	None	None
	USB 3.0 External	4 x USB 3.2 Gen1	4 x USB 3.0
Expansion Slots		1 x PCIe Gen4 x16 1 x PCIe Gen3 x4 5 x PCI slots 1 x M.2 (M Key 2242/2280) with PCIe x2 and SATA (SATA by opt.) (for storage)	1 x PCIe x16 slot 1 x PCIe x4 slot 5 x PCI slots 1 x M.2 (M Key 2242/2260/2280) socket for SATA SSD (share with 1 x SATA)
Storage	Expansion	4 x SATAIII (1 x SATAIII share with M.2 M Key)	4 x SATA III
Networking	LAN	1 x 2.5GbE, RJ45 connector 1 x GbE, RJ45 connector*	1 x 2.5GbE RJ45 connector 1 x GbE, RJ45 connector
	Controller	1 x Intel i219-V 1 x Intel i225-V	1 x Intel i225-V 1 x Intel i219-V
Audio	Codec	ALC897	ALC897
	I/O Connector	3 x Audio jack (Line-in/Line-out/Mic-in) 1 x 2*5 front audio, supports Mic-in/Line-out 1 x 1*4-pin wafer, supports 2 x 2W speakers	3 x Audio Jack, support Line-in/Line-out/Mic-in 1 x 2*5 pin header, supports Line-out/Mic-in
Serial Interface	Serial Standard	10 x COM: 2 x D-sub 9 pin connectors, support RS232/RS422/RS485 with RI/5/12V 8 x 2*5 pin headers, support RS232 with RI/5/12V	6 x COM: 1 x D-sub 9 pin connector, supports RS232/RS422/RS485 with RI/5V/12V 1 x D-sub 9 pin connector, supports RS232 with RI/5V/12V 4 x 2*5 pins headers, support RS232 with RI/5V/12V
Other I/O	Other I/O (internal)	1 x 1*4pin CPU smart fan 1 x 1*4pin system smart fan 2 x 1*3pin system fans 1 x 2*13 pin parallel port (Multi-function with DIO), switch by BIOS control, default DIO 1 x 1*3pin clear CMOS 1 x 2*5pin header, support power button, reset button, HDD Led, power LED, reset LED 1 x Buzzer	1 x 2*5pin front panel header 1 x 2*5 8-bit DIO 1 x 2*13pin parallel port box-header 1 x 1*4pin, CPU PWM-Smart Fan header 2 x 1*3pin, System DC-Fan header 1 x Buzzer
Digital I/O		16 bit	8-Bit
Display	Interface	1 x HDMI 2.0 (up to 4096x2160@60Hz) 1 x DP 1.4++ (up to 4096x2160@60Hz) 1 x VGA (up to 1920x1200@60Hz)	1 x VGA (up to 1920x1200@60Hz) 1 x HDMI 1.4 (up to 4096x2160@30Hz) 1 x DP 1.4++ (up to 4096x2160@60Hz)
TPM	Support / Not	Support SLB9670 TPM 2.0 on board	Support SLB9670 TPM 2.0 on board Module (opt.)
Power Supply	DC Power	None	None
	ATX Power	1 x 24 pin ATX power connector 1 x 2*4pin ATX power connector	Supports 1 x ATX power 24 pin header 1 x 12V ATX 4P connector
Edge IO		2 x RJ45 (GbE) 4 x USB 3.2 Gen1 1 x PS2 1 x VGA (D-sub 15 pin connector) 1 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 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, support 1 x RS232/RS422/RS485, 1 x RS232) 4 x USB 3.0 2 x USB 2.0 2 x RJ45 (GbE) 3 x Audio Jack (Line-in/Line-out/Mic)
Operating Temp.		0°C ~ 60°C Humidity: 5% ~ 90%	0°C ~ 60°C Humidity: 5% ~ 90%
OS Support		Windows 10/Windows 11 Linux Ubuntu	Windows 7/Windows 8.1/Windows 10 Linux Ubuntu



Model Name		EIB7B-AXI
Processor Options		Intel Core 3rd Gen. processors (Ivy Bridge), LGA 1155
Chipset		Intel B75 Express Chipset
BIOS		AMI 64Mbit SPI Flash ROM BIOS
Form factor		ATX 305 x 220 mm
System Memory	Sockets	4 x DDR3L 1333/1066 LONG-DIMM
	Max. Capacity	Up to 32GB
USB 2.0	USB 2.0 Internal	5 x USB 2.0
	USB 2.0 External	4 x USB 2.0
USB 3.0	USB 3.0 Internal	None
	USB 3.0 External	2 x USB 3.0
Expansion Slots		1 x PCIe x16 slot 1 x PCIe x4 slot 5 x PCI slots
Storage	Expansion	5 x SATAII, 1 x SATAIII
Networking	LAN	2 x GbE, RJ45 connectors
	Controller	2 x Intel I211-AT
Audio	Codec	ALC897
	I/O Connector	1 x 2*5 pins wafer, supports Line-out/Mic-in 3 x Audio Jack, support Line-in/Line-out/Mic-in
Serial Interface	Serial Standard	6 x COM: 2 x D-sub 9 pin connectors, support RS232/RS422/RS485, mode with 0/5V/12V 4 x 2*5 pins headers, support RS232 with RI/5V/12V
Other I/O	Other I/O (internal)	1 x 2*5pin front panel header 1 x 2*13pin parallel port box-header 4 x 1*3pin headers, support 5V/5V dual switch for USB function 1 x 1*3pin header, supports 5V/ 5V dual switch for PS/2 function 1 x 1*2pin header, supports VGA Dummy Load 4 x 2*5pin, 4 COM box-headers 4 x RS-232 with jumper select for 5V/12V @ pin 10 1 x 1*4pin, CPU Smart-Fan header 2 x 1*3pin, System DC-Fan header 2 x power LEDs 1 x 1*3pin, clear CMOS 1 x Buzzer
Digital I/O		8 bit
Display	Interface	1 x VGA (up to 1920x1200@60Hz) 1 x DVI-D (up to 1920x1200@60 Hz)
TPM	Support / Not	Support TPM 1.2 module
Power Supply	DC Power	None
	ATX Power	Supports 1 x ATX power 24 pin header 1 x 12V ATX 4P connector
Edge IO		1 x PS/2 1 x VGA (D-sub 15 pin connector) 1 x DVI-D 2 x COM (D-sub 9pin connector, support 2x RS232/422/485) 4 x USB 2.0 2 x USB 3.0 2 x RJ45 (GbE) 3 x Audio Jack (Line-in/Line-out/Mic)
Operating Temp.		0°C ~ 60°C Humidity: 5% ~ 90%
OS Support		Windows 7/Windows 10

Model Name		ERX93-AXP
NXP I.MX 93		Dual Cortex -A55 1.7 GHz processors Cortex -M33 250 Mhz MCU processor Arm Ethos U-65 microNPU Neon Media Processor Engine (MPE)
Memory		LPDDR4X 2GB
Storage		eMMC 16GB up to 64GB (Support eMMC 5.1)
System OS		Linux
USB		2 x USB 2.0 (External) 2 x USB 2.0 (Internal) + 2 x USB 2.0 (opt.)
Ethernet		2 x RJ45 GbE LAN
Audio		Stereo PDM digital microphone connector Stereo 3W speaker amplifier output (opt.) Analog Line-in/Line-out (opt.)
GPIO		20pin interface 13 x GPIOs (Mux Pin UART TX/RX/CTS/RTS & I2C & SPI) 1 x ADC 2 x Power 3V output 2 x Power 5V output 2 x GND
CAN bus		2 x CAN-FD bus with built-in transceiver
Serial Ports		2 x Full functional RS232 (including DSR/ DTR/DCD/RI) (opt.) 1 x RS232/RS422/RS485 combo (opt.)
Camera		MIPI CSI with 24pin FFC
Wireless		1 x M.2 WiFi (SDIO + UART) (opt.) 1 x WiFi module on board (SDIO + UART) (opt.) 1 x Mini PCIe for WAN LTE + uSIM slot (opt.)
SD slot		1 x uSD slot, speed up to SDR104
RTC		1 x RTC IC with coin battery connector
Display		1 x LVDS single channel (up to 1366 x 768 p60 or 1280 x 800 p60) 1 x MIPI (up to 1920 x 1200 p60)
Dimension		122 x 100 mm
Power Input		DC 12V
Temperature		Operation: -25°C ~ 70°C Storage: -30°C ~ +80°C



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Model Name	MP-J4125	MP-J6412	MT-N97
Processor Options	Intel Celeron J4125 (4core, up to 2.7GHz, TDP 10W)	Intel Celeron J6412 (4core, up to 2.6GHz, TDP 10W)	Intel N97 (4core, up to 3.6GHz, TDP 12W)
Chipset	Intel Celeron J4125	Intel Celeron J6412	Intel N97
Graphic	Intel UHD Graphics 600	Intel UHD Graphics	Intel UHD Graphics
Display	1 x HDMI 1 x VGA	1 x HDMI 1 x VGA (opt.)	2 x HDMI 1 x DP (USB Type C) with power delivery (max. 100W 20V/5A)
Memory	Supports 2DIMM Dual Channel DDR4 up to 8GB memory	DDR4 3200Mhz SO-DIMM, up to 32GB	DDR4 3200Mhz SO-DIMM, up to 16GB
Expansion Slots	N/A	1 x M.2 (B Key 2242/3042/3052) with PCIe + USB 3.1 or SATA + PCIe signal (opt.) 1 x SIM slot	1 x M.2 E Key type 2230 w/ 1 x USB 2.0 + 1 x PCIe X1 1 x M.2 B Key type 3042/3052 with PCIe x1 + USB 3.2 & SIM card slots
Storage	1 x SATA III (6Gb/s) 1 x M.2 (M Key)	1 x SATAIII	1 x SATAIII 1 x M.2 M Key type 2242/2280 w/ PCIe x1
Serial Ports	1 x RS232	1 x RS232/422/485 (COM1) 1 x RS232/422/485 (COM2) (opt.)	1 x RS232/422/485 (COM1) (opt.)
USB	2 x USB 3.1 Gen1 ports 4 x USB 2.0 ports	2 x USB 3.0 4 x USB 2.0	2 x USB 3.2 Gen1 1 x USB 3.2 Gen2 for 1 x Rear Type C connector 4 x USB 2.0
Ethernet	RTL8111H 10/100/1000 Mb/s auto negotiation, Half/Full duplex capability	2 x RTL8111H-CG GbE LAN	2 x RTL8111H-CG GbE LAN Support PXE boot form LAN, wake on LAN
Audio	Audio Codec: ALC897	Audio Codec: ALC897	Audio Codec: ALC897 + ALC105
External I/O	1 x DC 12V Jack 1 x HDMI 1 x VGA 1 x COM port 1 x RJ45 (GbE) 3 x 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 HDMI 1 x COM port 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 2 x HDMI 1 x USB Type C 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 TPM 2.0 onboard
Power Supply	60W adapter (12V/5A)	60W adapter (12V/5A)	60W adapter (12V/5A)
Dimension (LxWxH)	235 x 192 x 100 mm	196.5 x 193 x 45 mm	196.5 x 193 x 45 mm
Operating Temperature	0°C ~ 60°C Humidity: 5% ~ 90%	0°C ~ 60°C Humidity: 5% ~ 90%	0°C ~ 60°C Humidity: 5% ~ 90%
OS Support	Windows 10/11 bit Windows 10 IoT Enterprise 2021 Linux Ubuntu 20.04	Windows 10/11 64bit Windows 10 IoT Enterprise 2021 Linux Ubuntu 20.04	Windows 10/11 64bit Windows 10 IoT Enterprise 2021 Linux Ubuntu 20.04



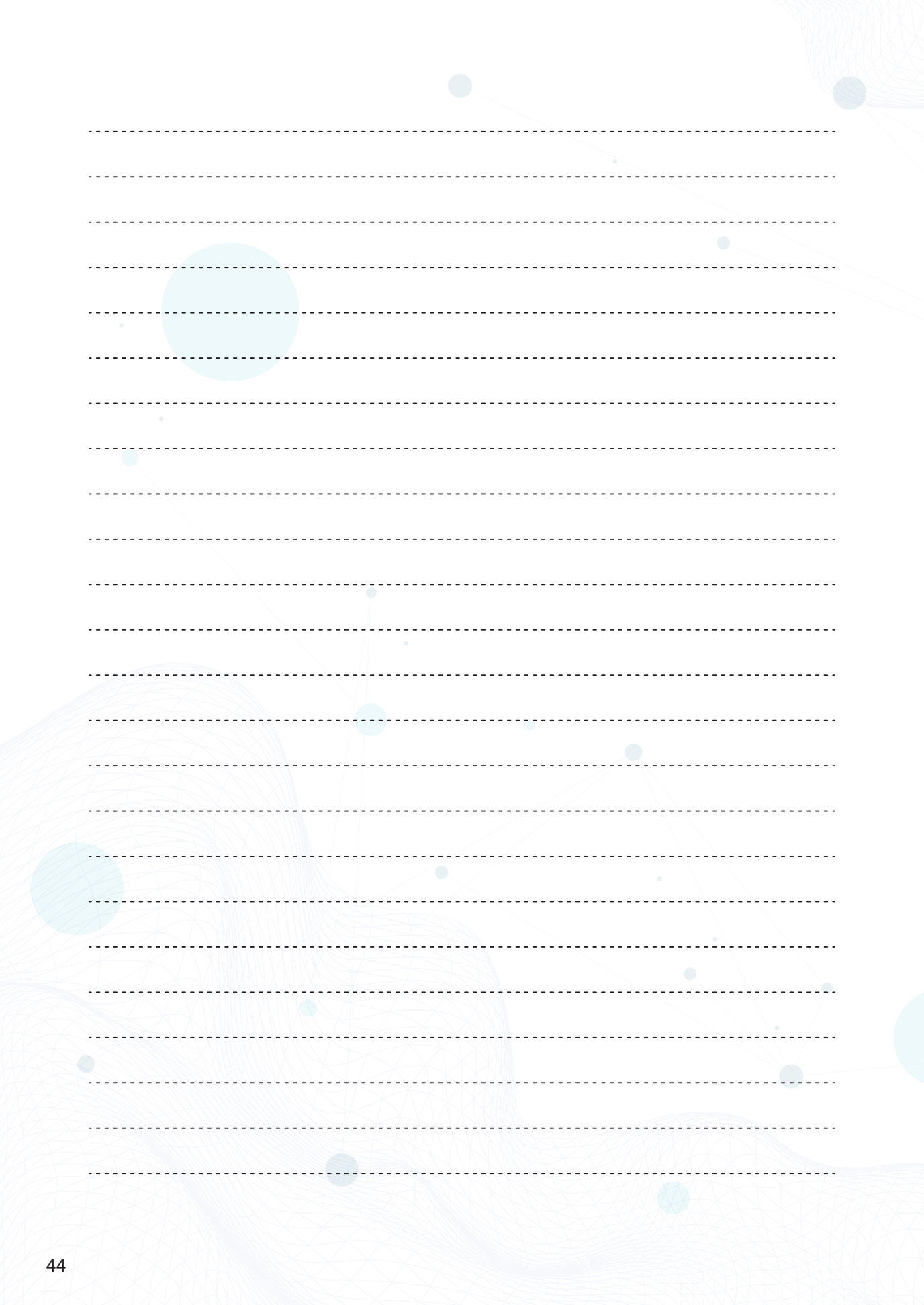
Model Name	MT-J6412	MT PRO-J6412
Processor Options	Intel Celeron J6412 (4core, up to 2.6GHz, TDP 10W)	Intel Celeron J6412 (4core, up to 2.6GHz, TDP 10W)
Chipset	Intel Celeron J6412	Intel Celeron J6412
Graphic	Intel UHD Graphics	Intel UHD Graphics
Display	1 x HDMI 1 x VGA (opt.)	1 x HDMI 1 x VGA
Memory	DDR4 3200Mhz SO-DIMM, up to 32GB	DDR4 3200Mhz SO-DIMM, up to 32GB
Expansion Slots	1 x M.2 B Key (2242/3042/3052) with PCIe + USB 3.1 or SATA + PCIe signal (opt.) 1 x SIM slot	1 x M.2 B Key (2242/3042/3052) with PCIe + USB 3.1 or SATA + PCIe signal (opt.) 1 x SIM slot
Storage	1 x SATAIII	1 x SATAIII
Serial Ports	1 x RS232/422/485 (COM1) 1 x RS232/422/485 (COM2) (opt.)	2 x RS232/422/485 (COM1/COM2) 4 x RS232 (COM3~COM6)
USB	2 x USB 3.0 4 x USB 2.0	2 x USB 3.0 4 x USB 2.0
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
Audio	Audio Codec: ALC897	Audio Codec: ALC897
External I/O	1 x DC 9~24V Jack 1 x HDMI 1 x VGA (opt.) 1 x COM port 2 x RJ45 (GbE) 1 x Audio Jack (Line-out) 1 x Power LED / 1 x HDD LED 1 x Power Key	1 x DC 9~24V Jack 1 x HDMI 1 x VGA 6 x COM ports 2 x RJ45 (GbE) 1 x Audio Jack (Line-out) 1 x Power LED / 1 x HDD LED 1 x Power Key
Power Supply	60W adapter (12V/5A)	60W adapter (12V/5A)
Dimension (LxWxH)	196.5 x 193 x 45 mm	200 x 182 x 50 mm
Operating Temperature	0°C ~ 60°C Humidity: 5% ~ 90%	0°C ~ 60°C Humidity: 5% ~ 90%
OS Support	Windows 10/11 64bit Windows 10 IoT Enterprise 2021 Linux Ubuntu 20.04	Windows 10/11 64bit Windows 10 IoT Enterprise 2021 Linux Ubuntu 20.04

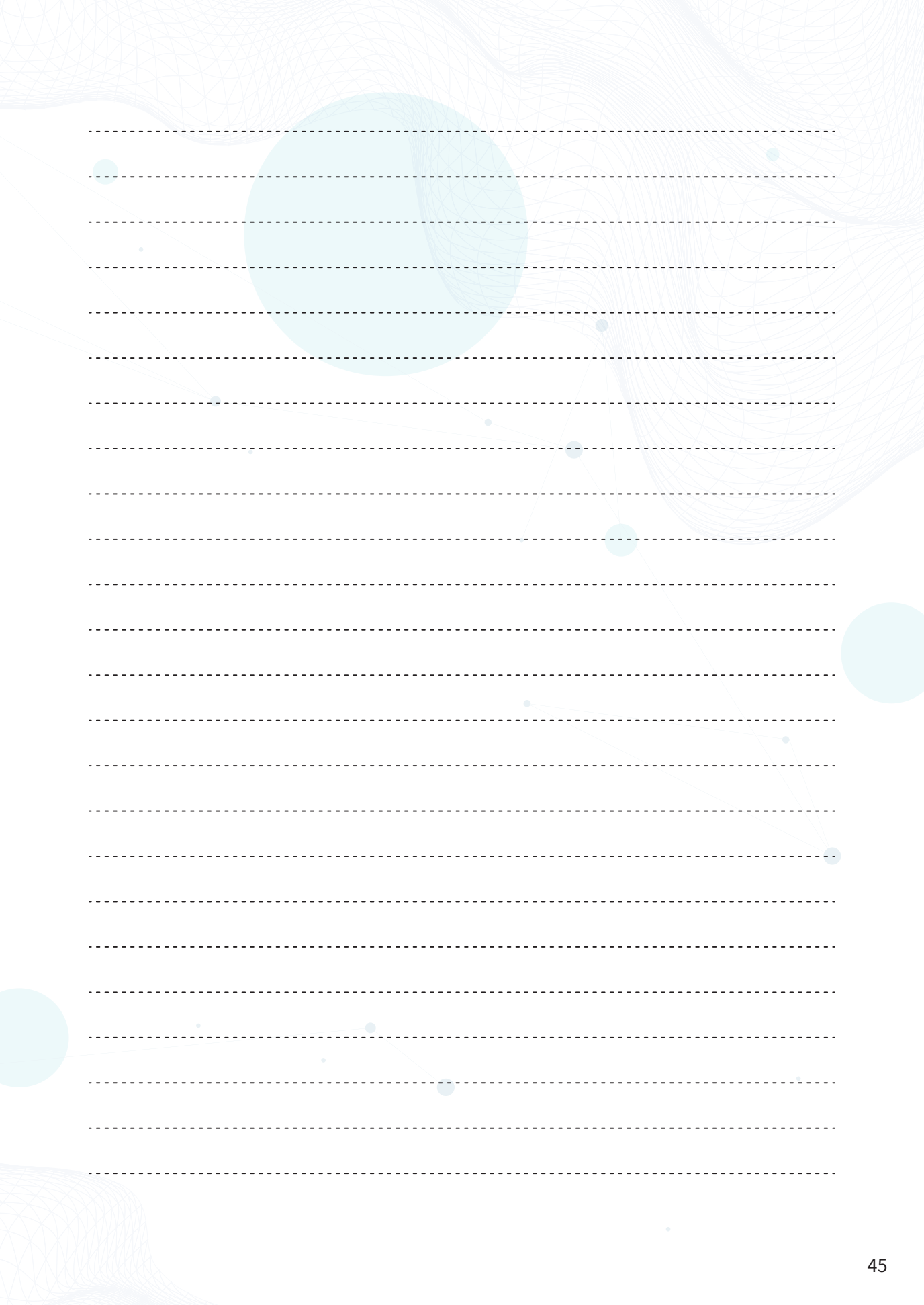


Model Name	MS-J6412 / MS-X6413E	MS-RPL Series
Processor Options	Intel Celeron J6412 (4core, up to 2.6GHz, TDP 10W) Intel Atom x6413E (4core, up to 3.0GHz, TDP 9W)	Intel Core i5-1345URE (10core, up to 4.6GHz, 15W/55W) Intel Core i3-1315URE (6core, up to 4.5GHz, 15W/55W)
Chipset	Intel Celeron J6412 Intel Atom x6413E	Intel Core i5-1345UE Intel Core i3-1315URE
Graphic	Intel UHD Graphics	Intel Iris Xe Graphics eligible (for i5-1345URE) Intel UHD Graphics for 13th Gen Intel processors (for i3-1315URE)
Display	1 x HDMI 1 x VGA	1 x HDMI 1 x DP 2 x DP (USB Type C)
Memory	DDR4 3200Mhz SO-DIMM, up to 32GB	DDR5 4800Mhz SO-DIMM, up to 64GB
Expansion Slots	1 x Mini-PCIe slot 1 x M.2 B Key type w/ SIM card slot	1 x M.2 E Key type 2230 w/ x USB 2.0 + 1 x PCIe x1 1 x M.2 B Key type 3042/3052 with PCIe x1 or SATA and USB 3.2 & SIM card slots (opt.)
Storage	1 x SATAIII 1 x M.2 M Key type 2242/2260/2280	1 x SATAIII 1 x M.2 M Key type 2242/2260/2280 w/ PCIe x4 for SSD (Gen4)
Serial Ports	2 x RS232/422/485 (COM1/COM2) 2 x RS232 (COM3~COM4)	3 x RS232/422/485 (COM1/COM2/COM3) 1 x RS232 (COM4)
USB	2 x USB 3.0 4 x USB 2.0	2 x USB 3.2 Gen2 (20G) signal for 2 x Type C connectors (5V/3A) 2 x USB 3.2 Gen2 (10G) signal for 2 x Type A connectors 2 x USB 2.0
Ethernet	2 x 2.5GbE LAN (Intel I226V) 2 x 2.5GbE LAN (Intel I226-IT) (For MS-X6413E) Support AC power loss, wake on LAN	2 x 2.5GbE LAN (Intel 1 x I226V, 1 x I226LM) 2 x I226-IT for wide range temperature (opt.)
Audio	Audio Codec: ALC897	Audio Codec: ALC897 + ALC105
External I/O	1 x DC 9~24V Jack 1 x HDMI 1 x VGA 2 x RJ45 (2.5GbE) 1 x Power LED / 1 x HDD LED 1 x Power Key	1 x DC 9~24V Jack 1 x HDMI 1 x DP 2 x DP (USB Type C) 4 x COM ports 2 x RJ45 (2.5GbE) 1 x Power LED / 1 x HDD LED 1 x Power Key
Power Supply	60W adapter (12V/5A)	Support 9~24VDC
Dimension (LxWxH)	160 x 130 x 50 mm	182 x 150 x 45 mm
Operating Temperature	0°C ~ 60°C Humidity: 5% ~ 90%	0°C ~ 60°C Humidity: 5% ~ 90%
OS Support	Windows 10/11 64bit Windows 10 IoT Enterprise 2021 Linux Ubuntu 20.04	Windows 10/11 64bit Windows 10 IoT Enterprise 2021 Linux Ubuntu 20.04











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