

# Industrial Motherboards & Embedded SBCs

Our Innovative Embedded Boards  
for Intelligent Applications






# Our Innovative Embedded Boards for Intelligent Applications

Our embedded boards (ranging from ultra-small Pico-ITX to full-function ATX motherboards) provide service to a broad range of embedded applications based on cutting-edge platforms and technologies


## Embedded SBCs & Industrial Motherboards Product Index

Form Factor	Processor	Platform	Model	Index	
1.8"	Intel Atom® E3900	Atom	ALF51	P8	
	AMD® Embedded R2000 Series - Picasso	AMD	PCSF51		
	AMD® Embedded R1000 Series	AMD	GHF51		
2.5"	13th Gen Intel® Core™	ULT	RPP051	P9	
	8th Gen Intel® Core™	ULT	WL051, WL053		
	Intel Atom® Elkhart Lake	Atom	EHL051		
	Intel Atom® E3900	Atom	AL05P AL051, AL053	P10	
	Intel® Pentium® / Celeron® N3000	Atom	BW051		
	NXP i.MX 93	ARM	M93053		
	3.5"	NXP i.MX 8M Series	ARM	M8M051	P11
		NXP i.MX 8M Mini	ARM	8MM053	
		Freescale i.MX6 Series	ARM	FS053	
		Qualcomm QCS6490	Qualcomm	QCS051	
4"	9th/8th Gen Intel® Core™	Desktop	CS551	P12	
	8th Gen Intel® Core™	ULT	WL551		
	7th Gen Intel® Core™	ULT	KU551, KU553		
	7th/6th Gen Intel® Core™	ULT	SU551		
	Intel Atom® Alder Lake-N	Atom	ADN553	P13	
	Intel Atom® Elkhart Lake	Atom	EHL556		
	Intel Atom® E3900	Atom	AL551, AL553		
	Intel Atom® E3800	Atom	BT553		
	AMD® Embedded V1000 / R2000 / R1000	AMD	GH551		
	NXP i.MX 8M Plus	ARM	M8MP553		
4"	12th Gen Intel® Core™	ULT	ADP253	P14	
	6th Gen Intel® Core™	ULT	SU256-SCM		
	Intel Atom® Alder Lake-N	Atom	ADN253		
	Intel Atom® Elkhart Lake	Atom	EHL253		
	Intel Atom® E3900	Atom	AL253		
	Intel Atom® E3800	Atom	BT253, BT259		


**Embedded SBCs**



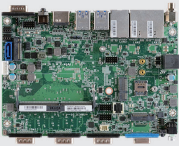
PSCF51



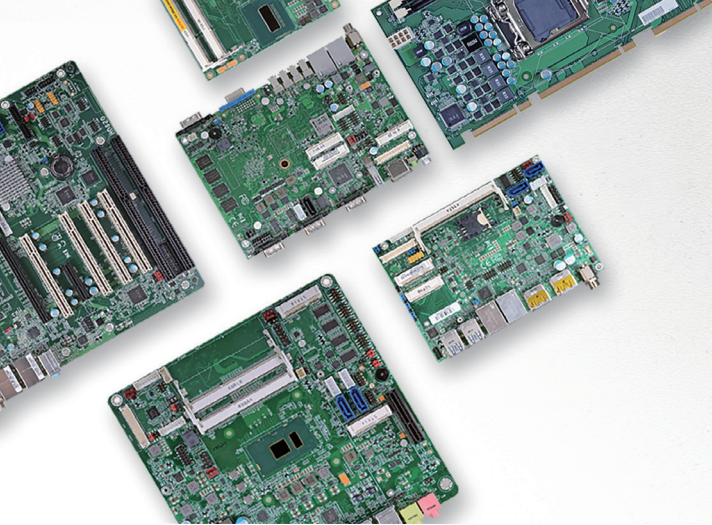
RPP051



ADN553



ADP253



### PICMG 1.3



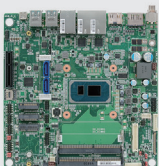
PIC-Q170/H110

Processor	Platform	Chipset	Model	Index
14th/13th/12th Gen Intel® Core™	Workstation	R680E	RPSPIC-R680E	P15
	Desktop	H610E	RPSPIC-H610E	
7th/6th Gen Intel® Core™	Desktop	Q170	PIC-Q170	P15
		H110	PIC-H110	

### Mini-ITX



CMS100



TGU171/TGU173

Processor	Platform	Chipset	Model	Index
14th/13th/12th Gen Intel® Core™	Workstation	R680E	RPS101/RPS103-R680E, RPS100-R680E, ADS101/ADS103-R680E	P16
	Desktop	Q670E	RPS183-Q670E, RPS101/RPS103-Q670E, RPS100-Q670E, ADS101/ADS103-Q670E	P17
		H610E	RPS183-H610E, RPS101/RPS103-H610E, RPS100-H610E, ADS101/ADS103-H610E	P17
13th Gen Intel® Core™	ULT	-	RPP171/RPP173	P18
11th Gen Intel® Core™	ULT	-	TGU171/TGU173	P18
10th Gen Intel® Core™	Workstation	W480E	CMS171/CMS173-W480E, CMS101/CMS103-W480E, CMS100-W480E	P19
	Desktop	Q470E	CMS171/CMS173-Q470E, CMS101/CMS103-Q470E, CMS100-Q470E	
		H420E	CMS101/CMS103-H420E, CMS100-H420E	P19
9th/8th Gen Intel® Core™	Workstation	C246	CS170-C246, CS103-C246, CS101-C246, CS100-C246	P20
	Desktop	Q370	CS181-Q370, CS170-Q370, CS103-Q370, CS101-Q370, CS100-Q370	P21
		H310	CS181-H310, CS170-H310, CS103-H310, CS101-H310, CS100-H310	P22
8th Gen Intel® Core™	ULT	-	WL171/WL173	P23
7th Gen Intel® Core™	ULT	-	KU171/KU173	
7th/6th Gen Intel® Core™	Desktop	Q170/H110	KD171	P23
		Q170	SD106-Q170, SD101/SD103-Q170, SD100-Q170	
		H110	SD170-H110, SD101/SD103-H110, SD100-H110	P23
6th Gen Intel® Core™	ULT	-	SU171/SU173	P24
Intel® Atom® Alder Lake-N	Atom	-	ADN171/ADN173	
Intel® Atom X Series	Atom	-	EHL171/EHL173	P24
Intel® Atom E3900	Atom	-	AL170, AL171/AL173	
Intel® Atom E3800	Atom	-	BT100, BT101/BT103	P25
AMD® Ryzen™ Embedded V2000 Series	AMD	-	RNO171	
AMD® Ryzen Embedded V1000/R1000 Series	AMD	-	GH171	

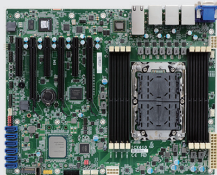
microATX



ADS310

Processor	Platform	Chipset	Model	Index
AMD® Ryzen™ 7000 Series	AMD	B650	RAP310-B650	P26
14th/13th/12th Gen Intel® Core™	Workstation	R680E	RPS310-R680E, ADS310-R680E	
	Desktop	Q670E	RPS330-Q670E, RPS310-Q670E, ADS310-Q670E	P27
		H610E	RPS330-H610E	
10th Gen Intel® Core™	Workstation	W480E	CMS311-W480E, CMS310-W480E	
	Desktop	Q470E	CMS330-Q470E, CMS311-Q470E, CMS310-Q470E	
		H420E	CMS330-H420E	
9th/8th Gen Intel® Core™	Workstation	C246	CS350-C246, CS332-C246	P29
			CS331-C246	
	Desktop	Q370	CS350-Q370, CS332-Q370, CS331-Q370, CS330-Q370	
7th/6th Gen Intel® Core™	Desktop	H310	CS330-H310	P30
		Workstation	C236	
	Desktop	Q170	KD331-Q170, SD331-Q170, SD330-Q170	
		H110	SD330-H110	

EATX/ATX



ICX610

Processor	Platform	Chipset	Model	Index
5th/4th Gen Intel® Xeon® Scalable Family	Server-Grade	C741	ERX810-C741	P31
2nd/1st Gen Intel® Xeon® Scalable Family		C622	PR811-C622 PR810-C622	
3rd Gen Intel® Xeon® Scalable Family	Server-Grade	C621A	ICX610-C621A	P32
2nd/1st Gen Intel® Xeon® Scalable Family		C621	PR611-C621, PR610-C621	
1st Gen Intel® Xeon® Scalable Family		C622	PL610-C622	
AMD® EPYC™ 3000 Series	AMD	-	SO630	P33
14th/13th/12th Gen Intel® Core™	Workstation	R680E	RPS630-R680E, ADS630-R680E	P34
	Desktop	Q670E	RPS630-Q670E, ADS630-Q670E	
		H610	RPS631-H610	
10th Gen Intel® Core™	Workstation	W480E	CMS632-W480E	P35
			CMS630-W480E	
	Desktop	Q470E	CMS632-Q470E, CMS631-Q470E, CMS630-Q470E	
9th/8th Gen Intel® Core™	Desktop	H420E	CMS631-H420E	P36
		Workstation	C246	
	Desktop	Q370	CS650-Q370, CS632-Q370, CS631-Q370, CS630-Q370	
7th/6th Gen Intel® Core™	Desktop	H310	CS630-H310, CS620-H310	P38
		Workstation	C236	
	Desktop	Q170	KD632-Q170, SD631-Q170	
		H110	KD630-H110, SD630-H110	

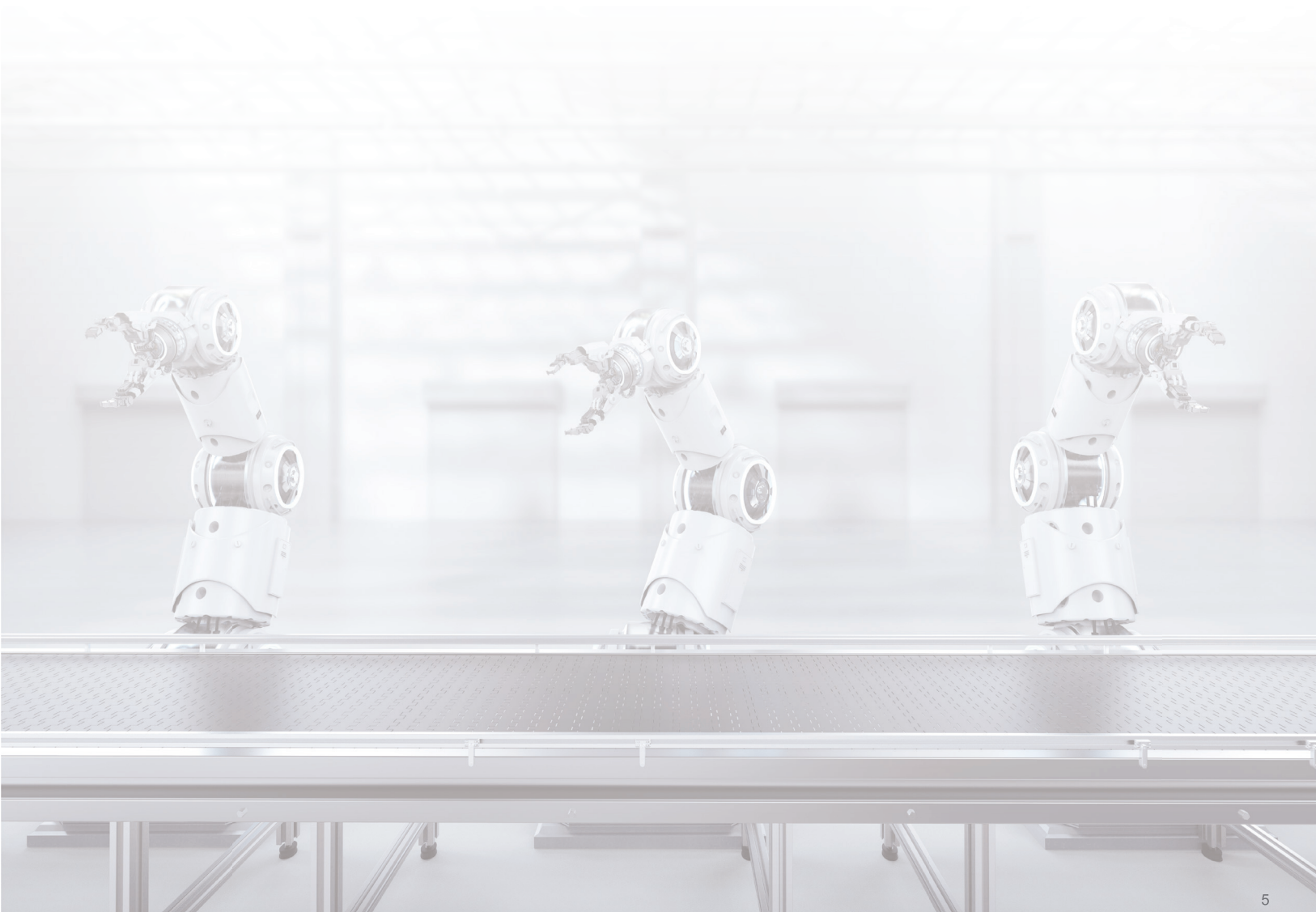


**Peripherals**



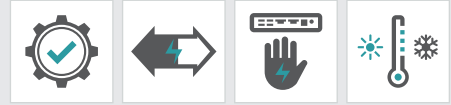
M.2-COM4

Processor	Model	Index
Proprietary I/O Cards	EXT-100GbE	P41
Riser Cards	H300-2E, H300-2P1E, H300-3P1M, RISER-2PE4, RISER-PE16 X100-2P1M, X100-3PE2, T100-2E, T200-1E	
DC to DC Converters	X102-DC12, X102-DC24, X102-DC30, X103-DC36	
Proprietary Expansion Modules	EXT-HDMI, EXT-VGA EXT-DP, SDVO-LVDS, MPE-CAN2 EXT-RS232, EXT-RS485, MPE-EXTB, MPE-EXTF, MPE-SATA, MPE-SIM2	
M.2 Expansion Modules	M.2-eMMC M.2-1LAN/2LAN, M.2-1PSE/2PSE, MPE-M2M/M2E, M.2-COM4, M.2-SATA2, M.2-USB314	P42
Remote Management	M2A-OOB, SEM2500/2510	



## Rugged Design

- Industrial-rated components with high MTBF over 100,000 hrs
- Extended operating temperatures
- High ESD protection for I/O ports
- Signal integrity measurement
- Wide range power design
- 100% Japanese-made solid capacitor
- Power hot plug protection for DC-in type SBC and Industrial Motherboards



## Software Integration

- Embedded BIOS and OS customization services
- Windows licensing offerings
- Android, Linux distribution (Yocto/Ubuntu/CentOS/Debian)
- Embedded API  
(Hardware Monitor, SMBus, I<sup>2</sup>C, Brightness Control, GPIO, Watchdog)
- Remote management utility



## Embedded Total Solution

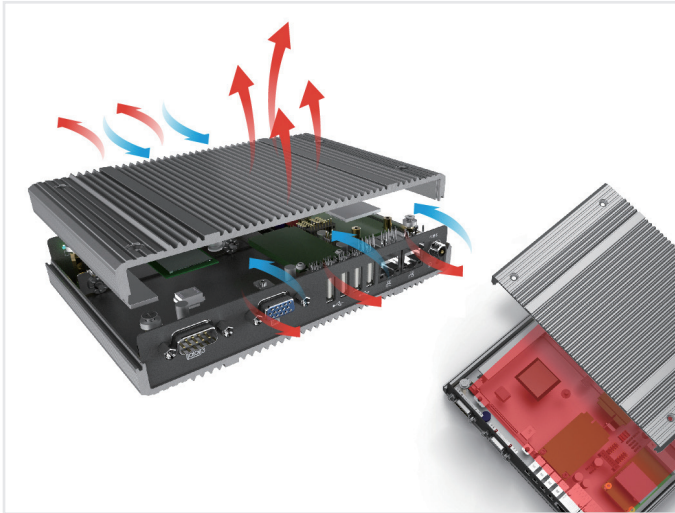
- Express customization service: 30 days (NRE cost: project based)
- Strict revision control
- Long product life cycle support
- High volume OEM/ODM production capabilities



## We Provides a Total Solution Designed for Your Embedded Applications

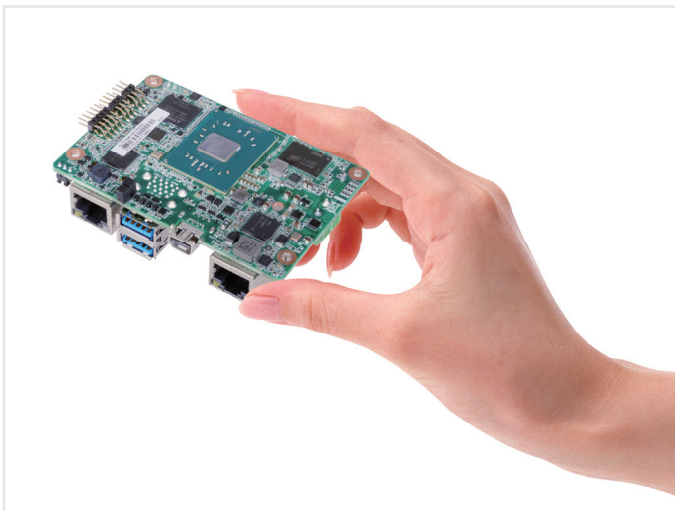






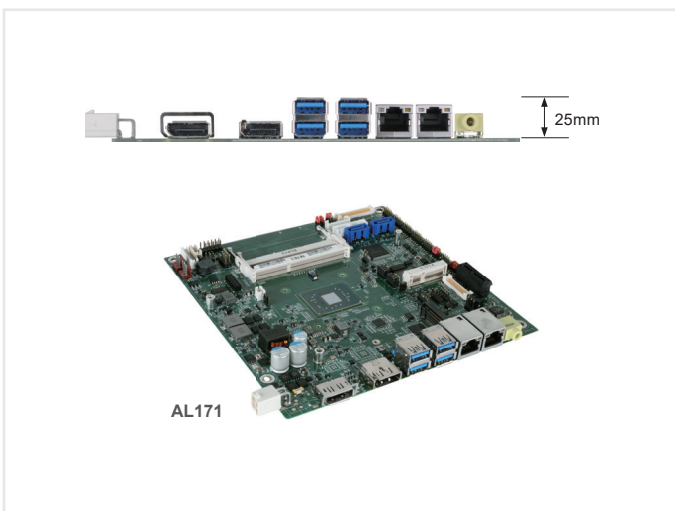
### Easy System Integration

- Optional peripheral: DC power module, Wi-Fi, Cellular, GPS module
- Optimized low profile thermal solution: fanless for ULT and Atom based platform
- Optional heatspreader for 4", 3.5", Pico-ITX SBC with efficient thermal dissipation
- Unified mechanical design for rear I/O location, screw hole, and connector type



### The Smallest Our 1.8" SBC

- 1.8" small form factor fits space-limited applications
- All-in-one 100% readiness standalone SBC
- Ultra low power Fanless embedded SBC
- Perfectly fits gateway application with a few I/O requirements



### Thin Mini-ITX

- Thinner than general Mini-ITX, and only 25mm in height
- Equipped with a variety of I/O connectivity
- Features mSATA, Mini PCIe, LVDS and built-in DC power connector
- Designed for slim panel PCs, POS systems, portable medical devices, and All-in-One systems

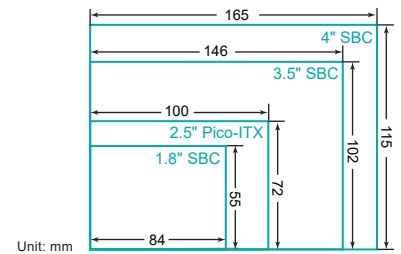
# Embedded SBCs

Ultra-Small & Low-Power Solutions



## Features

Our single board computers (SBC) support low power consumption and fanless design with rich I/O connectivity in a small size. In addition, we provide a wide range of form factors covering from: 1.8" SBC (84mm x 55mm), 2.5" Pico-ITX (100 x 72 mm), 3.5" SBC (146 x 102 mm), to 4" SBC (165 x 115 mm) in order to target space-limited embedded applications like POS, KIOSK, digital signage, and surveillance.



1.8"

Atom

1.8"



AMD

1.8"



AMD

Model Name		ALF51	PCSF51	GHF51
Platform		Atom	AMD R-Series	AMD R-Series
System	Processor	Intel Atom® E3900	AMD Ryzen™ Embedded R2000 Series - Picasso	AMD® Ryzen™ Embedded R1000 Series
	Socket	BGA 1296	FP5	FP5
	Max. Speed	1.3~1.8GHz	2.1~2.7GHz	up to 3.6GHz(Turbo)
	TDP	6W~9.5W	12W	up to 12W
	Cache	2MB	2MB	2MB
	Chipset	-	-	-
BIOS		Insyde SPI 128Mbit (supports UEFI boot only)	AMI SPI 128Mbit	AMI SPI 64Mbit
Memory	Technology	Single Channel LPDDR4 2400MHz	Single Channel DDR4 2400/2667 MHz	up to DDR4 2400 MHz
	Max. Capacity	8GB	8GB	8GB
	Socket	-	-	-
Graphics	Connector	1 Mini DP++	1 HDMI (HDMI 1.4)	2 Micro HDMI (HDMI 1.4)
	PCIe, PCI	-	-	-
Expansion	Mini PCIe / M.2	1 Full-size Mini PCIe	1 M.2 E key	1 Full-size Mini PCIe
	SIM	-	-	-
	Audio	-	-	-
Ethernet	Controller	2 Intel® I211AT/I210IT	1 Intel® I210AT	1 Intel® I211AT / I210IT
	Ethernet (GbE)	2	1	1
Rear I/O	Serial	-	-	-
	USB	2 USB 3.2 Gen 1	2 USB 3.2 Gen 2 (Type A)	1 USB 3.2 Gen 2 (Type C)
	Display	1 Mini DP++	1 HDMI (HDMI 1.4)	2 Micro HDMI (HDMI 1.4)
	Audio	-	-	-
	PS/2	-	-	-
	Serial	1 RS-232/422/485	-	-
Internal I/O	USB	1 USB 2.0	-	-
	Display	-	-	-
	Audio	-	-	-
	Storage	-	1 eMMC up to 128GB	-
	DIO	8-bit DIO	8-bit DIO	8-bit DIO
	LPC	-	-	-
	SMBus	1	-	1
TPM / iAMT	fTPM 2.0	fTPM 2.0	fTPM 2.0	
Power	12V DC	12 VDC	12 VDC	
Operating Temperature	0°C ~ 60°C / -20°C ~ 70°C / -40°C ~ 85°C	0°C ~ 60°C / -20°C ~ 70°C	0°C ~ 60°C / -20°C ~ 70°C	



2.5"



ULT

2.5"



ULT

2.5"



ULT

Model Name		RPP051	WL051	WL053
Platform		ULT	ULT	ULT
System	Processor	13th Gen Intel® Core™	8th Gen Intel® Core™	8th Gen Intel® Core™
	Socket	BGA 1744	BGA 1528	BGA 1528
	Max. Speed	4.3~4.9GHz	2.0~4.4GHz	2.0~4.4GHz
	TDP	15W	15W	15W
	Cache	8M~12M	2M~8M	2M~8M
	Chipset	-	-	-
BIOS		AMI SPI 256Mbit	AMI SPI 128Mbit	AMI SPI 128Mbit
Memory	Technology	Single Channel DDR5 up to 4800MHz	Single Channel DDR4 up to 2400MHz	Single Channel DDR4 up to 2400MHz
	Max. Capacity	32GB	32GB	32GB
	Socket	1 SODIMM	1 SODIMM	1 SODIMM
Graphics	Connector	1 DP++, 1 eDP	1 DP++/HDMI, 1 eDP	1 DP++/HDMI
Expansion	PCIe, PCI	-	-	-
	Mini PCIe / M.2	1 M.2 E key 2230, 1 M.2 B key 3042/2242 (storage), 1 M.2 B key 3042/2242 (5G/LTE module)	1 M.2 E key 2230, 2 M.2 B key 3042/2242	1 M.2 E key 2230, 2 M.2 B key 3042/2242
	SIM	1 Nano SIM	-	-
Audio	Audio Codec	ALC888S	ALC888S	-
Ethernet	Controller	1 Intel® I226IT/LM	1 Intel® I219V/LM, 1 Intel® I211AT/I210IT	1 Intel® I219V/I219LM
Rear I/O	Ethernet (GbE)	1 2.5GbE	2	1
	Serial	-	-	-
	USB	2 USB 3.2 Gen 2	2 USB 3.2 Gen 2	2 USB 3.2 Gen 2
	Display	1 DP++	1 COMBO port (DP++/HDMI)	1 COMBO port (DP++/HDMI)
	Audio	-	-	-
	PS/2	-	-	-
Internal I/O	Serial	1 RS-232/422/485	1 RS-232/422/485	1 RS-232/422/485
	USB	2 USB 2.0	2 USB 2.0	2 USB 2.0
	Display	1 eDP	1 eDP	-
	Audio	1 Line-out/Mic-in	1 Audio (Line-out, Mic-in)	-
	Storage	-	-	-
	DIO	8-bit DIO	8-bit DIO	8-bit DIO
	LPC	-	-	-
SMBus	1	1	1	
TPM / iAMT		fTPM2.0	fTPM 2.0	fTPM 2.0
Power		12V DC-in	12V DC-in	9-36V DC-in
Operating Temperature		-5°C ~ 65°C / -30°C ~ 80°C	-5°C ~ 65°C / -30°C ~ 80°C	0°C ~ 60°C / -30°C ~ 80°C

2.5"



Atom

2.5"



Atom

Model Name		EHL051	AL05P
Platform		Atom	Atom
System	Processor	Intel Atom® Elkhart Lake	Intel Atom® E3900
	Socket	BGA 1493	BGA 1296
	Max. Speed	2.6~3.0GHz	1.8~2.5GHz
	TDP	6~12W	6~9.5W
	Cache	2M/4M	2M
	Chipset	-	-
BIOS		AMI SPI 256Mbit	Insyde SPI 128Mbit (supports UEFI boot only)
Memory	Technology	Single Channel DDR4 up to 3200MHz	Single Channel LPDDR4 2400MHz
	Max. Capacity	32GB	4GB
	Socket	1 SODIMM	-
Graphics	Connector	1 HDMI, 1 LVDS	1 Mini DP++
Expansion	PCIe, PCI	-	-
	Mini PCIe / M.2	1 M.2 E Key 2230, 1 M.2 B Key 3042/2242	1 Full-size Mini PCIe
	SIM	-	-
Audio	Audio Codec	ALC888S	-
Ethernet	Controller	2 Intel® I225LM/IT	1 Intel® I211AT, 1 Intel® I210IT
Rear I/O	Ethernet (GbE)	2	1
	Serial	-	-
	USB	2 USB 3.2 Gen 2	2 USB 3.2 Gen 1
	Display	1 HDMI	1 Mini DP++
	Audio	-	-
	PS/2	-	-
Internal I/O	Serial	2 RS-232/422/485	1 RS-232/422/485
	USB	2 USB 2.0	2 USB 2.0
	Display	1 LVDS, 1 LCD Power	-
	Audio	1 Audio (Line-out/Mic-in)	-
	Storage	1 SATA 3.0, 1 5V SATA Power	-
	DIO	8-bit DIO	8-bit DIO
	LPC	-	-
SMBus	1 SMBus/°C (Opt.)	1	
TPM / iAMT		dTPM2.0	fTPM 2.0
Power		12V DC-in	48V DC PoE
Operating Temperature		-5°C ~ 65°C / -40°C ~ 85°C	0°C ~ 60°C / -20°C ~ 70°C



2.5"

Atom

2.5"



Atom

Model Name		AL051	AL053
Platform		Atom	Atom
System	Processor	Intel Atom® E3900	Intel Atom® E3900
	Socket	BGA 1296	BGA 1296
	Max. Speed	1.8~2.5GHz	1.8~2.5GHz
	TDP	6~12W	6~12W
	Cache	2M	2M
	Chipset	-	-
	BIOS	Insyde SPI 64Mbit (supports UEFI boot only)	Insyde SPI 128Mbit (supports UEFI boot only)
Memory	Technology	Single Channel DDR3L 1866MHz	Single Channel DDR3L 1866MHz
	Max. Capacity	8GB	8GB
	Socket	1 SODIMM	1 SODIMM
Graphics	Connector	1 Mini DP++, 1 VGA, 1 LVDS	1 Mini DP++, 1 LVDS
Expansion	PCIe, PCI	-	-
	Mini PCIe / M.2	1 Full-size Mini PCIe, 1 M.2 B key 2242	1 Mini PCIe, 1 M.2 B key 2242
	SIM	-	-
Audio	Audio Codec	ALC888S	ALC888S
Ethernet	Controller	2 Intel® I211AT, 2 Intel® I210IT	1 Intel® I211AT, 1 Intel® I210IT
Rear I/O	Ethernet (GbE)	2	1
	Serial	-	-
	USB	2 USB 3.2 Gen 1	2 USB 3.2 Gen 1
	Display	1 Mini DP++, 1 VGA, 1 LVDS	1 Mini DP++
	Audio	-	-
	PS/2	-	-
Internal I/O	Serial	1 RS-232/422/485	1 RS-232/422/485
	USB	2 USB 2.0	2 USB 2.0
	Display	1 LVDS	1 LVDS, 1 LCD Power
	Audio	1 Audio (Line-out, Mic-in)	1 Audio (Line-out, Mic-in)
	Storage	1 SATA 3.0	-
	DIO	8-bit DIO	8-bit DIO
	LPC	-	-
	SMBus	1	1
TPM / iAMT	fTPM 2.0	fTPM 2.0	
Power	12V DC-in	9-36V DC-in	
Operating Temperature	0°C ~ 60°C / -40°C ~ 85°C	0°C ~ 60°C / -20°C ~ 70°C / -40°C ~ 85°C	



2.5"

Atom

2.5"



ARM

2.5"



ARM

Model Name		BW051	M93053	M8M051
Platform		Atom	ARM	ARM
System	Processor	Intel® Pentium® / Celeron® N3000	NXP i.MX 93 Dual Cortex-A55	NXP i.MX 8M Quad / Dual Cortex-A53
	Socket	BGA 1170	-	-
	Max. Speed	2.24~2.56GHz	Up to 1.7GHz	Up to 1.5GHz
	TDP	4W/5W/6W	-	-
	Cache	2M	-	-
	Chipset	-	-	-
	BIOS	Insyde SPI 64Mbit	-	-
Memory	Technology	Single Channel DDR3L 1600MHz	Single Channel LPDDR4	Single Channel LPDDR4 up to 3200 MHz
	Max. Capacity	8GB	2GB Memory Down	2GB/4GB Memory Down
	Socket	1 SODIMM	-	-
Graphics	Connector	1 VGA/HDMI, 1 LVDS	1 LVDS, 1 HDMI	1 HDMI/LVDS
Expansion	PCIe, PCI	-	-	-
	Mini PCIe / M.2	1 Mini PCIe, 1 mSATA, 1 E I/O (Opt.)	1 M.2 B Key 3042	1 M.2 B key 3042/2242, 1 M.2 E key 2230
	SIM	-	1 Nano SIM	1 Nano SIM
Audio	Audio Codec	ALC888S	-	SGTL5000
Ethernet	Controller	1 Intel® I211AT	1 RTL8211	1 ATHEROS AR8035
Rear I/O	Ethernet (GbE)	1	2	1
	Serial	-	1 RS485	1 RS485
	USB	2 USB 3.2	2 USB 2.0, 1 Micro USB 2.0	1 Micro USB 2.0, 2 USB 3.2 Gen1
	Display	1 VGA/HDMI	1 HDMI	1 HDMI
	Audio	-	-	-
	PS/2	-	-	-
Internal I/O	Serial	1 RS-232/422/485, 1 RS-232	1 RS-232, 1 RS-232/422/485	1 RS-232/422/485, 1 RS232
	USB	2 USB 2.0	2 USB 2.0	2 USB 2.0
	Display	1 LVDS	1 LVDS, 1 LCD Power	1 LVDS, 1 Backlight Power
	Audio	1 Audio (Line-out / Mic-in)	-	1 Audio (Line-out / Mic-in)
	Storage	1 SATA 3.0	1 eMMC up to 64GB	1 eMMC up to 64GB
	DIO	8-bit DIO	8-bit DIO	8-bit DIO
	LPC	-	-	-
	SMBus	1	1 CANBus 2.0b	1 CANBus 2.0
TPM / iAMT	TPM (Opt.)	-	-	
Power	12V DC-in	9-36V DC-in	12V DC-in	
Operating Temperature	0°C ~ 60°C	-5°C ~ 65°C / -30°C ~ 80°C	-5°C ~ 65°C / -30°C ~ 80°C	





2.5"

ARM

2.5"



ARM

Model Name		8MM053	FS053
Platform		ARM	ARM
System	Processor	NXP i.MX 8M Mini Quad Cortex-A53	Freescale i.MX6 Series
	Socket	-	-
	Max. Speed	1.6~1.8GHz	1.0GHz
	TDP	-	-
	Cache	-	-
	Chipset	-	-
Memory	Technology	Single Channel LPDDR4	4MB NOR Flash Single Channel DDR3L 1600/1866MHz
	Max. Capacity	4GB Memory Down	1GB/2GB, 4GB(Opt.)
	Socket	-	SDRAM Memory down
Graphics	Connector	1 HDMI	1 HDMI, 1 LVDS
	PCIe, PCI	-	-
Expansion	Mini PCIe / M.2	1 M.2 B key 3042/2242, 1 M.2 E key 2230	1 Full-size Mini PCIe
	SIM	1 Nano SIM	1 SD
	Audio Codec	-	-
Audio	Controller	1 RTL8211, 1 LAN7500	1 RTL8211, 1 LAN7500
Rear I/O	Ethernet (GbE)	2	2
	Serial	1 RS485	1 RS-485
	USB	2 USB 2.0	2 USB 2.0, 1 USB 2.0 OTG Port
	Display	1 HDMI	1 HDMI
	Audio	-	-
	PS/2	-	-
Internal I/O	Serial	2 RS232, 1 RS422	1 RS-232/422/485
	USB	1 USB 2.0	1 USB 2.0
	Display	-	1 LVDS
	Audio	-	-
	Storage	1 eMMC up to 64GB	1 SATA 2.0 (Quad processor only)
	DIO	4 DIO, 1 PWR, 1 GND	8-bit DIO
	LPC	-	-
SMBus	-	-	
TPM / iAMT	-	-	
Power	9-36V DC-in	9~36V DC-in	
Operating Temperature	-5°C ~ 65°C / -40°C ~ 80°C	0°C ~ 60°C / -20°C ~ 70°C	



3.5"

Qualcomm

3.5"



C246/Q370/H310

Model Name		QCS051	CS551
Platform		Qualcomm	Desktop
System	Processor	Qualcomm QCS6490	9th/8th Gen Intel® Core™
	Socket	-	LGA 1151
	Max. Speed	2.7GHz	2.9~4.0GHz
	TDP	-	35W
	Cache	-	2M/4M/6M/9M/12M
	Chipset	-	Intel® C246/Q370/H310
Memory	Technology	Single Channel LPDDR5	AMI SPI 128Mbit Single Channel DDR4 2666MHz
	Max. Capacity	4GB/8GB	32GB
	Socket	SDRAM Memory down	1 SODIMM
Graphics	Connector	1 HDMI	2 DP++, 1 LVDS
	PCIe, PCI	-	-
Expansion	Mini PCIe / M.2	1 M.2 B key 3052, 1 M.2 E key 2230	1 Full size Mini PCIe, 1 M.2 M key 2280
	SIM	1 Nano SIM	1 (Opt.)
	Audio Codec	WCD9385	ALC262
Ethernet	Controller	1 LAN AX88179	2 Intel® I211AT/I210IT
Rear I/O	Ethernet (GbE)	1	2
	Serial	-	-
	USB	2 USB 3.1, 1 Micro USB debug UART	4 USB 3.2 Gen 1/Gen 2
	Display	1 HDMI	2 DP++
	Audio	1 Audio combo (Line-out / Mic-in)	-
	PS/2	-	-
Internal I/O	Serial	1 RS-232	1 RS-232/422/485
	USB	4 USB 2.0, 1 USB Type C (Download only)	2 USB 2.0
	Display	-	1 LVDS
	Audio	-	1 Audio (Line-out, Mic-in)
	Storage	1 USB 3.1, default 128GB	1 SATA 3.0, 1 SATA Power
	DIO	8-bit DIO	8-bit DIO
	LPC	-	-
SMBus	-	1	
TPM / iAMT	-	fTPM 2.0	
Power	5V DC-in	12V DC-in	
Operating Temperature	0°C ~ 60°C	-5°C ~ 65°C / -30°C ~ 80°C	

3.5"



ULT

3.5"



ULT

3.5"



ULT

Model Name		WL551	KU551	KU553
Platform		ULT	ULT	ULT
System	Processor	8th Gen Intel® Core™	7th Gen Intel® Core™	7th Gen Intel® Core™
	Socket	BGA1528	BGA 1356	BGA 1356
	Max. Speed	2.0~4.4GHz	2.2~3.9GHz	2.2~3.9GHz
	TDP	15W	15W	15W
	Cache	2M~8M	2M/3M/4M	2M/3M/4M
	Chipset	-	-	-
Memory	BIOS	AMI SPI 128Mbit	Insyde SPI 128Mbit	Insyde SPI 128Mbit
	Technology	Single Channel DDR4 up to 2400MHz	Single Channel DDR4 1866/2133MHz	Single Channel DDR4 1866/2133MHz
	Max. Capacity	32GB	16GB	16GB
Graphics	Socket	1 SODIMM	1 SODIMM	1 SODIMM
	Connector	1 DP++/HDMI, 1 LVDS/eDP (Opt.)	1 VGA/DDI, 1 LVDS/eDP, 1 DP++/DDI	1 VGA, 1 LVDS/eDP, 1 DP++
Expansion	PCIe, PCI	-	-	-
	Mini PCIe / M.2	1 M.2 M key 2280/2242 (support Innodisk InnoAge™ SSD), 1 M.2 E key 2230, 1 M.2 B key 3042/2242	1 Full-size Mini PCIe, 1 M.2 B key 2242, 1 E I/O(Opt.)	1 Full-size Mini PCIe, 1 M.2 B key 2242, 1 M.2 E key 2230
	SIM	1 Nano SIM (Opt.)	-	1 (Opt.)
Audio	Audio Codec	ALC888S	ALC888S	ALC888S
Ethernet	Controller	3 Intel® I211AT/I210IT	1 Intel® I210AT, 1 Intel® I219LM	1 Intel® I210AT/I210IT, 1 Intel® I219LM/I219V
Rear I/O	Ethernet (GbE)	3	2	2
	Serial	-	-	-
	USB	4 USB 3.2 Gen2	4 USB 3.2	4 USB 3.2
	Display	1 COMBO port (DP++/HDMI)	1 VGA, 1 DP++	1 VGA, 1 DP++
	Audio	-	-	-
	PS/2	-	-	-
Internal I/O	Serial	1 RS-232/422/485	2 RS-232/422/485	1 RS-232/422/485
	USB	2 USB 2.0	2 USB 2.0	2 USB 2.0
	Display	1 LVDS/eDP	1 LVDS, 1 LCD/Inverter Power	1 LVDS, 1 LCD/Inverter Power
	Audio	1 Audio (Line-out, Mic-in)	1 Audio (Line-out, Mic-in)	1 Audio (Line-out, Mic-in)
	Storage	1 SATA 3.0, 1 SATA Power	1 SATA 3.0, 1 SATA Power	1 SATA 3.0, 1 SATA Power
	DIO	8-bit DIO	8-bit DIO	8-bit DIO
	LPC	-	-	-
	SMBus	1	1	1
TPM / iAMT	fTPM 2.0 (default) / dTPM 2.0 (Opt.)		fTPM	fTPM2.0
Power	12V DC-in		12V DC-in	9~36V DC-in
Operating Temperature	-5°C ~ 65°C / -20°C ~ 80°C		0°C ~ 60°C / -20°C ~ 70°C (Opt.)	0°C ~ 60°C / -20°C ~ 70°C (Opt.)

3.5"



ULT

3.5"



Atom

Model Name		SU551	ADN553
Platform		ULT	Atom
System	Processor	7th/6th Gen Intel® Core™	Intel Atom® Alder Lake-N
	Socket	BGA 1356	BGA 1264
	Max. Speed	2.0~3.9GHz	3.20~3.80GHz
	TDP	15W	up to 15W
	Cache	2M/3M/4M	6M
	Chipset	-	-
Memory	BIOS	Insyde SPI 128Mbit	AMI SPI 256Mbit
	Technology	Single Channel DDR3L 1600MHz	Single Channel DDR5 4800MHz
	Max. Capacity	8GB	16GB
Graphics	Socket	1 SODIMM	1 SODIMM
	Connector	1 VGA, 1 LVDS, 1 DP++	1 HDMI, 1 Type-C DP Alt. Mode, 1 LVDS/eDP
Expansion	PCIe, PCI	-	-
	Mini PCIe / M.2	1 Full-size Mini PCIe, 1 Half-size Mini PCIe	1 M.2 M key 2280/2242, 1 M.2 B key 3052/3042, 1 M.2 E key 2230
	SIM	1 (Opt.)	1 SIM
Audio	Audio Codec	ALC888S	ALC888S
Ethernet	Controller	1 Intel® I210AT, 1 Intel® I219LM	3 Intel® I226V/IT
Rear I/O	Ethernet (GbE)	2	3 2.5GbE
	Serial	-	-
	USB	4 USB 3.2 Gen 1	4 USB 3.2
	Display	1 VGA, 1 DP++	1 HDMI, 1 Type-C DP Alt. Mode, 1 LVDS/eDP
	Audio	-	-
	PS/2	-	-
Internal I/O	Serial	2 RS-232/422/485, 2 RS-232	1 RS-232/422/485
	USB	2 USB 2.0	2 USB 2.0
	Display	1 LVDS, 1 LCD/Inverter Power	1 LVDS, 1 LCD/Inverter Power
	Audio	1 Audio (Line-out, Mic-in)	1 Audio (Line-out, Mic-in)
	Storage	2 SATA 3.0	1 SATA 3.0, 1 SATA Power
	DIO	8-bit DIO	8-bit DIO
	LPC	-	-
	SMBus	1	-
TPM / iAMT	only Core i7/i5 supports iAMT		dTPM2.0
Power	12V DC-in		9~36V DC-in
Operating Temperature	0°C ~ 60°C / -20°C ~ 70°C (Opt.)		-5°C ~ 65°C



3.5"



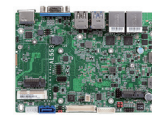
Atom

3.5"



Atom

3.5"



Atom

Model Name		EHL556	AL551	AL553
Platform		Atom	Atom	Atom
System	Processor	Intel Atom® Elkhart Lake	Intel Atom® E3900	Intel Atom® E3900
	Socket	BGA 1493	BGA 1296	BGA 1296
	Max. Speed	1.5~3.0GHz	1.8~2.5GHz	1.8~2.5GHz
	TDP	6.5~12W	6W~12W	6W~12W
	Cache	2M/4M	2M	2M
	Chipset	-	-	-
	BIOS	AMI SPI 256Mbit	Insyde SPI 128Mbit (supports UEFI boot only)	Insyde SPI 128Mbit (supports UEFI boot only)
Memory	Technology	Single DDR4-3200	Single Channel DDR3L 1866MHz	Single Channel DDR3L 1866MHz
	Max. Capacity	32GB	8GB	8GB
	Socket	1 SODIMM	1 SODIMM	1 SODIMM
Graphics	Connector	1 HDMI 2.0, 1 DP++, 1 LVDS/eDP + Backlight	1 VGA, 1 LVDS, 1 DP++	1 VGA, 1 LVDS, 1 HDMI
	PCIe, PCI	-	-	-
Expansion	Mini PCIe / M.2	1 mini-PCIe, 1 M.2 E key 2230	1 Full-size Mini PCIe, 1 M.2 B key 2242, 1 E I/O (Opt.)	1 Full-size Mini PCIe, 1 M.2 B key 2242, 1 M.2 E key 2230
	SIM	-	-	-
	Audio	Audio Codec	ALC888S	ALC262
Ethernet	Controller	2 Intel® I225IT	2 Intel® I211AT, 2 Intel® I210IT (Opt.)	2 Intel® I211AT, 2 Intel® I210IT (Opt.)
	Ethernet (GbE)	2	2	2
Rear I/O	Serial	-	-	-
	USB	2 USB 3.2 Gen 2	2 USB 3.2 Gen 1, 2 USB 2.0, 1 USB 3.2 Gen1 Type C OTG (Opt.)	2 USB 3.2 Gen 1, 2 USB 2.0
	Display	1 DP++, 1 HDMI	1 VGA, 1 DP++, 1 LVDS	1 VGA, 1 LVDS, 1 HDMI
	Audio	-	-	-
	PS/2	-	-	-
	Serial	1 RS232/422/485 + 1 RS232, or 1 RS232/422/485	2 RS-232/422/485	1 RS-232/422/485
Internal I/O	USB	4 USB 2.0	2 USB 2.0	2 USB 2.0
	Display	1 LVDS or eDP + Backlight	1 LVDS, 1 LCD Power	1 LVDS, 1 LCD Power
	Audio	1 Audio (Line-out, Mic-in)	1 Audio (Line-out, Mic-in), Speaker Out (Opt.)	1 Audio (Line-out, Mic-in)
	Storage	1 SATA 3.0, 1 SATA Power	1 SATA 3.0, 1 SATA Power	1 SATA 3.0, 1 SATA Power
	DIO	8-bit DIO	8-bit DIO	8-bit DIO
	LPC	-	-	-
	SMBus	2	1	1
TPM / iAMT	dTPM2.0	fTPM 2.0 (default) / dTPM 2.0 (Opt.)	fTPM2.0	
Power	9~36V DC-in	12V DC-in	9~36V DC-in	
Operating Temperature	-40°C ~ 85°C	0°C ~ 60°C, -20°C ~ 70°C / -40°C ~ 85°C (Opt.)	0°C ~ 60°C / -20°C ~ 70°C / -40°C ~ 85°C	

3.5"



Atom

3.5"



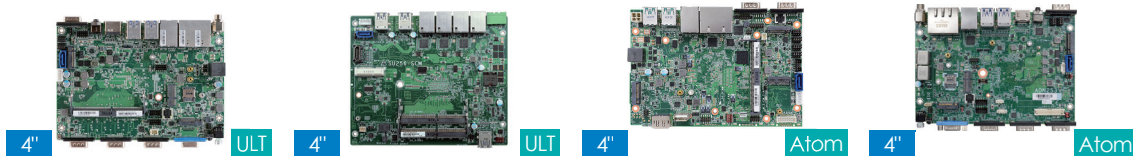
AMD

3.5"

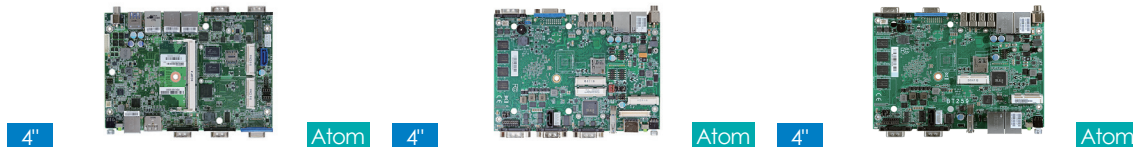


ARM

Model Name		BT553	GH551	M8MP553
Platform		Atom	AMD V Series, R-Series AMD® Ryzen™ Embedded V1000/R2000/R1000 Series	ARM
System	Processor	Intel Atom® E3800	AMD® Ryzen™ Embedded FP5	NXP i.MX 8M Plus Quad/Dual Cortex-A53
	Socket	BGA 1170	FP5	-
	Max. Speed	1.46~2.41GHz	up to 3.6GHz (Turbo)	Up to 1.8GHz
	TDP	7W/10W	up to 15W	-
	Cache	1M/2M	4MB	512 KB L2 cache
	Chipset	-	-	-
	BIOS	AMI SPI 64Mbit	AMI SPI 64Mbit	-
Memory	Technology	Dual Channel DDR3L 1066/1333MHz	Single Channel DDR4 up to 2400MHz (ECC/non ECC support)	Single Channel LPDDR4 up to 4000MHz
	Max. Capacity	2GB/4GB	16GB	2GB/4GB/8GB
	Socket	Memory down	1 SODIMM	Memory Down
Graphics	Connector	1 VGA, 1 LVDS, 1 DP	4 DP++, 1 LVDS (Opt.)	1 HDMI, 1 LVDS
	PCIe, PCI	-	-	-
Expansion	Mini PCIe / M.2	1 Mini PCIe	1 Full-size Mini PCIe, 1 M.2 M key 2280/2242	1 M.2 B key 3052/2242, 1 M.2 E key 2230
	SIM	-	1 Nano SIM (Opt.)	1 Nano SIM
	Audio	Audio Codec	ALC888S	ALC888S
Ethernet	Controller	2 Intel® I210	3 RealtekRTL8111HN/RTL8119I	2 ATHEROS AR8035
	Ethernet (GbE)	2	3	2
Rear I/O	Serial	-	-	1 RS-485
	USB	1 USB 3.2, 1 USB 2.0	2 USB 3.2 Gen 2, 1 USB 2.0	2 USB 3.2 Gen 1, 2 USB 2.0
	Display	1 VGA, 1 DP	4 DP++	1 HDMI
	Audio	-	-	-
	PS/2	-	-	-
	Serial	1 RS-485, 2 RS-232	1 RS-232/422/485	1 RS-232/422/485, 1 RS-232
Internal I/O	USB	4 USB 2.0	1 USB 2.0	2 USB 2.0, 1 micro USB 2.0 (download mode)
	Display	1 LVDS	1 LVDS (Opt.)	1 LVDS, 1 LCD / Inverter Power
	Audio	1 Line-out, 1 Mic-in	Line-out, Mic-in, Speaker out	1 Audio (Line-out, Mic-in)
	Storage	1 SATA 2.0	1 SATA 3.0, 1 SATA Power	1 eMMC5.1 up to 64GB, 1 uSD card
	DIO	8-bit DIO	8-bit DIO	8-bit DIO
	LPC	-	-	1 I²C
	SMBus	1	1	2 CANBus 2.0b
TPM / iAMT	TPM (Opt.)	fTPM 2.0 (default) / dTPM 2.0 (Opt.)	-	
Power	15~36V DC-in	12V DC-in	9~36V DC-in	
Operating Temperature	0°C ~ 60°C / -20°C ~ 70°C / -40°C ~ 85°C	-5°C ~ 65°C / -30°C ~ 80°C	-30°C ~ 80°C	



Model Name		ADP253	SU256-SCM	EHL253	ADN253
Platform		ULT	ULT	Atom	Atom
System	Processor	12th Gen Intel® Core™	6th Gen Intel® Core™	Intel Atom® Elkhart Lake	Intel Atom® Alder Lake-N
	Socket	BGA 1744	BGA 1356	BGA 1493	BGA 1264
	Max. Speed	4.4~4.7GHz	2.3~3.9GHz	1.9~3.0GHz	2.9~3.0GHz
	TDP	15W	15W	6.5W/9W/10W/12W	6W/10W/12W/15W
	Cache	up to 12M	3M/4M	2M/4M	6M
BIOS		AMI SPI 256Mbit (Supports UEFI boot only)	Insyde SPI 128Mbit	AMI SPI 256Mbit (supports UEFI boot only)	AMI SPI 256Mbit (supports UEFI boot only)
Memory	Technology	Dual Channel DDR4 3200MHz	Dual Channel DDR4 2400MHz	On board DDR4 + 1 DDR4 up to 3200MHz	8GB/16GB LPDDR5 5200MHz
	Max. Capacity	up to 32GB	4GB/8GB	up to 32GB	up to 16GB
	Socket	Memory down, 1 SODIMM	2 SODIMM	Memory down, 1 SODIMM	Memory down
Graphics	Connector	1 HDMI, 1 VGA/DP(Opt.), 2 Type-C Alt. Mode	1 HDMI	1 VGA, 1 DP++	1 VGA, 1 HDMI 1.4, 1/2 USB-C Alt. Mode (opt.)
Mini PCIe / M.2	Mini PCIe / M.2	1 M.2 E key 2230, 1 M.2 B key 3052/3042, 1 M.2 M key 2280	1 Full-size Mini PCIe	1 M.2 E Key 2230, 1 M.2 B Key 3042/3052, 1 M.2 M Key 2280	1 M.2 B+M key 2242/2280, 1 M.2 E key 2230, 1 miniPCIe
	SIM	1	-	2 Nano SIM	1
Audio	Audio Codec	ALC888S	-	ALC888S	ALC888S
Ethernet	Controller	3 Intel® I225LM/I225IT	3 Intel® I210IT, 1 Intel® I219LM	1 Intel® I225 (2.5GbE), 2/3 Intel® I210/I211	2 Intel® i226 (2.5GbE), 1 Intel® i210 (GbE/DFI OOB)
Rear I/O	Ethernet (GbE)	1 2.5GbE, 2 GbE	4	1 2.5GbE, 2/3 GbE	1 2.5GbE, 1 GbE
	Serial	2 RS-232/422/485, 2 RS-232	-	2 RS232/422/485	1 RS232/422/485/DIO, 3 RS232/422/485
	USB	4 USB 3.2 (2 Type C + 2 Type A) / 4 USB 3.2 (Type A)	4 USB 3.2	2/4 USB 3.1	4 USB 3.2 (3 Type-A+1 Type-C or 4 Type-A)
	Display	1 HDMI, 1 VGA/DP (Opt.), 2 Type-C Alt. Mode	-	1 DP++	1 VGA, 1 HDMI 1.4, 1/2 USB-C Alt. Mode (opt.)
Audio	1 Audio (Line-out, Mic-in)	-	-	1 Audio (Line-out, Mic-in)	
Internal I/O	Serial	2 RS-232	-	2 RS232	2 RS232
	USB	2 USB 2.0	2 USB 3.0	2 USB 2.0 (Pin header), 1 USB 2.0 (Vertical)	2 USB 2.0 (Pin header)
	Display	-	1 HDMI	1 VGA	1 40 pin LVDS/eDP
	Audio	1 Front Audio (Line-out, Mic-in)	-	1 Audio (Line-out, Mic-in)	-
	Storage	1 SATA 3.0, 1 SATA Power	1 mSATA, 1 SATA 3.0	1 SATA 3.0, 1 SATA Power	1 SATA 3.0, 1 SATA Power
	DIO	8-bit DIO via DB9 (Opt.)	-	8-bit DIO, Opt. with COM 1	8-bit DIO, Opt. with COM 4
	LPC	-	1	-	-
	SMBus	-	1	1	1
TPM / iAMT	Discrete TPM 2.0	TPM 2.0 (Opt.), Core i7/i5 supports iAMT	dTPM2.0 (Opt.)	dTPM2.0 (Opt.)	
Power	9~36V DC-in	Wide Range 15~36V	9~36V DC-in	9~36V DC-in	
Operating Temperature	-5°C ~ 65°C / -30°C ~ 80°C	-20°C ~ 70°C	0°C ~ 80°C / -40°C ~ 80°C	0°C ~ 80°C	



Model Name		AL253	BT253	BT259
Platform		Atom	Atom	Atom
System	Processor	Intel Atom® E3900	Intel Atom® E3800	Intel Atom® E3800
	Socket	BGA1296	BGA 1170	BGA 1170
	Max. Speed	1.8~2.5GHz	1.33~2.41GHz	1.91~2.41GHz
	TDP	6W/9.5W/12W	4.3W/6W/10W	10W
	Cache	2M	1M/2M	2M
BIOS		AMI SPI 128Mbit	AMI SPI 64Mbit	AMI SPI 64Mbit
Memory	Technology	Dual Channel DDR3L 1866MHz	Single Channel DDR3L 1066/1333MHz	Single Channel DDR3L 1066/1333MHz
	Max. Capacity	up to 8GB	2GB/4GB	2GB/4GB
	Socket	Memory down, 1 SODIMM	Memory down (ECC/non-ECC)	Memory down
Graphics	Connector	1 DP++/HDMI, 1 VGA/DP(Opt.)	1 LVDS, 1 VGA*/DVI , 1 HDMI	1 VGA, 1 DVI-I (Opt.)
Mini PCIe / M.2	Mini PCIe / M.2	1 Full-size mSATA, 1 Full-size Mini PCIe, 1 M.2 E key 2230	2 Mini PCIe, 1 mSATA	2 Full-size Mini PCIe
SIM	SIM	1 (Opt.)	1	-
Audio	Audio Codec	-	ALC888S	-
Ethernet	Controller	4 Intel® I211AT/I210IT	2 Intel® I210AT	4 Intel® I210AT
Rear I/O	Ethernet (GbE)	Up to 4	2	4
	Serial	4 RS-232/422/485	4 RS-232/422/485 (3 Front, 1 Rear)	2 RS232/422/485
	USB	Up to 4 USB 3.2 Gen 1	1 USB 3.2 (Front), 4 USB 2.0 (Rear)	1 USB 3.2 (Type A), 4 USB 2.0
	Display	1 COMBO port (DP++/HDMI), 1 VGA/DP (Opt.)	1 HDMI (Front), 1 VGA/DVI (Rear)	1 VGA, 1 DVI-I (Opt.)
Audio	-	Line-out (Opt.) (Rear)	-	
Internal I/O	Serial	-	2 RS-232	-
	USB	2 USB 2.0	1 USB 2.0	2 USB 2.0
	Display	-	1 LVDS	-
	Audio	-	1 Mic-in	-
	Storage	1 SATA 3.0, 1 SATA Power, 1 8G/16G/32G/64G eMMC (Opt.)	1 SATA 2.0	1 SATA 2.0, 1 SATA Power
DIO	8-bit DIO	-	8-bit DIO	
TPM / iAMT	fTPM 2.0	TPM (Opt.)	TPM (Opt.)	
Power	9~36V DC-in	16~24V DC-in	16~24V DC-in	
Operating Temperature	0°C ~ 60°C / -40°C ~ 85°C	-20°C ~ 85°C / 0°C ~ 85°C / 0°C ~ 60°C	0°C ~ 60°C	

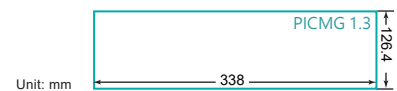
# PICMG 1.3

Multiple I/O & Easy Expandable Solutions



## Features

Our PICMG 1.3 boards are built with versatile I/O ports and plenty of backplanes to achieve flexibility and expansion capability. With comprehensive backplane and high performance boards, we can offer a great solution for expandable industrial application.



R680E

H610E

Q170

H110

Model Name		RPSPIC-R680E	RPSPIC-H610E	PIC-Q170	PIC-H110
Platform		Workstation	Desktop	Desktop	Desktop
System	Processor	14th/13th/12th Gen Intel® Core™	14th/13th/12th Gen Intel® Core™	7th/6th Gen Intel® Core™	7th/6th Gen Intel® Core™
	Socket	LGA 1700	LGA 1700	LGA 1151	LGA 1151
	Max. Speed	2.4~5.8GHz	2.4~5.8GHz	2.6~4.2GHz	2.6~4.2GHz
	TDP	35/46/60/65W	35/46/60/65W	35/54/65W	35/54/65W
	Cache	4/6/12/18/20/24/25/30/33/36M	4/6/12/18/20/24/25/30/33/36M	2/3/4/6/8M	2/3/4/6/8M
	Chipset	Intel® R680E	Intel® H610E	Intel® Q170	Intel® H110
BIOS		AMI SPI 256Mbit	AMI SPI 256Mbit	Insyde SPI 128Mbit	Insyde SPI 128Mbit
Memory	Technology	4 Channel DDR5 4000MHz (ECC supported)	2 Channel DDR5 4000MHz	Dual Channel DDR4 1866/2133MHz	Dual Channel DDR4 1866/2133MHz
	Max. Capacity	192GB	96GB	32GB	32GB
	Socket	4 UDIMM	2 UDIMM	2 UDIMM	2 UDIMM
Graphics	Connector	1 DVI-I (colay VGA), 2 DFI EXT-Display Port	1 DVI-I (colay VGA), 2 DFI EXT-Display Port	1 VGA, 1 DVI-D	1 VGA, 1 DVI-D
	PCIe, PCI	-	-	-	-
Expansion	Mini PCIe / M.2	1 M.2 E Key 2230, 1 M.2 M Key 2242/2260/2280, 1 M2A OOB 3042	1 M.2 E Key 2230, 1 M2A OOB 3042	1 M.2 M key 2280	-
	SIM	-	-	-	-
	Bus	1 PCIe x16 Gen 4 1 PCIe x4 Gen3 or 4 PCIe x1 Gen3 1 PCIe x1 Gen3 to 4 PCI	1 PCIe x16 Gen 4 1 PCIe x4 Gen3 or 4 PCIe x1 Gen3 1 PCIe x1 Gen3 to 4 PCI	1 PCIe x16, 1 PCIe x4 or 4 PCIe x1, 1 PCIe x1 to 4 PCI, 4 USB 2.0	1 PCIe x16, 1 PCIe x4 or 4 PCIe x1, 1 PCIe x1 to 4 PCI, 4 USB 2.0
Audio	Audio Codec	ALC888S	ALC888S	-	-
Ethernet	Controller	1 I226LM, 1 I226V (colay I210)	1 I226LM, 1 I226V (colay I210)	1 I211, 1 I219	1 I211, 1 I219
Rear I/O	Ethernet (GbE)	2x 2.5GbE	2x 2.5GbE	2	2
	Serial	-	-	-	-
	USB	2 USB 3.2 Gen2	2 USB 3.2 Gen2	2 USB 3.0	2 USB 3.0
	Display	1 DVI-I (colay VGA)	1 DVI-I (colay VGA)	1 VGA	1 VGA
	Audio	-	-	-	-
Internal I/O	Serial	2 RS232/422/485 mode selection by SW, 2 RS232	2 RS232/422/485 mode selection by SW, 2 RS232	2 RS-232/422/485, 2 RS-232	2 RS-232/422/485, 2 RS-232
	USB	4 USB 3.2 Gen2, 2 USB 2.0	2 USB 2.0	2 USB 3.0, 6 USB 2.0	4 USB 2.0
	Display	2 DFI EXT-Display Port	2 DFI EXT-Display Port	1 DVI-D	1 DVI-D
	Audio	1 Front Audio (Line-out, Mic-in)	1 Front Audio (Line-out, Mic-in)	Audio Module	Audio Module
	Storage	6 SATA 3.0 (support RAID 0/1/5/10)	4 SATA 3.0	4 SATA 3.0	4 SATA 3.0
	DIO	8-bit DIO	8-bit DIO	8-bit DIO	8-bit DIO
	LPT	1	1	1	1
	PS/2	1	1	1	1
	SMBus	1	1	1	1
TPM / iAMT	fTPM / dTPM 2.0	fTPM / dTPM 2.0	fTPM 2.0 / dTPM 2.0 (Opt.)	fTPM 2.0 / dTPM 2.0 (Opt.)	
Power	24-pin ATX	24-pin ATX	24-pin ATX	24-pin ATX	
Operating Temperature	0°C~60°C	0°C~60°C	0°C~60°C	0°C~60°C	



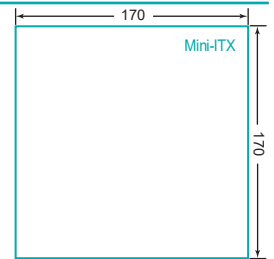
# Mini-ITX

Compact & High-Performance Solutions

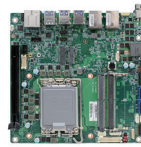


## Features

Our embedded Mini-ITX motherboard is designed with a variety of I/O connectors, passive cooling option, and DC input features in a small form factor measuring to only 170 x 170 mm. This compact and highly integrated platform delivers low power consumption of less than 100 Watts and provides the reserved expansion slot; which makes it an ideal solution for the computing-intensive markets such as POS, gaming, and digital signage, etc.



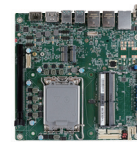
Thin Mini-ITX



R680E



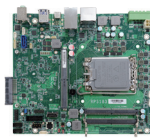
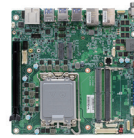
R680E



R680E

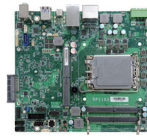
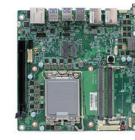
Model Name		RPS101/RPS103-R680E	RPS100-R680E	ADS101/ADS103-R680E
Platform		Workstation	Workstation	Workstation
System	Processor	14th/13th/12th Gen Intel® Core™	14th/13th/12th Gen Intel® Core™	14th/13th/12th Gen Intel® Core™
	Socket	LGA 1700	LGA 1700	LGA 1700
	Max. Speed	2.4~5.8GHz	2.4~5.2GHz	2.4~5.2GHz
	TDP	35/46/60/65W	35/46/60/65W	35/46/60/65W
	Cache	4/6/12/18/20/24/25/30/33/36M	4/6/12/18/20/24/25/30/36M	4/6/12/18/20/24/25/30/36M
	Chipset	Intel® R680E	Intel® R680E	Intel® R680E
Memory	BIOS	AMI SPI 256Mbit	AMI SPI 256Mbit	AMI SPI 256Mbit
	Technology	Dual Channel DDR5 4800MHz (ECC supported)	Dual Channel DDR5 4800MHz (ECC supported)	Dual Channel DDR4 3200MHz (ECC supported)
	Max. Capacity	64GB	64GB	64GB
Graphics	Connector	1 HDMI, 1 DP++, 1 USB Type-C, 1 eDP/LVDS, 1 DFI EXT-Display Port	1 HDMI, 1 DP++, 1 VGA	1 DP++, 1 DP++/HDMI, 1 LVDS/eDP, 1 DFI EXT-Display Port
	Expansion	1 PCIe x16 (Gen 5) 1 M.2 B key 2242/3042/3052, 1 M.2 E key 2230, 1 M.2 M key 2280	1 PCIe x16 (1 x16, 2 x8) 1 M.2 E Key 2230, 1 M.2 A Key 3060, 1 M.2 M Key 2280	1 PCIe x16 (Gen 5) 1 M.2 B key 2242/3042/3052, 1 M.2 E key 2230, 1 M.2 M key 2280
Audio	Audio Codec	ALC888S	ALC888S	ALC888S
Ethernet	Controller	2 Intel® I226	2 Intel® I226	1 Intel® I226, 1 Intel® I210, 1 Intel® I219
	Ethernet (GbE)	2x 2.5GbE	2x 2.5GbE	1x 2.5GbE + 1~2x GbE
Rear I/O	Serial	-	2 RS232/422/485	-
	USB	5 USB 3.2 Gen 2, 1 USB Type-C	6 USB 3.2 Gen2	4~6 USB 3.2 Gen2
	Display	1 HDMI, 1 DP++, 1 USB Type-C	1 HDMI, 1 DP++, 1 VGA	1 DP++, 1 DP++/HDMI, 1 DFI EXT-Display Port
	Audio	-	-	Line-out, Mic-in
Internal I/O	Serial	2 RS232/422/485 w/o Power	-	2 RS232/422/485
	USB	4 USB 2.0	2 USB 2.0	2 USB 3.2 Gen1, 4 USB 2.0
	Display	1 eDP/LVDS, 1 DFI EXT-Display Port	1 M.2 A key, support M2A-Display	1 LVDS, 1 eDP
	Audio	1 Front Audio (Line-out, Mic-in)	1 Front Audio (Line-out, Mic-in)	1 Front Audio (Line-out, Mic-in)
	Storage	2 SATA 3.0, (RAID 0/1/5/10) w/ M.2 M&B key	2 SATA 3.0	2 SATA 3.0, (RAID 0/1/5/10) w/ M.2 M&B key
	DIO	8-bit DIO	8-bit DIO	8-bit DIO
	LPC**	-	-	-
TPM / iAMT	1	1	-	
Power	12V / 12~28V DC In	ATX	12V / 15~36V DC In	
Operating Temperature	-5°C~65°C	-5°C~65°C	-5°C~65°C	

\*\*Supports LPC EXT-RS232/RS485 module

**Q670E****Q670E****Q670E**

Model Name		RPS183-Q670E	RPS101/RPS103-Q670E	RPS100-Q670E
Platform		Desktop	Desktop	Desktop
System	Processor	14th/13th/12th Gen Intel® Core™	14th/13th/12th Gen Intel® Core™	14th/13th/12th Gen Intel® Core™
	Socket	LGA 1700	LGA 1700	LGA 1700
	Max. Speed	2.4~5.8GHZ	2.4~5.8GHZ	2.4~5.2GHZ
	TDP	35/46/60/65W	35/46/60/65W	35/46/60/65W
	Cache	4/6/12/18/20/24/25/30/36M	4/6/12/18/20/24/25/30/33/36M	4/6/12/18/20/24/25/30/36M
	Chipset	Intel® Q670E	Intel® Q670E	Intel® Q670E
Memory	BIOS	AMI SPI 256Mbit	AMI SPI 256Mbit	AMI SPI 256Mbit
	Technology	Dual Channel DDR5 4800MHz (ECC supported)	Dual Channel DDR5 4800MHz	Dual Channel DDR5 4800MHz
	Max. Capacity	64GB	64GB	64GB
Graphics	Socket	2 SODIMM	2 SODIMM	2 SODIMM
	Connector	1 DP++ (CPU), 1 DP++(MXM), 1 USB Type C (DP alt-mode), 1 eDP, 1 HDMI (MXM)	1 HDMI, 1 DP++, 1 USB Type-C, 1 eDP/LVDS, 1 DFI EXT-Display Port	1 HDMI, 1 DP++, 1 VGA
Expansion	PCIe, PCI	1 PCIe x4 (Gen3)	1 PCIe x16 (Gen 5)	1 PCIe x16 (1 x16, 2 x8)
	Mini PCIe / M.2	1 M.2 B key 2242/3042/3052, 1 M.2 E key 2230, 1 M.2 M key 2280	1 M.2 B key 2242/3042/3052, 1 M.2 E key 2230, 1 M.2 M key 2280	1 M.2 E Key 2230, 1 M.2 A Key 3060, 1 M.2 M Key 2280
	SIM	1 Nano SIM	1 Nano SIM	-
Audio	Audio Codec	ALC888S	ALC888S	ALC888S
Ethernet	Controller	1 Intel® I219, 1 Intel® I226	2 Intel® I226	2 Intel® I226
Rear I/O	Ethernet (GbE)	1x 2.5GbE + 1x GbE	2x 2.5GbE	2x 2.5GbE
	Serial	1 RS232/422/485, 1 RS232	-	2 RS232/422/485
	USB	4 USB 3.2 Gen 2 or 3 USB 3.2 Gen2+ 1 USB Type C	5 USB 3.2 Gen 2, 1 USB Type-C	6 USB 3.2 Gen2
	Display	1 DP++ (CPU), 1 DP++ (MXM), 1 USB Type C (DP alt-mode)	1 HDMI, 1 DP++, 1 USB Type-C	1 HDMI, 1 DP++, 1 VGA
	Audio	Line-out, Mic-in	-	-
Internal I/O	Serial	2 RS-232/422/485	2 RS232/422/485 w/o Power	-
	USB	1 USB 2.0 Type A (Vertical)	4 USB 2.0	2 USB 2.0
	Display	1 eDP (MXM), 1 HDMI (MXM)	1 eDP/LVDS, 1 DFI EXT-Display Port	1 M.2 A key, support M2A-Display
	Audio	Line-in, Mic-in	1 Front Audio (Line-out, Mic-in)	1 Front Audio (Line-out, Mic-in)
	Storage	1 SATA 3.0	2 SATA 3.0, (RAID 0/1/5/10) w/ M.2 M&B key	2 SATA 3.0
	DIO	8-bit DIO	8-bit DIO	8-bit DIO
	LPC**	-	-	-
TPM / iAMT	dTPM (default) / fTPM (Opt.)	fTPM / dTPM 2.0	dTPM (default) / fTPM (Opt.)	
Power	19~24V 4P Terminal coloy 4P vertical	12V / 12~28V DC In	ATX	
Operating Temperature	-5°C~65°C	-5°C~65°C	-5°C~65°C	

\*\*Supports LPC EXT-RS232/RS485 module

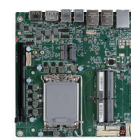
**Q670E****H610E****H610E**

Model Name		ADS101/ADS103-Q670E	RPS183-H610E	RPS101/RPS103-H610E
Platform		Desktop	Desktop	Desktop
System	Processor	14th/13th/12th Gen Intel® Core™	14th/13th/12th Gen Intel® Core™	14th/13th/12th Gen Intel® Core™
	Socket	LGA 1700	LGA 1700	LGA 1700
	Max. Speed	2.4~5.2GHZ	2.4~5.8GHZ	2.4~5.8GHZ
	TDP	35/46/60/65W	35/46/60/65W	35/46/60/65W
	Cache	4/6/12/18/20/24/25/30/36M	4/6/12/18/20/24/25/30/36M	4/6/12/18/20/24/25/30/33/36M
	Chipset	Intel® Q670E	Intel® H610E	Intel® H610E
Memory	BIOS	AMI SPI 256Mbit	AMI SPI 256Mbit	AMI SPI 256Mbit
	Technology	Dual Channel DDR4 3200MHz	Dual Channel DDR5 4800MHz (ECC supported)	Dual Channel DDR5 4800MHz
	Max. Capacity	64GB	64GB	64GB
Graphics	Socket	2 SODIMM	2 SODIMM	2 SODIMM
	Connector	1 DP++, 1 DP++/HDMI, 1 LVDS/eDP, 1 DFI EXT-Display Port	1 DP++ (CPU), 1 DP++ (MXM), 1 USB Type C (DP alt-mode), 1 eDP, 1 HDMI (MXM)	1 HDMI, 1 DP++, 1 eDP/LVDS, 1 DFI EXT-Display Port
Expansion	PCIe, PCI	1 PCIe x16 (Gen 5)	1 PCIe x4 (Gen3)	1 PCIe x16 (Gen 5)
	Mini PCIe / M.2	1 M.2 B key 2242/3042/3052, 1 M.2 E key 2230, 1 M.2 M key 2280	1 M.2 B key 2242/3042/3052, 1 M.2 E key 2230, 1 M.2 M key 2280	1 M.2 B key 2242/3042/3052, 1 M.2 E key 2230, 1 M.2 M key 2280
	SIM	1 Nano SIM	1 Nano SIM	1 Nano SIM
Audio	Audio Codec	ALC888S	ALC888S	ALC888S
Ethernet	Controller	1 Intel® I226, 1 Intel® I210, 1 Intel® I219	1 Intel® I219, 1 Intel® I226	2 Intel® I226
Rear I/O	Ethernet (GbE)	1x 2.5GbE + 1~2x GbE	1x 2.5GbE + 1x GbE	2x 2.5GbE
	Serial	-	1 RS232/422/485, 1 RS232	-
	USB	4~6 USB 3.2 Gen2	2 USB3.2 Gen2 + 2 USB2.0 or 2 USB3.2 Gen2 + 1 USB Type C	2 x USB 3.2 Gen 2 1 x USB 3.2 Gen 1, 2 x USB 2.0
	Display	1 DP++, 1 DP++/HDMI, 1 DFI EXT-Display Port	1 DP++ (CPU), 1 DP++ (MXM), 1 USB Type C (DP alt-mode)	1 HDMI, 1 DP++
	Audio	Line-out, Mic-in	-	-
Internal I/O	Serial	2 RS232/422/485	2 RS-232/422/485	2 RS232/422/485 w/o Power
	USB	2 USB 3.2 Gen1, 4 USB 2.0	1 USB 2.0 Type A (Vertical)	2 USB 2.0
	Display	1 eDP/LVDS, 1 DFI EXT-Display Port	1 eDP (MXM), 1 HDMI (MXM)	1 eDP/LVDS, 1 DFI EXT-Display Port
	Audio	1 Front Audio (Line-out, Mic-in)	Line-in, Mic-in	1 Front Audio (Line-out, Mic-in)
	Storage	2 SATA 3.0, (RAID 0/1/5/10) w/ M.2 M&B key	1 SATA 3.0	2 SATA 3.0, (RAID 0/1/5/10) w/ M.2 M&B key
	DIO	8-bit DIO	8-bit DIO	8-bit DIO
	LPC**	-	-	-
TPM / iAMT	dTPM 2.0, iAMT 12.0 (Core i7 & i5 only)	dTPM (default) / fTPM (Opt.)	Nuvoton TPM 2.0	
Power	12V / 15~36V DC In	19~24V 4P Terminal coloy 4P vertical	12V / 12~28V DC In	
Operating Temperature	-5°C~65°C	-5°C~65°C	-5°C~65°C	

\*\*Supports LPC EXT-RS232/RS485 module



H610E



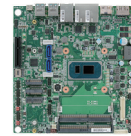
H610E

Model Name		RPS100-H610E	ADS101/ADS103-H610E
Platform		Desktop	Desktop
System	Processor	14th/13th/12th Gen Intel® Core™	14th/13th/12th Gen Intel® Core™
	Socket	LGA 1700	LGA 1700
	Max. Speed	2.4~5.2GHz	2.4~5.2GHz
	TDP	35/46/60/65W	35/46/60/65W
	Cache	4/6/12/18/20/24/25/30/36M	4/6/12/18/20/24/25/30/36M
	Chipset	Intel® H610E	Intel® H610E
Memory	BIOS	AMI SPI 256Mbit	AMI SPI 256Mbit
	Technology	Dual Channel DDR5 4800MHz	Dual Channel DDR4 3200MHz
	Max. Capacity	64GB	64GB
Graphics	Socket	2 SODIMM	2 SODIMM
	Connector	1 HDMI, 1 DP++, 1 VGA	1 DP++, 1 DP++/HDMI, 1 LVDS/eDP, 1 DFI EXT-Display Port
Expansion	PCIe, PCI	1 PCIe x16 (1 x16, 2 x8)	1 PCIe x16 (Gen 5)
	Mini PCIe / M.2	1 M.2 E Key 2230, 1 M.2 A Key 3060, 1 M.2 M Key 2280	1 M.2 B key 2242/3042/3052, 1 M.2 E key 2230, 1 M.2 M key 2280
	SIM	-	1 Nano SIM
Audio	Audio Codec	ALC888S	ALC888S
Ethernet	Controller	2 Intel® I226	1 Intel® I226, 1 Intel® I210, 1 Intel® I219
Rear I/O	Ethernet (GbE)	2x 2.5GbE	1x 2.5GbE + 2x GbE
	Serial	2 RS232/422/485	-
	USB	2 USB 3.2 Gen2, 2 USB 3.2 Gen1, 2 USB 2.0	2 USB 3.2 Gen2, 1 USB 3.2 Gen1, 1 USB 2.0
	Display	1 HDMI, 1 DP++, 1 VGA	1 DP++, 1 DP++/HDMI, 1 DFI EXT-Display Port
Internal I/O	Audio	-	-
	Serial	-	2 RS232/422/485
	USB	2 USB 2.0	4 USB 2.0
	Display	1 M.2 A key, support M2A-Display	1 eDP/LVDS, 1 DFI EXT-Display Port
	Audio	1 Front Audio (Line-out, Mic-in)	1 Front Audio (Line-out, Mic-in)
	Storage	2 SATA 3.0	2 SATA 3.0
	DIO	8-bit DIO	8-bit DIO
	LPC**	-	-
SMBus	1	-	
TPM / iAMT		dTPM (default) / fTPM (Opt.)	dTPM (default) / fTPM (Opt.)
Power		ATX	12V / 15~36V DC In
Operating Temperature		-5°C~65°C	-5°C~65°C

\*\*Supports LPC EXT-RS232/RS485 module



ULT



ULT

Model Name		RPP171/RPP173	TGU171/TGU173
Platform		ULT	ULT
System	Processor	13th Gen Intel® Core™	11th Gen Intel® Core™
	Socket	BGA1744	BGA1499
	Max. Speed	4.3~4.9GHz	1.8~4.4GHz
	TDP	15W~28W	15W~28W
	Cache	10/12/24M	4/6/8/12M
	Chipset	-	-
Memory	BIOS	AMI SPI 256Mbit	AMI SPI 256Mbit
	Technology	Dual Channel DDR5 5200MHz	Dual Channel DDR4 3200MHz (Support in-band ECC)
	Max. Capacity	64GB	64GB
Graphics	Socket	2 SODIMM	2 SODIMM
	Connector	2 HDMI/DP Combo(Auto detect), 1 USB Type C, M2A-Display(Opt.)	1 LVDS, 1 eDP, 1 DP++, 1 HDMI, 1 USB Type C
Expansion	PCIe, PCI	1 PCIe x4 (Gen4)	1 PCIe x4 (Gen3)
	Mini PCIe / M.2	1 M.2 M Key 2242/2280, 1 M.2 B Key 2242/3042/3052, 1 M.2 E Key 2230, 1 M.2 A Key 3060	1 M.2 M key 2242/2280, 1 M.2 B key 2242/3042/3052, 1 M.2 E key 2230
	SIM	1 Nano SIM	1 Nano SIM
Audio	Audio Codec	ALC888S	ALC888S
Ethernet	Controller	3 Intel® I226	1 Intel® I225, 2 Intel® I210/I211
Rear I/O	Ethernet (GbE)	Up to 3x 2.5GHz	1x 2.5GbE + 2x GbE
	Serial	-	-
	USB	4 USB 3.2 Gen2, 1 USB Type C	4 USB 3.2 Gen2, 1 USB Type C
	Display	2 DP/HDMI combo (Auto detect)	1 DP++, 1 HDMI
Internal I/O	Audio	-	-
	Serial	2 RS232/422/485, 2 RS232	2 RS232/422/485, 2 RS232
	USB	4 USB 2.0	4 USB 2.0
	Display	1 M.2 A key, support M2A-Display(Opt.)	1 LVDS, 1 eDP
	Audio	Line-out, Mic-in	1 Front Audio
	Storage	2 SATA 3.0	2 SATA 3.0, (RAID 0/1) w/ M.2 B Key
	DIO	8-bit DIO	8-bit DIO
	LPC**	-	-
SMBus	1	1	
TPM / iAMT		dTPM (default) / fTPM (Opt.)	fTPM (default) / dTPM (Opt.)
Power		12V / 9~36V DC In	12V / 9~36V DC In
Operating Temperature		-20°C~70°C or -5°C~65°C	-20°C~70°C or -5°C~65°C

\*\*Supports LPC EXT-RS232/RS485 module





W480E



W480E



W480E

Model Name		CMS171/CMS173-W480E	CMS101/CMS103-W480E	CMS100-W480E
Platform		Workstation	Workstation	Workstation
System	Processor	10th Gen Intel® Core™	10th Gen Intel® Core™	10th Gen Intel® Core™
	Socket	LGA1200	LGA1200	LGA1200
	Max. Speed	3.0~4.8GHz	3.0~4.7GHz	up to 4.7GHz
	TDP	35/65/80/95/125W	35/65W	35/65/80/95/125W
	Cache	2/4/6/12/16/20M	-	-
	Chipset	Intel® W480E	Intel® W480E	Intel® W480E
	BIOS	AMI SPI 256Mbit	AMI SPI 256Mbit	AMI SPI 256Mbit
Memory	Technology	Dual Channel DDR4 2933MHz (ECC supported by selected SKU)	Dual Channel DDR4 2933MHz	Dual Channel DDR4 2933MHz (ECC supported by selected SKU)
	Max. Capacity	64GB	64GB	64GB
	Socket	2 SODIMM	2 SODIMM	2 SODIMM
Graphics	Connector	2 DP++	1 LVDS/eDP, 2 DP++	1 DP++, 1 HDMI/DP++, 1 LVDS/eDP, 1 DVI-I (DVI-D signal)
Expansion	PCIe, PCI	1 PCIe x16 (Gen3) 1 M.2 B key 3042/3052, 1 M.2 E key 2230, 1 M.2 M key 2280	1 PCIe x16 (Gen3) 1 M.2 B key 2242/3042/3052, 1 M.2 E key 2230, 1 M.2 M key 2280	1 PCIe x16 (Gen3) 1 M.2 M key 2280, 1 M.2 B key 2242/3042, 1 M.2 E key 2230
	Mini PCIe / M.2	1 Nano SIM	1 Nano SIM	1 Nano SIM
	SIM	1 Nano SIM	1 Nano SIM	1 Nano SIM
Audio	Audio Codec	ALC888S	ALC888S	ALC888S
Ethernet	Controller	1 Intel® I211, 1 Intel® I219	1 Intel® I225, 1 Intel® I210, 1 Intel® I219	1 Intel® I225, 1 Intel® I219
Rear I/O	Ethernet (GbE)	2 x GbE	1x 2.5GbE + 2x GbE	1x 2.5GbE + 1x GbE
	Serial	1 RS232/422/485	-	2 RS232/422/485
	USB	8 USB 3.2 Gen2, 4 USB 3.2	4 USB 3.2 Gen2	6 USB 3.2 Gen2
	Display	2 DP++	2 DP++	1 DP++, 1 DP++/HDMI, 1 DVI-I
	Audio	-	-	-
Internal I/O	Serial	1 RS232/422/485	2 RS232/422/485, 2 RS232	-
	USB	-	4 USB 2.0	4 USB 2.0
	Display	-	1 LVDS, 1 eDP	1 LVDS, 1 eDP
	Audio	1 Front Audio	1 Front Audio	1 Front Audio
	Storage	2 SATA 3.0, (RAID 0/1) w/ M.2 B Key	2 SATA 3.0, (RAID 0/1/5/10) w/ M.2 M&B key	2 SATA 3.0, (RAID 0/1/5/10) w/ M.2 M&B key
	DIO	8-bit DIO	8-bit DIO	8-bit DIO
	LPC**	1	1	1
SMBus	1	1	-	
TPM / iAMT	Infineon TPM1.2/2.0 (Opt.), iAMT 12.0 (Core i7 & i5 only)	fTPM (default) / dTPM 2.0 (Opt.), iAMT 12.0 (Core i7 & i5 only)	fTPM (Default) / dTPM (Opt.)	
Power	12V / 15~36V DC In	12V / 15~36V DC In	ATX	
Operating Temperature	-5°C~65°C	-5°C~65°C	-5°C~65°C	

\*\*Supports LPC EXT-RS232/RS485 module



Q470E



Q470E



Q470E

Model Name		CMS171/CMS173-Q470E	CMS101/CMS103-Q470E	CMS100-Q470E
Platform		Desktop	Desktop	Desktop
System	Processor	10th Gen Intel® Core™	10th Gen Intel® Core™	10th Gen Intel® Core™
	Socket	LGA1200	LGA1200	LGA1200
	Max. Speed	3.0~4.8GHz	up to 4.7GHz	up to 4.7GHz
	TDP	35/58/65/80/95/125W	35/65W	35/65/125W
	Cache	2/4/6/12/16/20M	-	-
	Chipset	Intel® Q470E	Intel® Q470E	Intel® Q470E
	BIOS	AMI SPI 256Mbit	AMI SPI 256Mbit	AMI SPI 256Mbit
Memory	Technology	Dual Channel DDR4 2933MHz	Dual Channel DDR4 2933MHz	Dual Channel DDR4 2933MHz
	Max. Capacity	64GB	64GB	64GB
	Socket	2 SODIMM	2 SODIMM	2 SODIMM
Graphics	Connector	2 DP++	1 LVDS/eDP, 2 DP++	1 DP++, 1 HDMI/DP++, 1 LVDS/eDP, 1 DVI-I (DVI-D signal)
Expansion	PCIe, PCI	1 PCIe x16 (Gen3) 1 M.2 B key 3042/3052, 1 M.2 E key 2230, 1 M.2 M key 2280	1 PCIe x16 (Gen3) 1 M.2 B key 2242/3042/3052, 1 M.2 E key 2230, 1 M.2 M key 2280	1 PCIe x16 (Gen3) 1 M.2 M key 2280, 1 M.2 B key 2242/3042, 1 M.2 E key 2230
	Mini PCIe / M.2	1 Nano SIM	1 Nano SIM	1 Nano SIM
	SIM	1 Nano SIM	1 Nano SIM	1 Nano SIM
Audio	Audio Codec	ALC888S	ALC888S	ALC888S
Ethernet	Controller	1 Intel® I211, 1 Intel® I219	1 Intel® I225, 1 Intel® I210, 1 Intel® I219	1 Intel® I225, 1 Intel® I219
Rear I/O	Ethernet (GbE)	2 x GbE	1x 2.5GbE + 2x GbE	1x 2.5GbE + 1x GbE
	Serial	1 RS232/422/485	-	2 RS232/422/485
	USB	8 USB 3.2 Gen2, 4 USB 3.2	4 USB 3.2 Gen2	6 USB 3.2 Gen2
	Display	2 DP++	2 DP++	1 DP++, 1 DP++/HDMI, 1 DVI-I
	Audio	-	-	-
Internal I/O	Serial	1 RS232/422/485	2 RS232/422/485, 2 RS232	-
	USB	-	4 USB 2.0	4 USB 2.0
	Display	-	1 LVDS, 1 eDP	1 LVDS, 1 eDP
	Audio	1 Front Audio	1 Front Audio	1 Front Audio
	Storage	2 SATA 3.0, (RAID 0/1) w/ M.2 M Key	2 SATA 3.0, (RAID 0/1/5/10) w/ M.2 M&B key	2 SATA 3.0, (RAID 0/1/5/10) w/ M.2 M&B key
	DIO	8-bit DIO	8-bit DIO	8-bit DIO
	LPC**	1	1	1
SMBus	1	1	-	
TPM / iAMT	Infineon TPM 1.2/2.0 (Opt.), iAMT 12.0 (Core i7 & i5 only)	fTPM (default) / dTPM 2.0 (Opt.), iAMT 12.0 (Core i7 & i5 only)	fTPM (Default) / dTPM (Opt.)	
Power	12V / 15~36V DC In	12V / 15~36V DC In	ATX	
Operating Temperature	-5°C~65°C	-5°C~65°C	-5°C~65°C	

\*\*Supports LPC EXT-RS232/RS485 module



H420E



H420E

Thin Mini-ITX



C246

Model Name		CMS101/CMS103-H420E	CMS100-H420E	CS170-C246
Platform		Desktop	Desktop	Workstation
System	Processor	10th Gen Intel® Core™	10th Gen Intel® Core™	9th/8th Gen Intel® Core™
	Socket	LGA1200	LGA1200	LGA1151
	Max. Speed	up to 4.7GHz	up to 4.7GHz	3.1~5.0GHz
	TDP	35/65W	35/65/125W	35/54/58/65/80/95W
	Cache	-	-	-
	Chipset	Intel® H420E	Intel® H420E	Intel® C246
BIOS		AMI SPI 256Mbit	AMI SPI 256Mbit	AMI SPI 128Mbit
Memory	Technology	Dual Channel DDR4 2933MHz	Dual Channel DDR4 2933MHz	Dual Channel DDR4 2400/2666MHz (ECC supported by selected SKU)
	Max. Capacity	64GB	64GB	32GB
	Socket	2 SODIMM	2 SODIMM	2 SODIMM
Graphics	Connector	1 LVDS/eDP, 2 DP++	1 DP++, 1 HDMI/DP++, 1 LVDS/eDP, 1 DVI-I (DVI-D signal)	1 LVDS, 2 DP++, 1 VGA
Expansion	PCIe, PCI	1 PCIe x16 (Gen3)	1 PCIe x16 (Gen3)	1 PCIe x16 (Gen3)
	Mini PCIe / M.2	1 M.2 B key 2242/3042/3052, 1 M.2 E key 2230, 1 M.2 M key 2280	1 M.2 M key 2280, 1 M.2 B key 2242/3042, 1 M.2 E key 2230	1 M.2 M key 2280, 1 M.2 E key 2230
	SIM	1 Nano SIM	1 Nano SIM	-
Audio	Audio Codec	ALC888S	ALC888S	ALC888S
Ethernet	Controller	1 Intel® I225, 1 Intel® I210, 1 Intel® I219	1 Intel® I225, 1 Intel® I219	1 Intel® I210, 1 Intel® I219
Rear I/O	Ethernet (GbE)	1x 2.5GbE + 2x GbE	1x 2.5GbE + 1x GbE	2
	Serial	-	2 RS232/422/485	2 RS232
	USB	4 USB 3.2 Gen1	5 USB 3.2 Gen1, 1 USB 2.0	2 USB 3.2 Gen2, 4 USB 3.2 Gen1
	Display	2 DP++	1 DP++, 1 DP++/HDMI, 1 DVI-I	2 DP++, 1 VGA
Audio		-	-	1 Audio Jack (Lin-out/Mic-in/Line-in)
Internal I/O	Serial	2 RS232/422/485, 2 RS232	-	-
	USB	4 USB 2.0	2 USB 2.0	2 USB 2.0
	Display	1 LVDS, 1 eDP	1 LVDS, 1 eDP	1 LVDS
	Audio	1 Front Audio	1 Front Audio	1 Front Audio
	Storage	2 SATA 3.0	2 SATA 3.0	2 SATA 3.0 (RAID 0/1/5) w/ M.2 M Key
	DIO	8-bit DIO	8-bit DIO	8-bit DIO
	LPC**	1	1	1
SMBus		1	-	1
TPM / iAMT		fTPM (default) / dTPM 2.0 (Opt.), iAMT 12.0 (Core i7 & i5 only)	fTPM (Default) / dTPM (Opt.)	dTPM 2.0
Power		12V / 15~36V DC In	ATX	ATX
Operating Temperature		-5°C~65°C	-5°C~65°C	-5°C~65°C

\*\*Supports LPC EXT-RS232/RS485 module



Thin Mini-ITX

C246



Thin Mini-ITX

C246



C246

Model Name		CS103-C246	CS101-C246	CS100-C246
Platform		Workstation	Workstation	Workstation
System	Processor	9th/8th Gen Intel® Core™	9th/8th Gen Intel® Core™	9th/8th Gen Intel® Core™
	Socket	LGA1151	LGA1151	LGA1151
	Max. Speed	3.1~4.6GHz	3.1~4.6GHz	3.1~4.7GHz
	TDP	35/54/58/65W	35/54/58/65/95W	35/54/58/65/80W
	Cache	-	-	-
	Chipset	Intel® C246	Intel® C246	Intel® C246
BIOS		AMI SPI 128Mbit	AMI SPI 128Mbit	AMI SPI 128Mbit
Memory	Technology	Dual Channel DDR4 2400/2666MHz (ECC supported by selected SKU)	Dual Channel DDR4 2666MHz (ECC supported by selected SKU)	Dual Channel DDR4 2400/2666MHz (ECC supported by selected SKU)
	Max. Capacity	32GB	32GB	32GB
	Socket	2 SODIMM	2 SODIMM	2 SODIMM
Graphics	Connector	1 LVDS, 2 DP++	1 LVDS/eDP, 2 DP++, 1 HDMI	1 LVDS, 2 DP++, 1 VGA
Expansion	PCIe, PCI	1 PCIe x4 (Gen3)	1 PCIe x4 (Gen3)	1 PCIe x16 (Gen3)
	Mini PCIe / M.2	1 M.2 M key 2280, 1 M.2 E key 2230	1 M.2 M key 2280, 1 M.2 E key 2230, 1 Full mPCIe	1 Full mPCIe
	SIM	-	-	-
Audio	Audio Codec	ALC888S	ALC888S	ALC888S
Ethernet	Controller	1 Intel® I211, 1 Intel® I219	1 Intel® I210, 1 Intel® I219	1 Intel® i210, 1 Intel® I219
Rear I/O	Ethernet (GbE)	2	2	2
	Serial	-	-	1 RS232
	USB	4 USB 3.2 Gen2	4 USB 3.2 Gen2	2 USB 3.2 Gen2, 2 USB 3.2 Gen1, 4 USB 2.0
	Display	2 DP++	2 DP++, 1 HDMI	2 DP++, 1 VGA
Audio		-	-	1 Audio Jack (Lin-out/Mic-in/Line-in(Opt.))
Internal I/O	Serial	2 RS232/422/485, 2 RS232	2 RS232/422/485, 2 RS232	1 RS232
	USB	4 USB 2.0	4 USB 2.0	4 USB 2.0
	Display	1 LVDS	1 LVDS*/eDP	1 LVDS
	Audio	1 Front Audio	1 Front Audio	1 S/PDIF, 1 Front Audio
	Storage	2 SATA 3.0, (RAID 0/1/5) w/ M.2 M Key	2 SATA 3.0, (RAID 0/1/5) w/ M.2 M Key	3 SATA 3.0 (RAID 0/1/5)
	DIO	8-bit DIO	8-bit DIO	8-bit DIO
	LPC**	1	1	1
SMBus		1	1	-
TPM / iAMT		dTPM 2.0	dTPM 2.0, iAMT 12.0 (Core i7 & i5 only)	dTPM 2.0 (Opt.), iAMT 12.0 (Core i7 & i5 only)
Power		9~36V DC In	12V DC In	ATX
Operating Temperature		-10°C~70°C	0°C~60°C	0°C~60°C

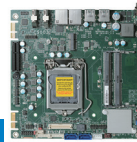
\*\*Supports LPC EXT-RS232/RS485 module



Thin Mini-ITX

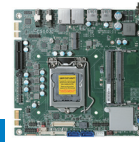
Q370

Thin Mini-ITX



Q370

Thin Mini-ITX



Q370

Model Name		CS181-Q370	CS170-Q370	CS103-Q370
Platform		Desktop	Desktop	Desktop
System	Processor	9th/8th Gen Intel® Core™	9th/8th Gen Intel® Core™	9th/8th Gen Intel® Core™
	Socket	LGA1151	LGA1151	LGA1151
	Max. Speed	3.1~4.6GHz	3.1~5.0GHz	3.1~4.6GHz
	TDP	35/54/58/65W	35/54/58/65/80/95W	35/54/58/65W
	Cache	-	-	-
	Chipset	Intel® Q370	Intel® Q370	Intel® Q370
BIOS		AMI SPI 128Mbit	AMI SPI 128Mbit	AMI SPI 128Mbit
Memory	Technology	Dual Channel DDR4 2400/2666MHz	Dual Channel DDR4 2400/2666MHz	Dual Channel DDR4 2400/2666MHz
	Max. Capacity	64GB	32GB	32GB
	Socket	2 SODIMM	2 SODIMM	2 SODIMM
Graphics	Connector	1 eDP, 1 DP++/HDMI, 4 DP by MXM module	1 LVDS, 2 DP++, 1 VGA	1 LVDS, 2 DP++
Expansion	PCIe, PCI	1 MXM Type-A/B/B+/C	1 PCIe x16 (Gen3)	1 PCIe x4 (Gen3)
	Mini PCIe / M.2	1 M.2 M key 2280, 1 M.2 E key 2230, 1 M.2 B key 3042/3052	1 M.2 M key 2280, 1 M.2 E key 2230	1 M.2 M key 2280, 1 M.2 E key 2230
	SIM	-	-	-
Audio	Audio Codec	ALC888S	ALC888S	ALC888S
Ethernet	Controller	3 Intel® I210, 1 Intel® I219	1 Intel® I210, 1 Intel® I219	1 Intel® I211, 1 Intel® I219
Rear I/O	Ethernet (GbE)	4	2	2
	Serial	-	2 RS232	-
	USB	4 USB 3.2 Gen2	2 USB 3.2 Gen2, 4 USB 3.2 Gen1	4 USB 3.2 Gen2
	Display	1 DP++/HDMI	2 DP++, 1 VGA	2 DP++
	Audio	-	1 Audio Jack (Lin-out/Mic-in/Line-in)	-
Internal I/O	Serial	2 RS232/422/485	-	2 RS232/422/485, 2 RS232
	USB	2 USB 2.0	2 USB 2.0	4 USB 2.0
	Display	1 eDP	1 LVDS	1 LVDS
	Audio	1 Front Audio	1 Front Audio	1 Front Audio
	Storage	2 SATA 3.0, (RAID 0/1/5) w/ M.2 M Key	2 SATA 3.0, (RAID 0/1/5) w/ M.2 M Key	2 SATA 3.0, (RAID 0/1/5) w/ M.2 M Key
	DIO	8-bit DIO	8-bit DIO	8-bit DIO
	LPC**	1	1	1
	SMBus	1	1	1
TPM / iAMT	dTPM 2.0	dTPM 2.0	dTPM 2.0	
Power	19V DC In	ATX	9~36V DC In	
Operating Temperature	-5°C~65°C	-5°C~65°C	-10°C~70°C	

\*\*Supports LPC EXT-RS232/RS485 module



Thin Mini-ITX

Q370



Q370

Model Name		CS101-Q370	CS100-Q370
Platform		Desktop	Desktop
System	Processor	9th/8th Gen Intel® Core™	9th/8th Gen Intel® Core™
	Socket	LGA1151	LGA1151
	Max. Speed	3.1~4.6GHz	3.1~4.7GHz
	TDP	35/54/58/65/95W	35/54/58/65/80W
	Cache	-	-
	Chipset	Intel® Q370	Intel® Q370
BIOS		AMI SPI 128Mbit	AMI SPI 128Mbit
Memory	Technology	Dual Channel DDR4 2666MHz	Dual Channel DDR4 2400/2666MHz
	Max. Capacity	32GB	32GB
	Socket	2 SODIMM	2 SODIMM
Graphics	Connector	1 LVDS/eDP, 2 DP++, 1 HDMI	1 LVDS, 2 DP++, 1 VGA
Expansion	PCIe, PCI	1 PCIe x4 (Gen3)	1 PCIe x16 (Gen3)
	Mini PCIe / M.2	1 M.2 M key 2280, 1 M.2 E key 2230, 1 Full mPCIe	1 Full mPCIe
	SIM	-	-
Audio	Audio Codec	ALC888S	ALC888S
Ethernet	Controller	1 Intel® I210, 1 Intel® I219	1 Intel® I210, 1 Intel® I219
Rear I/O	Ethernet (GbE)	2	2
	Serial	-	1 RS232
	USB	4 USB 3.2 Gen2	2 USB 3.2 Gen2, 2 USB 3.2 Gen1, 4 USB 2.0
	Display	2 DP++, 1 HDMI	2 DP++, 1 VGA
	Audio	-	1 Audio Jack (Lin-out/Mic-in/Line-in(Opt.))
Internal I/O	Serial	2 RS232/422/485, 2 RS232	1 RS232
	USB	4 USB 2.0	-
	Display	1 LVDS*/eDP	1 LVDS
	Audio	1 Front Audio	1 S/PDIF, 1 Front Audio
	Storage	2 SATA 3.0, (RAID 0/1/5) w/ M.2 M Key	3 SATA 3.0 (RAID 0/1/5)
	DIO	8-bit DIO	8-bit DIO
	LPC**	1	1
	SMBus	1	-
TPM / iAMT	dTPM 2.0, iAMT 12.0 (Core i7 & i5 only)	dTPM 2.0 (Opt.), iAMT 12.0 (Core i7 & i5 only)	
Power	12V DC In	ATX	
Operating Temperature	0°C~60°C	0°C~60°C	

\*\*Supports LPC EXT-RS232/RS485 module





Thin Mini-ITX

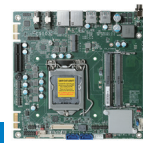
H310

Thin Mini-ITX



H310

Thin Mini-ITX



H310

Model Name		CS181-H310	CS170-H310	CS103-H310
Platform		Desktop	Desktop	Desktop
System	Processor	9th/8th Gen Intel® Core™	9th/8th Gen Intel® Core™	9th/8th Gen Intel® Core™
	Socket	LGA1151	LGA1151	LGA1151
	Max. Speed	3.1~4.6GHz	3.1~5.0GHz	2.9~4.6GHz
	TDP	35/54/58/65W	35/54/58/65/80/95W	35/54/58/65W
	Cache	-	-	-
	Chipset	Intel® H310	Intel® H310	Intel® H310
Memory	BIOS	AMI SPI 128Mbit	AMI SPI 128Mbit	AMI SPI 128Mbit
	Technology	Dual Channel DDR4 2400/2666MHz	Dual Channel DDR4 2400/2666MHz	Dual Channel DDR4 2400/2666MHz
	Max. Capacity	64GB	32GB	32GB
Graphics	Socket	2 SODIMM	2 SODIMM	2 SODIMM
	Connector	1 eDP, 1 DP++/HDMI, 4 DP by MXM module	1 LVDS, 2 DP++, 1 VGA	1 LVDS, 2 DP++
Expansion	PCIe, PCI	1 MXM Type-A/B/B+/C	1 PCIe x16 (Gen3)	1 PCIe x4 (Gen3)
	Mini PCIe / M.2	1 M.2 M key 2280, 1 M.2 E key 2230, 1 M.2 B key 3042/3052	1 M.2 M key 2280, 1 M.2 E key 2230	1 M.2 M key 2280, 1 M.2 E key 2230
	SIM	-	-	-
Audio	Audio Codec	ALC888S	ALC888S	ALC888S
Ethernet	Controller	3 Intel® I210, 1 Intel® I219	1 Intel® I210, 1 Intel® I219	1 Intel® I211, 1 Intel® I219
	Ethernet (GbE)	4	2	2
Rear I/O	Serial	-	2 RS232	-
	USB	4 USB 3.2 Gen1	4 USB 3.2 Gen1, 2 USB 2.0	4 USB 3.2 Gen1
	Display	1 DP++/HDMI	2 DP++, 1 VGA	2 DP++
	Audio	-	1 Audio Jack (Lin-out/Mic-in/Line-in)	-
	Serial	2 RS232/422/485	-	2 RS232/422/485
Internal I/O	USB	2 USB 2.0	2 USB 2.0	4 USB 2.0
	Display	1 eDP	1 LVDS	1 LVDS
	Audio	1 Front Audio	1 Front Audio	1 Front Audio
	Storage	2 SATA 3.0	2 SATA 3.0	2 SATA 3.0
	DIO	8-bit DIO	8-bit DIO	8-bit DIO
	LPC**	1	1	1
	SMBus	1	1	1
TPM / iAMT		dTPM 2.0	dTPM 2.0	
Power		19V DC In	ATX	
Operating Temperature		-5°C~65°C	-5°C~65°C	
			-10°C~70°C	

\*\*Supports LPC EXT-RS232/RS485 module



Thin Mini-ITX

H310



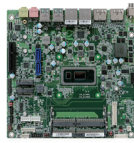
H310

Model Name		CS101-H310	CS100-H310
Platform		Desktop	Desktop
System	Processor	9th/8th Gen Intel® Core™	9th/8th Gen Intel® Core™
	Socket	LGA1151	LGA1151
	Max. Speed	3.1~4.6GHz	3.1~4.7GHz
	TDP	35/54/58/65/95W	35/54/58/65/80W
	Cache	-	-
	Chipset	Intel® H310	Intel® H310
Memory	BIOS	AMI SPI 128Mbit	AMI SPI 128Mbit
	Technology	Dual Channel DDR4 2666MHz	Dual Channel DDR4 2400/2666MHz
	Max. Capacity	32GB	32GB
Graphics	Socket	2 SODIMM	2 SODIMM
	Connector	1 LVDS/eDP, 2 DP++, 1 HDMI	1 LVDS, 2 DP++, 1 VGA
Expansion	PCIe, PCI	1 PCIe x4 (Gen3)	1 PCIe x16 (Gen3)
	Mini PCIe / M.2	1 M.2 M key 2280, 1 M.2 E key 2230, 1 Full mPCIe	1 Full mPCIe
	SIM	-	-
Audio	Audio Codec	ALC888S	ALC888S
Ethernet	Controller	1 Intel® I210, 1 Intel® I219	1 Intel® I210, 1 Intel® I219
	Ethernet (GbE)	2	2
Rear I/O	Serial	-	1 RS232
	USB	4 USB 3.2 Gen1	4 USB 3.2 Gen1, 4 USB 2.0
	Display	2 DP++, 1 HDMI	2 DP++, 1 VGA
	Audio	-	1 Audio Jack (Lin-out/Mic-in/Line-in(Opt.))
	Serial	2 RS232/422/485, 2 RS232	1 RS232
Internal I/O	USB	4 USB 2.0	-
	Display	1 LVDS*/eDP	1 LVDS
	Audio	1 Front Audio	1 S/PDIF, 1 Front Audio
	Storage	2 SATA 3.0	3 SATA 3.0 (RAID 0/1/5)
	DIO	8-bit DIO	8-bit DIO
	LPC**	1	1
	SMBus	1	-
TPM / iAMT		dTPM 2.0 (Opt.)	
Power		12V DC In	
Operating Temperature		0°C~60°C	
		0°C~60°C	

\*\*Supports LPC EXT-RS232/RS485 module

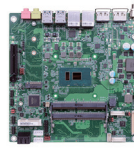
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Thin Mini-ITX



ULT

Thin Mini-ITX



ULT

Thin Mini-ITX



Q170 / H110

Model Name		WL171/WL173	KU171/KU173	KD171
Platform		ULT	ULT	Desktop
System	Processor	8th Gen Intel® Core™	7th Gen Intel® Core™	7th/6th Gen Intel® Core™
	Socket	BGA1528	BGA1356	LGA1151
	Max. Speed	2.0~4.4GHz	3.5~3.9GHz	2.3~3.9GHz
	TDP	15W	15W	35/51/54W
	Cache	2/4/6/8M	2/3/4M	3/6/8M
	Chipset	-	-	Intel® Q170 / H110
	BIOS	AMI SPI 128Mbit	AMI SPI 128Mbit	Insyde SPI
Memory	Technology	Dual Channel DDR4 2133/2400MHz	Dual Channel DDR4 1866/2133MHz	Dual Channel DDR4 2133/2400MHz
	Max. Capacity	32GB	32GB	32GB
	Socket	2 SODIMM	2 SODIMM	2 UDIMM
Graphics	Connector	1 LVDS*/eDP, 2 DP++/HDMI	1 LVDS*/eDP, 2 DP++	2 DP++, 1 HDMI(Opt.)
Expansion	PCIe, PCI	1 PCIe x4 (Gen3)	1 PCIe x4 (Gen3)	1 PCIe x16 (Gen3)
	Mini PCIe / M.2	1 M.2 M key 2242/2260/2280, 1 M.2 E key 2230	1 M.2 M key 2242/2260/2280, 1 Full mPCIe	-
	SIM	-	-	-
Audio	Audio Codec	ALC888S	ALC888S	-
Ethernet	Controller	1 Intel® I210, 1 Intel® I219	1 Intel® I210, 1 Intel® I219	2 GbE, 2 8111/8119 (opt.)
Rear I/O	Ethernet (GbE)	2	2	2
	Serial	-	-	2 RS232
	USB	4 USB 3.2 Gen2	4 USB 3.2 Gen1	2 USB 3.2 Gen1, 2 USB 2.0
	Display	2 DP++/HDMI	2 DP++	2 DP++, 1 HDMI(Opt.)
	Audio	Line-out, Mic-in	Line-out, Mic-in	1 Audio Jack (Lin-out/Mic-in/Line-in)
Internal I/O	Serial	1 RS232/422/485, 1 RS232	1 RS232/422/485, 1 RS232	4 RS232
	USB	4 USB 2.0	4 USB 2.0	1 USB 3.2 Gen1 Vertical, 4 USB 2.0
	Display	1 LVDS*/eDP	1 LVDS*/eDP	-
	Audio	1 Front Audio	1 S/PDIF	-
	Storage	2 SATA 3.0, (RAID 0/1/5) w/ M.2 M Key	2 SATA 3.0, (RAID 0/1/5) w/ M.2 M Key	2 SATA 3.0
	DIO	8-bit DIO	8-bit DIO	-
	LPC**	1	1	-
	SMBus	1	1	-
TPM / iAMT	dTPM 2.0, iAMT 11.6 (Core i7 & i5 only)	TPM 2.0 (Opt.), iAMT 11.6 (Core i7 & i5 only)	Infineon TPM 2.0 (Opt.)	
Power	12V / 9~36V DC In	12V / 9~36V DC In	12V DC In	
Operating Temperature	-5°C~65°C / -20°C~70°C	0°C~60°C / -20°C~70°C	0°C~60°C	

\*\*Supports LPC EXT-RS232/RS485 module

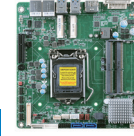
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Thin Mini-ITX



Q170

Thin Mini-ITX



Q170



Q170

Model Name		SD106-Q170	SD101/SD103-Q170	SD100-Q170
Platform		Desktop	Desktop	Desktop
System	Processor	7th/6th Gen Intel® Core™	7th/6th Gen Intel® Core™	7th/6th Gen Intel® Core™
	Socket	LGA1151	LGA1151	LGA1151
	Max. Speed	3.8~4.2GHz	2.4~4.2GHz	2.4~4.2GHz
	TDP	35/51/54/65W	35/47/65W	35/47/65W
	Cache	3/6/8M	2/3/4/6/8M	2/3/4/6/8M
	Chipset	Intel® Q170	Intel® Q170	Intel® Q170
	BIOS	Insyde SPI 128Mbit	Insyde SPI 128Mbit	Insyde SPI 128Mbit
Memory	Technology	Dual Channel DDR4 1866/2133MHz	Dual Channel DDR4 1866/2133MHz	Dual Channel DDR4 1866/2133MHz
	Max. Capacity	32GB	32GB	32GB
	Socket	2 SODIMM	2 SODIMM	2 SODIMM
Graphics	Connector	1 LVDS, 1 eDP, 1 DP++	1 LVDS, 1 DP++/HDMI, 1 DVI-I(DVI-D Signal)	1 LVDS, 1 DP++, 1 VGA, 1 DVI-I(DVI-D Signal)
Expansion	PCIe, PCI	1 PCIe x16	1 PCIe x4 (Gen3)	1 PCIe x16 (Gen3)
	Mini PCIe / M.2	1 Full mPCIe, 1 Half mPCIe	1 Full mPCIe, 1 Half mPCIe	1 Full mPCIe
	SIM	-	-	-
Audio	Audio Codec	ALC888S	ALC888S	ALC888S
Ethernet	Controller	1 Intel® I211, 1 Intel® I219	1 Intel® I210, 1 Intel® I219	1 Intel® I210, 1 Intel® I219
Rear I/O	Ethernet (GbE)	2	2	2
	Serial	-	-	2 RS232
	USB	4 USB 3.2 Gen1	4 USB 3.2 Gen1	4 USB 3.0, 2 USB 2.0
	Display	1 DP++	1 DP++/HDMI, 1 DVI-I(DVI-D signal)	1 DP++, 1 VGA, 1 DVI-I(DVI-D Signal)
	Audio	-	-	1 Audio Jack (Lin-out/Mic-in/Line-in (Opt.))
Internal I/O	Serial	2 RS232	1 RS232/422/485, 3 RS232	1 RS232/422/485, 2 RS232
	USB	4 USB 2.0	4 USB 2.0	4 USB 2.0
	Display	1 LVDS, 1 eDP	1 LVDS	1 LVDS
	Audio	1 Front Audio(Line-out/Mic-in), 1 Speaker (3W)	1 Front Audio(Line-out/Mic-in), 1 S/PDIF	1 S/PDIF
	Storage	2 SATA 3.0	2 SATA 3.0, (RAID 0/1/5/10) w/ mPCIe	3 SATA 3.0, (RAID 0/1/5) w/ mPCIe
	DIO	-	8-bit DIO	8-bit DIO
	LPC**	-	1	1
	SMBus	1	1	1
TPM / iAMT	TPM 2.0(Opt.), iAMT 11.0 (Core i7 & i5 Only)	iAMT 11.0 (Core i7 & i5 Only)	iAMT 11.0 (Core i7/i5 Only)	
Power	15~36V DC In	12V / 15~36V DC In	ATX	
Operating Temperature	0°C~60°C	0°C~60°C	0°C~60°C	

\*\*Supports LPC EXT-RS232/RS485 module



H110

Thin Mini-ITX



H110



H110

Model Name		SD170-H110	SD101/SD103-H110	SD100-H110
Platform		Desktop	Desktop	Desktop
System	Processor	7th/6th Gen Intel® Core™	7th/6th Gen Intel® Core™	7th/6th Gen Intel® Core™
	Socket	LGA1151	LGA1151	LGA1151
	Max. Speed	2.4~4.2GHz	2.4~4.2GHz	2.4~4.2GHz
	TDP	35/47/65W	35/47/65W	35/47/65W
	Cache	2/3/4/6/8M	2/3/4/6/8M	2/3/4/6/8M
	Chipset	Intel® H110	Intel® H110	Intel® H110
	BIOS	Insyde SPI 128Mbit	Insyde SPI 128Mbit	Insyde SPI 128Mbit
Memory	Technology	Dual Channel DDR4 1866/2133MHz	Dual Channel DDR4 1866/2133MHz	Dual Channel DDR4 1866/2133MHz
	Max. Capacity	32GB	32GB	32GB
	Socket	2 SODIMM	2 SODIMM	2 SODIMM
Graphics	Connector	1 DP++, 1 HDMI, 1 VGA	1 LVDS, 1 HDMI/DP++, 1 DVI-I(DVI-D Signal)	1 LVDS, 1 DP++, 1 VGA, 1 DVI-I(DVI-D Signal)
Expansion	PCIe, PCI	1 PCIe x16 (Gen3)	1 PCIe x4 (Gen2)	1 PCIe x16 (Gen3)
	Mini PCIe / M.2	1 M.2 M key 2280, 1 Full mPCIe	1 Full mPCIe, 1 Half mPCIe	1 Full mPCIe
	SIM	-	-	-
Audio	Audio Codec	ALC888S / ALC262 (Opt.)	ALC888S	ALC888S
Ethernet	Controller	4 Intel® I210 or I211 (Opt.)	1 Intel® I210, 1 Intel® I219	1 Intel® I211, 1 Intel® I219
Rear I/O	Ethernet (GbE)	4	2	2
	Serial	1 RS232/422/485	-	2 RS232
	USB	2 USB 3.2 Gen1	4 USB 3.2 Gen1	4 USB 3.0, 2 USB 2.0
	Display	1 VGA, 1 DP++, 1 DVI-I (DVI-D signal)	1 HDMI/DP++, 1 DVI-I(DVI-D Signal)	1 DP++, 1 VGA, 1 DVI-I(DVI-D Signal)
	Audio	-	-	1 Audio Jack (Lin-out/Mic-in/Line-in (Opt.))
Internal I/O	Serial	1 RS232/422/485, 2 RS232	-	1 RS232/422/485, 2 RS232
	USB	2 USB 3.2 Gen1, 4 USB 2.0, 1 USB 2.0 Vertical	4 USB 2.0	2 USB 2.0
	Display	-	1 LVDS	1 LVDS
	Audio	1 S/PDIF, 1 Audio Jack (Lin-out/Mic-in)	1 Audio(Line-out/Mic-in), 1 S/PDIF	1 S/PDIF
	Storage	2 SATA 3.0	2 SATA 3.0	3 SATA 3.0
	DIO	16-bit DIO	8-bit DIO	8-bit DIO
	LPC**	1	1 (Opt.)	1
	SMBus	1	1	1
TPM / iAMT	fTPM 2.0 / dTPM 2.0 (Opt.)	TPM (Opt.)	-	
Power	ATX	12V / 15~36V DC In	ATX	
Operating Temperature	0°C~60°C	0°C~60°C	0°C~60°C	

\*\*Supports LPC EXT-RS232/RS485 module



Thin Mini-ITX

ULT



Atom



Atom

Model Name		SU171/SU173	ADN171/ADN173	EHL171/EHL173
Platform		ULT	Atom	Atom
System	Processor	6th Gen Intel® Core™	Intel® Atom® Alder Lake-N	Intel® Atom X Series
	Socket	BGA1356	BGA1264	BGA1493
	Max. Speed	2.0~3.4GHz	3.2~3.8GHz	3.0GHz
	TDP	15W	6/10/15W	6/9/10/12W
	Cache	2/3/4M	6/16M	1.5M
	Chipset	-	-	-
	BIOS	Insyde SPI 128Mbit	AMI SPI 256Mbit	AMI SPI 256Mbit (supports UEFI boot only)
Memory	Technology	Dual Channel DDR3L 1600MHz	Single Channel DDR5 4800MHz	Dual Channel DDR4 3200MHz (ECC supported by selected SKU)
	Max. Capacity	16GB	16GB	32GB
	Socket	2 SODIMM	1 SODIMM	2 SODIMM
Graphics	Connector	1 LVDS/eDP, 1 HDMI/DP, 1 DP++	1 DP++/VGA (Co-layout), 1 DP++/HDMI (Co-layout), 1 USB Type C	1 DP++/VGA, 1 HDMI/DP++, 1 eDP/LVDS
Expansion	PCIe, PCI	1 PCIe x4 (Gen3)	1 PCIe x4	1 PCIe x4 (Gen3)
	Mini PCIe / M.2	2 Full mPCIe	1 M.2 B Key 2242/3042/3052, 1 M.2 E Key 2230, 1 M.2 A Key 3060	1 M.2 B key 2242/2280/3052, 1 M.2 E key 2230
	SIM	1 SIM (Opt.)	1 Nano SIM	1 Nano SIM
Audio	Audio Codec	ALC888S	ALC888S	ALC888S
Ethernet	Controller	1 Intel® I210, 1 Intel® I219	2 Intel® I226	2 Intel® I225
Rear I/O	Ethernet (GbE)	2	2x 2.5GbE	2x 2.5GbE
	Serial	-	-	-
	USB	4 USB 3.2 Gen1	4 USB 3.2 Gen2 or 3 USB 3.2 Gen2 + 1 USB 2.0 or 3 USB 3.2 Gen2+1 USB Type C	2 USB 3.2 Gen2, 2 USB 3.2 Gen1
	Display	1 DP++, 1 DP++/HDMI	1 HDMI/DP++(Opt.), 1 DP++/VGA(Opt.), 1 USB Type C	1 HDMI/DP++, 1 DP++/VGA
	Audio	1 Line-out, 1 Mic-in	Line-out	1 Audio Jack (Line-out)
Internal I/O	Serial	2 RS232/422/485, 2 RS232	2 RS-232/422/485, 4 RS-232	2 RS232/422/485, 4 RS232
	USB	4 USB 2.0 or 2 USB 2.0 + 1 USB 2.0 Vertical	2 USB 2.0 or 1 USB 2.0 + 1 Vertical USB 2.0 (Opt.)	4 USB 2.0 or 2 USB 2.0 + 1 Vertical USB 2.0 (Opt.)
	Display	1 LVDS/eDP	-	1 LVDS/eDP
	Audio	1 S/PDIF	1 S/PDIF, 1 Line-in/Mic-in	1 Line-out, 1 Mic-in, 1 S/PDIF
	Storage	2 SATA 3.0, (RAID 0/1/5) w/ mPCIe	2 SATA 3.0	2 SATA 3.0
	DIO	8-bit DIO	8-bit DIO	8-bit DIO
	LPC**	1	-	-
	SMBus	1	1	1
TPM / iAMT	dTPM (Opt.), iAMT 11.0 (Core i7 & i5 only)	dTPM (default) / fTPM (Opt.)	fTPM (default) / dTPM (Opt.)	
Power	12V / 15~36V DC In	12V / 9~36V DC In	12V / 9~36V DC In	
Operating Temperature	0°C~60°C / -20°C~70°C	-5°C~65°C	-5°C~65°C / -40°C~85°C	

\*\*Supports LPC EXT-RS232/RS485 module

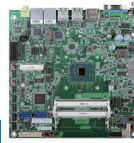


Thin Mini-ITX



Atom

Thin Mini-ITX



Atom



Atom

Model Name		AL170	AL171/AL173	BT100
Platform		Atom		
System	Processor	Intel® Atom E3900	Intel® Atom E3900	Intel® Atom E3800
	Socket	BGA1296	BGA1296	BGA1170
	Max. Speed	1.8~2.5GHz	1.8~2.5GHz	1.46~2.41GHz
	TDP	6/6.5/9.5/12W	6/6.5/9.5/12W	5/10W
	Cache	2M	2M	0.5/2M
	Chipset	-	-	-
	BIOS	SPI 64Mbit (supports UEFI boot only)	Insyde SPI 128Mbit (supports UEFI boot only)	AMI SPI 64Mbit
Memory	Technology	Dual Channel DDR3L 1867MHz	Dual Channel DDR3L 1867MHz	Single channel DDR3L 1066MHz / Dual channel DDR3L 1333MHz
	Max. Capacity	8GB	8GB	4G / 8G
	Socket	2 SODIMM	2 SODIMM	1 or 2 SODIMM
Graphics	Connector	1 VGA/DP++, 1 DP++, 1 LVDS/eDP	1 VGA/DP++, 1 HDMI/DP++, 1 LVDS/eDP	1 DVI-D, 1 VGA, 1 LVDS
Expansion	PCIe, PCI	1 PCIe x1 (Gen2)	1 PCIe x1 (Gen2)	1 PCIe x4 (Gen2)
	Mini PCIe / M.2	1 M.2 M key 2242/2280, 1 Full mPCIe	1 M.2 B key 2242/2280, 1 Full mPCIe	1 mPCIe
	SIM	-	-	-
Audio	Audio Codec	ALC888S	ALC262	ALC888S
Ethernet	Controller	2 Intel® I210 or I211	2 Intel® I210 or I211	2 Intel® I210
Rear I/O	Ethernet (GbE)	2	2	2
	Serial	2 RS232/422/485	-	1 RS232/422/485, 1 RS232
	USB	4 USB 3.2 Gen1	4 USB 3.2 Gen1	1 USB 3.2 Gen1, 3 USB 2.0
	Display	1 DP++, 1 VGA/DP++	1 HDMI/DP++, 1 VGA/DP++	1 DVI-I (DVI-D signal), 1 VGA
	Audio	1 Audio Jack (Lin-out/Mic-in/Line-in (Opt.))	1 Audio Jack (Line-out)	1 Audio Jack (Line-out/Mic-in)
Internal I/O	Serial	4 RS232	2 RS232/422/485, 4 RS232	1 RS232/422/485, 3 RS232
	USB	6 USB 2.0	4 USB 2.0, 1 USB 2.0 or USB 2.0 Vertical (Opt.)	3 USB 2.0
	Display	1 LVDS/eDP	1 LVDS/eDP	1 LVDS
	Audio	1 S/PDIF	1 Line-out, 1 Mic-in, 1 S/PDIF	1 Line-out, 1 Mic-in, 1 S/PDIF
	Storage	2 SATA 3.0	2 SATA 3.0	2 SATA 2.0
	DIO	8-bit DIO	8-bit DIO	8-bit DIO
	LPC**	1	1	1
	SMBus	1	1	1
TPM / iAMT	dTPM 2.0 (Opt.)	dTPM 2.0 (Opt.)	TPM (Opt.)	
Power	ATX	12V / 15~36V DC In	ATX	
Operating Temperature	0°C~60°C / -40°C~85°C		0°C~60°C / -40°C~85°C	0°C~60°C / -20°C~70°C / -40°C~85°C

\*\*Supports LPC EXT-RS232/RS485 module

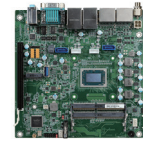
Thin Mini-ITX



Atom



AMD



AMD

Model Name		BT101/BT103	RNO171	GH171
Platform		Atom		AMD R-Series
System	Processor	Intel® Atom E3800	AMD® Ryzen™ Embedded V2000 Series	AMD® Ryzen™ Embedded V1000/R1000/R2000 Series
	Socket	BGA1170	FP6	-
	Max. Speed	1.33~2.41GHz	3.95~4.25GHz	3.2~3.8GHz
	TDP	5/6/7/10W	15/45W	12W~54W
	Cache	0.5/1/2M	3/4M	1/2/4M
	Chipset	-	-	-
	BIOS	AMI SPI 64Mbit	AMI BIOS	AMI BIOS
Memory	Technology	Single Channel DDR3L 1066MHz / Dual Channel DDR3L 1333/1066MHz	Dual Channel DDR4 3200MHz (ECC supported by selected SKU)	Dual Channel DDR4 3200MHz (ECC supported by selected SKU)
	Max. Capacity	4G / 8G	64GB	32GB
	Socket	1 or 2 SODIMM	2 SODIMM	2 SODIMM
Graphics	Connector	1 DVI-I, 1 LVDS	4 DP++	4 DP++
Expansion	PCIe, PCI	1 PCIe x1 (Gen2)	1 PCIe x16 (Gen3)	1 PCIe x16 (Gen3)
	Mini PCIe / M.2	1 mPCIe	1 M.2 M key 2280	1 M.2 M key 2280
	SIM	1 Nano SIM	-	-
Audio	Audio Codec	ALC888S	ALC888S	ALC888S
Ethernet	Controller	2 Intel® I210	2 Realtek RTL8119-CG	2 Realtek RTL8111HN-CG
Rear I/O	Ethernet (GbE)	2	2	2
	Serial	-	1 RS232/422/485, 1 RS232	1 RS232/422/485, 1 RS232
	USB	1 USB 3.2 Gen1, 2 USB 2.0	2 USB 3.2 Gen1, 2 USB 2.0	2 USB 3.2 Gen1, 2 USB 2.0
	Display	1 DVI-I	4 DP++	3 or 4 DP++
	Audio	1 Audio Jack (Line-out)	1 Audio Jack (Lin-out/Mic-in/Line-in)	1 Audio Jack (Lin-out/Mic-in/Line-in)
Internal I/O	Serial	1 RS232/422/485, 3 RS232	4 RS232	4 RS232
	USB	4 USB 2.0	3 USB 2.0 + 1 USB 2.0 Vertical Type A or 4 USB 2.0 (Opt.)	4 USB 2.0, 1 USB 3.2 Vertical / 1 USB 2.0 Vertical
	Display	1 LVDS	-	-
	Audio	1 Line-out, 1 Mic-in, 1 S/PDIF	1 Front Audio (Mic-in/Line-out), 1 S/PDIF	1 Front Audio (Mic-in/Line-out), 1 S/PDIF
	Storage	2 SATA 2.0	2 SATA 3.0	2 SATA 3.0
	DIO	8-bit DIO	-	-
	LPC**	1	-	-
	SMBus	1	-	-
TPM / iAMT	TPM (Opt.)	TPM 2.0 (Opt.)	TPM 2.0	
Power	12V / 19~24V DC In	12V DC In	12V DC In	
Operating Temperature	0°C~60°C / -20°C~70°C / -40°C~85°C		-5°C~65°C	0°C~60°C

\*\*Supports LPC EXT-RS232/RS485 module

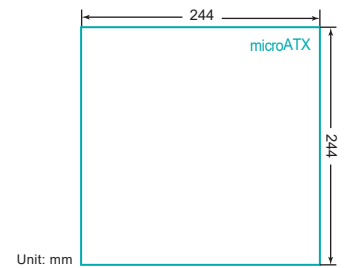
# microATX

Cost-Effective & Scalable Solutions



## Features

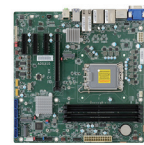
microATX ( $\mu$ ATX) motherboards (measuring 244 x 244 mm) offer high performance and cost efficiency with a smaller footprint when compared to ATX. our microATX boards are equipped with up to 4 expansion slots (combination of PCI and PCI Express) and rich I/O ports that are ideally suited for space/cost sensitive applications such as medical, industrial automation, and surveillance applications.



B650



R680E



R680E

Model Name		RAP310-B650	RPS310-R680E	ADS310-R680E
Platform		AMD Desktop	Workstation	Workstation
System	Processor	AMD® Ryzen™ 7000 Series	14th/13th/12th Gen Intel® Core™	14th/13th/12th Gen Intel® Core™
	Socket	AM5	LGA 1700	LGA 1700
	Max. Speed	5.4GHz	2.4~5.2GHz	2.4~5.2GHz
	TDP	65W	35/46/60/65/125W	35/46/60/65/125W
	Cache	up to 64MB	4/6/12/18/20/24/25/30/36M	4/6/12/18/20/24/25/30/36M
	Chipset	AMD B650	Intel® R680E	Intel® R680E
	BIOS	AMI	AMI SPI 256Mbit	AMI SPI 256Mbit
Memory	Technology	Dual Channel DDR5 5200 MHz	Dual Channel DDR5 up to 4400 MHz	Dual Channel DDR4 3200 MHz
	Max. Capacity	128GB	128GB	128GB
	Socket	4 UDIMM (ECC/Non-ECC)	4 UDIMM (ECC/Non-ECC)	4 UDIMM (ECC/Non-ECC)
Graphics	Connector	1 VGA, 1 DP++, 1 HDMI	1 VGA, 2 DP++, 1 HDMI	1 VGA, 2 DP++, 1 HDMI
	PCIe, PCI	2 PCIe x16 (Gen 4) (1 x16 or 2 x8), 2 PCIe x4 (Gen 4)	2 PCIe x16 (Gen 4) (1 x16 or 2 x8), 2 PCIe x4 (Gen 4)	1 PCIe x16 (Gen 5), 2 PCIe x4 (Gen 4), 1 PCIe x4 (Gen 3)
Expansion	Mini PCIe / M.2 / SIM	1 M.2 M key 2242/2260/2280, 1 M.2 E key 2230	2 M.2 M key 2242/2260/2280, 1 M.2 E key 2230	2 M.2 M key 2242/2260/2280, 1 M.2 E key 2230
Audio	Audio Codec	ALC888S	ALC888S	ALC888S
Ethernet	Controller	2 Intel® I226	4 Intel® I226	2 Intel® I226, 1 Intel® x550-AT2
	Ethernet (GbE)	2x 2.5GbE	4x 2.5GbE	2x 2.5GbE, 2x 10GbE
Rear I/O	Serial	1 RS-232	-	-
	USB	6 USB 3.2 Gen 2, 2 USB 2.0	4 USB 3.2 Gen 2, 4 USB 3.2 Gen 1	4 USB 3.2 Gen 2, 4 USB 3.2 Gen 1
	Display	1 VGA, 1 DP++, 1 HDMI	1 VGA, 2 DP++, 1 HDMI	1 VGA, 2 DP++, 1 HDMI
	Audio	Line-out, Mic-in, Line-in (Opt.)	Line-out, Mic-in, Line-in (Opt.)	Line-out, Mic-in, Line-in (Opt.)
	PS/2	-	-	-
	Internal I/O	Serial	1 RS-232/422/485, 2 RS-232	2 RS-232/422/485, 2 RS-232
	USB	1 USB 3.2 Gen1, 4 USB 2.0 (colay vertical Type A)	2 USB 3.2 Gen1, 2 USB 2.0 + 1 Vertical USB 2.0 or 4 USB 2.0 (Opt.)	2 USB 3.2 Gen2, 4 USB 2.0 (colay vertical Type A, MOQ required)
	Audio	1 Front Audio, 1 S/PDIF	1 Front Audio, 1 S/PDIF	1 Front Audio, 1 S/PDIF
	Storage	4 SATA 3.0, (RAID 0/1/5/10)	4 SATA 3.0, (RAID 0/1/5/10) w/ M.2 M Key	4 SATA 3.0, (RAID 0/1/5/10) w/ M.2 M Key
	DIO	8bit	4-IN / 8-OUT DIO	8-bit DIO
	LPC**	-	-	-
	SMBus	1	1	1
	PS/2	1	1	1
TPM / iAMT		Nuvoton TPM 2.0	dTPM 2.0, iAMT (Core i5/i7/i9 Only)	dTPM 2.0, iAMT (Core i5/i7/i9 Only)
Power		ATX	ATX	ATX
Operating Temperature		-5°C~65°C	-5°C~65°C	-5°C~65°C

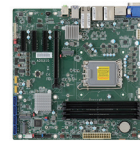
\*\*Supports LPC EXT-RS232/RS485 module



Q670E



Q670E



Q670E

Model Name		RPS330-Q670E	RPS310-Q670E	ADS310-Q670E
Platform		Desktop	Desktop	Desktop
System	Processor	14th/13th/12th Gen Intel® Core™	14th/13th/12th Gen Intel® Core™	14th/13th/12th Gen Intel® Core™
	Socket	LGA 1700	LGA 1700	LGA 1700
	Max. Speed	2.4~5.2GHz	2.4~5.2GHz	2.4~5.2GHz
	TDP	35/46/60/65/125W	35/46/60/65/125W	35/46/60/65/125W
	Cache	4/6/12/18/20/24/25/30/36M	4/6/12/18/20/24/25/30/36M	4/6/12/18/20/24/25/30/36M
	Chipset	Intel® Q670E	Intel® Q670E	Intel® Q670E
Memory	BIOS	AMI SPI 256Mbit	AMI SPI 256Mbit	AMI SPI 256Mbit
	Technology	Dual Channel DDR5 up to 4400MHz	Dual Channel DDR5 up to 4400MHz	Dual Channel DDR4 3200MHz
	Max. Capacity	128GB	128GB	128GB
Graphics	Socket	4 UDIMM (Non-ECC)	4 UDIMM (Non-ECC)	4 UDIMM (Non-ECC)
	Connector	1 VGA, 1 DP++, 1 HDMI	1 VGA, 2 DP++, 1 HDMI	1 VGA, 2 DP++, 1 HDMI
Expansion	PCIe, PCI	1 PCIe x16 (Gen 5), 1 PCIe x4 (Gen 3, share M.2-M), 2 PCI	2 PCIe x16 (Gen 4) (1 x16 or 2 x8), 2 PCIe x4 (Gen 4)	1 PCIe x16 (Gen 5), 2 PCIe x4 (Gen 4), 1 PCIe x4 (x1, Gen 3)
	Mini PCIe / M.2 / SIM	2 M.2 M key 2242/2260/2280, 1 M.2 E key 2230	2 M.2 M key 2242/2260/2280, 1 M.2 E key 2230	2 M.2 M key 2242/2260/2280, 1 M.2 E key 2230
Audio	Audio Codec	ALC888S	ALC888S	ALC888S
Ethernet	Controller	1 Intel® I219, 1 Intel® I226 or 2 Intel® I226	2 Intel® I226	2 Intel® I226, 1 Intel® x550-AT2
	Ethernet (GbE)	1x 2.5GbE, 1x GbE or 2x 2.5GbE	2x 2.5GbE	2x 2.5GbE, 2x 10GbE
Rear I/O	Serial	1 RS-232/422/485	-	-
	USB	4 USB 3.2 Gen 2, 2 USB 2.0	4 USB 3.2 Gen 2, 4 USB 3.2 Gen 1	4 USB 3.2 Gen 2, 4 USB 3.2 Gen 1
	Display	1 VGA, 1 DP++, 1 HDMI	1 VGA, 2 DP++, 1 HDMI	1 VGA, 2 DP++, 1 HDMI
	Audio	Line-out, Mic-in, Line-in (Opt.)	Line-out, Mic-in, Line-in (Opt.)	Line-out, Mic-in, Line-in (Opt.)
	PS/2	1 mini-DIN-6	-	-
	Internal I/O	Serial	1 RS-232/422/485, 4 RS-232	2 RS-232/422/485, 2 RS232
Internal I/O	USB	2 USB 3.2 Gen1, 4 USB 2.0, 1 USB 2.0 vertical Type A	2 USB 3.2 Gen1, 2 USB 2.0 + 1 Vertical USB 2.0 or 4 USB 2.0 (Opt.)	2 USB 3.2 Gen1, 4 USB 2.0 (colay vertical Type A, MOQ required)
	Audio	1 Front Audio, 1 S/PDIF	1 Front Audio, 1 S/PDIF	1 Front Audio, 1 S/PDIF
	Storage	4 SATA 3.0, (RAID 0/1/5/10) w/ M.2 M Key	4 SATA 3.0, (RAID 0/1/5/10) w/ M.2 M Key	4 SATA 3.0, (RAID 0/1/5/10) w/ M.2 M Key
	DIO	4-IN / 8-OUT DIO	4-IN / 8-OUT DIO	8-bit DIO
	LPC**	-	-	-
	SMBus	1	1	1
	PS/2	-	1	1
TPM / iAMT	dTPM 2.0	dTPM 2.0, iAMT (Core i5/i7/i9 Only)	dTPM 2.0, iAMT (Core i5/i7/i9 Only)	
Power	ATX	ATX	ATX	
Operating Temperature	-5°C~65°C	-5°C~65°C	-5°C~65°C	

\*\*Supports LPC EXT-RS232/RS485 module



H610E



W480E



W480E

Model Name		RPS330-H610E	CMS311-W480E	CMS310-W480E
Platform		Desktop	Workstation	Workstation
System	Processor	14th/13th/12th Gen Intel® Core™	10th Gen Intel® Core™	10th Gen Intel® Core™
	Socket	LGA 1700	LGA 1200	LGA 1200
	Max. Speed	2.4~5.2GHz	3.0~4.8GHz	3.0~4.8GHz
	TDP	35/46/60/65/125W	35/58/65/80/95/125W	35/58/65/80/95/125W
	Cache	4/6/12/18/20/24/25/30/36M	2/4/6/12/16/20M	2/4/6/12/16/20M
	Chipset	Intel® H610E	Intel® W480E	W480E
Memory	BIOS	AMI SPI 256Mbit	AMI SPI 256Mbit	Insyde SPI 128Mbit
	Technology	Dual Channel DDR5 up to 4400MHz	Dual Channel DDR4 2400/2666/2933MHz	Dual Channel DDR4 2400/2666/2933MHz
	Max. Capacity	64GB	128GB	128GB
Graphics	Socket	2 UDIMM (Non-ECC)	4 UDIMM (ECC/Non-ECC)	4 UDIMM (ECC/Non-ECC)
	Connector	1 VGA, 1 DP++, 1 HDMI	1 DP++, 1 VGA, 1 HDMI	1 DP++, 1 VGA, 1 HDMI
Expansion	PCIe, PCI	1 PCIe x16 (Gen 5), 1 PCIe x4 (Gen 3, share M.2-M), 2 PCI	2 PCIe x16 (Gen3)(1x16 or 2x8), 1 PCIe x4 (Gen3), 1 PCIe x1 (Gen3)	2 PCIe x16 (1x16 or 2x8), 2 PCIe x4
	Mini PCIe / M.2 / SIM	2 M.2 M key 2242/2260/2280	1 M.2 M key 2242/2260/2280	1 M.2 E key 2230, 1 M.2 M key 2242/2260/2280
Audio	Audio Codec	ALC888S	ALC888S	ALC888S
Ethernet	Controller	1 Intel® I219, 1 Intel® I226 or 2 Intel® I226	1 Intel® I219, 1 Intel® I210, 1 Intel® x550	1 Intel® I219, 1 or 3 Intel® I210
	Ethernet (GbE)	1x 2.5GbE, 1 GbE or 2x 2.5GbE	2x 10GbE, 2x GbE	2 or 4
Rear I/O	Serial	1 RS-232/422/485	-	-
	USB	4 USB 3.2 Gen 1, 2 USB 2.0	2 USB 3.2 Gen2, 4 USB 3.2 Gen1	2 USB 3.2 Gen 2, 4 USB 3.2 Gen1
	Display	1 VGA, 1 DP++, 1 HDMI	1 DP++, 1 VGA, 1 HDMI	1 DP++, 1 VGA, 1 HDMI
	Audio	Line-out, Mic-in, Line-in (Opt.)	Line-out, Mic-in, Line-in (Opt.)	Line-out, Mic-in, Line-in (Opt.)
	PS/2	1 mini-DIN-6	-	-
	Internal I/O	Serial	1 RS-232/422/485, 4 RS-232	2 RS-232/422/485
Internal I/O	USB	2 USB 2.0, 2 USB 2.0, co-lay 1 USB 2.0 vertical Type A	2 USB 3.2 Gen 2, 2 USB 3.2 Gen 1, 4 USB 2.0	2 USB 3.2 Gen 2, 4 USB 2.0
	Audio	1 Front Audio, 1 S/PDIF	1 Front Audio, 1 S/PDIF	1 Front Audio, 1 S/PDIF
	Storage	4 SATA 3.0, w/ M.2 M Key	5 SATA 3.0 (RAID 0/1/5/10)	SATA 3.0, (RAID 0/1/5/10) w/ M.2 M Key
	DIO	4-IN / 8-OUT DIO	16-bit DIO	16-bit DIO
	LPC**	-	1	1
	SMBus	1	1	1
	PS/2	-	-	1
TPM / iAMT	dTPM 2.0	dTPM 2.0, iAMT (Xeon/Core i5/i7/i9 Only)	dTPM 2.0, iAMT (Xeon/Core i5/i7/i9 Only)	
Power	ATX	ATX	ATX	
Operating Temperature	-5°C~65°C	-5°C~65°C	-5°C~65°C	

\*\*Supports LPC EXT-RS232/RS485 module

**Q470E****Q470E****Q470E**

Model Name		CMS330-Q470E	CMS311-Q470E	CMS310-Q470E
Platform		Desktop	Desktop	Desktop
System	Processor	10th Gen Intel® Core™	10th Gen Intel® Core™	10th Gen Intel® Core™
	Socket	LGA 1200	LGA 1200	LGA 1200
	Max. Speed	3.0~4.7GHz	3.0~4.8GHz	3.0~4.8GHz
	TDP	35/58/65/125W	35/58/65/80/95/125W	35/58/65/80/95/125W
	Cache	2/4/6/12/16/20M	2/4/6/12/16/20M	2/4/6/12/16/20M
	Chipset	Intel® Q470E	Intel® Q470E	Intel® Q470E
Memory	BIOS	AMI SPI 256Mbit	AMI SPI 256Mbit	Insyde SPI 128Mbit
	Technology	Dual Channel DDR4 2400/2666/2933MHz	Dual Channel DDR4 2400/2666/2933MHz	Dual Channel DDR4 2400/2666/2933MHz
	Max. Capacity	128GB	128GB	128GB
Graphics	Socket	4 UDIMM (Non-ECC)	4 UDIMM	4 UDIMM
	Connector	1 VGA, 1 DP++, 1 HDMI	1 DP++, 1 VGA, 1 HDMI	1 DP++, 1 VGA, 1 HDMI
Expansion	PCIe, PCI	1 PCIe x16, 1 PCIe x4, 2PCI	2 PCIe x16 (Gen3)(1x16 or 2x8), 1 PCIe x4 (Gen3), 1 PCIe x1 (Gen3)	2 PCIe x16 (1x16 or 2x8), 2 PCIe x4
	Mini PCIe / M.2 / SIM	1 M.2 M key 2242/2260/2280, 1 M.2 E key 2230	1 M.2 M key 2242/2260/2280	1 M.2 E key 2230, 1 M.2 M key 2242/2260/2280
Audio	Audio Codec	ALC888S	ALC888S	ALC888S
Ethernet	Controller	1 Intel® I219, 1 Intel® I210	1 Intel® I219, 1 Intel® I210, 1 Intel® x550	1 Intel® I219, 1 or 3 Intel® I210
Rear I/O	Ethernet (GbE)	2	2x 10GbE, 2x GbE	2 x 1GbE, 2 x 1GbE (Opt.)
	Serial	1 RS-232/422/485	-	-
	USB	2 USB 3.2 Gen2, 2 USB 3.2 Gen1, 4 USB 3.2 Gen1 (Opt.), 2 USB 2.0	2 USB 3.2 Gen2, 4 USB 3.2 Gen1	2 USB 3.2 Gen 2, 4 USB 3.2 Gen 1
	Display	1 VGA, 1 DP++, 1 HDMI	1 DP++, 1 VGA, 1 HDMI	1 DP++, 1 VGA, 1 HDMI
	Audio	Line-out, Mic-in, Line-in (Opt.)	Line-out, Mic-in, Line-in (Opt.)	Line-out, Mic-in, Line-in (Opt.)
	PS/2	1	-	-
Internal I/O	Serial	9 RS-232	2 RS-232/422/485	2 RS-232/422/485, 2 RS-232
	USB	2 USB 3.2 Gen 1, 4 USB 2.0	2 USB 3.2 Gen 2, 2 USB 3.2 Gen 1, 4 USB 2.0	2 USB 3.2 Gen 2, 4 USB 2.0
	Audio	1 Front Audio, 1 S/PDIF	1 Front Audio, 1 S/PDIF	1 Front Audio, 1 S/PDIF
	Storage	4 SATA 3.0, (RAID 0/1/5/10) w/ M.2 M Key	5 SATA 3.0 (RAID 0/1/5/10)	4 SATA 3.0, (RAID 0/1/5/10) w/ M.2 M Key
	DIO	16-bit DIO	16-bit DIO	16-bit DIO
	LPC**	1	1	1
	SMBus	1	1	1
PS/2	-	-	1	
TPM / iAMT	dTPM 2.0, iAMT (Xeon/Core i5/i7/i9 Only)	dTPM 2.0, iAMT (Xeon/Core i5/i7/i9 Only)	dTPM 2.0, iAMT (Xeon/Core i5/i7/i9 Only)	
Power	ATX	ATX	ATX	
Operating Temperature	-5°C~65°C	-5°C~65°C	-5°C~65°C	

\*\*Supports LPC EXT-RS232/RS485 module

**H420E****C246****C246**

Model Name		CMS330-H420E	CS350-C246	CS332-C246
Platform		Desktop	Workstation	Workstation
System	Processor	10th Gen Intel® Core™	9th/8th Gen Intel® Core™	9th/8th Gen Intel® Core™
	Socket	LGA 1200	LGA 1151	LGA 1151
	Max. Speed	3.0~4.7GHz	2.9~4.7 GHz	2.9~4.7 GHz
	TDP	35/58/65/125W	35/54/58/65/71/80/95W	35/54/58/65/71/80W
	Cache	2/4/6/12/16/20M	2/4/6/8/9/12/16M	2/4/6/8/9/12/16M
	Chipset	H420E	Intel® C246	Intel® C246
Memory	BIOS	AMI SPI 256Mbit	AMI SPI 128Mbit	AMI SPI 128Mbit
	Technology	Dual Channel DDR4 2400/2666/2933MHz	Dual Channel DDR4 2400/2666 MHz	Dual Channel DDR4 2400/2666 MHz
	Max. Capacity	64GB	128GB	128 GB
Graphics	Socket	2 UDIMM (Non-ECC)	4 DIMM (ECC/non-ECC)	4 DIMM (ECC/non-ECC)
	Connector	1 VGA, 1 DP++/VGA, 1 HDMI/DP++, 1 HDMI	1 DP++, 1 HDMI, 1 DVI-I (DVI-D signal)	1 VGA, 2 DP++
Expansion	PCIe, PCI	1 PCIe x16, 1 PCIe x4, 2PCI	2 PCIe x16 (1 x16 or 2 x8), 2 PCIe x4	1 PCIe x16, 2 PCIe x4, 1 PCI
	Mini PCIe / M.2 / SIM	-	1 M.2 M key 2242/2260/2280, 1 M.2 E key 2230	1 mPCIe, 1 M.2 M key 2242/2280, 1 M.2 E key 2230
Audio	Audio Codec	ALC888S	ALC888S	ALC888S
Ethernet	Controller	1 Intel® I219, 1 Intel® I210	1 Intel® I210, 1 Intel® I219	1 or 3 Intel® I210, 1 Intel® I219
Rear I/O	Ethernet (GbE)	2	2	2 or 4
	Serial	1 RS-232/422/485	1 RS-232/422/485	1 RS-232/422/485
	USB	4 USB 3.2 Gen1, 2 USB 2.0	2 USB 3.2 Gen2, 2 USB 3.2 Gen1, 2 USB 2.0	4 USB 3.2 Gen 1, 2 USB 2.0
	Display	1 VGA, 1 DP++/VGA, 1 HDMI/DP++, 1 HDMI	1 DP++, 1 HDMI, 1 DVI-I (DVI-D signal)	1 VGA, 2 DP++
	Audio	Line-out, Mic-in, Line-in (Opt.)	Line-out, Mic-in, Line-in (Opt.), S/PDIF, Front Audio	Line-out, Mic-in, Line-in (Opt.)
	PS/2	1	1 mini-DIN-6	1 mini-DIN-6
Internal I/O	Serial	9 RS-232	1 RS-232/422/485, 2 RS-232	3 RS-232
	USB	2 USB 3.2 Gen 1, 2 USB 2.0	2 USB 3.2 Gen2, 4 USB 2.0	2 USB 3.2 Gen1, 4 USB 2.0
	Audio	1 Front Audio, 1 S/PDIF	Front Audio, S/PDIF	Front Audio, S/PDIF
	Storage	4 SATA 3.0	6 SATA 3.0 (RAID 0/1/5/10)	4 SATA 3.0 (RAID 0/1/5/10) (Opt. 5 SATA 3.0)
	DIO	16-bit DIO	8-bit DIO	8-bit DIO
	LPC**	1	1	1
	SMBus	1	1	1
PS/2	-	-	-	
TPM / iAMT	dTPM 2.0	dTPM 2.0, iAMT 12.0 (Xeon/Core i5/i7 Only)	dTPM 2.0, iAMT (Xeon/Core i5/i7 Only)	
Power	ATX	ATX	ATX	
Operating Temperature	-5°C~65°C	-5°C~65°C	-5°C~65°C	

\*\*Supports LPC EXT-RS232/RS485 module

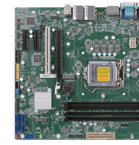




C246



Q370



Q370

Model Name		CS331-C246	CS350-Q370	CS332-Q370
Platform		Workstation	Desktop	Desktop
System	Processor	9th/8th Gen Intel® Core™	9th/8th Gen Intel® Core™	9th/8th Gen Intel® Core™
	Socket	LGA 1151	LGA 1151	LGA 1151
	Max. Speed	2.9~4.7 GHz	2.9~4.6 GHz	2.9~4.6 GHz
	TDP	35/54/58/65/71/80W	35/54/58/65/95W	35/54/58/65W
	Cache	2/4/6/8/9/12/16M	2/4/6/9/12M	2/4/6/9/12M
	Chipset	Intel® C246	Intel® Q370	Intel® Q370
	BIOS	AMI SPI 128Mbit	AMI SPI 128Mbit	AMI SPI 128Mbit
Memory	Technology	Dual Channel DDR4 2400/2666 MHz	Dual Channel DDR4 2400/2666 MHz	Dual Channel DDR4 2400/2666 MHz
	Max. Capacity	128GB	128GB	128GB
	Socket	4 DIMM (ECC/Non ECC)	4 DIMM (non ECC support)	4 DIMM (non ECC support)
Graphics	Connector	1 HDMI, 1 DP++, 1 DVI-I (DVI-D signal)	1 DP++, 1 HDMI, 1 DVI-I (DVI-D signal)	1 VGA, 2 DP++
	PCIe, PCI	2 PCIe x16 (1 x16 or 2 x8), 2 PCIe x4	2 PCIe x16 (1 x16 or 2 x8), 2 PCIe x4	1 PCIe x16, 2 PCIe x4, 1 PCI
Expansion	Mini PCIe / M.2 / SIM	1 mPCIe, 1 M.2 M key 2242/2260/2280	1 M.2 E key 2230, 1 M.2 M key 2242/2260/2280	1 M.2 M key 2242/2280, 1 M.2 E key 2230
	Audio Codec	ALC888S	ALC888S	ALC262
Ethernet	Controller	1 Intel® I210, 1 Intel® I219	1 Intel® I210, 1 Intel® I219	1 or 3 Intel® I210, 1 Intel® I219
	Ethernet (GbE)	2	2	2 or 4
Rear I/O	Serial	1 RS-232/422/485	1 RS-232/422/485	1 RS-232/422/485
	USB	2 USB 3.2 Gen 2, 2 USB 3.2 Gen 1, 2 USB 2.0	2 USB 3.2 Gen2, 2 USB 3.2 Gen1, 2 USB 2.0	4 USB 3.2 Gen 1, 2 USB 2.0
	Display	1 HDMI, 1 DP++, 1 DVI-I (DVI-D signal)	1 DP++, 1 HDMI, 1 DVI-I (DVI-D signal)	1 VGA, 2 DP++
	Audio	Line-out, Mic-in, Line-in (Opt.)	Line-out, Mic-in, Line-in (Opt.)	Line-out, Mic-in, Line-in (Opt.)
	PS/2	1 mini-DIN-6	1 mini-DIN-6	1 mini-DIN-6
	Serial	1 RS-232/422/485, 2 RS-232	1 RS-232/422/485, 2 RS-232	3 RS-232
	USB	2 USB 3.2 Gen 2, 4 USB 2.0	2 USB 3.2 Gen2, 4 USB 2.0	2 USB 3.2 Gen 1, 4 USB 2.0
Internal I/O	Audio	Front Audio, S/PDIF	Front Audio, S/PDIF	Front Audio, S/PDIF
	Storage	6 SATA 3.0 (RAID 0/1/5/10)	6 SATA 3.0 (RAID 0/1/5/10)	4 SATA 3.0 (RAID 0/1/5/10) (Opt. 5 SATA 3.0)
	DIO	8-bit DIO	8-bit DIO	8-bit DIO
	LPC**	1	1	1
	SMBus	1	1	1
	PS/2	-	-	-
	TPM / iAMT	dTPM 2.0, iAMT (Xeon/Core i5/i7 Only)	dTPM 2.0, iAMT (Xeon/Core i5/i7 Only)	dTPM 2.0, iAMT (Xeon/Core i5/i7 Only)
Power	ATX	ATX	ATX	
Operating Temperature	-5°C~65°C	-5°C~65°C	-5°C~65°C	

\*\*Supports LPC EXT-RS232/RS485 module



Q370



Q370



H310

Model Name		CS331-Q370	CS330-Q370	CS330-H310
Platform		Desktop	Desktop	Desktop
System	Processor	9th/8th Gen Intel® Core™	9th/8th Gen Intel® Core™	9th/8th Gen Intel® Core™
	Socket	LGA 1151	LGA 1151	LGA 1151
	Max. Speed	2.9~4.6 GHz	2.9~4.6 GHz	2.9~4.6 GHz
	TDP	35/54/58/65W	35/54/58/65W	35/54/58/65W
	Cache	2/4/6/9/12M	2/4/6/9/12M	2/4/6/9/12M
	Chipset	Intel® Q370	Intel® Q370	Intel® H310
	BIOS	AMI SPI 128Mbit	AMI SPI 128Mbit	AMI SPI 128Mbit
Memory	Technology	Dual Channel DDR4 2400/2666 MHz	Dual Channel DDR4 2400/2666 MHz	Dual Channel DDR4 2400/2666 MHz
	Max. Capacity	128GB	128 GB	64 GB
	Socket	4 DIMM (non ECC support)	4 DIMM	2 DIMM
Graphics	Connector	1 HDMI, 1 DP++, 1 DVI-I (DVI-D signal)	1 VGA, 1 DP++, 1 DVI-I (DVI-D signal)	1 VGA, 1 DP++, 1 DVI-I (DVI-D signal)
	PCIe, PCI	2 PCIe x16 (1 x16 or 2 x8), 2 PCIe x4	1 PCIe x16, 1 PCIe x4, 2 PCI	1 PCIe x16, 1 PCIe x4, 2 PCI
Expansion	Mini PCIe / M.2 / SIM	1 mPCIe, 1 M.2 M key 2242/2260/2280	1 Full mPCIe	-
	Audio Codec	ALC888S	ALC888S	ALC888S
Ethernet	Controller	1 Intel® I210, 1 Intel® I219	1 Intel® I210, 1 Intel® I219	1 Intel® I210, 1 Intel® I219
	Ethernet (GbE)	2	2	2
Rear I/O	Serial	1 RS-232/422/485	1 RS-232/422/485	1 RS-232/422/485
	USB	2 USB 3.2 Gen 2, 2 USB 3.2 Gen 1, 2 USB 2.0	2 USB 3.2 Gen 2, 2 USB 3.2 Gen 1, 2 USB 2.0	4 USB 3.2 Gen 1, 2 USB 2.0
	Display	1 HDMI, 1 DP++, 1 DVI-I (DVI-D signal)	1 VGA, 1 DP++, 1 DVI-I (DVI-D signal)	1 VGA, 1 DP++, 1 DVI-I (DVI-D signal)
	Audio	Line-out, Mic-in, Line-in (Opt.)	Line-out, Mic-in, Line-in (Opt.)	Line-out, Mic-in, Line-in (Opt.)
	PS/2	1 mini-DIN-6	1 mini-DIN-6	1
	Serial	1 RS-232/422/485, 2 RS-232	1 RS-232/422/485, 4 RS-232	1 RS-232/422/485, 4 RS-232
	USB	2 USB 3.2 Gen 2, 4 USB 2.0	2 USB 3.2 Gen 1, 4 USB 2.0	4 USB 2.0
Internal I/O	Audio	Front Audio, S/PDIF	Front Audio, S/PDIF	Front Audio, S/PDIF
	Storage	5 SATA 3.0 (RAID 0/1/5/10)	4 SATA 3.0 (RAID 0/1/5/10)	4 SATA 3.0
	DIO	8-bit DIO	8-bit DIO	8-bit DIO
	LPC**	1	1	1
	SMBus	1	1	1
	PS/2	-	-	-
	TPM / iAMT	dTPM 2.0, iAMT (Xeon/Core i5/i7 Only)	dTPM 2.0, iAMT (Xeon/Core i5/i7 Only)	dTPM 2.0
Power	ATX	ATX	ATX	
Operating Temperature	0°C~60°C	0°C~60°C	0°C~60°C	

\*\*Supports LPC EXT-RS232/RS485 module



C236



C236



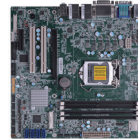
Q170

Model Name		KD331-C236	SD331-C236	KD331-Q170
Platform		Workstation	Workstation	Desktop
System	Processor	7th/6th Gen Intel® Core™	7th/6th Gen Intel® Core™	7th/6th Gen Intel® Core™
	Socket	LGA 1151	LGA 1151	LGA 1151
	Max. Speed	2.6~4.2GHz	2.6~4.2GHz	2.6~4.2GHz
	TDP	Max. 95W	Max. 95W	Max. 95W
	Cache	2/3/6/8M	2/3/4/6/8M	2/3/6/8M
	Chipset	Intel® C236	Intel® C236	Intel® Q170
	BIOS	Insyde SPI 128Mbit	Insyde SPI 128Mbit	Insyde SPI 128Mbit
Memory	Technology	Dual Channel DDR4 2133/2400MHz	Dual Channel DDR4 1866/2133MHz	Dual Channel DDR4 2133/2400MHz
	Max. Capacity	64GB	64GB	64GB
	Socket	4 DIMM (ECC/Non-ECC)	4 DIMM (ECC/Non-ECC)	4 DIMM
Graphics	Connector	1 DVI-D, 1 VGA, 1 DP++	1 VGA, 1 DVI-D, 1 DP++	1 DVI-D, 1 VGA, 1 DP++
Expansion	PCIe, PCI	2 PCIe x16 (1 x16 or 2 x8), 2 PCIe x4	2 PCIe x16 (1 x16 or 2 x8), 2 PCIe x4	2 PCIe x16 (1 x16 or 2 x8), 2 PCIe x4
	Mini PCIe / M.2 / SIM	1 M.2 M key 2260/2280	-	1 M.2 M key 2260/2280
Audio	Audio Codec	ALC888S	ALC888S	ALC888S
Ethernet	Controller	3 Intel® I210, 1 Intel® I219	1 Intel® I210, 1 Intel® I219	3 Intel® I210, 1 Intel® I219
Rear I/O	Ethernet (GbE)	4	2	4
	Serial	1 RS-232/422/485	1 RS-232/422/485	1 RS-232/422/485
	USB	4 USB 3.2 Gen1, 2 USB 2.0	4 USB 3.2 Gen1, 2 USB 2.0	4 USB 3.2 Gen1, 2 USB 2.0
	Display	1 DVI-D, 1 VGA, 1 DP++	1 VGA, 1 DVI-D, 1 DP++	1 DVI-D, 1 VGA, 1 DP++
	Audio	-	Line-out, Mic-in, Line-in (Opt.)	-
	PS/2	1 mini-DIN-6	1 mini-DIN-6	1 mini-DIN-6
	Internal I/O	Serial	1 RS-232/422/485, 4 RS-232	1 RS-232/422/485, 4 RS-232
USB	2 USB 3.2 Gen1, 4 USB 2.0 or 2 USB 2.0 + 1 Vertical USB 2.0(Opt.)	4 USB 3.2 Gen1, 4 USB 2.0	2 USB 3.2 Gen1, 4 USB 2.0 or 2 USB 2.0 + 1 Vertical USB 2.0(Opt.)	
Audio	Front Audio, S/PDIF	Front Audio(Line-out/Mic-in)(Opt.), S/PDIF	Front Audio, S/PDIF	
Storage	5 SATA 3.0, (RAID 0/1/5/10) w/ M.2 M Key	6 SATA 3.0, (RAID 0/1/5/10)	5 SATA 3.0, (RAID 0/1/5/10) w/ M.2 M Key	
DIO	8-bit DIO	8-bit DIO	8-bit DIO	
LPC**	1	1	1	
SMBus	1	1	1	
TPM / iAMT	dTPM 2.0, iAMT 11.0(Xeon E3/Core i5/i7 Only)	dTPM 2.0, iAMT 11.0(Xeon E3/Core i5/i7 Only)	dTPM 2.0, iAMT (Core i5/i7 Only)	
Power	ATX	ATX	ATX	
Operating Temperature	0°C~60°C	0°C~60°C	0°C~60°C	

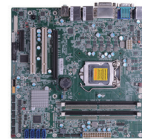
\*\*Supports LPC EXT-RS232/RS485 module



Q170



Q170



H110

Model Name		SD331-Q170	SD330-Q170	SD330-H110
Platform		Desktop	Desktop	Desktop
System	Processor	7th/6th Gen Intel® Core™	7th/6th Gen Intel® Core™	7th/6th Gen Intel® Core™
	Socket	LGA 1151	LGA 1151	LGA 1151
	Max. Speed	2.6~4.2GHz	2.6~4.2GHz	2.6~4.2GHz
	TDP	Max. 95W	Max. 95W	Max. 95W
	Cache	2/3/4/6/8M	2/3/4/6/8M	2/3/4/6/8M
	Chipset	Intel® Q170	Intel® Q170	Intel® H110
	BIOS	Insyde SPI 128Mbit	Insyde SPI 128Mbit	Insyde SPI 128Mbit
Memory	Technology	Dual Channel DDR4 1866/2133MHz	Dual Channel DDR4 1866/2133MHz	Dual Channel DDR4 1866/2133MHz
	Max. Capacity	64GB	64GB	32GB
	Socket	4 DIMM	4 DIMM	2 DIMM
Graphics	Connector	1 VGA, 1 DVI-D, 1 DP++	1 VGA, 1 LVDS, 1 DVI-D, 1 DP++	1 VGA, 1 LVDS, 1 DVI-D, 1 DP++
Expansion	PCIe, PCI	2 PCIe x16 (1 x16 or 2 x8), 2 PCIe x4	1 PCIe x16, 1 PCIe x4, 2 PCI	1 PCIe x16, 1 PCIe x4, 2 PCI
	Mini PCIe / M.2 / SIM	-	1 Full mPCIe, 1 SIM(Opt.)	-
Audio	Audio Codec	ALC888S	ALC888S	ALC888S
Ethernet	Controller	1 Intel® I210, 1 Intel® I219	1 Intel® I210, 1 Intel® I219	1 Intel® I210, 1 Intel® I219
Rear I/O	Ethernet (GbE)	2	2	2
	Serial	1 RS-232/422/485	1 RS-232/422/485	1 RS-232/422/485
	USB	4 USB 3.2 Gen1, 2 USB 2.0	4 USB 3.2 Gen1, 2 USB 2.0	4 USB 3.2 Gen1, 2 USB 2.0
	Display	1 VGA, 1 DVI-D, 1 DP++	1 VGA, 1 DVI-D, 1 DP++	1 VGA, 1 DVI-D, 1 DP++
	Audio	Line-out, Mic-in, Line-in (Opt.)	Line-out, Mic-in, Line-in (Opt.)	Line-out, Mic-in, Line-in (Opt.)
	PS/2	1 mini-DIN-6	1 mini-DIN-6	1 mini-DIN-6
	Internal I/O	Serial	1 RS-232/422/485, 4 RS-232	1 RS-232/422/485, 4 RS-232
USB	4 USB 3.2 Gen1, 2 USB 2.0 + 1 Vertical USB 2.0 (type A)	2 USB 3.2 Gen1, 4 USB 2.0	2 USB 2.0, 1 Vertical USB 2.0 (type A)	
Audio	Front Audio(Line-out/Mic-in)(Opt.), S/PDIF	Front Audio(Line-out/Mic-in)(Opt.), S/PDIF	Front Audio(Line-out/Mic-in)(Opt.), S/PDIF	
Storage	6 SATA 3.0, (RAID 0/1/5/10)	4 SATA 3.0, (RAID 0/1/5/10)	4 SATA 3.0	
DIO	8-bit DIO	8-bit DIO	8-bit DIO	
LPC**	1	1	1	
SMBus	1	1	1	
TPM / iAMT	dTPM 2.0, iAMT 11.0 (Core i5/i7 Only)	dTPM 2.0, iAMT 11.0 (Core i5/i7 Only)	dTPM 2.0	
Power	ATX	ATX	ATX	
Operating Temperature	0°C~60°C	0°C~60°C	0°C~60°C	

\*\*Supports LPC EXT-RS232/RS485 module

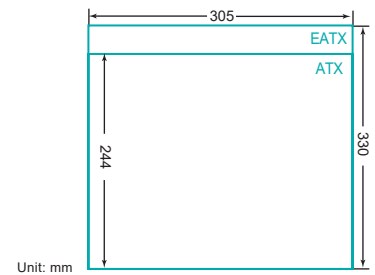
# EATX/ATX

Fast Computing & Highly Reliable Solutions



## Features

Our EATX/ATX embedded motherboards feature a high computing capability, rich I/O connectivity, high integration, and expansibility which support up to 7 expansion slots (ATX). The form factors of EATX/ATX boards are 330 x 305 mm for EATX and 305 x 244 mm for ATX, making both motherboards an ideal solution for industrial automation, server, and transportation applications that require a 24/7 operation reliability.



C741



C622

Model Name		ERX810-C741	PR811-C622
Platform		Server-Grade	Server-Grade
System	Processor	5th/4th Gen Intel® Xeon® Scalable Family	2nd/1st Gen Intel® Xeon® Scalable Family
	Socket	Dual LGA4677	Dual LGA3647
	Max. Speed	up to 4.1GHz (Turbo)	up to 3.9GHz (Turbo)
	TDP	up to 270W	up to 150W
	Cache	up to 60MB	up to 35.75MB
	Chipset	Intel® C741	Intel® C622
	BIOS	Insyde	Insyde
Memory	Technology	DDR5 Max. 4800MHz	DDR4 Max. 2933MHz
	Max. Capacity	1024GB	768GB
	Socket	16 RDIMM	12 RDIMM
Graphics	Connector	1 DP	1 VGA (with SEM2500/2510*)
	PCIe, PCI	4 PCIe x16 (Gen 5), 2 PCIe x8 (Gen5)	5 PCIe x16, 1 PCIe x8
Expansion	Mini PCIe / M.2 / SIM	1 M.2 M key 2280	1 M.2 M key 2280
	Audio	Audio Codec	ALC888S
Ethernet	Controller	4 Intel® I210	Intel® x557, 2 Intel® I210
	Ethernet (GbE)	4 GbE, 1 IPMI LAN	2 GbE, 2 10GbE, 1 IPMI LAN
Rear I/O	Serial	1 RS-232	1 RS-232
	USB	4 USB 3.2 Gen1	4 USB 3.2 Gen1, 2 USB 2.0 stack
	Display	DP	VGA(Opt.)
	Audio	-	-
	PS/2	1	-
	Internal I/O	Serial	1 RS-232
Internal I/O	USB	2 USB 3.2 Gen1, 2 USB2.0, 1 Vertical USB 2.0	2 USB 3.2 Gen1, 2 USB2.0, 1 Vertical USB 2.0
	Audio	1 Front Audio	-
	Storage	4 SATA 3.0 (RAID 0/1/5/10)	8 SATA 3.0 (RAID 0/1/5/10)
	DIO	16-bit DIO	-
	LPC	1	1
	SMBus	1	1
	TPM / iAMT	TPM 2.0	TPM 2.0
Power	ATX	ATX	
Operating Temperature	0°C~60°C	0°C~40°C	

\*SEM2500/2510: DFI proprietary peripheral for IPMI/VGA card.



C622

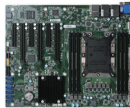


C621A

Model Name		PR810-C622	ICX610-C621A
Platform		Server-Grade	Server-Grade
System	Processor	2nd/1st Gen Intel® Xeon® Scalable Family	3rd Gen Intel® Xeon® Scalable Family
	Socket	Dual LGA3647	LGA 4189
	Max. Speed	up to 3.9GHz (Turbo)	up to 3.6GHz (Turbo)
	TDP	up to 150W	Max. 205W
	Cache	up to 35.75MB	Max 48M
	Chipset	Intel® C622	Intel® C621A
Memory	BIOS	Insyde	Insyde SPI 128Mbit
	Technology	DDR4 Max. 2933MHz	DDR4 Max. 3200MHz
	Max. Capacity	768GB	512GB
Graphics	Connector	12 RDIMM	8 ECC RDIMM
	Connector	1 VGA (with SEM2500/2510*)	1 VGA
Expansion	PCIe, PCI	4 PCIe x16, 1 PCIe x8, 1 PCI	3 PCIe x16, 3 PCIe x8
	Mini PCIe / M.2 / SIM	1 M.2 M key 2280	1 M.2 M key 2280
Audio	Audio Codec	ALC888S	ALC888S
Ethernet	Controller	Intel® x557, 2, Intel® I210, 1 100GbE Module**(Opt.)	2 Intel® I210, 2 Intel® X550, IPMI: RTL8211F
	Ethernet (GbE)	2 GbE, 2 10GbE	2x GbE, 2x 10GbE, 1 IPMI LAN
Rear I/O	Serial	1 RS-232	1 RS-232
	USB	4 USB 3.2 Gen1	4 USB 3.2 Gen1, 2 USB 2.0
	Display	VGA (Opt.)	1 VGA
	Audio	-	-
	PS/2	-	-
Internal I/O	Serial	1 RS-232	1 RS-232
	USB	2 USB 3.2 Gen1, 2 USB2.0, 1 Vertical USB 2.0	2 USB 3.2 Gen1, 2 USB2.0, 1 Vertical USB 2.0
	Audio	-	Front Audio
	Storage	8 SATA 3.0 (RAID 0/1/5/10)	6 SATA 3.0, (RAID 0/1/5/10) w/ M.2 M Key
	DIO	-	16-bit DIO
	LPC	1	1
TPM / iAMT		TPM 2.0 (Opt.)	Infineon TPM 2.0
Power		ATX	ATX
Operating Temperature		0°C~40°C	0°C~55°C

\*SEM2500/2510: DFI proprietary peripheral for IPMI/VGA card.

\*\*100GbE Module: DFI proprietary peripheral for LAN Extension Module Card (EXT-100GbE)



C621



C621

Model Name		PR611-C621	PR610-C621
Platform		Server-Grade	Server-Grade
System	Processor	2nd/1st Gen Intel® Xeon® Scalable Family	2nd/1st Gen Intel® Xeon® Scalable Family
	Socket	LGA 3647	LGA 3647
	Max. Speed	up to 3.9GHz (Turbo)	up to 3.9GHz (Turbo)
	TDP	Max. 150W	Max. 150W
	Cache	Max. 35.75MB	Max. 35.75MB
	Chipset	Intel® C621	Intel® C621
Memory	BIOS	Insyde SPI 128Mbit	Insyde SPI 128Mbit
	Technology	DDR4 Max. 2933 MHz	DDR4 Max. 2933 MHz
	Max. Capacity	192GB	192GB
Graphics	Connector	6 RDIMM	6 RDIMM
	Connector	1 VGA (Opt.)	1 VGA (with SEM2500/2510*)
Expansion	PCIe, PCI	3 PCIe x16, 3 PCIe x8	2 PCIe x16, 2 PCIe x8, 1 PCI
	Mini PCIe / M.2 / SIM	1 M.2 M key 2280, 1 M.2 E key 2230	1 M.2 M key 2280
Audio	Audio Codec	ALC888S	ALC888S
Ethernet	Controller	2 Intel® I210, IPMI: RTL8211F (Opt.)	2 Intel® I210, IPMI: RTL8211F with SEM2500*
	Ethernet (GbE)	2x GbE, 1 IPMI LAN (Opt.)	2x GbE, 1 IPMI LAN with SEM2500*
Rear I/O	Serial	1 RS-232	-
	USB	4 USB 3.2 Gen1, 2 USB2.0	4 USB 3.2 Gen1, 2 USB 2.0
	Display	1 VGA (Opt.)	1 VGA (with SEM2500/2510*)
	Audio	-	-
	PS/2	-	-
Internal I/O	Serial	-	2 RS-232
	USB	2 USB 3.2 Gen1, 2 USB 2.0, 1 Vertical USB 2.0	1 USB 3.2 Gen1, 2 USB 2.0, 1 Vertical USB 2.0
	Audio	1	-
	Storage	6 SATA 3.0, (RAID 0/1/5/10) w/ M.2 M Key	6 SATA 3.0, (RAID 0/1/5/10) w/ M.2 M Key
	DIO	-	-
	LPC	-	-
TPM / iAMT		TPM 2.0 (Opt.)	TPM 2.0 (Opt.)
Power		ATX	ATX
Operating Temperature		-5°C~65°C	0°C~60°C

\*SEM2500/2510: DFI proprietary peripheral for IPMI/VGA card.





C622



AMD

Model Name		PL610-C622	SO630
Platform		Server-Grade	AMD
System	Processor	1st Gen Intel® Xeon® Scalable Family	AMD® EPYC™ 3000 Series
	Socket	LGA 3647	BGA
	Max. Speed	up to 3.7GHz(Turbo)	3.0GHz
	TDP	Max. 145W	Max. 100W
	Cache	Max 27.5M	Max. 32MB
	Chipset	Intel® C622	-
	BIOS	Insyde SPI 128Mbit	Insyde SPI
Memory	Technology	DDR4 Max. 2933 MHz	DDR4 2666 MHz
	Max. Capacity	192GB	256GB
	Socket	6 RDIMM	8 RDIMM/UDIMM
Graphics	Connector	1 VGA	-
Expansion	PCIe, PCI	2 PCIe x16, 1 PCIe x8, 2 PCIe x4	3 PCIe x16, 3 PCIe x8, 1 PCI
	Mini PCIe / M.2 / SIM	1 M.2 M key 2280	2 M.2 M key
Audio	Audio Codec	-	-
Ethernet	Controller	GbE: i350-AM2, 10GbE: CS4227, IPMI: RTL8211F	2 Intel® I210
Rear I/O	Ethernet (GbE)	2x GbE, 1x 10GbE, 1 IPMI LAN	2
	Serial	-	1 RS-232/422/485, 1 RS-232
	USB	2 USB 2.0	6 USB 3.2 Gen1
	Display	1 VGA	-
	Audio	-	-
	PS/2	1	-
Internal I/O	Serial	1 RS-232	-
	USB	2 USB 3.2 Gen1, 2 USB 2.0, 1 Vertical USB 2.0	2 USB 3.2 Gen1
	Audio	-	-
	Storage	6 SATA 3.0, (RAID 0/1/5/10) w/ M.2 M Key	3 SATA 3.0, 2 SATA 3.0 (RAID 0/1) w/ M.2 M Key
	DIO	-	-
	LPC	-	-
	SMBus	1	-
TPM / iAMT		Infineon TPM 2.0 (Opt.)	TPM 2.0 (Opt.)
Power		ATX	ATX
Operating Temperature		0°C~60°C	-5°C~65°C

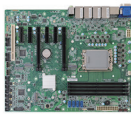


R680E



R680E

Model Name		RPS630-R680E	ADS630-R680E
Platform		Workstation	Workstation
System	Processor	14th/13th/12th Gen Intel® Core™	14th/13th/12th Gen Intel® Core™
	Socket	LGA 1700	LGA 1700
	Max. Speed	2.4~5.2GHz	2.4~5.2GHz
	TDP	35/46/60/65/125W	35/46/60/65/125W
	Cache	4/6/12/18/20/24/25/30/36M	2/4/6/10/12/14/16/24M
	Chipset	Intel® R680E	Intel® R680E
	BIOS	AMI SPI 256Mbit	AMI SPI 256Mbit
Memory	Technology	Dual Channel DDR5 up to 4400 MHz	Dual Channel DDR4 3200 MHz
	Max. Capacity	128GB	128GB
	Socket	4 UDIMM (ECC/Non-ECC)	4 UDIMM (ECC/Non-ECC)
Graphics	Connector	1 VGA, 2 DP++, 1 HDMI	1 VGA, 2 DP++, 1 HDMI
Expansion	PCIe, PCI	2 PCIe x16 (Gen4, 16 or 8+8), 1 PCIe x4 (Gen3, share M.2-M2), 3 PCIe x4 (Gen 4), 1 PCI	1 PCIe x16 (Gen5), 3 PCIe x4 (Gen4), 1 PCIe x4 (Gen4, co-lay M.2-M), 2 PCI
	Mini PCIe / M.2 / SIM	2 M.2 M key 2242/2260/2280, 1 M.2 A key for M2-OOB, 1 M.2 E key 2230	2 M.2 M key 2242/2260/2280, 1 M.2 E Key 2230 (Opt.)
Audio	Audio Codec	ALC888S	ALC888S
Ethernet	Controller	3 Intel® I226, 1 Intel® I210(co-lay I226-V)	2 Intel® I226, 1 Intel® x550(no support WOL)
Rear I/O	Ethernet (GbE)	3x 2.5GbE, 1x 1GbE (Opt. 2.5GbE)	2x 2.5GbE, 2x 10GbE
	Serial	-	-
	USB	4 USB 3.2 Gen 2, 4 USB 3.2 Gen 1	4 USB 3.2 Gen 2, 4 USB 3.2 Gen 1
	Display	1 VGA, 2 DP++, 1 HDMI	1 VGA, 2 DP++, 1 HDMI
	Audio	Line-out, Mic-in, Line-in (Opt.)	Line-out, Mic-in, Line-in (Opt.)
	PS/2	-	-
Internal I/O	Serial	2 RS-232/422/485, 4 RS-232	2 RS-232/422/485, 4 RS-232
	USB	2 USB 3.2 Gen1, 2 Vertical USB 2.0	2 USB 3.2 Gen 2, 1 Vertical USB 2.0, 2 USB 2.0 (colay vertical Type A, MOQ required)
	Audio	Front Audio, S/PDIF	Front Audio, S/PDIF
	Storage	4 SATA 3.0, (RAID 0/1/5/10) w/ M.2 M Key	4 SATA 3.0 (RAID 0/1/5/10)
	DIO	4-IN / 8-OUT DIO	8-bit DIO
	LPC	-	-
	eSPI	1	-
	SMBus	1	1
	PS/2	1	1
TPM / iAMT		dTPM 2.0, iAMT (Core i9/i7/i5 Only)	dTPM 2.0, iAMT (Core i9/i7/i5 Only)
Power		ATX	ATX
Operating Temperature		-5°C~65°C	-5°C~65°C



Q670E



Q670E

Model Name		RPS630-Q670E	ADS630-Q670E
Platform		Desktop	Desktop
System	Processor	14th/13th/12th Gen Intel® Core™	14th/13th/12th Gen Intel® Core™
	Socket	LGA 1700	LGA 1700
	Max. Speed	2.4~5.2GHz	2.4~5.2GHz
	TDP	35/46/60/65/125W	35/46/60/65/125W
	Cache	4/6/12/18/20/24/25/30/36M	2/4/6/10/12/14/16/24M
	Chipset	Intel® Q670E	Intel® Q670E
BIOS		AMI SPI 256Mbit	AMI SPI 256Mbit
Memory	Technology	Dual Channel DDR5 up to 4400 MHz	Dual Channel DDR4 3200 MHz
	Max. Capacity	128GB	128GB
	Socket	4 UDIMM (Non-ECC)	4 UDIMM (Non-ECC)
Graphics	Connector	1 VGA, 2 DP++, 1 HDMI	1 VGA, 2 DP++, 1 HDMI
Expansion	PCIe, PCI	2 PCIe x16 (Gen4, 16 or 8+8), 1 PCIe x4 (Gen3, share M.2-M2), 3 PCIe x4 (Gen 4), 1 PCI	1 PCIe x16 (Gen5), 3 PCIe x4 (Gen4), 1 PCIe x4 (Gen4, co-lay M.2-M), 2 PCI
	Mini PCIe / M.2 / SIM	2 M.2 M key 2242/2260/2280, 1 M.2 E key 2230	2 M.2 M key 2242/2260/2280, 1 M.2 E Key 2230 (Opt.)
Audio	Audio Codec	ALC888S	ALC888S
Ethernet	Controller	2 Intel® I226	2 Intel® I226
Rear I/O	Ethernet (GbE)	2x 2.5GbE	2x 2.5GbE, 2x 10GbE
	Serial	-	-
	USB	4 USB 3.2 Gen 2, 4 USB 3.2 Gen 1	4 USB 3.2 Gen 2, 4 USB 3.2 Gen 1
	Display	1 VGA, 2 DP++, 1 HDMI	1 VGA, 2 DP++, 1 HDMI
	Audio	Line-out, Mic-in, Line-in (Opt.)	Line-out, Mic-in, Line-in (Opt.)
	PS/2	-	-
Internal I/O	Serial	2 RS-232/422/485, 4 RS-232	2 RS-232/422/485, 4 RS-232
	USB	2 USB 3.2 Gen1, 2 USB 2.0, 1 Vertical USB 2.0	2 USB 3.2 Gen 1, 1 Vertical USB 2.0, 2 USB 2.0 (colay vertical Type A, MOQ required)
	Audio	Front Audio, S/PDIF	Front Audio, S/PDIF
	Storage	4 SATA 3.0, (RAID 0/1/5/10) w/ M.2 M Key	4 SATA 3.0 (RAID 0/1/5/10)
	DIO	4-IN / 8-OUT DIO	8-bit DIO
	LPC	-	-
	eSPI	1	-
	SMBus	1	1
PS/2	1	1	
TPM / iAMT	dTPM 2.0, iAMT (Core i9/i7/i5 Only)	dTPM 2.0, iAMT (Core i9/i7/i5 Only)	
Power	ATX	ATX	
Operating Temperature	-5°C~65°C	-5°C~65°C	



H610



W480E

Model Name		RPS631-H610	CMS632-W480E
Platform		Desktop	Workstation
System	Processor	14th/13th/12th Gen Intel® Core™	Intel® Xeon® / 10th Gen Intel® Core™
	Socket	LGA 1700	LGA 1200
	Max. Speed	2.4~5.2GHz	3.7~4.8GHz
	TDP	35/46/60/65/125W	35/65/80/95/125W
	Cache	2/4/6/10/12/14/16/24M	6/12/16/20M
	Chipset	Intel® H610	Intel® W480E
BIOS		AMI SPI 256Mbit	AMI SPI 128Mbit
Memory	Technology	Dual Channel DDR5 up to 5600 MHz	Dual Channel DDR4 2400/2666/2933MHz
	Max. Capacity	64GB	128GB
	Socket	2 UDIMM (Non-ECC)	4 UDIMM (ECC/Non-ECC)
Graphics	Connector	1 VGA, 1 HDMI	1 VGA, 1 DP++, 1 HDMI
Expansion	PCIe, PCI	1 PCIe x16 (Gen5), 2 PCIe x4 (x2, Gen3), 4 PCI	2 PCIe x16 (1x16 or 2x8), 2 PCIe x4, 2 PCIe x4 (co-lay M.2), 1 PCI
	Mini PCIe / M.2 / SIM	1 M.2 M key 2242/2260/2280	2 M.2 M key 2242/2260/2280, 1 M.2 E key 2230 (Opt.)
Audio	Audio Codec	ALC888S	ALC888S
Ethernet	Controller	1 Intel® I226, 1 Intel® I219	1 Intel® I210, 1 Intel® I219
Rear I/O	Ethernet (GbE)	1x 2.5GbE, 1x GbE	2
	Serial	2 RS-232/422/485	1 RS-232/422/485
	USB	4 USB 3.2 Gen 1, 2 USB 2.0	2 USB 3.2 Gen2, 2 USB 3.2 Gen1, 4 USB 2.0
	Display	1 VGA, 1 HDMI	1 VGA, DP++, 1 HDMI
	Audio	Line-out, Mic-in, Line-in (Opt.)	Line-out, Mic-in, Line-in (Opt.)
	PS/2	1 mini-DIN-6	-
Internal I/O	Serial	4 RS-232	1 RS-232/422/485, 4 RS-232
	USB	2 USB 2.0, 2 Vertical USB 2.0	2 USB 3.2 Gen 2, 2 USB 2.0(Colay vertical Type A, Opt.), 1 USB 2.0 Type A
	Audio	Front Audio, S/PDIF	Front Audio, S/PDIF
	Storage	4 SATA 3.0	4 SATA 3.0, (RAID 0/1/5/10) w/ M.2 M Key
	DIO	4-IN / 8-OUT DIO	16-bit DIO
	LPC	-	1
	eSPI	1	-
	SMBus	1	1
PS/2	-	1 mini-DIN-6	
TPM / iAMT	dTPM 2.0	dTPM 2.0, iAMT 12.0 (Xeon/Core i5/i7/i9 Only)	
Power	ATX	ATX	
Operating Temperature	-5°C~65°C	-5°C~65°C	



W480E



Q470E

Model Name		CMS630-W480E	CMS632-Q470E
Platform		Workstation	Desktop
System	Processor	Intel® Xeon® / 10th Gen Intel® Core™	10th Gen Intel® Core™
	Socket	LGA 1200	LGA 1200
	Max. Speed	3.6~4.8GHz	3.0~4.7GHz
	TDP	35/65/80/95/125W	35/58/65/125W
	Cache	6/12/16/20M	2/4/12/16/20M
	Chipset	Intel® W480E	Intel® Q470E
BIOS		Insyde SPI 128Mbit	AMI SPI 128Mbit
Memory	Technology	Dual Channel DDR4 2400/2666/2933MHz	Dual Channel DDR4 2400/2666/2933MHz
	Max. Capacity	128GB	128GB
	Socket	4 UDIMM (ECC/Non-ECC)	4 UDIMM (Non-ECC)
Graphics	Connector	1 VGA, DP++, 1 HDMI	1 VGA, 1 DP++, 1 HDMI
Expansion	PCIe, PCI	2 PCIe x16 (1x16 or 2x8), 2 PCIe x4, 1 PCIe x1, 2 PCI	2 PCIe x16 (1x16 or 2x8), 2 PCIe x4, 2 PCIe x4 (co-lay M.2), 1 PCI
	Mini PCIe / M.2 / SIM	2 M.2 M key 2242/2260/2280, 1 M.2 E key 2230 (Opt.)	2 M.2 M key 2242/2260/2280, 1 M.2 E key 2230 (Opt.)
Audio	Audio Codec	ALC888S	ALC888S
Ethernet	Controller	1 Intel® I210, 1 Intel® I219	1 Intel® I210, 1 Intel® I219
Rear I/O	Ethernet (GbE)	2	2
	Serial	1 RS-232/422/485	1 RS-232/422/485
	USB	2 USB 3.2 Gen2, 2 USB 3.2 Gen1, 4 USB 2.0	2 USB 3.2 Gen2, 2 USB 3.2 Gen1, 4 USB 2.0
	Display	1 VGA, DP++, 1 HDMI	1 VGA, 1 DP++, 1 HDMI
	Audio	Line-out, Mic-in, Line-in (Opt.)	Line-out, Mic-in, Line-in (Opt.)
Internal I/O	Serial	1 RS-232/422/485, 4 RS-232	1 RS-232/422/485, 4 RS-232
	USB	2 USB 3.2 Gen 2, 2 USB 2.0(Colay vertical Type A, Opt.), 1 USB 2.0 Type A	2 USB 3.2 Gen 2, 2 USB 2.0(Colay vertical Type A, Opt.), 1 USB 2.0 Type A
	Audio	Front Audio, S/PDIF	Front Audio, S/PDIF
	Storage	4 SATA 3.0, (RAID 0/1/5/10) w/ M.2 M Key	4 SATA 3.0, (RAID 0/1/5/10) w/ M.2 M Key
	DIO	16-bit DIO	16-bit DIO
	LPC	1	1
	SMBus	1	1
	PS/2	1 mini-DIN-6	1 mini-DIN-6
TPM / iAMT	dTPM 2.0, iAMT 12.0 (Xeon/Core i5/i7/i9 Only)	dTPM 2.0, iAMT 12.0 (Xeon/Core i5/i7/i9 Only)	
Power	ATX	ATX	
Operating Temperature	-5°C~65°C	-5°C~65°C	



Q470E



Q470E

Model Name		CMS631-Q470E	CMS630-Q470E
Platform		Desktop	Desktop
System	Processor	10th Gen Intel® Core™	10th Gen Intel® Core™
	Socket	LGA 1200	LGA 1200
	Max. Speed	3.0~4.7GHz	3.0~4.7GHz
	TDP	35/58/65/125W	35/58/65/125W
	Cache	2/4/8/12/16/20M	2/4/12/16/20M
	Chipset	Intel® Q470E	Intel® Q470E
BIOS		AMI	Insyde SPI 128Mbit
Memory	Technology	Dual Channel DDR4 2400/2666/2933MHz	Dual Channel DDR4 2400/2666/2933MHz
	Max. Capacity	128GB	128GB
	Socket	4 UDIMM (Non-ECC)	4 UDIMM (Non-ECC)
Graphics	Connector	1 VGA, 1 DP++, 1 HDMI	1 VGA, 1 DP++, 1 HDMI
Expansion	PCIe, PCI	1 PCIe x16, 1 PCIe x4, 5 PCI	2 PCIe x16 (1x16 or 2x8), 2 PCIe x4, 1 PCIe x1, 2 PCI
	Mini PCIe / M.2 / SIM	1 or 2 M.2 M key 2242/2260/2280, 1 M.2 E key 2230 (Opt.)	2 M.2 M key 2242/2260/2280, 1 M.2 E key 2230 (Opt.)
Audio	Audio Codec	ALC888S	ALC888S
Ethernet	Controller	1 Intel® I210, 1 Intel® I219	1 Intel® I210, 1 Intel® I219
Rear I/O	Ethernet (GbE)	2	2
	Serial	1 RS-232/422/485	1 RS-232/422/485
	USB	2 USB 3.2 Gen2, 2 USB 3.2 Gen1, 2 USB 2.0	2 USB 3.2 Gen2, 2 USB 3.2 Gen1, 4 USB 2.0
	Display	1 VGA, 1 DP++, 1 HDMI	1 VGA, 1 DP++, 1 HDMI
	Audio	Line-out, Mic-in, Line-in (Opt.)	Line-out, Mic-in, Line-in (Opt.)
Internal I/O	Serial	1 RS-232/422/485, 4 RS-232	1 RS-232/422/485, 4 RS-232
	USB	2 USB 3.2 Gen 1, 4 USB 2.0(Colay vertical Type A, Opt.), 1 Vertical USB 2.0 Type A	2 USB 3.2 Gen 2, 2 USB 2.0(Colay vertical Type A, Opt.), 1 USB 2.0 Type A
	Audio	Front Audio, S/PDIF	Front Audio, S/PDIF
	Storage	6 SATA 3.0, (RAID 0/1/5/10) w/ M.2 M Key	4 SATA 3.0, (RAID 0/1/5/10) w/ M.2 M Key
	DIO	16-bit DIO	16-bit DIO
	LPC	1	1
	SMBus	1	1
	PS/2	1 mini-DIN-6	1 mini-DIN-6
TPM / iAMT	dTPM 2.0, iAMT 12.0 (Xeon/Core i5/i7/i9 Only)	dTPM 2.0, iAMT 12.0 (Xeon/Core i5/i7/i9 Only)	
Power	ATX	ATX	
Operating Temperature	-5°C~65°C	-5°C~65°C	



H420E



C246

Model Name		CMS631-H420E	CS650-C246
Platform		Desktop	Workstation
System	Processor	10th Gen Intel® Core™	Intel® Xeon® / 9th/8th Gen Intel® Core™
	Socket	LGA 1200	LGA 1151
	Max. Speed	3.0~4.7GHz	2.9~4.7GHz
	TDP	35/58/65/125W	35/54/58/65/71/80/95W
	Cache	2/4/8/12/16/20M	2/4/6/8/9/12/16M
	Chipset	Intel® H420E	Intel® C246
	BIOS	AMI	AMI SPI 128Mbit
Memory	Technology	Dual Channel DDR4 2400/2666/2933MHz	Dual Channel DDR4 2400/2666 MHz
	Max. Capacity	64GB	128GB
	Socket	2 UDIMM (Non-ECC)	4 DIMM (ECC/non-ECC)
Graphics	Connector	1 VGA, 1 DP++, 1 HDMI	1 VGA, 2 DP++
Expansion	PCIe, PCI	1 PCIe x16, 1 PCIe x4, 5 PCI	2 PCIe x16 (1 x16 or 2 x8), 3 PCIe x4, 1 PCIe x1, 1 PCI
	Mini PCIe / M.2 / SIM	1 M.2 M key 2242/2260/2280	"1 Full mPCIe, 1 M.2 M key 2242/2260/2280"
Audio	Audio Codec	ALC888S	ALC888S
Ethernet	Controller	1 Intel® I210, 1 Intel® I219	1 Intel® I210, 1 Intel® I219
	Ethernet (GbE)	2	2
Rear I/O	Serial	1 RS-232/422/485	1 RS-232/422/485
	USB	4 USB 3.2 Gen1, 2 USB 2.0	2 USB 3.2 Gen2, 2 USB 3.2 Gen1, 2 USB 2.0
	Display	1 VGA, 1 DP++, 1 HDMI	1 VGA, 2 DP++
	Audio	Line-out, Mic-in, Line-in (Opt.)	Mic-in, Line-out, Line-in (Opt.)
	DIO	-	-
	PS/2	-	8-bit DIO
	Serial	1 RS-232/422/485, 4 RS-232	1 mini-DIN-6
Internal I/O	USB	2 USB 3.2 Gen 1, 2 USB 2.0(Colay vertical Type A, Opt.)	1 RS-232/422/485, 4 RS-232
	Audio	Front Audio, S/PDIF	2 USB 3.2 Gen1, 4 USB 2.0
	Storage	4 SATA 3.0	Front Audio, S/PDIF
	DIO	16-bit DIO	4 SATA 3.0 (RAID 0/1/5/10)
	LPC	1	-
	SMBus	1	1
	PS/2	1 mini-DIN-6	1
TPM / iAMT	dTPM 2.0	Infineon TPM 2.0 (Opt.), iAMT 12.0(Xeon/Core i5/i7 only)	
Power	ATX	ATX	
Operating Temperature	-5°C~65°C	-5°C~65°C	



C246



C246

Model Name		CS632-C246	CS631-C246
Platform		Workstation	Workstation
System	Processor	Intel® Xeon® / 9th/8th Gen Intel® Core™	Intel® Xeon® / 9th/8th Gen Intel® Core™
	Socket	LGA 1151	LGA 1151
	Max. Speed	2.9~4.7 GHz	2.9~4.7 GHz
	TDP	35/54/58/65/71/80W	35/54/58/65/71/80W
	Cache	2/4/6/8/9/12/16M	2/4/6/8/9/12/16M
	Chipset	Intel® C246	Intel® C246
	BIOS	SPI 128Mbit	AMI SPI 128Mbit
Memory	Technology	Dual Channel DDR4 2400/2666 MHz	Dual Channel DDR4 2400/2666 MHz
	Max. Capacity	128 GB	128 GB
	Socket	4 DIMM (ECC/non-ECC)	4 DIMM (ECC/non-ECC)
Graphics	Connector	1 VGA, 2 DP++	1 VGA, 2 DP++
Expansion	PCIe, PCI	1 PCIe x16 (2 x8 as Opt.), 3 PCIe x4, 2 PCI	2 PCIe x16 (1 x16 or 2 x8), 3 x PCIe x4, 1 PCIe x1, 1 PCI
	Mini PCIe / M.2 / SIM	1 mPCIe, 1 M.2 M key 2242/2280	2 Full mPCIe, 1 M.2 M key 2242/2260/2280
Audio	Audio Codec	ALC888S	ALC888S
Ethernet	Controller	1 Intel® I210, 1 Intel® I219	1 Intel® I210, 1 Intel® I219
	Ethernet (GbE)	2	2
Rear I/O	Serial	1 RS-232/422/485	1 RS-232/422/485
	USB	4 USB 3.2 Gen1, 2 USB 2.0	2 USB 3.2 Gen2, 2 USB 3.2 Gen1, 2 USB 2.0
	Display	1 VGA, 2 DP++	1 VGA, 2 DP++
	Audio	Mic-in, Line-out, Line-in (Opt.)	Mic-in, Line-out, Line-in (Opt.)
	DIO	-	-
	PS/2	1 mini-DIN-6	1 mini-DIN-6
	Serial	5 RS-232	1 RS-232/422/485, 4 RS-232
Internal I/O	USB	2 USB 3.2 Gen2, 4 USB 2.0, 1 USB 2.0 vertical Type A	2 USB 3.2 Gen1, 4 USB 2.0
	Audio	Front Audio, S/PDIF	Front Audio, S/PDIF
	Storage	4 SATA 3.0 (RAID 0/1/5/10)	5 SATA 3.0 (RAID 0/1/5/10)
	DIO	8-bit DIO	8-bit DIO
	LPC	1	1
	SMBus	1	1
	TPM / iAMT	dTPM 2.0, iAMT 12.0 (Xeon/Core i5/i7 only)	dTPM 2.0, iAMT 12.0 (Xeon/Core i5/i7 only)
Power	ATX	ATX	
Operating Temperature	0°C~60°C	0°C~60°C	





Q370

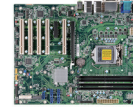


Q370

Model Name		CS650-Q370	CS632-Q370
Platform		Desktop	Desktop
System	Processor	9th/8th Gen Intel® Core™	9th/8th Gen Intel® Core™
	Socket	LGA 1151	LGA 1151
	Max. Speed	2.9~4.6GHz	2.9~4.6 GHz
	TDP	35/54/58/65/95W	35/54/58/65W
	Cache	2/4/6/9/12M	2/4/6/9/12M
	Chipset	Intel® Q370	Intel® Q370
Memory	BIOS	AMI SPI 128Mbit	SPI 128Mbit
	Technology	Dual Channel DDR4 2400/2666 MHz	Dual Channel DDR4 2400/2666 MHz
	Max. Capacity	128GB	128 GB
Graphics	Socket	4 DIMM	4 DIMM
	Connector	1 VGA, 2 DP++	1 VGA, 2 DP++
Expansion	PCIe, PCI	2 PCIe x16 (1 x16 or 2 x8), 3 PCIe x4, 1 PCIe x1, 1 PCI	*1 PCIe x16 (2 x8 as Opt.), 3 PCIe x4, 2 PCI*
	Mini PCIe / M.2 / SIM	1 Full mPCIe, 1 M.2 M key 2242/2260/2280	1 mPCIe, 1 M.2 M key 2242/2280
Audio	Audio Codec	ALC888S	ALC888S
Ethernet	Controller	1 Intel® I210, 1 Intel® I219	1 Intel® I210, 1 Intel® I219
Rear I/O	Ethernet (GbE)	2	2
	Serial	1 RS-232/422/485	1 RS-232/422/485
	USB	2 USB 3.2 Gen2, 2 USB 3.2 Gen1, 2 USB 2.0	4 USB 3.2 Gen1, 2 USB 2.0
	Display	1 VGA, 2 DP++	1 VGA, 2 DP++
	Audio	Mic-in, Line-out, Line-in (Opt.)	Mic-in, Line-out, Line-in (Opt.)
	DIO	-	-
	PS/2	1 mini-DIN-6	1 mini-DIN-6
Internal I/O	Serial	1 RS-232/422/485, 4 RS-232	5 RS-232
	USB	2 USB 3.2 Gen1, 4 USB 2.0	2 USB 3.2 Gen2, 4 USB 2.0, 1 USB 2.0 vertical Type A
	Audio	Front Audio, S/PDIF	Front Audio, S/PDIF
	Storage	4 SATA 3.0 (RAID 0/1/5/10)	4 SATA 3.0 (RAID 0/1/5/10)
	DIO	8-bit DIO	8-bit DIO
	LPC	1	1
TPM / iAMT	SMBus	1	1
		dTPM 2.0, iAMT 12.0 (Xeon/Core i5/i7 only)	dTPM 2.0, iAMT 12.0 (Xeon/Core i5/i7 only)
Power	ATX	ATX	
Operating Temperature	-5°C~65°C	0°C~60°C	

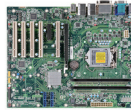


Q370



Q370

Model Name		CS631-Q370	CS630-Q370
Platform		Desktop	Desktop
System	Processor	9th/8th Gen Intel® Core™	9th/8th Gen Intel® Core™
	Socket	LGA 1151	LGA 1151
	Max. Speed	2.9~4.6 GHz	2.9~4.6 GHz
	TDP	35/54/58/65W	35/54/58/65/95W
	Cache	2/4/6/9/12M	2/4/6/9/12M
	Chipset	Intel® Q370	Intel® Q370
Memory	BIOS	AMI SPI 128Mbit	AMI SPI 128Mbit
	Technology	Dual Channel DDR4 2400/2666 MHz	Dual Channel DDR4 2400/2666 MHz
	Max. Capacity	128 GB	128 GB
Graphics	Socket	4 DIMM	4 DIMM
	Connector	1 VGA, 2 DP++	1 VGA, 1 DVI-I (DVI-D signal), 1 DP++
Expansion	PCIe, PCI	2 PCIe x16 (1 x16 or 2 x8), 3 PCIe x4, 1 PCIe x1, 1 PCI	1 PCIe x16, 1 PCIe x4, 5 PCI
	Mini PCIe / M.2 / SIM	2 Full mPCIe, 1 M.2 M key 2242/2260/2280	1 mPCIe, 1 M.2 M key 2260/2280
Audio	Audio Codec	ALC888S	ALC888S
Ethernet	Controller	1 Intel® I210, 1 Intel® I219	1 Intel® I210, 1 Intel® I219
Rear I/O	Ethernet (GbE)	2	2
	Serial	1 RS-232/422/485	1 RS-232/422/485
	USB	2 USB 3.2 Gen2, 2 USB 3.2 Gen1, 2 USB 2.0	4 USB 3.2 Gen1, 2 USB 2.0
	Display	1 VGA, 2 DP++	1 VGA, 1 DVI-I (DVI-D signal), 1 DP++
	Audio	Mic-in, Line-out, Line-in (Opt.)	Mic-in, Line-out, Line-in (Opt.)
	DIO	-	-
	PS/2	1 mini-DIN-6	1 mini-DIN-6
Internal I/O	Serial	1 RS-232/422/485, 4 RS-232	1 RS-232/422/485, 4 RS-232
	USB	2 USB 3.2 Gen1, 4 USB 2.0	2 USB 3.2 Gen2, 4 USB2.0
	Audio	Front Audio, S/PDIF	Front Audio, S/PDIF
	Storage	5 SATA 3.0 (RAID 0/1/5/10)	5 SATA 3.0 (RAID 0/1/5/10) w/ M.2 M Key
	DIO	8-bit DIO	16-bit DIO
	LPC	1	1
TPM / iAMT	SMBus	1	1
		dTPM 2.0, iAMT 12.0 (Xeon/Core i5/i7 only)	dTPM 2.0, iAMT 12.0 (Xeon/Core i5/i7 only)
Power	ATX	ATX	
Operating Temperature	0°C~60°C	0°C~60°C	



H310



H310

Model Name		CS630-H310	CS620-H310
Platform		Desktop	Desktop
System	Processor	9th/8th Gen Intel® Core™	9th/8th Gen Intel® Core™
	Socket	LGA 1151	LGA1151
	Max. Speed	2.9~4.6 GHz	2.9~4.6 GHz
	TDP	35/54/58/65/95W	35/54/58/65/95W
	Cache	2/4/6/9/12M	2/4/6/9/12M
	Chipset	Intel® H310	Intel® H310
Memory	BIOS	AMI SPI 128Mbit	AMI SPI 128Mbit
	Technology	Dual Channel DDR4 2400/2666 MHz	Dual Channel DDR4 2400/2666 MHz
	Max. Capacity	64 GB	64GB
Graphics	Socket	2 DIMM	2 UDIMM (non-ECC)
	Connector	1 VGA, 1 DVI-I (DVI-D signal), 1 DP++	1 VGA, 1 DVI-I (DVI-D signal), 1 DP++
Expansion	PCIe, PCI	1 PCIe x16, 1 PCIe x4, 5 PCI	1 PCIe x 16, 1 PCIe x 4, 4 PCI, 2 ISA
	Mini PCIe / M.2 / SIM	-	1 mSATA
Audio	Audio Codec	ALC888S	ALC888S
Ethernet	Controller	1 Intel® I210, 1 Intel® I219	1 Intel® I210, 1 Intel® I219
	Ethernet (GbE)	2	2
Rear I/O	Serial	1 RS-232/422/485	1 RS232/422/485
	USB	4 USB 3.2 Gen 1, 2 USB 2.0	4 USB 3.2 Gen1, 2 USB 2.0
	Display	1 VGA, 1 DVI-I (DVI-D signal), 1 DP++	1 VGA, 1 DVI-I (DVI-D signal), 1 DP++
	Audio	Mic-in, Line-out, Line-in (Opt.)	Mic-in, Line-out, Line-in (Opt.)
	DIO	-	-
	PS/2	1 mini-DIN-6	1 mini-DIN-6
Internal I/O	Serial	1 RS-232/422/485, 4 RS-232	1 RS-232/422/485, 4 RS-232
	USB	4 USB 2.0	4 USB 2.0
	Audio	Front Audio, S/PDIF	Front Audio, S/PDIF
	Storage	4 SATA 3.0	4 SATA 3.0 (1 share with mSATA)
	DIO	16-bit DIO	8-bit DIO
	LPC	1	1
TPM / iAMT	SMBus	1	1
	TPM / iAMT	dTPM 2.0	dTPM 2.0
Power	ATX	ATX	
Operating Temperature	0°C~60°C	-5°C~65°C	



C236



C236

Model Name		KD632-C236	SD631-C236
Platform		Workstation	Workstation
System	Processor	Intel® Xeon® / 7th/6th Gen Intel® Core™	Intel® Xeon® / 7th/6th Gen Intel® Core™
	Socket	LGA 1151	LGA 1151
	Max. Speed	2.6~4.2 GHz	2.6~4.2 GHz
	TDP	Max. 95W	Max. 95W
	Cache	2M/3M/6M/8M	2M/3M/4M/6M/8M
	Chipset	Intel® C236	Intel® C236
Memory	BIOS	Insyde SPI 128Mbit	Insyde SPI 128Mbit
	Technology	Dual Channel DDR4 2133/2400MHz	Dual Channel DDR4 2133/2400MHz
	Max. Capacity	64GB	64GB
Graphics	Socket	4 UDIMM (ECC/Non ECC)	4 DIMM (ECC/Non ECC)
	Connector	1 VGA, 1 DVI, 1 DP++	1 VGA, 1 DVI-I (DVI-D signal), 1 HDMI
Expansion	PCIe, PCI	2 PCIe x16 (1 x16 or 2 x8), 3 PCIe x4, 2 PCI	2 PCIe x16 (1 x16 or 2 x8), 2 PCIe x4, 3 PCI
	Mini PCIe / M.2 / SIM	1 M.2 M key 2260/2280, 1 mPCIe	-
Audio	Audio Codec	ALC888S	ALC888S
Ethernet	Controller	1 Intel® I210, 1 Intel® I219	1 Intel® I210, 1 Intel® I219
	Ethernet (GbE)	2	2
Rear I/O	Serial	1 RS-232/422/485	1 RS-232/422/485
	USB	4 USB 3.2 Gen1, 2 USB 2.0	4 USB 3.2 Gen1, 2 USB 2.0
	Display	1 VGA, 1 DVI, 1 DP++	1 VGA, 1 DVI-I (DVI-D signal), 1 HDMI
	Audio	Mic-in, Line-out, Line-in (Opt.)	Mic-in, Line-out, Line-in (Opt.)
	PS/2	1 mini-DIN-6	1 mini-DIN-6
	Internal I/O	Serial	1 RS-232/422/485, 4 RS-232
USB		2 USB 3.2 Gen1, 4 USB 2.0, 1 Vertical USB 2.0 (type A)	2 USB 3.2 Gen1, 6 USB 2.0 or 4 USB 2.0 + 1 Vertical USB 2.0 (Opt.)
Audio		Front Audio, S/PDIF	S/PDIF
Storage		5 SATA 3.0 (RAID 0/1/5/10)	6 SATA 3.0 (RAID 0/1/5/10)
DIO		8-bit DIO	8-bit DIO
LPC		1	1
TPM / iAMT	SMBus	1	1
	TPM / iAMT	dTPM 2.0, iAMT 11.0 (Xeon/Core i5/i7 only)	dTPM 2.0, iAMT 11.0 (Xeon/Core i5/i7 only)
Power	ATX	ATX	
Operating Temperature	0°C~60°C	0°C~60°C	



Q170



Q170

Model Name		KD632-Q170	SD631-Q170
Platform		Desktop	Desktop
System	Processor	7th/6th Gen Intel® Core™	7th/6th Gen Intel® Core™
	Socket	LGA 1151	LGA 1151
	Max. Speed	2.6~4.2 GHz	2.6~4.2 GHz
	TDP	Max. 95W	Max. 95W
	Cache	2M/3M/6M/8M	2M/3M/4M/6M/8M
	Chipset	Intel® Q170	Intel® Q170
	BIOS	Insyde SPI 128Mbit	Insyde SPI 128Mbit
Memory	Technology	Dual Channel DDR4 2133/2400MHz	Dual Channel DDR4 2133/2400MHz
	Max. Capacity	64GB	64GB
	Socket	4 UDIMM (Non ECC)	4 DIMM
Graphics	Connector	1 VGA, 1 DVI, 1 DP++	1 VGA, 1 DVI-I (DVI-D signal), 1 HDMI
Expansion	PCIe, PCI	2 PCIe x16 (1 x16 or 2 x8), 3 PCIe x4, 2 PCI	2 PCIe x16 (1 x16 or 2 x8), 2 PCIe x4, 3 PCI
	Mini PCIe / M.2 / SIM	1 M.2 M key 2260/2280, 1 mPCIe	-
Audio	Audio Codec	ALC888S	ALC888S
Ethernet	Controller	1 Intel® I210, 1 Intel® I219	1 Intel® I210, 1 Intel® I219
Rear I/O	Ethernet (GbE)	2	2
	Serial	1 RS-232/422/485	1 RS-232/422/485
	USB	4 USB 3.2 Gen1, 2 USB 2.0	4 USB 3.2 Gen1, 2 USB 2.0
	Display	1 VGA, 1 DVI, 1 DP++	1 VGA, 1 DVI-I (DVI-D signal), 1 HDMI
	Audio	Mic-in, Line-out, Line-in (Opt.)	Mic-in, Line-out, Line-in (Opt.)
	PS/2	1 mini-DIN-6	1 mini-DIN-6
	Serial	1 RS-232/422/485, 4 RS-232	1 RS-232/422/485, 4 RS-232
Internal I/O	USB	2 USB 3.2 Gen1, 4 USB 2.0, 1 Vertical USB 2.0 (type A)	2 USB 3.2 Gen1, 6 USB 2.0 or 4 USB 2.0 + 1 Vertical USB 2.0 (Opt.)
	Audio	Front Audio, S/PDIF	S/PDIF
	Storage	5 SATA 3.0 (RAID 0/1/5/10)	6 SATA 3.0 (RAID 0/1/5/10)
	DIO	8-bit DIO	8-bit DIO
	LPC	1	1
	SMBus	1	1
TPM / iAMT		dTPM 2.0, iAMT 11.0 (Core i5/i7 only)	dTPM 2.0, iAMT 11.0 (Core i5/i7 only)
Power		ATX	ATX
Operating Temperature		0°C~60°C	0°C~60°C



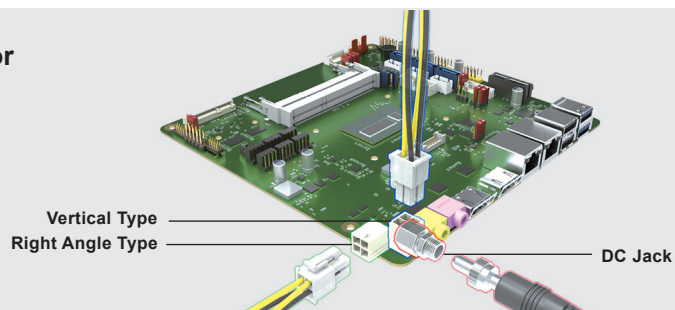
H110



H110

Model Name		KD630-H110	SD630-H110
Platform		Desktop	Desktop
System	Processor	7th/6th Gen Intel® Core™	7th/6th Gen Intel® Core™
	Socket	LGA 1151	LGA 1151
	Max. Speed	2.6~4.5 GHz	2.6~4.2 GHz
	TDP	35/65/91/95W	Max. 95W
	Cache	2/2/4/6/8M	2/2/4/6/8M
	Chipset	Intel® H110	Intel® H110
	BIOS	Insyde SPI 128Mbit	Insyde SPI 128Mbit
Memory	Technology	Dual Channel DDR4 up to 2400 MHz	Dual Channel DDR3L 1600MHz
	Max. Capacity	32GB	16GB
	Socket	2 UDIMM	2 DIMM
Graphics	Connector	1 VGA, 1 DVI-I (DVI-D signal), 1 HDMI	1 VGA, 1 DVI-I (DVI-D signal), 1 HDMI
Expansion	PCIe, PCI	1 PCIe x16, 1 PCIe x4, 5 PCI, 1 mSATA	1 PCIe x16, 1 PCIe x4, 5 PCI
	Mini PCIe / M.2 / SIM	1 M.2 M key 2242/2260/2280	-
Audio	Audio Codec	ALC888S	ALC888S
Ethernet	Controller	1 Intel® I210, 1 Intel® I219	1 Intel® I210, 1 Intel® I219
Rear I/O	Ethernet (GbE)	2	2
	Serial	1 RS-232/422/485	1 RS-232/422/485
	USB	4 USB 3.2 Gen1, 2 USB 2.0	4 USB 3.2 Gen1, 2 USB 2.0
	Display	1 VGA, 1 DVI-I (DVI-D signal), 1 HDMI	1 VGA, 1 DVI-I (DVI-D signal), 1 HDMI
	Audio	Line-out, Mic-in, Line-in (Opt.)	Mic-in, Line-out, Line-in (Opt.)
	PS/2	1 mini-DIN-6	1 mini-DIN-6
	Serial	1 RS-232/422/485, 4 RS-232	1 RS-232/422/485, 4 RS-232
Internal I/O	USB	4 USB 2.0 or Up to 2 Vertical USB 2.0 Type A (Opt.)	4 USB 2.0 or 2 USB 2.0 + 1 Vertical USB 2.0 Type A (Opt.)
	Audio	Audio, S/PDIF	Audio (Line-out/Mic-in)(Opt.), S/PDIF
	Storage	4 SATA 3.0	4 SATA 3.0
	DIO	8-bit DIO	8-bit DIO
	LPC	1	1
	SMBus	1	1
TPM / iAMT		dTPM 2.0	dTPM 2.0
Power		ATX	ATX
Operating Temperature		-5°C~65°C	0°C~60°C

## Flexible Power Connector



### Our Applicable Boards:

Processor	Form Factor	Model
12th /13th /14th Gen Intel® Core™	Mini-ITX	ADS101/ADS103,RPS101/RPS103
11th Gen Intel® Core™	Mini-ITX	TGU171/TGU173
10th Gen Intel® Core™	Mini-ITX	CMS101/CMS103
9th/8th Gen Intel® Core™	Mini-ITX	WL171/WL173, CS103-Q370/C246/H310, CS101-Q370/C246/H310
7th Gen Intel® Core™	Mini-ITX	KD171, KU171/173
	SBC	KU551, KU553
6th Gen Intel® Core™	Mini-ITX	SD101/SD103-Q170, SD101/SD103-H110, SU171/SU173
	SBC	SU551
Intel® Atom® Alder Lake-N Processors	Mini-ITX	ADN171/ADN173
Intel Atom® Processor X Series	Mini-ITX	EHL171/173
Intel Atom® E3900	Mini-ITX	AL171/AL173
	SBC	AL551, AL553
Intel® Pentium®/Celeron® N3000	SBC	BW051
AMD® Ryzen™ Embedded V2000 Series	Mini-ITX	RNO171
AMD® Ryzen™ Embedded V1000/R1000/R2000 Series	Mini-ITX	GH171

Connector Type	P/N
4P Vertical Angle Type	347-104007-106S
4P Right Angle Type	347-202041-100G

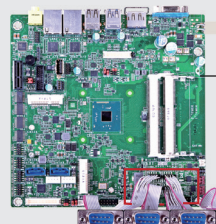
## Our Proprietary LPC Modules



EXT-RS232



EXT-RS485



Proprietary Card

4 COM ports

1. Two proprietary cards for expanding extra 4 COM ports via a LPC interface
2. Provides flexibility and system integration on our newest platforms

### Our Applicable Boards:

Processor	Form Factor	Model
10th Gen Intel® Core™	microATX	CMS310-W480E, CMS310-Q470E, CMS311-W480E, CMS311-Q470E
9th/8th Gen Intel® Core™	ATX	CMS631-Q470E/H420E, CMS630-W480E/Q470E, CS620-H310, CS650-C246, CS650-Q370, CS632-C246, CS632-Q370, CS631-C246, CS631-Q370
	microATX	CS332-Q370, CS332-H310, CS331-Q370, CS331-C246, CS330-Q370, CS330-H310
	Mini-ITX	WL171/WL173, CS103-Q370/C246, CS103-H310, CS101-Q370/C246, CS101-H310, CS100-Q370/C246/H310
7th Gen Intel® Core™	ATX	KD632-Q170, KD632-C236, KD631-C236, KD631-Q170, KD630-H110
	microATX	KD331-C236, KD331-Q170, KD300-Q170, KD300-H110
	PICMG 1.3	PIC-Q170/H110
6th Gen Intel® Core™	ATX	SD631-C236, SD631-Q170, SD630-H110, SD630-Q170
	microATX	SD331-C236, SD331-Q170, SD330-Q170, SD330-H110
	Mini-ITX	SD170, SD100-Q170, SD101/SD103-Q170(Opt.), SD100-H110, SD101/SD103-H110(Opt.), SU171/SU173
Intel Atom® E3900	Mini-ITX	AL170, AL171/AL173



# Peripherals

Providing Expandability & High Flexibility

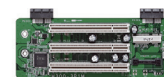


Proprietary I/O Cards

Model Name	EXT-100GbE
Chip	E810-CAM2
Mode	100GbE
Interface	DFI Proprietary
Dimension	167.7mm x 68.9mm
Applicable Models	PR810-C622



Riser Cards



Model Name	H300-2E	H300-2P1E	H300-3P1M
Expansion Slots	2 PCIe x8	1 PCIe x16, 2 PCI	3 PCI, 1 Mini PCIe
Interface	2 DFI Proprietary Extension Bus	2 DFI Proprietary Extension Bus	2 DFI Proprietary Extension Bus
Dimensions	170 x 37 mm	170 x 64 mm	170 x 64 mm
Applicable Models	HR100-CRM, CR100-CRM, CM100-C	HR100-CRM, CR100-CRM, CM100-C	HR100-CRM, CR100-CRM, CM100-C



Riser Cards

Model Name	RISER-2PE4	RISER-PE16	X100-2P1M	X100-3PE2	T100-2E	T200-1E
Expansion Slots	2 PCIe x4	1 PCIe x16	2 PCI, 1 Mini PCIe	1 PCIe x1, 1 PCI, 1 Mini PCIe	2 PCIe x16 (PCIe x8 signal)	1 PCIe x16 (PCIe x16 signal)
Interface	1 PCIe x8	1 PCIe x16	1 PCIe x1	1 PCIe x1	PCIe x16	PCIe x16
Dimensions	170 x 52.7 mm	137.1 x 31.3 mm	170 x 52.7 mm	170 x 52.7 mm	170mm x 52.70mm	140mm x 51mm
Applicable Models	SB102-D	-	SB102-D	SB102-D	-	-



DC to DC Converters

Model Name	X102-DC12				X102-DC24				X102-DC30				X103-DC36			
Input Voltage	11.4V~12.6V				20.4V~25.2V				6V~30V				9V~36V			
Output Voltage	Output Voltage	Output Current	Power Output	Test Result 125.9W	Output Voltage	Output Current (maximum)	Output Voltage	Output Current (maximum)	12V/24V	Output Voltage	Output Current (maximum)	Output Voltage	Output Current (maximum)			
	+3.3V	5A	16.5W		+3.3V ±5%	5.0A	+3.3V ±5%	6.0A								
	+5V	5A	25W		+5V ±5%	8.0A	+5V ±5%	6.0A								
	5VSB	2A	10W		5VSB ±5%	2.0A	5VSB ±5%	1.5A								
	+12V	6A	72W		+12V ±5%	6.0A	+12V ±5%	5A								
Maximum Output	130W				140W				120W				70W			
Ports	One DC 12V Jack, One 4-pin ATX +12V Power Connector, One 20-pin ATX Power Connector				One 3-pin DC-in Connector, One 4-pin ATX 12V Power Connector, One 20-pin ATX Power Connector, Two 4-pin FDD Power Connector				One 3-pin DC-in Connector, One 4-pin ATX 12V Power Connector, One 20-pin ATX Power Connector, One 4-pin FDD Power Connector				One DC-in Jack(default) or One 4-pin Power Connector			
Dimensions	146 x 50 mm				146 x 50 mm				146 x 50 mm				146 x 55 mm			



Proprietary Expansion Modules

Model Name	EXT-HDMI	EXT-VGA	EXT-DP	SDVO-LVDS	MPE-CAN2
Chip	ASM1442K	IT6516B	SN75DP130	Chrontel CH7308B	-
Ports	HDMI Connector LCD/Inverter Power connector	VGA Connector LCD/Inverter Power connector	DP Connector LCD/Inverter Power Connector	LVDS LCD Panel Connector LCD/Inverter Power Connector	1 DB9 connector includes Dual CAN Bus and 1 J1708 ports
Interface	1 HDMI	1 VGA	1 DP	1 SDVO	1 Mini PCIe/USB (Opt.)
Dimensions	50 x 40 mm	50 x 40 mm	50 x 40 mm	45 x 38 mm	50.59mm x 30mm
Applicable Models	ADS101/ADS103	ADS101/ADS103	HU171/HU173, HU101/HU103, HM100/HM101/HM103-QM87/HM86, ADS101/ADS103	-	-

\*Available upon project request & MOQ required

Proprietary Expansion Modules



Model Name	EXT-RS232	EXT-RS485	MPE-EXTB	MPE-EXTF	MPE-SATA	MPE-SIM2
Chip	NCT5104	NCT5104	-	-	-	-
Expansion Slots/Ports	4 RS232 Serial Connector	4 RS485 Serial Connector	1 Full-size Mini PCIe	1 Full-size Mini PCIe	1 SATA Connector	2 SIM slots
Interface	1 LPC	1 LPC	1 Half-size Mini PCIe	1 Half-size Mini PCIe	1 mSATA	Mini PCIe (USB 3.2 Gen 1 / USB 2.0, PCIe)
Dimensions	48 x 30 mm	48 x 30 mm	30 x 26.8 mm	30 x 26.8 mm	35 x 25 mm	61.45 x 30 mm
Applicable Models	SD631-C236/Q170, SD630-H110, SD331-C236/Q170, SD331-Q170/H110, SD101/SD103-Q170/H110, SD100-Q170/H110, SU171/SU173		-	-	-	-

M.2 Expansion Modules



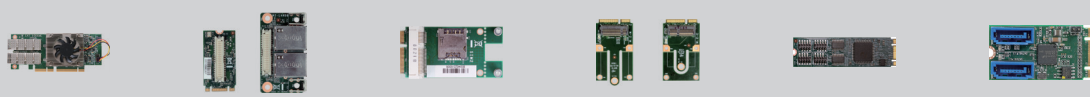
Model Name	M.2-eMMC	M.2-1LAN/2LAN	M.2-1PSE/2PSE	MPE-M2M/M2E	M.2-COM4	M.2-SATA2	M.2-USB314
Expansion Slots/Ports	-	1 RJ45 / 2 RJ45	1 RJ45 / 2 RJ45	1 M.2 M key/ 1 M.2 E key	RS232/RS422/RS485	2 SATA 3.0	4 USB 3.2 Gen1
Interface	M.2 Key B & Key M Supports PCIe 5Gbps NVME 1.3a	PCIe x1	PCIe x1	PCIe, SATA, USB (based on motherboard input)	PCIe x1	PCIe	PCIe
Form Factor	M.2 2230/2242/2260/2280	M.2 B-M key (22 x 42 mm)	M.2 B-M key (22 x 42 mm)	Mini PCIe for both full and half sizes	M.2 B-M key (22 x 80 mm)	M.2 B-M key (22 x 42 mm)	M.2 B-M key (22 x 80 mm)
Applicable Models	-	All DFI systems and boards with M.2 interface	All DFI systems and boards with M.2 interface	All DFI systems and boards with Mini PCIe.	All DFI systems and boards with M.2 interface	All DFI systems and boards with M.2 interface	All DFI systems and boards with M.2 interface

Remote Management



Model Name	M2A-OOB	SEM-2500/2510
Chip	NUC980	AST2500/2510
Mode	OUT OF BAND	SEM2500: IPMI & VGA SEM2510: VGA
Interface	Proprietary M.2 A key	DFI Proprietary
Dimension	30 x 42mm	69.6 x 45mm
Applicable Models	1. RPS630 m.2 A key 2. RPS310 with EXT-OOB riser card 3. All DFI boards with PCIe Slot	PR610-C621/ PR810-C622

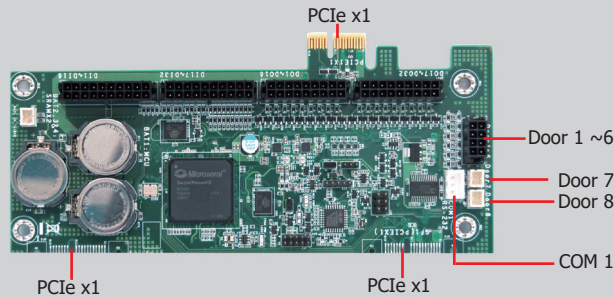
High Speed Modules



EXT-100GbE      M.2-1LAN/2LAN      MPE-SIM2      MPE-M2M/M2E      M.2-COM4      M.2-SATA2

Enjoy greater scalability in networking, storage, video or signal transmission with additional standard-compliant interfaces

Gaming I/O Board



**GM901**  
Expand gaming ports and provide FPGA for API usage

Gaming IO      Digital IO      Security ROM

- Intrusion switch inputs:
- 6 via 2x4 micro-fit connector
  - 2 via 2-pin box headers
  - 32 ESD-protected inputs
  - 32 ESD-protected outputs
  - 2 x SRAM (BGA type): 64K x16, 512K x16, 1M x16, 2M x16, 4M x16

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