

# 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

### Embedded SBCs



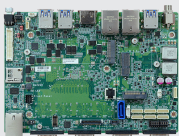
PCSF51



RPP051



ASL553



MTH253

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® Amston Lake	Atom	ASL051	
	Intel® Atom® Elkhart Lake	Atom	EHL051	
2.5"	Intel Atom® E3900	Atom	AL05P AL051, AL053	P10
	Intel® Pentium® / Celeron® N3000	Atom	BW051	
	NXP i.MX 93	NXP	M93053	
	NXP i.MX 8M Series	NXP	M8M051	
	NXP i.MX 8M Mini	NXP	8MM053	
	Freescale i.MX6 Series	NXP	FS053	
3.5"	Qualcomm QCS6490	Qualcomm	QCS051	P11
	9th/8th Gen Intel® Core™	Desktop	CS551	
	Intel® Core™ Ultra Processor	U/H	MTH556	
	8th Gen Intel® Core™	ULT	WL551	
3.5"	7th Gen Intel® Core™	ULT	KU551, KU553	P12
	7th/6th Gen Intel® Core™	ULT	SU551	
	Intel® Atom® Amston Lake	Atom	ASL553	
	Intel® Atom® Alder Lake-N	Atom	ADN553	
	Intel® Atom® Elkhart Lake	Atom	EHL556	
	Intel® Atom® E3900	Atom	AL551, AL553	
3.5"	Intel® Atom® E3800	Atom	BT553	P13
	AMD® Embedded V1000 / R2000 / R1000	AMD	GH551	
	NXP i.MX 8M Plus	NXP	M8MP553	
	Intel® Core™ Ultra Processor	U/H	MTH253	
4"	12th Gen Intel® Core™	ULT	ADP253	P14
	6th Gen Intel® Core™	ULT	SU256-SCM	
	Intel® Atom® Amston Lake	Atom	ASL253	
	Intel® Atom® Alder Lake-N	Atom	ADN253	P15
	Intel® Atom® Elkhart Lake	Atom	EHL253	
	Intel® Atom® E3900	Atom	AL253	
	Intel® Atom® E3800	Atom	BT253, BT259	

**PICMG 1.3**



RPSPIC-R680E/H610E

Processor	Platform	Chipset	Model	Index
14th/13th/12th Gen Intel® Core™	Workstation	R680E	RPSPIC-R680E	P16
	Desktop	H610E	RPSPIC-H610E	
7th/6th Gen Intel® Core™	Desktop	Q170	PIC-Q170	
		H110	PIC-H110	

**Mini-ITX**



RPS101/RPS103



RPP171/RPP173



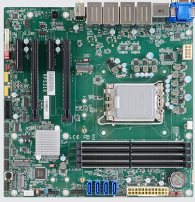
RPS183



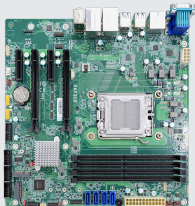
ASL171/ASL173

Processor	Platform	Chipset	Model	Index	
Intel® Core™ Ultra	Workstation	W880	ARS101/ARS103-W880	P17	
	Desktop	Q870	ARS101/ARS103-Q870		
		H810	ARS101/ARS103-H810		
14th/13th/12th Gen Intel® Core™	Workstation	R680E	RPS101/RPS103-R680E	P18	
			RPS100-R680E, ADS101/ADS103-R680E		
	Desktop	Q670E	RPS183-Q670E, RPS101/RPS103-Q670E, RPS100-Q670E, ADS101/ADS103-Q670E		P19
		H610E	RPS183-H610E, RPS101/RPS103-H610E, RPS100-H610E, ADS101/ADS103-H610E		
Intel® Core™ Ultra	ULT/Mobile	-	ARH171/173		
13th Gen Intel® Core™	ULT/Mobile	-	RPP171/RPP173		
11th Gen Intel® Core™	ULT/Mobile	-	TGU171/TGU173		
10th Gen Intel® Core™	Workstation	W480E	CMS171/CMS173-W480E, CMS101/CMS103-W480E, CMS100-W480E	P20	
			CMS171/CMS173-Q470E, CMS101/CMS103-Q470E, CMS100-Q470E		
	Desktop	H420E	CMS101/CMS103-H420E, CMS100-H420E	P21	
9th/8th Gen Intel® Core™	Workstation	C246	CS170-C246, CS101-C246	P23	
			CS103-C246		
			CS100-C246		
	Desktop	Q370	CS181-Q370, CS170-Q370, CS103-Q370, CS101-Q370, CS100-Q370	P22	
H310		CS181-H310, CS170-H310, CS103-H310, CS101-H310, CS100-H310	P23		
8th Gen Intel® Core™	ULT	-	WL171/WL173		
7th Gen Intel® Core™	ULT	-	KU171/KU173		
7th/6th Gen Intel® Core™	Desktop	Q170/H110	KD171	P24	
		Q170	SD106-Q170, SD100-Q170		
			SD101/SD103-Q170	P26	
H110	SD170-H110, SD101/SD103-H110, SD100-H110	P25			
	SU171/SU173				
6th Gen Intel® Core™	ULT	-	SU171/SU173		
Intel® Atom® Amston Lake	Atom	-	ASL171/ASL173		
Intel® Atom® Alder Lake-N	Atom	-	ADN171/ADN173		
Intel® Atom X Series	Atom	-	EHL171/EHL173	P26	
Intel® Atom E3900	Atom	-	AL170, AL171/AL173		
Intel® Atom E3800	Atom	-	BT100, BT101/BT103		
AMD® Ryzen™ Embedded 8000 Series	AMD	-	HPT171	P27	
AMD® Ryzen™ Embedded V2000 Series	AMD	-	RNO171		
AMD® Ryzen Embedded V1000/ R1000 Series	AMD	-	GH171		

microATX



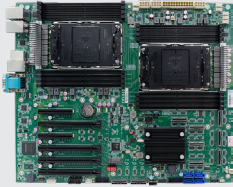
RPS310



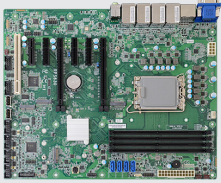
RAP310

Processor	Platform	Chipset	Model	Index
Intel® Core™ Ultra	Workstation	W880	ARS310-W880	P28
	Desktop	Q870	ARS310-Q870	
14th/13th/12th Gen Intel® Core™	Workstation	R680E	RPS310-R680E	P29
			ADS310-R680E	
	Desktop	Q670E	RPS330-Q670E, RPS310-Q670E, ADS310-Q670E	
		H610E	RPS330-H610E	
10th Gen Intel® Core™	Workstation	W480E	CMS311-W480E	P30
			CMS310-W480E	
	Desktop	Q470E	CMS330-Q470E, CMS311-Q470E, CMS310-Q470E	
		H420E	CMS330-H420E	
9th/8th Gen Intel® Core™	Workstation	C246	CS350-C246	P31
			CS332-C246	
			CS331-C246	
	Desktop	Q370	CS350-Q370, CS332-Q370, CS331-Q370, CS330-Q370	
		H310	CS330-H310	
7th/6th Gen Intel® Core™	Workstation	C236	KD331-C236, SD331-C236	P32
	Desktop	Q170	KD331-Q170	P33
			SD331-Q170, SD330-Q170	
		H110	SD330-H110	
AMD® Ryzen™ 7000 Series	AMD	B650	RAP310-B650	

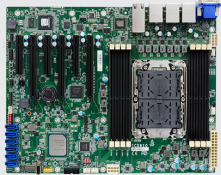
## EATX/ATX



ERX810



RPS630



ICX610

Processor	Platform	Chipset	Model	Index
5th/4th Gen Intel® Xeon® Scalable Family	Server-Grade	C741	ERX810-C741	P34
2nd/1st Gen Intel® Xeon® Scalable Family		C622	PR811-C622 PR810-C622	
5th/4th Gen Intel® Xeon® Scalable Family	Server-Grade	C741	ERX610-C741	P35
3rd Gen Intel® Xeon® Scalable Family		C621A	ICX610-C621A	
2nd/1st Gen Intel® Xeon® Scalable Family		C621	PR611-C621, PR610-C621	
1st Gen Intel® Xeon® Scalable Family		C622	PL610-C622	
Intel® Core™ Ultra	Workstation	W880	ARS630-W880	P36
	Desktop	Q870	ARS630-Q870	
14th/13th/12th Gen Intel® Core™	Workstation	R680E	RPS630-R680E, ADS630-R680E	P37
	Desktop	Q670E	RPS630-Q670E, ADS630-Q670E	
10th Gen Intel® Core™	Workstation	W480E	CMS632-W480E	P38
			CMS630-W480E	
	Desktop	Q470E	CMS632-Q470E, CMS631-Q470E, CMS630-Q470E	
9th/8th Gen Intel® Core™	Workstation	C246	CS650-C246, CS632-C246, CS631-C246	P39
			Q370	
	Desktop	H310	CS630-H310, CS620-H310	
7th/6th Gen Intel® Core™	Workstation	C236	KD632-C236, SD631-C236	P40
			Q170	
	Desktop	H110	KD630-H110, SD630-H110	
AMD® EPYC™ 3000 Series	AMD	-	SO630	

## Peripherals



EXT-OOB

Processor	Model	Index
Proprietary I/O Cards	EXT-100GbE	P42
	EXT-10GbE	
Riser Cards	H300-2E, H300-2P1E, H300-3P1M, RISER-2PE4, RISER-PE16	P43
	X100-2P1M, X100-3PE2, T100-2E, T200-1E	
DC to DC Converters	X102-DC12, X102-DC24, X102-DC30, X103-DC36	
Proprietary Expansion Modules	EXT, EXT-VGA	P44
	EXT-DP, SDVO-LVDS, MPE-CAN2	
M.2 Expansion Modules	EXT-RS232, EXT-RS485, MPE-EXTB, MPE-EXTF, MPE-SATA, MPE-SIM2	P45
	M2A-eDP/LVDS, M2A-VGA, M2A, M2A-DP, M2A-M21	
	M.2-eMMC	
Remote Management	M.2-1LAN/2LAN, M.2-1PSE/2PSE, MPE-M2M/M2E, M.2-COM4, M.2-SATA2, M.2-USB314	P46
	EXT-OOB, RM101-OOB	
	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



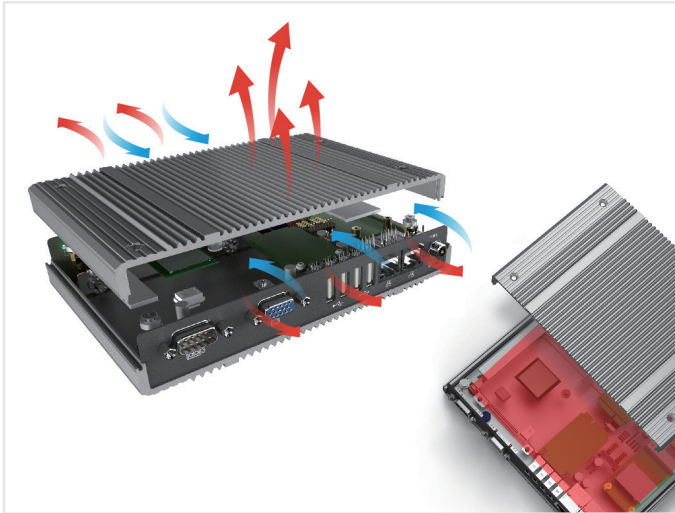
## Embedded Total Solution

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



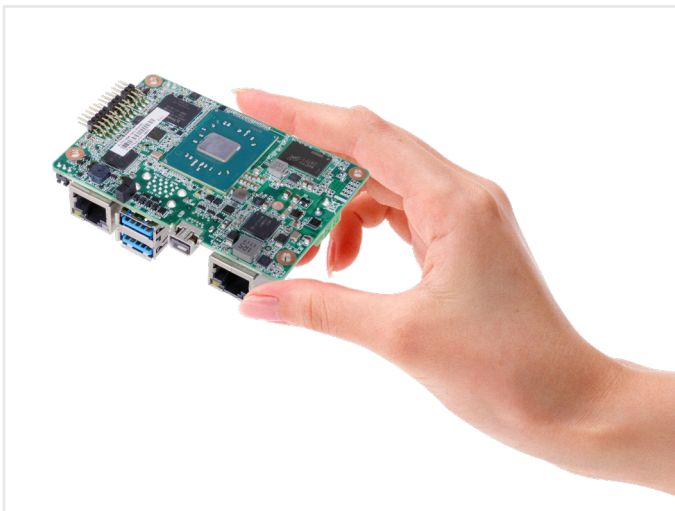
## We Provides a Total Solution Designed for Your Embedded Applications





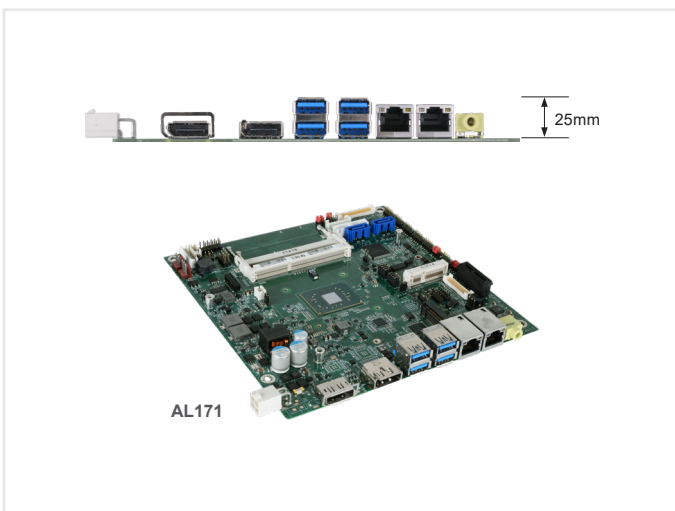
### Easy System Integration

- 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

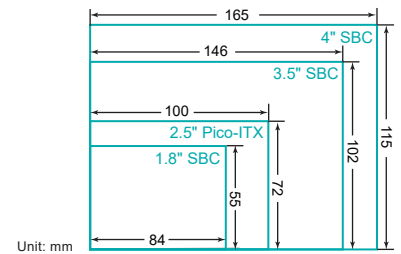
# Embedded SBCs

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	1.8~2.5GHz	2.1~2.7GHz	1.2~2.6GHz
	TDP	6/6.5/9.5W	12W	up to 12W
	Cache	2MB	1/2MB	2MB
	Chipset	Memory Down	Memory Down	Memory Down
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	Single Channel DDR4 2400MHz
	Max. Capacity	8GB	8GB	8GB
	Socket	-	-	-
Graphics	Connector	1 Mini DP++	-	-
Expansion	PCIe, PCI	-	-	-
	Mini PCIe / M.2	1 Full-size Mini PCIe	1 M.2 E key	1 Full-size Mini PCIe
	SIM	-	-	-
Audio	Audio Codec	-	-	-
Ethernet	Controller	2 Intel® I210AT / I210IT	1 Intel® I210AT	1 Intel® I211AT / I210IT
	Ethernet	2 GbE	1 GbE	1 GbE
Rear I/O	Serial	-	-	-
	USB	2 USB 3.2 Gen1	2 USB 3.2 Gen2 (Type A)	1 USB 3.2 Gen2 (Type C)
	Display	1 Mini DP++	-	-
	Audio	-	-	-
	PS/2	-	-	-
	Serial	1 RS-232/422/485	-	-
Internal I/O	USB	1 USB 2.0	-	-
	Display	-	-	-
	Audio	-	-	-
	Storage	1 eMMC up to 64GB	1 eMMC up to 128GB	1 eMMC up to 64GB
	DIO	8-bit DIO	8-bit DIO	8-bit DIO
	CANBus	-	-	-
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++, 1 eDP	1 DP++
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	1 Intel® I219V/LM, 1 Intel® I211AT/I210IT	1 Intel® I219V/I219LM
Rear I/O	Ethernet	1x 2.5GbE	2 GbE	1 GbE
	Serial	-	-	-
	USB	2 USB 3.2 Gen2	2 USB 3.2 Gen2	2 USB 3.2 Gen2
	Display	1 DP++	1 COMBO port (DP++)	1 COMBO port (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	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	
CANBus	-	-	-	
SMBus	1	1	1	
TPM / iAMT		fTPM 2.0, iAMT (Core i7/i5 only)	fTPM 2.0, iAMT (Core i7/i5 only)	fTPM 2.0, iAMT (Core i7/i5 only)
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

2.5"



Atom

Model Name		ASL051	EHL051	AL05P
Platform		Atom	Atom	Atom
System	Processor	Intel® Atom® Amston Lake	Intel Atom® Elkhart Lake	Intel Atom® E3900
	Socket	BGA 1264	BGA 1493	BGA 1296
	Max. Speed	3.2~3.6GHz	2.6~3.0GHz	1.8~2.5GHz
	TDP	6W/9W/12W	6~12W	6~9.5W
	Cache	6M	2M/4M	2M
	Chipset	-	-	-
	BIOS	AMI SPI 256Mbit	AMI SPI 256Mbit	Insyde SPI 128Mbit (supports UEFI boot only)
Memory	Technology	Single Channel DDR5 4800MHz	Single Channel DDR4 up to 3200MHz	Single Channel LPDDR4 2400MHz
	Max. Capacity	16GB	32GB	4GB
	Socket	1 SODIMM	1 SODIMM	-
Graphics	Connector	1 LVDS/eDP (Opt.)	1 LVDS	1 Mini DP++
Expansion	PCIe, PCI	-	-	-
	Mini PCIe / M.2	1 M.2 E Key 2230 for Wi-Fi/BT, 1 M.2 B Key 3042/2242 for 4G/5G, 1 M.2 2242 B key	1 M.2 E Key 2230, 1 M.2 B Key 3042/2242	1 Full-size Mini PCIe
	SIM	1 Nano SIM	-	-
Audio	Audio Codec	CMEDIA CM9825	ALC888S	-
Ethernet	Controller	2 Intel® I226V/IT	2 Intel® I225LM/IT	1 Intel® I211AT, 1 Intel® I210IT
Rear I/O	Ethernet	2x 2.5GbE	2	1
	Serial	-	-	-
	USB	2 USB 3.2 Gen2	2 USB 3.2 Gen 2	2 USB 3.2 Gen 1
	Display	-	-	1 Mini DP++
	Audio	-	-	-
	PS/2	-	-	-
	Internal I/O	Serial	2 RS-232/422/485	2 RS-232/422/485
USB		2 USB 2.0	2 USB 2.0	2 USB 2.0
Display		1 LVDS/eDP (Opt.)	1 LVDS, 1 LCD Power	-
Audio		1 Audio (Line-out/Mic-in)	1 Audio (Line-out/Mic-in)	-
Storage		-	1 SATA 3.0, 1 5V SATA Power	-
DIO		8-bit DIO	8-bit DIO	8-bit DIO
CANBus		-	-	-
SMBus	1 SMBus/I²C (Opt.)	1 SMBus/I²C (Opt.)	1	
TPM / iAMT		dTPM2.0	dTPM2.0	fTPM 2.0
Power		12V DC-in	12V DC-in	48V DC PoE
Operating Temperature		-40 to 85 °C	-5°C ~ 65°C / -40°C ~ 85°C	0°C ~ 60°C / -20°C ~ 70°C

2.5"



Atom

2.5"



Atom

2.5"



Atom

Model Name		AL051	AL053	BW051
Platform		Atom	Atom	Atom
System	Processor	Intel Atom® E3900	Intel Atom® E3900	Intel® Pentium® / Celeron® N3000
	Socket	BGA 1296	BGA 1296	BGA 1170
	Max. Speed	1.8~2.5GHz	1.8~2.5GHz	2.24~2.56GHz
	TDP	6~12W	6~12W	4W/5W/6W
	Cache	2M	2M	2M
	Chipset	-	-	-
BIOS		Insyde SPI 64Mbit (supports UEFI boot only)	Insyde SPI 128Mbit (supports UEFI boot only)	Insyde SPI 64Mbit
Memory	Technology	Single Channel DDR3L 1866MHZ	Single Channel DDR3L 1866MHZ	Single Channel DDR3L 1600MHZ
	Max. Capacity	8GB	8GB	8GB
	Socket	1 SODIMM	1 SODIMM	1 SODIMM
Graphics	Connector	1 Mini DP++, 1 VGA, 1 LVDS	1 Mini DP++, 1 LVDS	1 VGA, 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	1 Mini PCIe, 1 mSATA, 1 E I/O (Opt.)
	SIM	-	-	-
Audio	Audio Codec	ALC888S	ALC262	ALC888S
Ethernet	Controller	2 Intel® I210AT, 2 Intel® I210IT(Opt.)	1 Intel® I210AT, 1 Intel® I210IT(Opt.)	1 Intel® I211AT
Rear I/O	Ethernet	2 GbE	1 GbE	1 GbE
	Serial	-	-	-
	USB	2 USB 3.2 Gen1	2 USB 3.2 Gen1	2 USB 3.2
	Display	1 Mini DP++, 1 VGA, 1 LVDS	1 Mini DP++	1 VGA
	Audio	-	-	-
	PS/2	-	-	-
Internal I/O	Serial	1 RS-232/422/485	1 RS-232/422/485	1 RS-232/422/485, 1 RS-232
	USB	2 USB 2.0	2 USB 2.0	2 USB 2.0
	Display	1 LVDS	1 LVDS, 1 LCD Power	1 LVDS
	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 3.0
	DIO	8-bit DIO	8-bit DIO	8-bit DIO
	CANBus	-	-	-
	SMBus	1	1	1
TPM / iAMT	fTPM 2.0	fTPM 2.0	TPM (Opt.)	
Power	12V DC-in	9-36V DC-in	12V DC-in	
Operating Temperature	0°C ~ 60°C / -40°C ~ 85°C	0°C ~ 60°C / -20°C ~ 70°C / -40°C ~ 85°C	0°C ~ 60°C	

2.5"



NXP

2.5"



NXP

2.5"



NXP

Model Name		M93053	M8M051	8MM053
Platform		NXP	NXP	NXP
System	Processor	NXP i.MX 93 Dual Cortex-A55	NXP i.MX 8M Quad / Dual Cortex-A53	NXP i.MX 8M Mini Quad Cortex-A53
	Socket	-	-	-
	Max. Speed	Up to 1.7GHz	Up to 1.5GHz	1.6~1.8GHz
	TDP	-	-	-
	Cache	-	-	-
	Chipset	-	-	-
BIOS		-	-	-
Memory	Technology	Single Channel LPDDR4	Single Channel LPDDR4 up to 3200 MHz	Single Channel LPDDR4
	Max. Capacity	2GB	2GB/4GB	4GB
	Socket	Memory Down	Memory Down	Memory Down
Graphics	Connector	1 LVDS-	1 -LVDS	-
Expansion	PCIe, PCI	-	-	-
	Mini PCIe / M.2	1 M.2 B Key 3042	1 M.2 B key 3042/2242, 1 M.2 E key 2230	1 M.2 B key 3042/2242, 1 M.2 E key 2230
	SIM	1 Nano SIM	1 Nano SIM	1 Nano SIM
Audio	Audio Codec	-	SGTL5000	-
Ethernet	Controller	RTL8211	1 ATHEROS AR8035	RTL8211
Rear I/O	Ethernet	2 GbE	1 GbE	2 GbE
	Serial	1 RS485	1 RS485	1 RS485
	USB	2 USB 2.0, 1 Micro USB 2.0 (OTG)	1 Micro USB 2.0, 2 USB 3.2 Gen1	2 USB 2.0
	Display	-	-	-
	Audio	-	-	-
	PS/2	-	-	-
Internal I/O	Serial	1 RS-232, 1 RS-232/422/485	1 RS-232/422/485, 1 RS232	2 RS232
	USB	2 USB 2.0	2 USB 2.0	1 USB 2.0
	Display	1 LVDS, 1 LCD Power	1 LVDS, 1 Backlight Power	-
	Audio	-	1 Audio (Line-out / Mic-in)	-
	Storage	1 eMMC up to 64GB	1 eMMC up to 64GB	1 eMMC up to 64GB
	DIO	8-bit DIO	8-bit DIO	4 DIO, 1 PWR, 1 GND
	CANBus	-	-	-
	SMBus	1 CANBus 2.0b	1 CANBus 2.0	-
TPM / iAMT	-	-	-	
Power	9-36V 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	-5°C ~ 65°C / -40°C ~ 80°C	



2.5"

NXP



2.5"

Qualcomm

Model Name		FS053	QCS051
Platform		NXP	Qualcomm
System	Processor	Freescale i.MX6 Series	Qualcomm QCS6490
	Socket	-	-
	Max. Speed	1.0GHz	2.7GHz
	TDP	-	-
	Cache	-	-
	Chipset	-	-
Memory	BIOS	4MB NOR Flash	-
	Technology	Single Channel DDR3L 1600/1866MHz	Single Channel LPDDR5
	Max. Capacity	1GB/2GB, 4GB(Opt.)	4GB/8GB
Graphics	Socket	SDRAM Memory down	SDRAM Memory down
	Connector	1 LVDS	-
Expansion	PCIe, PCI	-	-
	Mini PCIe / M.2	1 Full-size Mini PCIe	1 M.2 B key 3052, 1 M.2 E key 2230
Audio	SIM	-	1 Nano SIM
	Audio Codec	-	WCD9385
Ethernet	Controller	1 Atheros AR8033, 1 LAN7500	1 LAN AX88179
	Ethernet	2 GbE	1 GbE
Rear I/O	Serial	1 RS-485	-
	USB	2 USB 2.0, 1 USB 2.0 OTG Port	2 USB 3.2 Gen1 Type A
	Display	-	-
	Audio	-	1 Audio combo (Line-out / Mic-in)
	PS/2	-	-
	Serial	1 RS-232/422/485	1 RS-232
Internal I/O	USB	1 USB 2.0	3 USB 2.0, 1 USB Type C (Download only)
	Display	1 LVDS	-
	Audio	-	-
	Storage	1 SATA 2.0 (Quad processor only), 1 eMMC up to 32GB	1 UFS 3.1, default 128GB
	DIO	8-bit DIO	8-bit DIO
	CANBus	-	1 CAN FD
TPM / iAMT	-	-	
Power	9~36V DC-in	5V DC-in	
Operating Temperature	0°C ~ 60°C / -20°C ~ 70°C	0°C ~ 60°C / -25°C ~ 75°C	



3.5"

C246/Q370/H310

3.5"



U/H

3.5"



ULT

Model Name		CS551	MTH556	WL551
Platform		Desktop	U/H	ULT
System	Processor	9th/8th Gen Intel® Core™	Intel® Core™ Ultra Processor	8th Gen Intel® Core™
	Socket	LGA 1151	BGA2049	BGA1528
	Max. Speed	2.9~4.0GHz	4.3~5.0GHz	2.0~4.4GHz
	TDP	35W	up to 28W	15W
	Cache	2M/4M/6M/9M/12M	12~24M	2M~8M
	Chipset	Intel® C246/Q370/H310	-	-
Memory	BIOS	AMI SPI 128Mbit	AMI SPI 256Mbit	AMI SPI 128Mbit
	Technology	Single Channel DDR4 2666MHz (C246 with ECC Support)	DDR5 5600MHz	Single Channel DDR4 up to 2400MHz
	Max. Capacity	32GB	96GB	32GB
Graphics	Socket	1 SODIMM	2 SODIMM	1 SODIMM
	Connector	2 DP++, 1 LVDS	1 LVDS/eDP, 1 USB-C DP Alt. mode	1 DP++, 1 LVDS/eDP (Opt.)
Expansion	PCIe, PCI	-	-	-
	Mini PCIe / M.2	1 Full size Mini PCIe, 1 M.2 M key 2280	1 M.2 M key 2280, 1 M.2 B key 3052, 1 M.2 E key 2230	1 M.2 M key 2280/2242, 1 M.2 B key 3042/2242, 1 M.2 E key 2230
	SIM	1 (Opt.)	1 nano SIM	1 Nano SIM (Opt.)
Audio	Audio Codec	ALC262	CM9825	ALC888S
	Ethernet	2 Intel® I211AT/I210IT	2 Intel® I226V	3 Intel® I211AT/I210IT
Rear I/O	Ethernet	2 GbE	2x 2.5GbE	3 GbE
	Serial	-	-	-
	USB	4 USB 3.2 Gen1/Gen2	3 USB 3.2, 1 USB Type C	4 USB 3.2 Gen2
	Display	2 DP++	1 USB-C DP Alt. Mode	1 COMBO port (DP++/)
	Audio	-	-	-
	PS/2	-	-	-
Internal I/O	Serial	1 RS-232/422/485	2 RS-232/422/485, 2 RS-232	1 RS-232/422/485
	USB	2 USB 2.0	2 USB 2.0	2 USB 2.0
	Display	1 LVDS	1 LVDS/eDP	1 LVDS/eDP
	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
	DIO	8-bit DIO	8-bit DIO	8-bit DIO
CANBus	-	-	-	
SMBus	1	-	1	
TPM / iAMT	fTPM 2.0	dTPM 2.0.	fTPM 2.0 (default) / dTPM 2.0. (Opt.)	
Power	12V DC-in	9~36V DC-in	12V DC-in	
Operating Temperature	-5°C ~ 65°C / -30°C ~ 80°C	-5°C ~ 65°C	-5°C ~ 65°C / -20°C ~ 80°C	

3.5"



ULT

3.5"



ULT

3.5"



ULT

Model Name		KU551	KU553	SU551
Platform		ULT	ULT	ULT
System	Processor	7th Gen Intel® Core™	7th Gen Intel® Core™	7th/6th Gen Intel® Core™
	Socket	BGA 1356	BGA 1356	BGA 1356
	Max. Speed	2.2~3.9GHz	2.2~3.9GHz	2.0~3.9GHz
	TDP	15W	15W	15W
	Cache	2M/3M/4M	2M/3M/4M	2M/3M/4M
	Chipset	-	-	-
Memory	BIOS	Insyde SPI 128Mbit	Insyde SPI 128Mbit	Insyde SPI 128Mbit
	Technology	Single Channel DDR4 1866/2133MHz	Single Channel DDR4 1866/2133MHz	Single Channel DDR3L 1600MHz
	Max. Capacity	16GB	16GB	8GB
Graphics	Socket	1 SODIMM	1 SODIMM	1 SODIMM
	Connector	1 VGA/DDI, 1 LVDS/eDP, 1 DP++/DDI	1 VGA, 1 LVDS/eDP, 1 DP++	1 VGA, 1 LVDS, 1 DP++
Expansion	PCIe, PCI	-	-	-
	Mini PCIe / M.2	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	1 Full-size Mini PCIe, 1 Half-size Mini PCIe
	SIM	-	1 (Opt.)	1 (Opt.)
Audio	Audio Codec	ALC888	ALC888S	ALC888S
Ethernet	Controller	1 Intel® I210AT, 1 Intel® I219LM	1 Intel® I210AT/I210IT, 1 Intel® I219LM/I219V	1 Intel® I210AT, 1 Intel® I219LM
Rear I/O	Ethernet	2 GbE	2 GbE	2 GbE
	Serial	-	-	-
	USB	4 USB 3.2	4 USB 3.2	4 USB 3.2 Gen1
	Display	1 VGA, 1 DP++	1 VGA, 1 DP++	1 VGA, 1 DP++
	Audio	-	-	-
	PS/2	-	-	-
Internal I/O	Serial	2 RS-232/422/485	1 RS-232/422/485	2 RS-232/422/485, 2 RS-232
	USB	2 USB 2.0	2 USB 2.0	2 USB 2.0
	Display	1 LVDS, 1 LCD/Inverter Power	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	2 SATA 3.0
	DIO	8-bit DIO	8-bit DIO	8-bit DIO
	CANBus	-	-	-
SMBus	1	1	1	
TPM / iAMT		fTPM 2.0, iAMT 11.6	fTPM 2.0, iAMT 11.6	iAMT 11.0 (Core i7/i5 only)
Power		12V DC-in	9~36V DC-in	12V DC-in
Operating Temperature		0°C ~ 60°C / -20°C ~ 70°C (Opt.)	0°C ~ 60°C / -20°C ~ 70°C (Opt.)	0°C ~ 60°C / -20°C ~ 70°C (Opt.)

3.5"



Atom

3.5"



Atom

3.5"



Atom

Model Name		ASL553	ADN553	EHL556
Platform		Atom	Atom	Atom
System	Processor	Intel® Atom® Amston Lake	Intel Atom® Alder Lake-N	Intel Atom® Elkhart Lake
	Socket	BGA 1264	BGA 1264	BGA 1493
	Max. Speed	3.2~3.6GHz	3.2~3.8GHz	1.5~3.0GHz
	TDP	6W/9W/12W	up to 15W	6.5~12W
	Cache	6M	6M	2M/4M
	Chipset	-	-	-
Memory	BIOS	AMI SPI 256Mbit	AMI SPI 256Mbit	AMI SPI 256Mbit
	Technology	Single Channel DDR5 4800MHz	Single Channel DDR5 4800MHz	Single Channel DDR4 3200MHz (in-band ECC support in embedded/industrial SKU)
	Max. Capacity	16GB	16GB	32GB
Graphics	Socket	1 SODIMM	1 SODIMM	1 SODIMM
	Connector	1 Type-C DP Alt. Mode, 1 LVDS/eDP(Opt.)	1 Type-C DP Alt. Mode, 1 LVDS/eDP	1 VGA, 1 DP++, 1 LVDS or eDP + Backlight
Expansion	PCIe, PCI	-	-	-
	Mini PCIe / M.2	1 M.2 M key 2280/2242, 1 M.2 B key 3052/3042, 1 M.2 E key 2230	1 M.2 M key 2280/2242, 1 M.2 B key 3052/3042, 1 M.2 E key 2230	1 Mini PCIe, 1 M.2 E key 2230
	SIM	1 SIM	1 SIM	-
Audio	Audio Codec	ALC888S	ALC888S	ALC888
Ethernet	Controller	3 Intel® I226IT	3 Intel® I226V/IT	2 Intel® I225IT
Rear I/O	Ethernet	3x 2.5GbE	3x 2.5GbE	2 GbE
	Serial	-	-	-
	USB	4 USB 3.2	4 USB 3.2	2 USB 3.2 Gen2
	Display	1 Type-C DP Alt. Mode, 1 LVDS/eDP(Opt.)	1 Type-C DP Alt. Mode, 1 LVDS/eDP	1 DP++, 1 VGA
	Audio	-	-	-
	PS/2	-	-	-
Internal I/O	Serial	1 RS-232/422/485	1 RS-232/422/485	1 RS232/422/485 + 1 RS232, or 1 RS232/422/485
	USB	2 USB 2.0	2 USB 2.0	4 USB 2.0
	Display	1 LVDS, 1 LCD/Inverter Power	1 LVDS, 1 LCD/Inverter Power	1 LVDS or eDP + Backlight
	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 (BIOS select)
	CANBus	-	-	-
SMBus	-	-	-	
TPM / iAMT		dTPM 2.0.	dTPM 2.0.	dTPM 2.0.
Power		9~36V DC-in	9~36V DC-in	9~36V DC-in
Operating Temperature		-40°C ~ 85°C	-5°C ~ 65°C	-40°C ~ 85°C

3.5"



Atom

3.5"



Atom

3.5"



Atom

Model Name		AL551	AL553	BT553
Platform		Atom	Atom	Atom
System	Processor	Intel Atom® E3900	Intel Atom® E3900	Intel Atom® E3800
	Socket	BGA 1296	BGA 1296	BGA 1170
	Max. Speed	1.8~2.5GHz	1.8~2.5GHz	1.46~2.41GHz
	TDP	6W~12W	6W~12W	7W/10W
	Cache	2M	2M	1M/2M
	Chipset	-	-	-
	BIOS	Insyde SPI 128Mbit (supports UEFI boot only)	Insyde SPI 128Mbit (supports UEFI boot only)	AMI SPI 64Mbit
Memory	Technology	Single Channel DDR3L 1866MHz	Single Channel DDR3L 1866MHz	Dual Channel DDR3L 1066/1333MHz
	Max. Capacity	8GB	8GB	2GB/4GB
	Socket	1 SODIMM	1 SODIMM	Memory down
Graphics	Connector	1 VGA, 1 LVDS, 1 DP++	1 VGA, 1 LVDS	1 VGA, 1 LVDS, 1 DP
	PCIe, PCI	-	-	-
Expansion	Mini PCIe / M.2	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	1 Mini PCIe
	SIM	-	-	-
	Audio Codec	ALC262	ALC262	ALC888
Ethernet	Controller	2 Intel® I210AT, 2 Intel® I210IT (Opt.)	2 Intel® I210AT, 2 Intel® I210IT (Opt.)	2 Intel® I210AT
	Ethernet	2 GbE	2 GbE	2 GbE
Rear I/O	Serial	-	-	-
	USB	2 USB 3.2 Gen1, 2 USB 2.0, 1 USB 3.2 Gen1 Type C OTG (Opt.)	2 USB 3.2 Gen1, 2 USB 2.0	1 USB 3.2, 1 USB 2.0
	Display	1 VGA, 1 DP++, 1 LVDS	1 VGA, 1 LVDS	1 VGA, 1 DP
	Audio	-	-	-
	PS/2	-	-	-
	Internal I/O	Serial	2 RS-232/422/485	1 RS-232/422/485
Internal I/O	USB	2 USB 2.0	2 USB 2.0	4 USB 2.0
	Display	1 LVDS, 1 LCD Power	1 LVDS, 1 LCD Power	1 LVDS
	Audio	1 Audio (Line-out, Mic-in), Speaker Out (Opt.)	1 Audio (Line-out, Mic-in)	1 Line-out, 1 Mic-in
	Storage	1 SATA 3.0, 1 SATA Power	1 SATA 3.0, 1 SATA Power	1 SATA 2.0
	DIO	8-bit DIO	8-bit DIO	8-bit DIO
	CANBus	-	-	-
	SMBus	1	1	1
	TPM / iAMT	fTPM 2.0 (default) / dTPM 2.0. (Opt.)	fTPM 2.0.	TPM (Opt.)
Power	12V DC-in	9~36V DC-in	15~36V DC-in	
Operating Temperature	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	0°C ~ 60°C / -20°C ~ 70°C / -40°C ~ 85°C	

3.5"



AMD

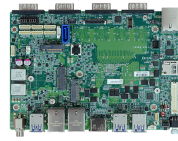
3.5"



NXP

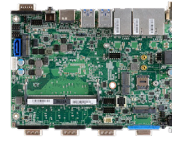
Model Name		GH551	M8MP553
Platform		AMD V Series, R-Series	NXP
System	Processor	AMD® Ryzen™ Embedded V1000/R2000/R1000 Series	NXP i.MX 8M Plus Quad/Dual Cortex-A53
	Socket	FP5	-
	Max. Speed	up to 3.6GHz (Turbo)	Up to 1.8GHz
	TDP	up to 15W	-
	Cache	4MB	512 KB L2 cache
	Chipset	-	-
	BIOS	AMI SPI 64Mbit	-
Memory	Technology	Single Channel DDR4 up to 2400MHz (ECC/non-ECC)	Single Channel LPDDR4 up to 4000MHz
	Max. Capacity	16GB	2GB/4GB/8GB
	Socket	1 SODIMM	Memory Down
Graphics	Connector	3/4 DP++, 1 LVDS (Opt.)	1 LVDS
	PCIe, PCI	-	-
Expansion	Mini PCIe / M.2	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 Codec	ALC888S	SGTL5000
Ethernet	Controller	3 Realtek® RTL8111HN/ RTL8119I	2 Atheros AR8035
	Ethernet	3 GbE	2 GbE
Rear I/O	Serial	-	1 RS-485
	USB	2 USB 3.2 Gen2, 1 USB 2.0	2 USB 3.2 Gen1, 2 USB 2.0
	Display	3/4 DP++	-
	Audio	-	-
	PS/2	-	-
	Internal I/O	Serial	1 RS-232/422/485
Internal I/O	USB	1 USB 2.0	2 USB 2.0, 1 micro USB 2.0
	Display	1 LVDS (Opt.)	1 LVDS, 1 LCD / Inverter Power
	Audio	Line-out, Mic-in, Speaker out	1 Audio (Line-out, Mic-in)
	Storage	1 SATA 3.0, 1 SATA Power	1 eMMC 5.1 up to 64GB, 1 uSD card
	DIO	8-bit DIO	8-bit DIO
	CANBus	-	2 CANBus 2.0b
	SMBus	1	-
	TPM / iAMT	fTPM 2.0 (default) / dTPM 2.0. (Opt.)	-
Power	12V DC-in	9~36V DC-in	
Operating Temperature	-5°C ~ 65°C / -30°C ~ 80°C	-30°C ~ 80°C	

4"



U/H

4"



ULT

4"

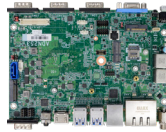


ULT

Model Name		MTH253	ADP253	SU256-SCM
Platform		U/H	ULT	ULT
System	Processor	Intel® Core™ Ultra Processor	12th Gen Intel® Core™	6th Gen Intel® Core™
	Socket	BGA2049	BGA 1744	BGA 1356
	Max. Speed	4.3~5.0GHz	4.4~4.7GHz	2.3~3.9GHz
	TDP	up to 28W	15W	15W
	Cache	12M/18M/24M	up to 12M	3M/4M
Memory	BIOS	AMI SPI 256Mbit	AMI SPI 256Mbit (Supports UEFI boot only)	Insyde SPI 128Mbit
	Technology	Dual Channel LPDDR5/x 6400MHz	Dual Channel DDR4 3200MHz	Dual Channel DDR4 2400MHz
	Max. Capacity	up to 32GB	up to 32GB	4GB/8GB
Graphics	Socket	Memory down	Memory down, 1 SODIMM	2 SODIMM
	Connector	1 LVDS, 1 USB-C DP Alt. mode	1 VGA/DP(Opt.), 2 Type-C Alt. Mode	-
Mini PCIe / M.2	Mini PCIe / M.2	1 M.2 M key 2280, 1 M.2 B key 3052, 1 M.2 E key 2230	1 M.2 E key 2230, 1 M.2 B key 3052/3042, 1 M.2 M key 2280	1 Full-size Mini PCIe
	SIM	1	1	-
Audio	Audio Codec	ALC888S	ALC888S	-
Ethernet	Controller	2 Intel® I226V, 1 Intel® i210AT (support OOB)	3 Intel® I225LM/I225IT	3 Intel® I210IT, 1 Intel® I219LM
	Ethernet	2x 2.5GbE, 1x GbE	1x 2.5GbE, 2 GbE	4 GbE
Rear I/O	Serial	1 RS-232/422/485, 1 RS-232, 1 RS-232/422/485 or 8-bit DIO	2 RS-232/422/485, 2 RS-232	-
	USB	5 USB 3.2 or 4 USB 3.2 + 1 USB 2.0, 1 USB Type C	4 USB 3.2 (2 Type C + 2 Type A) / 4 USB 3.2 (Type A)	6 USB 3.2
	Display	1 USB-C DP Alt. Mode	1 VGA/DP (Opt.), 2 Type-C Alt. Mode	-
	Audio	-	1 Audio (Line-out, Mic-in)	-
	Serial	2 RS-232	2 RS-232	-
Internal I/O	USB	1 USB 2.0	2 USB 2.0	-
	Display	-	-	-
	Audio	-	1 Front Audio (Line-out, Mic-in)	-
	Storage	1 SATA 3.0	1 SATA 3.0, 1 SATA Power	1 mSATA, 1 SATA 3.0
	DIO	8-bit DIO (Opt.)	8-bit DIO (Opt.)	-
	LPC	-	-	1
	SMBus	-	-	1
TPM / iAMT	dTPM 2.0.	Discrete dTPM 2.0., iAMT (Core i7/i5 only)	dTPM 2.0. (Opt.), iAMT 9.5 (Core i7/i5 only)	
Power	9~36V DC-in	9~36V DC-in	15~36V	
Operating Temperature	-5°C ~ 65°C	-5°C ~ 65°C / -30°C ~ 80°C	-20°C ~ 70°C	

\*Populated by default

4"



Atom

4"



Atom

Model Name		ASL253	ADN253
Platform		Atom	Atom
System	Processor	Intel® Atom® Amston Lake	Intel Atom® Alder Lake-N
	Socket	BGA 1264	BGA 1264
	Max. Speed	3.2~3.6GHz	2.7~3.4GHz
	TDP	6W/9W/12W	6W/10W/12W/15W
	Cache	6M	6M
Memory	BIOS	AMI SPI 256Mbit (supports UEFI boot only)	AMI SPI 256Mbit (supports UEFI boot only)
	Technology	LPDDR5 4800MHz	LPDDR5 4800MHz
	Max. Capacity	8GB/16GB	8GB/16GB
Graphics	Socket	Memory down	Memory down
	Connector	1 eDP/LVDS, 1 USB-C Alt. Mode	1 eDP/LVDS, 1 USB-C Alt. Mode
Mini PCIe / M.2	Mini PCIe / M.2	1 M.2 M key 2242/2280, 1 B key 3042/3052, 1 M.2 E key 2230	1 M.2 M key 2242/2280, 1 B key 3042/3052, 1 M.2 E key 2230
	SIM	1 Nano SIM	1 Nano SIM
Audio	Audio Codec	ALC888S	ALC888S
Ethernet	Controller	2 Intel® I226V/LM, 1 Intel® i210	2 Intel® I226V/LM, 1 Intel® i210
	Ethernet	2x 2.5GbE, 1x GbE	2x 2.5GbE, 1x GbE
Rear I/O	Serial	1 RS-232/DIO, 1 RS-232, 2 RS-232/422/485	1 RS-232/DIO, 1 RS-232, 2 RS-232/422/485
	USB	3 USB 3.2 type-A, 1 USB-C 3.2	3 USB 3.2 type-A, 1 USB-C 3.2
	Display	-	-
	Audio	1 Audio (Line-out, Mic-in)	1 Audio (Line-out, Mic-in)
	Serial	2 RS-232	2 RS-232
Internal I/O	USB	1 USB 2.0	1 USB 2.0
	Display	1 x eDP/LVDS	1 eDP/LVDS
	Audio	-	-
	Storage	1 SATA 3.0, 1 SATA Power, 1 32G/64G eMMC (Opt.)	1 SATA 3.0, 1 SATA Power, 1 32GB/64GB eMMC (Opt.)
	DIO	8-bit DIO (Opt.)	8-bit DIO (Opt.)
	LPC	-	-
	SMBus	1	1
TPM / iAMT	dTPM 2.0.	dTPM 2.0.	
Power	9~36V DC-in	9~36V DC-in	
Operating Temperature	-40°C ~ 80°C	-5°C ~ 80°C	

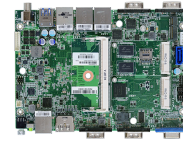
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4"

Atom

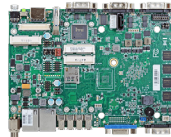
4"



Atom

Model Name		EHL253	AL253
Platform		Atom	Atom
System	Processor	Intel Atom® Elkhart Lake	Intel Atom® E3900
	Socket	BGA 1493	BGA 1296
	Max. Speed	1.9~3.0GHz	1.8~2.5GHz
	TDP	6.5W/9W/10W/12W	6W/9.5W/12W
	Cache	2M/4M	2M
BIOS		AMI SPI 256Mbit (supports UEFI boot only)	AMI SPI 128Mbit (support UEFI/legacy mode)
Memory	Technology	On board DDR4 + 1 DDR4 up to 3200MHz (in-band ECC support in embedded/industrial SKU)	Dual Channel DDR3L 1866MHz
	Max. Capacity	up to 32GB	up to 8GB
	Socket	Memory down, 1 SODIMM	Memory down, 1 SODIMM
Graphics	Connector	1 VGA, 1 DP++	1 DP++/, 1 VGA/DP(Opt.)
	Mini PCIe / M.2	1 M.2 E Key 2230, 1 M.2 B Key 3042/3052, 1 M.2 M Key 2280	1 Full-size Mini PCIe, 1 M.2 E key 2230
Audio	Audio Codec	ALC888S	-
Ethernet	Controller	1 Intel® I225 (2.5GbE), 2/3 Intel® I210/I211	4 Intel® I211AT/I210IT
	Ethernet	1x 2.5GbE, 2/3x GbE	Up to 4 GbE
Rear I/O	Serial	2 RS-232/422/485	4 RS-232/422/485
	USB	2/4 USB 3.2	Up to 4 USB 3.2 Gen1
	Display	1 DP++	1 DP++/, 1 VGA/DP (Opt.)
	Audio	-	-
Internal I/O	Serial	2 RS-232	-
	USB	2 USB 2.0, 1 USB 2.0 (Vertical)	2 USB 2.0
	Display	1 VGA	-
	Audio	1 Audio (Line-out, Mic-in)	-
	Storage	1 SATA 3.0, 1 SATA Power, 1 16GB/32GB eMMC (Opt.)	1 SATA 3.0, 1 SATA Power, 1 Full mSATA, 1 8G/16G/32G/64G eMMC (Opt.)
	DIO	8-bit DIO (Opt.)	8-bit DIO
	LPC	-	-
SMBus	1	-	
TPM / iAMT		dTPM 2.0. (Opt.)	fTPM 2.0
Power		9~36V DC-in	9~36V DC-in
Operating Temperature		0°C ~ 80°C / -40°C ~ 80°C	0°C ~ 60°C / -40°C ~ 85°C

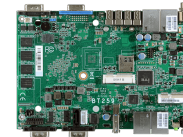
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4"

Atom

4"



Atom

Model Name		BT253	BT259
Platform		Atom	Atom
System	Processor	Intel Atom® E3800	Intel Atom® E3800
	Socket	BGA 1170	BGA 1170
	Max. Speed	1.33~2.41GHz	1.91~2.41GHz
	TDP	4.3W/6W/10W	10W
	Cache	1M/2M	2M
BIOS		AMI SPI 64Mbit	AMI SPI 64Mbit
Memory	Technology	Single Channel DDR3L 1066/1333MHz	Single Channel DDR3L 1066/1333MHz
	Max. Capacity	2GB/4GB	2GB/4GB
	Socket	Memory down (ECC/non-ECC)	Memory down
Graphics	Connector	1 LVDS, 1 VGA	1 VGA, 1 DVI-I (Opt.)
	Mini PCIe / M.2	2 Mini PCIe	2 Full-size Mini PCIe
Audio	Audio Codec	ALC888	-
Ethernet	Controller	2 Intel® I210AT	4 Intel® I210AT
	Ethernet	2 GbE	4 GbE
Rear I/O	Serial	4 RS-232/422/485	2 RS-232/422/485
	USB	1 USB 3.2, 4 USB 2.0	1 USB 3.2 (Type-A), 4 USB 2.0
	Display	1 VGA	1 VGA, 1 DVI-I (Opt.)
	Audio	Line-out (Opt.)	-
Internal I/O	Serial	2 RS-232	-
	USB	1 USB 2.0	2 USB 2.0
	Display	1 LVDS	-
	Audio	1 Mic-in (Opt.)	-
	Storage	1 SATA 2.0, 1 mSATA	1 SATA 2.0, 1 SATA Power
	DIO	-	8-bit DIO
	LPC	-	-
SMBus	-	-	
TPM / iAMT		TPM (Opt.)	TPM (Opt.)
Power		16~24V DC-in	16~24V DC-in
Operating Temperature		-20°C ~ 85°C / 0°C ~ 85°C / 0°C ~ 60°C	0°C ~ 60°C

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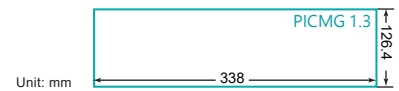
# PICMG 1.3

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
Memory	BIOS	AMI SPI 256Mbit	AMI SPI 256Mbit	Insyde SPI 128Mbit	Insyde SPI 128Mbit
	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
Graphics	Socket	4 UDIMM	2 UDIMM	2 UDIMM	2 UDIMM
	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 (Opt.)	1 VGA, 1 DVI-D (Opt.)
Expansion	PCIe, PCI	-	-	1 PCIe x16 Gen3, 4 PCIe x1 Gen3, 4 PCI	1 PCIe x16 Gen3, 4 PCIe x1 Gen3, 4 PCI
	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, 4 USB 2.0	1 PCIe x16 Gen 4, 1 PCIe x4 Gen3 or 4 PCIe x1 Gen3, 1 PCIe x1 Gen3 to 4 PCI, 4 USB 2.0	1 PCIe x16, 1 PCIe x4 or 4 PCIe x1, 1 PCIe x1 to 4 PCI, 4 US B 2.0	1 PCIe x16, 1 PCIe x4 or 4 PCIe x1, 1 PCIe x1 to 4 PCI, 4 USB 2.0
	Audio Codec	ALC888S	ALC888S	-	-
Ethernet	Controller	1 I226LM, 1 I226V (colay i210)	1 I226V, 1 I226V (colay i210)	1 I219LM, 1 I211AT	1 I219V, 1 I211AT
	Ethernet	2x 2.5GbE	2x 2.5GbE	2 GbE	2 GbE
Rear I/O	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 DVI-D (Opt.)	1 VGA, 1 DVI-D (Opt.)
	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	-	-
	Audio	1 Front Audio (Line-out, Mic-in)	1 Front Audio (Line-out, Mic-in)	-	-
	Storage	6 SATA 3.0 (support RAID 0/1/5/10)	4 SATA 3.0 (support RAID 0/1/5/10)	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	Nuvoton dTPM 2.0., iAMT (Core i9/i7/i5 only)	Nuvoton dTPM 2.0.	fTPM 2.0 / dTPM 2.0. (Opt.), iAMT (Core i7/i5 only)	fTPM 2.0 / dTPM 2.0. (Opt.)	
Power	8-pin ATX 12V power	8-pin ATX 12V power	24-pin ATX	24-pin ATX	
Operating Temperature	-5°C~65°C	-5°C~65°C	0°C~60°C	0°C~60°C	



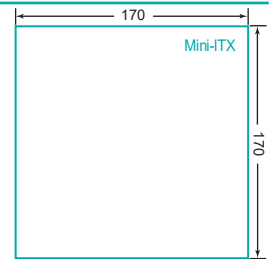
# Mini-ITX

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



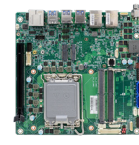
W880



Q870



H810



R680E

Model Name		ARS101/ARS103-W880	ARS101/ARS103-Q870	ARS101/ARS103-H810	RPS101/RPS103-R680E
Platform		Workstation	Desktop	Desktop	Workstation
System	Processor	Intel® Core™ Ultra	Intel® Core™ Ultra	Intel® Core™ Ultra	14th/13th/12th Gen Intel® Core™
	Socket	LGA 1851	LGA 1851	LGA 1851	LGA 1700
	Max. Speed	1.4~3.3GHz	1.4~3.3GHz	1.4~3.3GHz	2.4~5.8GHz
	TDP	35/65W	35/65W	35/65W	35/46/60/65W
	Cache	L2 up to 40M, L3 up to 36M	L2 up to 40M, L3 up to 36M	L2 up to 40M, L3 up to 36M	4/6/12/18/20/24/25/30/33/36M
Memory	Chipset	Intel® W880	Intel® Q870	Intel® H810	Intel® R680E
	BIOS	AMI SPI 256Mbit	AMI SPI 256Mbit	AMI SPI 256Mbit	AMI SPI 256Mbit
	Technology	Dual Channel DDR5 5600MHz (ECC supported)	Dual Channel DDR5 5600MHz (non-ECC)	Dual Channel DDR5 5600MHz (non-ECC)	Dual Channel DDR5 5600MHz (ECC supported)
Expansion	Max. Capacity	96GB	96GB	96GB	64GB
	Socket	2 SODIMM	2 SODIMM	2 SODIMM	2 SODIMM
Graphics	Connector	1 DP++, 1 USB Type-C, 1 eDP/LVDS, 1 DFI EXT-Display Port	1 DP++, 1 USB Type-C, 1 eDP/LVDS, 1 DFI EXT-Display Port	1 DP++, 1 USB Type-C, 1 eDP/LVDS, 1 DFI EXT-Display Port	1 DP++, 1 USB Type-C, 1 eDP/LVDS, 1 DFI EXT-Display Port
	PCIe, PCI	1 PCIe x16 (Gen 5)	1 PCIe x16 (Gen 5)	1 PCIe x16 (Gen 5)	1 PCIe x16 (Gen 5)
Expansion	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	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	1 Nano SIM
Audio	Audio Codec	ALC888	ALC888	ALC888	ALC888
Ethernet	Controller	1 Intel® I226LM, 1 Intel® I226V	1 Intel® I226LM, 1 Intel® I226V	1 Intel® I226LM, 1 Intel® I226V	1 Intel® I226LM, 1 Intel® I226V
Rear I/O	Ethernet	2x 2.5GbE	2x 2.5GbE	2x 2.5GbE	2x 2.5GbE
	Serial	-	-	-	-
	USB	5 USB 3.2 Gen2, 1 USB Type-C	5 USB 3.2 Gen2, 1 USB Type-C	5 USB 3.2 Gen2, 1 USB Type-C	5 USB 3.2 Gen2, 1 USB Type-C
	Display	1 DP++, 1 USB Type-C	1 DP++, 1 USB Type-C	1 DP++, 1 USB Type-C	1 DP++, 1 USB Type-C
	Audio	-	-	-	-
Internal I/O	Serial	2 RS232/422/485 w/o Power	2 RS232/422/485 w/o Power	2 RS232/422/485 w/o Power	2 RS232/422/485 w/o Power
	USB	4 USB 2.0	4 USB 2.0	4 USB 2.0	4 USB 2.0
	Display	1 eDP/LVDS, 1 DFI EXT-Display Port	1 eDP/LVDS, 1 DFI EXT-Display Port	1 eDP/LVDS, 1 DFI EXT-Display Port	1 eDP/LVDS, 1 DFI EXT-Display Port
	Audio	1 Front Audio (Line-out, Mic-in)	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, (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	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	8-bit DIO
	LPC**	-	-	-	-
SMBus	1	1	1	1	
TPM / iAMT	Nuvoton dTPM 2.0.				
Power	12V / 12~28V DC In				
Operating Temperature	-5°C~65°C				

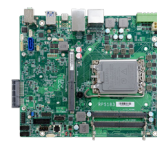
\*\*Supports LPC EXT-RS232/RS485 module



R680E



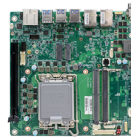
R680E



Q670E

Model Name		RPS100-R680E	ADS101/ADS103-R680E	RPS183-Q670E
Platform		Workstation	Workstation	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	4/6/12/18/20/24/25/30/33/36M	4/6/12/18/20/24/25/30/33/36M
	Chipset	Intel® R680E	Intel® R680E	Intel® Q670E
BIOS		AMI SPI 256Mbit	AMI SPI 256Mbit	AMI SPI 256Mbit
Memory	Technology	Dual Channel DDR5 4800MHz (ECC supported)	Dual Channel DDR4 3200MHz (ECC supported)	Dual Channel DDR5 4800MHz (ECC supported)
	Max. Capacity	64GB	64GB	64GB
	Socket	2 SODIMM	2 SODIMM	2 SODIMM
Graphics	Connector	1 DP++, 1 VGA	1 DP++, 1 DP++, 1 LVDS/eDP, 1 DFI EXT-Display Port	1 DP++(CPU), 1 DP++(MXM), 1 USB Type C(DP Alt-mode), 1 eDP(MXM)
	Expansion	PCIe, PCI 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	PCIe x16 (Gen 5) 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 x4 (Gen3) 1 M.2 B key 2242/3042/3052 1 M.2 E key 2230, 1 M.2 M key 2280
Audio	Audio Codec	ALC888S	ALC888	ALC888S
Ethernet	Controller	1 Intel® I226LM, 1 Intel® I226V	1 Intel® I226V, 1 Intel® I210AT, 1 Intel® I219LM	1 Intel® I226LM, 1 Intel® I226V
	Ethernet	2x 2.5GbE	1 x 2.5GbE 1 x GbE (2x by Opt.)	2x 2.5GbE
Rear I/O	Serial	2 RS232/422/485	-	-
	USB	2 USB 3.2 Gen2, 4 USB 3.2 Gen1	4~6 USB 3.2 Gen2	4 USB 3.2 Gen2 or 3 USB 3.2 Gen2+1 USB Type C
	Display	1 DP++, 1 VGA	1 DP++, 1 DP++, 1 DFI EXT-Display Port	1 DP++ (CPU), 1 DP++ (MXM), 1 USB Type C (DP alt-mode)
	Audio	-	-	Line-out, Mic-in
	Internal I/O	Serial	-	2 RS232/422/485
Internal I/O	USB	2 USB 2.0	2 USB 3.2 Gen1, 4 USB 2.0	2 USB 3.2 Gen1, 1 USB 2.0
	Display	1 M.2 A key, support M2A-Display	1 LVDS, 1 eDP	1 eDP (MXM)
	Audio	1 Front Audio (Line-out, Mic-in)	1 Front Audio (Line-out, Mic-in)	-
	Storage	2 SATA 3.0	2 SATA 3.0, (RAID 0/1/5/10) w/ M.2 M&B key	1 SATA 3.0
	DIO	8-bit DIO	8-bit DIO	8-bit DIO
	LPC**	-	-	-
	SMBus	1	-	2
	TPM / iAMT	dTPM (default) / fTPM (Opt.)	dTPM 2.0., iAMT 12.0 (Core i7 & i5 only)	dTPM (default) / fTPM (Opt.)
Power	ATX	12V / 15~36V DC In	19~24V DC In	
Operating Temperature	-5°C~65°C	-5°C~65°C	-5°C~65°C	

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



Q670E



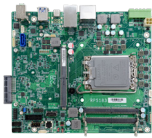
Q670E



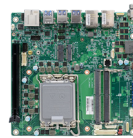
Q670E

Model Name		RPS101/RPS103-Q670E	RPS100-Q670E	ADS101/ADS103-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	2.4~5.8GHz
	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	4/6/12/18/20/24/25/30/33/36M
	Chipset	Intel® Q670E	Intel® Q670E	Intel® Q670E
BIOS		AMI SPI 256Mbit	AMI SPI 256Mbit	AMI SPI 256Mbit
Memory	Technology	Dual Channel DDR5 5600MHz	Dual Channel DDR5 4800MHz	Dual Channel DDR4 3200MHz
	Max. Capacity	64GB	64GB	64GB
	Socket	2 SODIMM	2 SODIMM	2 SODIMM
Graphics	Connector	1 DP++, 1 USB Type-C, 1 eDP/LVDS, 1 DFI EXT-Display Port	1 DP++, 1 VGA	1 DP++, 1 DP++/, 1 LVDS/eDP, 1 DFI EXT-Display Port
	Expansion	PCIe, PCI 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	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	ALC888	ALC888S	ALC888
Ethernet	Controller	1 Intel® I226LM, 1 Intel® I226V	1 Intel® I226LM, 1 Intel® I226V	1 Intel® I226V, 1 Intel® I210AT, 1 Intel® I219LM
	Ethernet	2x 2.5GbE	2x 2.5GbE	"1 x 2.5GbE 1 x GbE (2x by Opt.)"
Rear I/O	Serial	-	2 RS232/422/485	-
	USB	5 USB 3.2 Gen2, 1 USB Type-C	6 USB 3.2 Gen1	4~6 USB 3.2 Gen2
	Display	1 DP++, 1 USB Type-C	1 DP++, 1 VGA	1 DP++, 1 DP++/, 1 DFI EXT-Display Port
	Audio	-	-	-
	Internal I/O	Serial	2 RS232/422/485 w/o Power	-
Internal I/O	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	-	2 RS232/422/485	-
	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**	-	-	-
	SMBus	1	1	-
	TPM / iAMT	Nuvoton dTPM 2.0.	dTPM (default) / fTPM (Opt.)	dTPM 2.0, iAMT 12.0 (Core i7 & i5 only)
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	

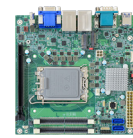
\*\*Supports LPC EXT-RS232/RS485 module



H610E



H610E



H610E

Model Name		RPS183-H610E	RPS101/RPS103-H610E	RPS100-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	2.4~5.8GHz	2.4~5.8GHz	2.4~5.2GHz
	TDP	35/46/60/65W	35/46/60/65W	35/46/60/65W
	Cache	4/6/12/18/20/24/25/30/33/36M	4/6/12/18/20/24/25/30/33/36M	4/6/12/18/20/24/25/30/36M
	Chipset	Intel® H610E	Intel® H610E	Intel® H610E
Memory	BIOS	AMI SPI 256Mbit	AMI SPI 256Mbit	AMI SPI 256Mbit
	Technology	Dual Channel DDR5 4800MHz (ECC supported)	Dual Channel DDR5 5600MHz	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(MXM)	1 DP++, 1 eDP/LVDS, 1 DFI EXT-Display Port	1 DP++, 1 VGA
Expansion	PCIe, PCI	-	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	ALC888	ALC888S
Ethernet	Controller	1 Intel® I219V, 1 Intel® I226V	2 Intel® I226V	2 Intel® I226V
	Ethernet	2x 2.5GbE	2x 2.5GbE	2x 2.5GbE
Rear I/O	Serial	-	-	2 RS232/422/485
	USB	2 USB 3.2 Gen2 + 2 USB 2.0 or 2 USB 3.2 Gen2 + 1 USB Type C	2 USB 3.2 Gen2 1 USB 3.2 Gen1, 2 USB 2.0	2 USB 3.2 Gen2, 2 USB 3.2 Gen1, 2 USB 2.0
	Display	1 DP++ (CPU), 1 DP++ (MXM), 1 USB Type C (DP alt-mode)	1 DP++	1 DP++, 1 VGA
	Audio	Line-out, Mic-in	-	-
	Serial	2 RS-232/422/485	2 RS232/422/485 w/o Power	-
Internal I/O	USB	2 USB 3.2 Gen1, 1 USB 2.0	2 USB 2.0	2 USB 2.0
	Display	1 eDP (MXM)	1 eDP/LVDS, 1 DFI EXT-Display Port	1 M.2 A key, support M2A-Display
	Audio	-	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**	-	-	-
	SMBus	2	1	1
TPM / iAMT	dTPM (default) / fTPM (Opt.)	Nuvoton dTPM 2.0.	dTPM (default) / fTPM (Opt.)	
Power	19~24V DC In	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



H610E



ULT/Mobile



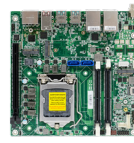
ULT

Model Name		ADS101/ADS103-H610E	ARH171/ARH173	RPP171/RPP173
Platform		Desktop	ULT/Mobile	ULT
System	Processor	14th/13th/12th Gen Intel® Core™	Intel® Arrow Lake H/U Processors Intel® Meteor Lake H/U Processors	13th Gen Intel® Core™
	Socket	LGA 1700	FCBGA2049	BGA1744
	Max. Speed	2.4~5.8GHz	5GHz	4.3~4.9GHz
	TDP	35/46/60/65W	28W	15W~28W
	Cache	4/6/12/18/20/24/25/30/33/36M	24M	10/12/24M
	Chipset	Intel® H610E	-	-
Memory	BIOS	AMI SPI 256Mbit	AMI	AMI SPI 256Mbit
	Technology	Dual Channel DDR4 3200MHz	DDR5	Dual Channel DDR5 5200MHz
	Max. Capacity	64GB	96GB	64GB
Graphics	Socket	2 SODIMM	SO-DIMM	2 SODIMM
	Connector	1 DP++, 1 DP++, 1 LVDS/eDP, 1 DFI EXT-Display Port	DP Combo, USB-Type C, 1 PCIe Gen4 x 4	DP Combo(Auto detect), 1 USB Type C, M2A-Display(Opt.)
Expansion	PCIe, PCI	1 PCIe x16 (Gen 5)	1 PCIe Gen4 x 4	1 PCIe x4 (Gen4)
	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 A Key 3060/3042 1 M.2 B key 2242/3042/3052	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 3042 support DFI M2A-display
	SIM	1 Nano SIM	1	1 Nano SIM
Audio	Audio Codec	ALC888	CM9825	ALC888S
Ethernet	Controller	1 Intel® I226V, 1 Intel® I210AT, 1 Intel® I219V	LAN1/2: I226-V, Lan3: I226LM/IT	2 Intel® I226V/IT, 1 Intel® I226LM/IT,
	Ethernet	1 x 2.5GbE, 1 x GbE (2x by Opt.)	3 RJ45	Up to 3x 2.5GHz
Rear I/O	Serial	-	N/A	-
	USB	2 USB 3.2 Gen2, 1 USB 3.2 Gen1, 1 USB 2.0	1 USB-C connector, 4 USB 3.2 Gen 2	4 USB 3.2 Gen2, 1 USB Type C
	Display	1 DP++, 1 DP++, 1 DFI EXT-Display Port	2 DP combo	2 DP combo (Auto detect)
	Audio	-	Line in/Line out/Mic-in , CM9825 2 3W SPK, 3W Amp controller: ALC105	-
Internal I/O	Serial	2 RS232/422/485	2 SATA 3.0	2 RS232/422/485, 1 RS232, 1 RS232 colay with DIO-4bit
	USB	4 USB 2.0	8-bit DIO	4 USB 2.0
	Display	1 LVDS, 1 eDP	N/A	1 M.2 A key, support M2A-Display(Opt.)
	Audio	1 Front Audio (Line-out, Mic-in)	1	Line-out, Mic-in
	Storage	2 SATA 3.0	TPM2.0	2 SATA 3.0
	DIO	8-bit DIO	12V / 12~28V	8-bit DIO
	LPC**	-	-20°C~70°C	-
SMBus	-	1	1	
TPM / iAMT	dTPM 2.0., iAMT 12.0 (Core i7 & i5 only)	dTPM 2.0.	dTPM (default) / fTPM (Opt.)	
Power	12V / 15~36V DC In	12V DC In	12V / 9~36V DC In	
Operating Temperature	-5°C~65°C	0°C~60°C	-20°C~70°C or -5°C~65°C	

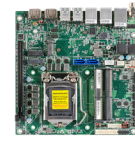
\*\*Supports LPC EXT-RS232/RS485 module



ULT



W480E



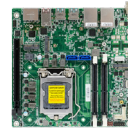
W480E

Model Name		TGU171/TGU173	CMS171/CMS173-W480E	CMS101/CMS103-W480E
Platform		ULT	Workstation	Workstation
System	Processor	11th Gen Intel® Core™	10th Gen Intel® Core™	10th Gen Intel® Core™
	Socket	BGA1499	LGA1200	LGA1200
	Max. Speed	1.8~4.4GHz	3.0~4.7GHz	3.0~4.7GHz
	TDP	15W~28W	35/65W	35/65W
	Cache	4/6/8/12M	6/12/16/20M	-
	Chipset	-	Intel® W480E	Intel® W480E
BIOS		AMI SPI 256Mbit	AMI SPI 256Mbit	AMI SPI 256Mbit
Memory	Technology	Dual Channel DDR4 3200MHz (Support in-band ECC)	Dual Channel DDR4 2933MHz (ECC supported by selected SKU)	Dual Channel DDR4 2933MHz
	Max. Capacity	64GB	64GB	64GB
	Socket	2 SODIMM	2 SODIMM	2 SODIMM
Graphics	Connector	1 LVDS, 1 eDP, 1 DP++, 1 USB Type C	2 DP++	1 LVDS/eDP, 2 DP++
Expansion	PCIe, PCI	1 PCIe x4 (Gen3)	1 PCIe x16 (Gen3)	1 PCIe x16 (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 B key 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 Codec	ALC888	ALC888	ALC888/887
Ethernet	Controller	1 Intel® I225LM/I2251T, 2 Intel® I211AT/I2101T	1 Intel® I211AT, 1 Intel® I219LM	1 Intel® I225LM, 1 Intel® I210AT, 1 Intel® I219LM
Rear I/O	Ethernet	1x 2.5GbE, 2 GbE	2 GbE	1x 2.5GbE, 2 GbE
	Serial	-	1 RS232/422/485	-
	USB	4 USB 3.2 Gen2, 1 USB Type C	8 USB 3.2 Gen2, 4 USB 3.2	4 USB 3.2 Gen2
	Display	1 DP++	2 DP++	2 DP++
	Audio	-	-	-
Internal I/O	Serial	2 RS232/422/485, 2 RS232	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 x SATA Power	*2 x SATA 3.0 1 x SATA Power RAID 0/1"	2 SATA 3.0, (RAID 0/1/5/10) w/ M.2 M&B key 1 x SATA Power
	DIO	8-bit DIO	8-bit DIO	8-bit DIO
	LPC**	-	1	1
	SMBus	1	1	1
TPM / iAMT	FTPM (default) / dTPM (Opt.)	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)	
Power	12V / 9~36V DC In	12V / 15~36V DC In	12V / 15~36V DC In	
Operating Temperature	-20°C~70°C or -5°C~65°C	-5°C~65°C	-5°C~65°C	

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



W480E



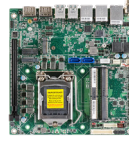
Q470E



Q470E

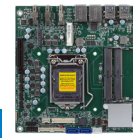
Model Name		CMS100-W480E	CMS171/CMS173-Q470E	CMS101/CMS103-Q470E
Platform		Workstation	Desktop	Desktop
System	Processor	10th Gen Intel® Core™	10th Gen Intel® Core™	10th Gen Intel® Core™
	Socket	LGA1200	LGA1200	LGA1200
	Max. Speed	3.0~4.8GHz	3.0~4.7GHz	3.0~4.7GHz
	TDP	35/65/80/95/125W	35/58/65W	35/65W
	Cache	-	2/4/12/16/20M	-
	Chipset	Intel® W480E	Intel® Q470E	Intel® Q470E
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
	Max. Capacity	64GB	64GB	64GB
	Socket	2 SODIMM	2 SODIMM	2 SODIMM
Graphics	Connector	1 DP++, 1 DP+, 1 LVDS/eDP, 1 DVI-I (DVI-D signal)	2 DP++	1 LVDS/eDP, 2 DP++
Expansion	PCIe, PCI	1 PCIe x16 (Gen3)	1 PCIe x16 (Gen3)	1 PCIe x16 (Gen3)
	Mini PCIe / M.2	1 M.2 M key 2280, 1 M.2 B key 2242/3042, 1 M.2 E key 2230	1 M.2 B key 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 Codec	ALC888	ALC888	ALC888/887
Ethernet	Controller	1 Intel® I225LM, 1 Intel® I219LM	1 Intel® I211AT, 1 Intel® I219LM	1 Intel® I225LM, 1 Intel® I210AT, 1 Intel® I219LM
Rear I/O	Ethernet	1x 2.5GbE, 1x GbE	2 GbE	1x 2.5GbE + 2 GbE
	Serial	2 RS232/422/485	1 RS232/422/485	-
	USB	6 USB 3.2 Gen2	8 USB 3.2 Gen2, 4 USB 3.2	4 USB 3.2 Gen2
	Display	1 DP++, 1 DP+, 1 DVI-I	2 DP++	2 DP++
	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 0/1/5/10) w/ M.2 M&B key	2 x SATA 3.0 1 x SATA Power RAID 0/1	2 SATA 3.0, (RAID 0/1/5/10) w/ M.2 M&B key 1 x SATA Power
	DIO	8-bit DIO	8-bit DIO	8-bit DIO
	LPC**	1	1	1
	SMBus	-	1	1
TPM / iAMT	FTPM (Default) / dTPM (Opt.)	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)	
Power	ATX	12V / 15~36V DC In	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

**Q470E****H420E****H420E**

Model Name		CMS100-Q470E	CMS101/CMS103-H420E	CMS100-H420E
Platform		Desktop	Desktop	Desktop
System	Processor	10th Gen Intel® Core™	10th Gen Intel® Core™	10th Gen Intel® Core™
	Socket	LGA1200	LGA1200	LGA1200
	Max. Speed	3.0~4.7GHz	3.0~4.7GHz	3.0~4.7GHz
	TDP	35/65/125W	35/65W	35/65/125W
	Cache	-	-	-
	Chipset	Intel® Q470E	Intel® H420E	Intel® H420E
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	1 DP++, 1 DP+, 1 LVDS/eDP, 1 DVI-I (DVI-D signal)	1 LVDS/eDP, 2 DP++	1 DP++, 1 DP+, 1 LVDS/eDP, 1 DVI-I (DVI-D signal)
	PCIe, PCI	1 PCIe x16 (Gen3)	1 PCIe x16 (Gen3)	1 PCIe x16 (Gen3)
Expansion	Mini PCIe / M.2	1 M.2 M key 2280, 1 M.2 B key 2242/3042, 1 M.2 E key 2230	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
	SIM	1 Nano SIM	1 Nano SIM	1 Nano SIM
	Audio Codec	ALC888	ALC888/887	ALC888
Ethernet	Controller	1 Intel® I225LM, 1 Intel® I219LM	1 Intel® I225LM, 1 Intel® I210AT, 1 Intel® I219LM	1 Intel® I225LM, 1 Intel® I219V
Rear I/O	Ethernet	1x 2.5GbE, 1x GbE	1x 2.5GbE + 2 GbE	1x 2.5GbE, 1x GbE
	Serial	2 RS232/422/485	-	2 RS232/422/485
	USB	6 USB 3.2 Gen2	4 USB 3.2 Gen1	5 USB 3.2 Gen1, 1 USB 2.0
	Display	1 DP++, 1 DP+, 1 DVI-I	2 DP++	1 DP++, 1 DP+, 1 DVI-I
	Audio	-	-	-
Internal I/O	Serial	-	2 RS232/422/485, 2 RS232	-
	USB	4 USB 2.0	4 USB 2.0	2 USB 2.0
	Display	1 LVDS, 1 eDP	1 LVDS, 1 eDP	1 LVDS, 1 eDP
	Audio	1 Front Audio	1 Front Audio	1 Front Audio
	Storage	2 SATA 3.0, (RAID 0/1/5/10) w/ M.2 M&B key	2 SATA 3.0	2 SATA 3.0
	DIO	8-bit DIO	8-bit DIO	8-bit DIO
	LPC**	1	1	1
	SMBus	-	1	-
TPM / iAMT	fTPM (Default) / dTPM (Opt.)		fTPM (default) / dTPM 2.0. (Opt.), iAMT 12.0 (Core i7 & i5 only)	fTPM (Default) / dTPM (Opt.)
Power	ATX		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

**Thin Mini-ITX****C246****Thin Mini-ITX****C246****Thin Mini-ITX****C246**

Model Name		CS170-C246	CS103-C246	CS101-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	3.1~5.0GHz	3.1~4.6GHz	3.1~4.6GHz
	TDP	35/54/58/65/80/95W	35/54/58/65W	35/54/58/65/95W
	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 2400/2666MHz (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 VGA	1 LVDS, 2 DP++	1 LVDS/eDP, 2 DP++
	PCIe, PCI	1 PCIe x16 Gen3 (Max. 75W)	1 PCIe x4 Gen3	1 PCIe x4 Gen3
Expansion	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 M.2 M key 2280, 1 M.2 E key 2230, 1 Full mPCIe
	SIM	-	-	-
Audio	Audio Codec	ALC888/887	ALC888S	ALC888S
Ethernet	Controller	1 Intel® I210AT, 1 Intel® I219LM	1 Intel® I211AT, 1 Intel® I219LM	1 Intel® I210AT, 1 Intel® I219LM
Rear I/O	Ethernet	2 GbE	2 GbE	2 GbE
	Serial	2 RS232	-	-
	USB	2 USB 3.2 Gen2, 4 USB 3.2 Gen1	4 USB 3.2 Gen2	4 USB 3.2 Gen2
	Display	2 DP++, 1 VGA	2 DP++	2 DP++
	Audio	1 Audio Jack (Lin-out/Mic-in/Line-in)	-	-
Internal I/O	Serial	-	2 RS232/422/485, 2 RS232	2 RS232/422/485, 2 RS232
	USB	2 USB 2.0	4 USB 2.0	4 USB 2.0
	Display	1 LVDS	1 LVDS	1 LVDS/eDP
	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 1 x SATA Power	2 SATA 3.0, (RAID 0/1/5) w/ M.2 M Key 1 x SATA Power
	DIO	8-bit DIO	8-bit DIO	8-bit DIO
	LPC**	1	1	1
	SMBus	1	1	1
TPM / iAMT	dTPM 2.0., iAMT 12.0 (Core i7 & i5 only)		dTPM 2.0., iAMT 12.0 (Core i7 & i5 only)	dTPM 2.0., iAMT 12.0 (Core i7 & i5 only)
Power	ATX		9~36V DC In	12V DC In
Operating Temperature	-5°C~65°C		-5°C~65°C	0°C~60°C

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



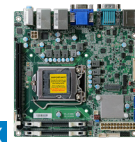
C246

Thin Mini-ITX



Q370

Thin Mini-ITX



Q370

Model Name		CS100-C246	CS181-Q370	CS170-Q370
Platform		Workstation	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	3.1~4.7GHz	3.1~4.6GHz	3.1~5.0GHz
	TDP	35/54/58/65/80W	35/54/58/65W	35/54/58/65/80/95W
	Cache	-	-	-
	Chipset	Intel® C246	Intel® Q370	Intel® Q370
Memory	BIOS	AMI SPI 128Mbit	AMI SPI 128Mbit	AMI SPI 128Mbit
	Technology	Dual Channel DDR4 2400/2666MHz (ECC supported by selected SKU)	Dual Channel DDR4 2400/2666MHz	Dual Channel DDR4 2400/2666MHz
	Max. Capacity	32GB	64GB	32GB
Graphics	Socket	2 SODIMM	2 SODIMM	2 SODIMM
	Connector	1 LVDS, 2 DP++, 1 VGA	1 eDP, 1 DP++, 4 DP by MXM module	1 LVDS, 2 DP++, 1 VGA
Expansion	PCIe, PCI	1 PCIe x16 Gen3	1 MXM Type-A/B/C	1 PCIe x16 Gen3 (Max. 75W)
	Mini PCIe / M.2	1 Full mPCIe	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
	SIM	-	-	-
Audio	Audio Codec	ALC888S	ALC888S	ALC888/887
Ethernet	Controller	1 Intel® I219LM, 1 Intel® I210AT	3 Intel® I210AT, 1 Intel® I219LM	1 Intel® I210AT, 1 Intel® I219LM
Rear I/O	Ethernet	2 GbE	4 GbE	2 GbE
	Serial	1 RS232	-	2 RS232
	USB	2 USB 3.2 Gen2, 2 USB 3.2 Gen1, 4 USB 2.0	4 USB 3.2 Gen2	2 USB 3.2 Gen2, 4 USB 3.2 Gen1
	Display	2 DP++, 1 VGA	1 DP++	2 DP++, 1 VGA
	Audio	1 Audio Jack (Lin-out/Mic-in/Line-in(Opt.))	-	1 Audio Jack (Lin-out/Mic-in/Line-in)
Internal I/O	Serial	1 RS232	2 RS232/422/485	-
	USB	4 USB 2.0	2 USB 2.0	2 USB 2.0
	Display	1 LVDS	1 eDP	1 LVDS
	Audio	1 S/PDIF, 1 Front Audio	1 Front Audio	1 Front Audio
	Storage	3 SATA 3.0, (RAID 0/1/5)	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, 1 DIO Power	8-bit DIO
	LPC**	1	1	1
	SMBus	-	1	1
TPM / iAMT	dTPM 2.0. (Opt.), iAMT 12.0 (Core i7 & i5 only)	dTPM 2.0.	dTPM 2.0., iAMT 12.0 (Core i7 & i5 only)	
Power	ATX	19V DC In	ATX	
Operating Temperature	0°C~60°C	-5°C~65°C	-5°C~65°C	

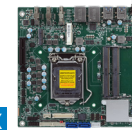
\*\*Supports LPC EXT-RS232/RS485 module



Thin Mini-ITX

Q370

Thin Mini-ITX



Q370

Thin Mini-ITX



Q370

Model Name		CS103-Q370	CS101-Q370	CS100-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	3.1~4.6GHz	3.1~4.7GHz
	TDP	35/54/58/65W	35/54/58/65/95W	35/54/58/65/80W
	Cache	-	-	-
	Chipset	Intel® Q370	Intel® Q370	Intel® Q370
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	32GB	32GB	32GB
Graphics	Socket	2 SODIMM	2 SODIMM	2 SODIMM
	Connector	1 LVDS, 2 DP++	1 LVDS/eDP, 2 DP++	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® I211AT, 1 Intel® I219LM	1 Intel® I210AT, 1 Intel® I219LM	1 Intel® I219LM, 1 Intel® I210AT
Rear I/O	Ethernet	2 GbE	2 GbE	2 GbE
	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++	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	-
	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 1 x SATA Power	2 SATA 3.0, (RAID 0/1/5) w/ M.2 M Key, 1 x SATA Power	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., iAMT 12.0 (Core i7 & i5 only)	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	-5°C~65°C	0°C~60°C	0°C~60°C	

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

Thin Mini-ITX



C246

Thin Mini-ITX



H310

Thin Mini-ITX



H310

Model Name		CS103-C246	CS181-H310	CS170-H310
Platform		Workstation	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	3.1~4.6GHz	3.1~5.0GHz
	TDP	35/54/58/65W	35/54/58/65W	35/54/58/65/80/95W
	Cache	-	-	-
	Chipset	Intel® C246	Intel® H310	Intel® H310
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 2400/2666MHz	Dual Channel DDR4 2400/2666MHz
	Max. Capacity	32GB	64GB	32GB
	Socket	2 SODIMM	2 SODIMM	2 SODIMM
Graphics	Connector	1 LVDS, 2 DP++	1 eDP, 1 DP++, 4 DP by MXM module	1 LVDS, 2 DP++, 1 VGA
	PCIe, PCI	1 PCIe x4 Gen3	1 MXM Type-A/B/C	1 PCIe x16 Gen3 (Max. 75W)
Expansion	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 M.2 B key 3042/3052	1 M.2 M key 2280, 1 M.2 E key 2230
	SIM	-	-	-
	Audio	Audio Codec	ALC888S	ALC888S
Ethernet	Controller	1 Intel® I211AT, 1 Intel® I219LM	3 Intel® I210AT, 1 Intel® I219V	1 Intel® I210AT, 1 Intel® I219V
	Ethernet	2 GbE	4 GbE	2 GbE
Rear I/O	Serial	-	-	2 RS232
	USB	4 USB 3.2 Gen2	4 USB 3.2 Gen1	4 USB 3.2 Gen1, 2 USB 2.0
	Display	2 DP++	1 DP++	2 DP++, 1 VGA
	Audio	-	-	1 Audio Jack (Lin-out/Mic-in/Line-in)
Internal I/O	Serial	2 RS232/422/485, 2 RS232	2 RS232/422/485	-
	USB	4 USB 2.0	2 USB 2.0	2 USB 2.0
	Display	1 LVDS	1 eDP	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	2 SATA 3.0
	DIO	8-bit DIO	8-bit DIO, 1 x DIO Power	8-bit DIO
	LPC**	1	1	1
	SMBus	1	1	1
TPM / iAMT	dTPM 2.0., iAMT 12.0 (Core i7 & i5 only)	dTPM 2.0.	dTPM 2.0.	
Power	9~36V DC In	19V DC In	ATX	
Operating Temperature	-5°C~65°C	-5°C~65°C	-5°C~65°C	

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

Thin Mini-ITX



H310

Thin Mini-ITX



H310

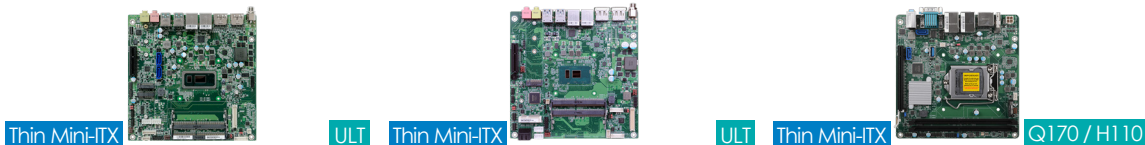
Thin Mini-ITX



H310

Model Name		CS103-H310	CS101-H310	CS100-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	2.9~4.6GHz	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® H310	Intel® H310	Intel® H310
BIOS		AMI SPI 128Mbit	AMI SPI 128Mbit	AMI SPI 128Mbit
Memory	Technology	Dual Channel DDR4 2666MHz	Dual Channel DDR4 2400/2666MHz	Dual Channel DDR4 2400/2666MHz
	Max. Capacity	32GB	32GB	32GB
	Socket	2 SODIMM	2 SODIMM	2 SODIMM
Graphics	Connector	1 LVDS, 2 DP++	1 LVDS/eDP, 2 DP++	1 LVDS, 2 DP++, 1 VGA
	PCIe, PCI	1 PCIe x4 (Gen3)	1 PCIe x4 Gen3	1 PCIe x16 Gen3
Expansion	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	-
	SIM	-	-	-
	Audio	Audio Codec	ALC888S	ALC888S
Ethernet	Controller	1 Intel® I211AT, 1 Intel® I219LM	1 Intel® I210AT, 1 Intel® I219V	1 Intel® I219V, 1 Intel® I210AT
	Ethernet	2 GbE	2 GbE	2 GbE
Rear I/O	Serial	-	-	1 RS232
	USB	4 USB 3.2 Gen1	4 USB 3.2 Gen1	4 USB 3.2 Gen1, 4 USB 2.0
	Display	2 DP++	2 DP++	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	-
	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, 1 x SATA Power	2 SATA 3.0, 1 x SATA Power	3 SATA 3.0, (RAID 0/1/5)
	DIO	8-bit DIO	8-bit DIO, 1 x DIO Power	8-bit DIO
	LPC**	1	1	1
	SMBus	1	1	-
TPM / iAMT	dTPM 2.0.	dTPM 2.0.	dTPM 2.0. (Opt.)	
Power	9~36V DC In	12V DC In	ATX	
Operating Temperature	-5°C~65°C	0°C~60°C	0°C~60°C	

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



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	35/51/54/65W
	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++	1 LVDS/eDP, 2 DP++	2 DP++
	PCIe, PCI	1 PCIe x4 Gen3	1 PCIe x4 Gen3	1 PCIe x16 Gen3
Expansion	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® I210AT, 1 Intel® I219LM	1 Intel® I210AT, 1 Intel® I219LM	2 GbE, 2 Realtek® 8111/8119 (opt.)
	Ethernet	2 GbE	2 GbE	2 GbE
Rear I/O	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++	2 DP++	2 DP++
	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 x SATA Power	2 SATA 3.0
	DIO	8-bit DIO, 1 x DIO Power	8-bit DIO	-
	LPC**	1	1	-
SMBus	1	1	-	
TPM / iAMT	dTPM 2.0., iAMT 11.6 (Core i7 & i5 only)	dTPM 2.0. (Opt.), iAMT 11.6 (Core i7 & i5 only)	Infineon dTPM 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



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++, 1 DVI-I (DVI-D Signal)	1 LVDS, 1 DP++, 1 VGA, 1 DVI-I (DVI-D Signal)
	PCIe, PCI	1 PCIe x16	1 PCIe x4 (Gen3)	1 PCIe x16 (Gen3)
Expansion	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® I211AT, 1 Intel® I219LM	1 Intel® I210AT, 1 Intel® I219LM	1 Intel® I210AT, 1 Intel® I219LM
	Ethernet	2 GbE	2 GbE	2 GbE
Rear I/O	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++, 1 DVI-I (DVI-D signal)	1 DP++, 1 VGA, 1 DVI-I (DVI-D Signal)
	Audio	1 Front Audio (Line-out/Mic-in), 1 Speaker (3W)	1 Front Audio (Line-out/Mic-in), 1 S/PDIF	1 S/PDIF
Internal I/O	Serial	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
	USB	-	8-bit DIO	8-bit DIO
	Display	-	1 (Opt.)	1
	Audio	1	1	1
	Storage	dTPM 2.0. (Opt.), iAMT 11.0 (Core i7 & i5 Only)	iAMT 11.0 (Core i7 & i5 Only)	iAMT 11.0 (Core i7/i5 Only)
	DIO	15~36V DC In	12V / 15~36V DC In	ATX
	LPC**	0°C~60°C	0°C~60°C	0°C~60°C
SMBus	1	1	-	
TPM / iAMT	dTPM 2.0., iAMT 12.0 (Core i7 & i5 only)	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	-5°C~65°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
Memory	BIOS	Insyde SPI 128Mbit	Insyde SPI 128Mbit	Insyde SPI 128Mbit
	Technology	Dual Channel DDR4 1866/2133MHz	Dual Channel DDR4 1866/2133MHz	Dual Channel DDR4 1866/2133MHz
	Max. Capacity	32GB	32GB	32GB
Graphics	Socket	2 SODIMM	2 SODIMM	2 SODIMM
	Connector	1 DP++, 1 VGA	1 LVDS, 1 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	1	-	-
Audio	Audio Codec	ALC888S / ALC262 (Opt.)	ALC888S	ALC888S
Ethernet	Controller	4 Intel® I210AT or I211AT(Opt.)	1 Intel® I210AT, 1 Intel® I219V	1 Intel® I211AT, 1 Intel® I219V
Rear I/O	Ethernet	4 GbE	2 GbE	2 GbE
	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 DP++, 1 DVI-I(DVI-D Signal)	1 DP++, 1 VGA, 1 DVI-I(DVI-D Signal)
Internal I/O	Audio	1 S/PDIF, 1 Audio Jack (Lin-out/Mic-in)	1 Audio(Line-out/Mic-in), 1 S/PDIF	1 S/PDIF
	Serial	2 SATA 3.0	2 SATA 3.0	3 SATA 3.0
	USB	16-bit DIO	8-bit DIO	8-bit DIO
	Display	1	1 (Opt.)	1
	Audio	1	1	1
	Storage	fTPM 2.0 / dTPM 2.0. (Opt.)	-	-
	DIO	ATX	12V / 15~36V DC In	ATX
	LPC**	0°C~60°C	0°C~60°C	0°C~60°C
SMBus	1	1	1	
TPM / iAMT	dTPM 2.0., iAMT 12.0 (Core i7 & i5 only)	dTPM 2.0.	dTPM 2.0.	
Power	9~36V DC In	19V DC In	ATX	
Operating Temperature	-5°C~65°C	-5°C~65°C	-5°C~65°C	

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



Thin Mini-ITX

ULT



Atom

Model Name		SU171/SU173	ASL171/ASL173
Platform		ULT	Atom
System	Processor	6th Gen Intel® Core™	Intel® Atom® Amston Lake
	Socket	BGA1356	-
	Max. Speed	2.0~3.4GHz	3.2~3.6GHz
	TDP	15W	6/9/12W
	Cache	2/3/4M	-
	Chipset	-	-
Memory	BIOS	Insyde SPI 128Mbit	AMI SPI 256Mbit
	Technology	Dual Channel DDR3L 1600MHz	Single Channel DDR5 4800MHz
	Max. Capacity	16GB	16GB
Graphics	Socket	2 SODIMM	1 SODIMM
	Connector	1 LVDS/eDP, 1 DP, 1 DP++	1 DP++/VGA (Co-layout), 1 DP++(Co-layout), 1 USB Type C
Expansion	PCIe, PCI	1 PCIe x4 Gen3	1 PCIe x4
	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
	SIM	1 SIM(Opt.)	1 Nano SIM
Audio	Audio Codec	ALC888S	ALC888S
Ethernet	Controller	1 Intel® I210AT, 1 Intel® I219LM	2 Intel® I226IT
Rear I/O	Ethernet	2 GbE	2x 2.5GbE
	Serial	-	-
	USB	4 USB 3.2 Gen1	4 USB 3.2 Gen2 or 3 USB 3.2 Gen2 + 1 x USB 2.0 or 3 USB 3.2 Gen2 + 1 USB Type C
	Display	1 DP++, 1 DP++	1 DP++(Opt.), 1 DP++/VGA(Opt.), 1 USB Type C
Internal I/O	Audio	1 S/PDIF	1 S/PDIF, 1 Line-out/Mic-in
	Serial	2 SATA 3.0, (RAID 0/1/5) w/ mPCIe	2 SATA 3.0
	USB	8-bit DIO	8-bit DIO
	Display	1	-
	Audio	1	1
	Storage	dTPM (Opt.), iAMT 11.0 (Core i7 & i5 only)	dTPM (default) / fTPM (Opt.)
	DIO	12V / 15~36V DC In	12V / 9~36V DC In
	LPC**	0°C~60°C / -20°C~70°C	-40°C~85°C
SMBus	1	-	
TPM / iAMT	dTPM 2.0.	dTPM 2.0. (Opt.)	
Power	9~36V DC In	ATX	
Operating Temperature	-5°C~65°C	0°C~60°C	

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

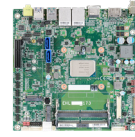
Thin Mini-ITX



Q170



Atom



Atom

Model Name		SD101/SD103-Q170	ADN171/ADN173	EHL171/EHL173
Platform		Desktop	Atom	Atom
System	Processor	7th/6th Gen Intel® Core™	Intel® Atom® Alder Lake-N	Intel® Atom X Series
	Socket	LGA1151	BGA1264	BGA1493
	Max. Speed	2.4~4.2GHz	3.2~3.8GHz	3.0GHz
	TDP	35/47/65W	6/10/12/15W	6/9/10/12W
	Cache	2/3/4/6/8M	6M	1.5M
	Chipset	Intel® Q170	-	-
BIOS		Insyde SPI 128Mbit	AMI SPI 256Mbit	AMI SPI 256Mbit (supports UEFI boot only)
Memory	Technology	Dual Channel DDR4 1866/2133MHz	Single Channel DDR5 4800MHz	Dual Channel DDR4 3200MHz (ECC supported by selected SKU)
	Max. Capacity	32GB	16GB	32GB
	Socket	2 SODIMM	1 SODIMM	2 SODIMM
Graphics	Connector	1 LVDS, 1 DP++, 1 DVI-I(DVI-D Signal)	1 DP++/VGA (Co-layout), 1 DP++, 1 USB Type C	1 DP++/VGA, 1 DP++, 1 eDP/LVDS
Expansion	PCIe, PCI	1 PCIe x4 (Gen3)	1 PCIe x4	1 PCIe x4 (Gen3)
	Mini PCIe / M.2	1 Full mPCIe, 1 Half 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 Nano SIM	1 Nano SIM
Audio	Audio Codec	ALC888S	ALC888S	ALC888
Ethernet	Controller	1 Intel® I210AT, 1 Intel® I219LM	2 Intel® I226V	2 Intel® I225IT or I225LM
Rear I/O	Ethernet	2 GbE	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 DVI-I(DVI-D signal)	1 DP++(Opt.), 1 DP++/VGA(Opt.), 1 USB Type C	1 DP++, 1 DP++/VGA
	Audio	1 Front Audio(Line-out/Mic-in), 1 S/PDIF	1 S/PDIF, 1 Line-out/Mic-in	1 S/PDIF, 1 Line-in/Mic-in
Internal I/O	Serial	2 SATA 3.0, (RAID 0/1/5/10) w/ mPCIe	2 SATA 3.0	2 SATA 3.0
	USB	8-bit DIO	8-bit DIO	8-bit DIO
	Display	1 (Opt.)	-	-
	Audio	1	1	1
	Storage	iAMT 11.0 (Core i7 & i5 Only)	dTPM (default) / fTPM (Opt.)	fTPM (default) / dTPM (Opt.)
	DIO	12V / 15~36V DC In	12V / 9~36V DC In	12V / 9~36V DC In
	LPC**	0°C~60°C	-5°C~65°C	-5°C~65°C / -40°C~85°C
	SMBus	1	1	-
TPM / iAMT	dTPM 2.0., iAMT 11.6 (Core i7 & i5 only)	dTPM 2.0. (Opt.), iAMT 11.6 (Core i7 & i5 only)	Infineon dTPM 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

Thin Mini-ITX



Atom

Thin Mini-ITX



Atom

Model Name		AL170	AL171/AL173
Platform		Atom	Atom
System	Processor	Intel® Atom E3900	Intel® Atom E3900
	Socket	BGA1296	BGA1296
	Max. Speed	1.8~2.5GHz	1.8~2.5GHz
	TDP	6/6.5/9.5/12W	6/6.5/9.5/12W
	Cache	2M	2M
	Chipset	-	-
BIOS		SPI 64Mbit (supports UEFI boot only)	Insyde SPI 128Mbit (supports UEFI boot only)
Memory	Technology	Dual Channel DDR3L 1867MHz	Dual Channel DDR3L 1867MHz
	Max. Capacity	8GB	8GB
	Socket	2 SODIMM	2 SODIMM
Graphics	Connector	1 VGA/DP++, 1 DP++, 1 LVDS/eDP	1 VGA/DP++, 1 DP++, 1 LVDS/eDP
Expansion	PCIe, PCI	1 PCIe x1 (Gen2)	1 PCIe x1 (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
SIM		-	-
Audio	Audio Codec	ALC888	ALC888S
Ethernet	Controller	2 Intel® I210IT or I211AT	2 Intel® I211IT/I210IT or I211AT/I210AT
Rear I/O	Ethernet	2 GbE	2 GbE
	Serial	2 RS232/422/485	-
	USB	4 USB 3.2 Gen1	4 USB 3.2 Gen1
	Display	1 DP++, 1 VGA/DP++	1 DP++, 1 VGA/DP++
	Audio	1 S/PDIF	1 Line-out, 1 Mic-in, 1 S/PDIF
Internal I/O	Serial	2 SATA 3.0	2 SATA 3.0
	USB	8-bit DIO	8-bit DIO
	Display	1	1
	Audio	1	1
	Storage	dTPM 2.0. (Opt.)	dTPM 2.0. (Opt.)
	DIO	ATX	12V / 15~36V DC In
	LPC**	0°C~60°C / -40°C~85°C	0°C~60°C / -40°C~85°C
	SMBus	1	1
TPM / iAMT	dTPM 2.0., iAMT 12.0 (Core i7 & i5 only)	dTPM 2.0., iAMT 12.0 (Core i7 & i5 only)	
Power	9~36V DC In	12V DC In	
Operating Temperature		-5°C~65°C	0°C~60°C

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



Atom

Thin Mini-ITX



Atom

Model Name		BT100	BT101/BT103
Platform		Atom	Atom
System	Processor	Intel® Atom E3800	Intel® Atom E3800
	Socket	BGA1170	BGA1170
	Max. Speed	1.46~2.41GHz	1.33~2.41GHz
	TDP	5/10W	5/6/7/10W
	Cache	0.5/2M	0.5/1/2M
	Chipset	-	-
BIOS		AMI SPI 64Mbit	AMI SPI 64Mbit
Memory	Technology	Single channel DDR3L 1066MHz / Dual channel DDR3L 1333MHz	Single Channel DDR3L 1066MHz / Dual Channel DDR3L 1333/1066MHz
	Max. Capacity	4G / 8G	4G / 8G
	Socket	1 or 2 SODIMM	1 or 2 SODIMM
Graphics	Connector	1 DVI-D, 1 VGA, 1 LVDS	1 DVI-I, 1 LVDS
	PCIe, PCI	1 PCIe x4 (Gen2)	1 PCIe x1 (Gen2)
Expansion	Mini PCIe / M.2	1 mPCIe	1 mPCIe
	SIM	-	1 Nano SIM
	Audio Codec	ALC888	ALC888
Ethernet	Controller	2 Intel® I210AT	2 Intel® I210AT
Rear I/O	Ethernet	2 GbE	2 GbE
	Serial	1 RS232/422/485, 1 RS232	-
	USB	1 USB 3.2 Gen1, 3 USB 2.0	1 USB 3.2 Gen1, 2 USB 2.0
	Display	1 DVI-I (DVI-D signal), 1 VGA	1 DVI-I
	Audio	1 Line-out, 1 Mic-in, 1 S/PDIF	1 Line-out, 1 Mic-in, 1 S/PDIF
	Serial	2 SATA 2.0	2 SATA 2.0
Internal I/O	USB	8-bit DIO	8-bit DIO
	Display	1	1
	Audio	1	1
	Storage	TPM (Opt.)	TPM (Opt.)
	DIO	ATX	12V / 19~24V DC In
	LPC**	0°C~60°C/ -20°C~70°C/ -40°C~85°C	0°C~60°C/ -20°C~70°C/ -40°C~85°C
	SMBus	1	1
	TPM / iAMT	dTPM 2.0., iAMT 12.0 (Core i7 & i5 only)	dTPM 2.0., iAMT 12.0 (Core i7 & i5 only)
Power	9~36V DC In	12V DC In	
Operating Temperature	-5°C~65°C	0°C~60°C	

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



AMD



AMD



AMD

Model Name		HPT171	RNO171	GH171
Platform		Hawk Point	AMD V-Series	AMD R-Series
System	Processor	AMD® Ryzen™ Embedded 8000 Series	AMD® Ryzen™ Embedded V2000 Series	AMD® Ryzen™ Embedded V1000/R1000/R2000 Series
	Socket	-	FP6	-
	Max. Speed	4.9~5.1GHz	3.95~4.25GHz	3.2~3.8GHz
	TDP	15W~54W	15/45W	12W~54W
	Cache	6/8M	3/4M	1/2/4M
	Chipset	-	-	-
BIOS		AMI SPI 256Mbit	AMI BIOS	AMI BIOS
Memory	Technology	Dual Channel DDR5 5600/5200/4800MHz	Dual Channel DDR4 3200MHz (ECC supported by selected SKU)	Dual Channel DDR4 3200MHz (ECC supported by selected SKU)
	Max. Capacity	96GB	64GB	32GB
	Socket	2 SODIMM	2 SODIMM	2 SODIMM
Graphics	Connector	4 DP++ or 3 DP++ + 1 M.2 A display	4 DP++	4 DP++
	PCIe, PCI	1 PCIe x16 Gen4	1 PCIe x16 Gen3	1 PCIe x16 Gen3
Expansion	Mini PCIe / M.2	1 M.2 M Key 2280, 1 M.2 A Key 3030	1 M.2 M key 2280	1 M.2 M key 2280
	SIM	eMMC B2B header, GIO1 (UART, USB2, AUDIO R/L), GIO2 (PCIE x1)	-	-
	Audio Codec	1 Realtek ALC888S, 1 Realtek ALC105(3W)	ALC888S	ALC887
Ethernet	Controller	2 Intel® I226V	2 Realtek RTL8119-CG	2 Realtek RTL8111HN-CG
Rear I/O	Ethernet	2x 2.5GbE	2 GbE	2 GbE
	Serial	1 Full RS232, 1 RS232/RS422/RS485	1 RS232/422/485, 1 RS232	1 RS232/422/485, 1 RS232
	USB	1 USB 3.0 Gen2, 1 USB Type-C, 2 USB 2.0	2 USB 3.2 Gen1, 2 USB 2.0	2 USB 3.2 Gen1, 2 USB 2.0
	Display	4 DP++, 1 USB Type C (DP Alt-mode)	4 DP++	3 or 4 DP++
	Audio	1 Front audio (Line-out, Line-in, Mic-in)	1 Audio Jack (Lin-out/Mic-in/Line-in)	1 Audio Jack (Lin-out/Mic-in/Line-in)
	Serial	2 RS232 / TTL header, 2 RS232 / ccTalk header	4 RS232	4 RS232
Internal I/O	USB	4 USB 2.0, 1 USB 2.0 vertical	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	-	-	-
	Audio	1 3W Speaker L/R header / 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 3.0, (RAID 0/1) w/ M.2 M key	2 SATA 3.0	2 SATA 3.0
	DIO	2 x SATA Power	2 x SATA Power	2 x SATA Power
	DIO	8-bit DIO	-	-
	LPC**	-	-	-
	SMBus	2 I2C, 1 SPI	-	-
TPM / iAMT	dTPM 2.0.(Default), fTPM (Opt.)	dTPM 2.0. (Opt.)	dTPM 2.0.	
Power	12V DC In	12V DC In	12V DC In	
Operating Temperature	-5°C~65°C	-5°C~65°C	0°C~60°C	

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

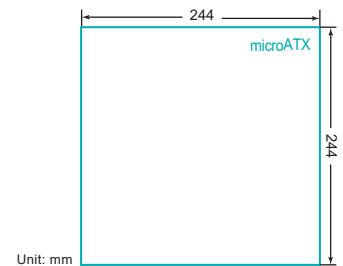
# microATX

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.



W880



Q870



R680E

Model Name		ARS310-W880	ARS310-Q870	RPS310-R680E
Platform				Workstation
System	Processor			14th/13th/12th Gen Intel® Core™
	Socket			LGA 1700
	Max. Speed			2.4~5.8GHz
	TDP			35/46/60/65/125W
	Cache			4/6/12/18/20/24/25/30/33/36M
	Chipset			Intel® R680E
Memory				AMI SPI 256Mbit
Memory	Technology			Dual Channel DDR5 up to 4400 MHz
	Max. Capacity			192GB
	Socket			4 UDIMM (ECC/Non-ECC)
Graphics				4 UDIMM (ECC/Non-ECC)
Expansion	Connector			1 VGA, 2 DP++
	PCIe, PCI			2 PCIe x16 Gen 4 (1 x16 or 2 x8), 2 PCIe x4 Gen 4
Audio				2 M.2 M key 2242/2260/2280, 1 M.2 E key 2230
Ethernet				2 M.2 M key 2242/2260/2280, 1 M.2 E key 2230
Rear I/O	Controller			ALC888
	Ethernet			1 Intel® I226LM, 1 Intel® I226V or 1 Intel® I226LM, 3 Intel® I226V
	Serial			2 or 4x 2.5GbE
	USB			-
	Display			4 USB 3.2 Gen2, 4 USB 3.2 Gen1
	Audio			1 VGA, 2 DP++
Internal I/O	PS/2			Line-out, Mic-in, Line-in (Opt.)
	Serial			-
	USB			2 RS-232/422/485, 2 RS-232
	Audio			2 USB 3.2 Gen1,
	Storage			2 USB 2.0 + 1 Vertical USB 2.0 or 3 USB 2.0 (Opt.)
	DIO			1 Front Audio, 1 S/PDIF
	LPC**			4 SATA 3.0, (RAID 0/1/5/10) w/ M.2 M Key
	SMBus			4-IN / 8-OUT DIO
TPM / iAMT				1
Power				1
Operating Temperature				dTPM 2.0., iAMT (Core i5/i7/i9 Only)
				ATX
				-5°C~65°C

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



R680E



Q670E



Q670E

Model Name		ADS310-R680E	RPS330-Q670E	RPS310-Q670E
Platform		Workstation	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	2.4~5.8GHz
	TDP	35/46/60/65/125W	35/46/60/65/125W	35/46/60/65/125W
	Cache	4/6/12/18/20/24/25/30/33/36M	4/6/12/18/20/24/25/30/33/36M	4/6/12/18/20/24/25/30/33/36M
	Chipset	Intel® R680E	Intel® Q670E	Intel® Q670E
	BIOS	AMI SPI 256Mbit	AMI SPI 256Mbit	AMI SPI 256Mbit
Memory	Technology	Dual Channel DDR4 3200 MHz	Dual Channel DDR5 up to 4400MHz	Dual Channel DDR5 up to 4400MHz
	Max. Capacity	128GB	192GB	192GB
	Socket	4 UDIMM (ECC/Non-ECC)	4 UDIMM (Non-ECC)	4 UDIMM (Non-ECC)
Graphics	Connector	1 VGA, 2 DP++	1 VGA, 1 DP++	1 VGA, 2 DP++
	PCIe, PCI	1 PCIe x16 Gen 5, 2 PCIe x4 Gen 4, 1 x PCIe x4 Gen 3 (x4 signal)	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
Expansion	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 Codec	ALC888	ALC888	ALC888
Ethernet	Controller	1 Intel® I226LM, 1 Intel® I226V, 1 Intel® x550-AT2	1 Intel® I226LM(co-lay I219LM), 1 Intel® I226V	1 Intel® I226LM, 1 Intel® I226V
	Ethernet	2x 2.5GbE, 2x 10GbE	2x 2.5GbE or 1x 2.5GbE + 1x GbE	2x 2.5GbE
Rear I/O	Serial	-	1 RS-232/422/485	-
	USB	4 USB 3.2 Gen2, 4 USB 3.2 Gen1	4 USB 3.2 Gen2, 2 USB 2.0	4 USB 3.2 Gen2, 4 USB 3.2 Gen1
	Display	1 VGA, 2 DP++	1 VGA, 1 DP++	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	-
	Serial	2 RS-232/422/485	1 RS-232/422/485, 4 RS-232	2 RS-232/422/485, 2 RS232
	USB	2 USB 3.2 Gen2, 2 USB 3.2 Gen1, 4 USB 2.0	2 USB 3.2 Gen1, 4 USB 2.0, 1 USB 2.0 vertical Type A	2 USB 3.2 Gen1, 4 USB 2.0, 2 USB 2.0 + 1 Vertical USB 2.0 or 3 USB 2.0 (Opt.)
Internal I/O	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	8-bit DIO	4-IN / 8-OUT DIO	4-IN / 8-OUT DIO
	LPC**	-	-	-
	SMBus	1	1	1
	PS/2	1	-	1
	TPM / iAMT	Nuvoton dTPM 2.0., iAMT (Xeon/Core i5/i7/i9 Only)	Nuvoton 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



H610E



W480E

Model Name		ADS310-Q670E	RPS330-H610E	CMS311-W480E
Platform		Desktop	Desktop	Workstation
System	Processor	14th/13th/12th Gen Intel® Core™	14th/13th/12th Gen Intel® Core™	10th Gen Intel® Core™
	Socket	LGA 1700	LGA 1700	LGA 1200
	Max. Speed	2.4~5.8GHz	2.4~5.8GHz	3.6~4.8GHz
	TDP	35/46/60/65/125W	35/46/60/65/125W	35/65/80/95/125W
	Cache	4/6/12/18/20/24/25/30/33/36M	4/6/12/18/20/24/25/30/33/36M	6/12/16/20M
	Chipset	Intel® Q670E	Intel® H610E	Intel® W480E
	BIOS	AMI SPI 256Mbit	AMI SPI 256Mbit	AMI SPI 256Mbit
Memory	Technology	Dual Channel DDR4 3200MHz	Dual Channel DDR5 up to 4400MHz	Dual Channel DDR4 2400/2666/2933MHz
	Max. Capacity	128GB	192GB	128GB
	Socket	4 UDIMM (Non-ECC)	2 UDIMM (Non-ECC)	4 UDIMM (ECC/Non-ECC)
Graphics	Connector	1 VGA, 2 DP++	1 VGA, 1 DP++	1 DP++, 1 VGA
	PCIe, PCI	1 PCIe x16 Gen 5, 2 PCIe x4 Gen 4, 1 x PCIe x4 Gen 3 (x4 signal)	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
Expansion	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 M key 2242/2260/2280
	Audio Codec	ALC888	ALC888	ALC888
Ethernet	Controller	1 Intel® I226LM, 1 Intel® I226V, 1 Intel® x550-AT2	1 Intel® I219V, 1 Intel® I226V	1 Intel® I219LM, 1 Intel® I210AT, 1 Intel® x550-AT2
	Ethernet	2x 2.5GbE, 2x 10GbE	1x 2.5GbE + 1x GbE	2x 10GbE, 2 GbE
Rear I/O	Serial	-	1 RS-232/422/485	-
	USB	4 USB 3.2 Gen2, 4 USB 3.2 Gen1	2 USB 3.2 Gen2, 2 USB 3.2 Gen1, 2 USB 2.0	2 USB 3.2 Gen2, 4 USB 3.2 Gen1
	Display	1 VGA, 2 DP++	1 VGA, 1 DP++	1 DP++, 1 VGA
	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	-
	Serial	2 RS-232/422/485	1 RS-232/422/485, 4 RS-232	2 RS-232/422/485
	USB	2 USB 3.2 Gen1, 3 USB 2.0 (colay vertical Type A, MOQ required)	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 (colay vertical Type A)
Internal I/O	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, w/ M.2 M Key	5 SATA 3.0 (RAID 0/1/5/10)
	DIO	8-bit DIO	4-IN / 8-OUT DIO	16-bit DIO
	LPC**	-	-	1
	SMBus	1	1	1
	PS/2	1	-	-
	TPM / iAMT	Nuvoton dTPM 2.0., iAMT (Xeon/Core i5/i7/i9 Only)	Nuvoton dTPM 2.0.	Infineon dTPM 2.0. (Opt.), 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



W480E



Q470E



Q470E

Model Name		CMS310-W480E	CMS330-Q470E	CMS311-Q470E
Platform		Workstation	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	3.6~4.8GHz	3.0~4.7GHz	3.0~4.8GHz
	TDP	35/65/80/95/125W	35/58/65/125W	35/58/65/80/95/125W
	Cache	6/12/16/20M	2/4/6/12/16/20M	2/4/6/12/16/20M
	Chipset	Intel® W480E	Intel® Q470E	Intel® Q470E
Memory	BIOS	Insyde SPI 128Mbit	AMI SPI 256Mbit	AMI SPI 256Mbit
	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 (ECC/Non-ECC)	4 UDIMM (Non-ECC)	4 UDIMM (Non-ECC)
	Connector	1 DP++, 1 VGA	1 VGA, 1 DP++	1 DP++, 1 VGA
Expansion	PCIe, PCI	2 PCIe x16 Gen3 (1x16 or 2x8), 2 PCIe x4 Gen3	1 PCIe x16 (Gen3), 1 PCIe x4 (Gen3), 2 PCI	2 PCIe x16 Gen3 (1x16 or 2x8), 1 PCIe x4 Gen3, 1 PCIe x1 Gen3
	Mini PCIe / M.2 / SIM	1 M.2 E key 2230, 1 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	ALC888	ALC888	ALC888
Ethernet	Controller	1 Intel® I219LM, 1 Intel® I210AT, 2 Intel® I210AT (Opt.)	1 Intel® I219LM, 1 Intel® I210AT	1 Intel® I219LM, 1 Intel® I210AT, 1 Intel® x550-AT2
	Ethernet	2 GbE or 4 GbE	2 GbE	2x 10GbE, 2 GbE
Rear I/O	Serial	-	1 RS-232/422/485	-
	USB	2 USB 3.2 Gen2, 4 USB 3.2 Gen1	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
	Display	1 DP++, 1 VGA	1 VGA, 1 DP++	1 DP++, 1 VGA
	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	2 RS-232/422/485, 2 RS-232	9 RS-232
Internal I/O	USB	2 USB 3.2 Gen2, 4 USB 2.0 (1 USB 2.0 colay vertical Type A)	2 USB 3.2 Gen1, 4 USB 2.0(Colay vertical Type A)	2 USB 3.2 Gen 2, 2 USB 3.2 Gen 1, 4 USB 2.0 (colay vertical Type A)
	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	5 SATA 3.0 (RAID 0/1/5/10)
	DIO	16-bit DIO	16-bit DIO	16-bit DIO
	LPC**	1	1	1
	SMBus	1	1	1
	PS/2	1	-	-
	TPM / iAMT	Infinion dTPM 2.0. (Opt.), iAMT (Xeon/Core i5/i7/i9 Only)	Infinion dTPM 2.0. (Opt.), iAMT 12.0.(Core i5/i7/i9 Only)	Infinion dTPM 2.0. (Opt.), 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



H420E



C246

Model Name		CMS310-Q470E	CMS330-H420E	CS350-C246
Platform		Desktop	Desktop	Workstation
System	Processor	10th Gen Intel® Core™	10th Gen Intel® Core™	9th/8th Gen Intel® Core™
	Socket	LGA 1200	LGA 1200	LGA 1151
	Max. Speed	3.0~4.8GHz	3.0~4.7GHz	2.9~4.7 GHz
	TDP	35/58/65/80/95/125W	35/58/65/125W	35/54/58/65/71/80/95W
	Cache	2/4/6/12/16/20M	2/4/6/12/16/20M	2/4/6/8/9/12/16M
	Chipset	Intel® Q470E	Intel® H420E	Intel® C246
Memory	BIOS	Insyde SPI 128Mbit	AMI SPI 256Mbit	AMI SPI 128Mbit
	Technology	Dual Channel DDR4 2400/2666/2933MHz	Dual Channel DDR4 2400/2666/2933MHz	Dual Channel DDR4 2400/2666 MHz
	Max. Capacity	128GB	64GB	128GB
Graphics	Socket	4 UDIMM (Non-ECC)	2 UDIMM (Non-ECC)	4 DIMM (ECC/non-ECC)
	Connector	1 DP++, 1 VGA	1 VGA, 1 DP++/VGA, 1 DP++	1 DP++, 1 DVI-I (DVI-D signal)
Expansion	PCIe, PCI	2 PCIe x16 Gen3 (1x16 or 2x8), 2 PCIe x4 Gen3	1 PCIe x16 Gen3, 1 PCIe x4 Gen3, 2 PCI	2 PCIe x16 Gen3 (1 x16 or 2 x8), 2 PCIe x4 Gen3
	Mini PCIe / M.2 / SIM	1 M.2 E key 2230, 1 M.2 M key 2242/2260/2280	-	1 M.2 M key 2242/2260/2280, 1 M.2 E key 2230
Audio	Audio Codec	ALC888	ALC888	ALC888
Ethernet	Controller	1 Intel® I219LM, 1 Intel® I210AT, 2 Intel® I210AT (Opt.)	1 Intel® I219LM, 1 Intel® I210AT	1 Intel® I210AT, 1 Intel® I219LM
	Ethernet	2 GbE or 4 GbE	2 GbE	2 GbE
Rear I/O	Serial	-	1 RS-232/422/485	1 RS-232/422/485
	USB	2 USB 3.2 Gen2, 4 USB 3.2 Gen1	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 DP++, 1 VGA	1 VGA, 1 DP++	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.), S/PDIF, Front Audio
	PS/2	-	1	1 mini-DIN-6
	Internal I/O	Serial	2 RS-232/422/485, 2 RS-232	9 RS-232
Internal I/O	USB	2 USB 3.2 Gen2, 4 USB 2.0 (1 USB 2.0 colay vertical Type A)	2 USB 3.2 Gen 1, 2 USB 2.0(Colay vertical Type A)	2 USB 3.2 Gen2, 4 USB 2.0 (1 USB 2.0 colay vertical Type A)
	Audio	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	6 SATA 3.0 (RAID 0/1/5/10)
	DIO	16-bit DIO	16-bit DIO	8-bit DIO
	LPC**	1	1	1
	SMBus	1	1	1
	PS/2	1	-	-
	TPM / iAMT	Infinion dTPM 2.0. (Opt.), iAMT (Xeon/Core i5/i7/i9 Only)	Infinion dTPM 2.0. (Opt.)	Infinion dTPM 2.0. (Opt.), iAMT 12.0 (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



C246



Q370

Model Name		CS332-C246	CS331-C246	CS350-Q370
Platform		Workstation	Workstation	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	2.9~4.7 GHz	2.9~4.6 GHz
	TDP	35/54/58/65/95W	35/54/58/65/71/80W	35/54/58/65/95W
	Cache	2/4/6/9/12M	2/4/6/8/9/12/16M	2/4/6/9/12M
	Chipset	Intel® C246	Intel® C246	Intel® Q370
Memory	BIOS	AMI SPI 128Mbit	AMI SPI 128Mbit	AMI SPI 128Mbit
	Technology	Dual Channel DDR4 2400/2666 MHz	Dual Channel DDR4 2400/2666 MHz	Dual Channel DDR4 2400/2666 MHz
	Max. Capacity	128 GB	128GB	128GB
Graphics	Socket	4 DIMM (ECC/non-ECC)	4 DIMM (ECC/Non ECC)	4 DIMM (non-ECC)
	Connector	1 VGA, 2 DP++	1 DP++, 1 DVI-I (DVI-D signal)	1 DP++, 1 DVI-I (DVI-D signal)
Expansion	PCIe, PCI	1 PCIe x16 Gen3 , 2 PCIe x4 Gen3 , 1 PCI	2 PCIe x16 Gen3 (1 x16 or 2 x8), 2 PCIe x4 Gen3	2 PCIe x16 Gen3 (1 x16 or 2 x8), 2 PCIe x4 Gen3
	Mini PCIe / M.2 / SIM	1 mPCIe, 1 M.2 M key 2242/2280, 1 M.2 E key 2230	1 mPCIe, 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	ALC888	ALC888
Ethernet	Controller	1 Intel® I219LM, 1 Intel® I210AT, 2 Intel® I210AT (Opt.)	1 Intel® I211AT, 1 Intel® I219LM	1 Intel® I211AT, 1 Intel® I219LM
	Ethernet	2 GbE, 4 GbE (Opt.)	2 GbE	2 GbE
Rear I/O	Serial	1 RS-232/422/485	1 RS-232/422/485	1 RS-232/422/485
	USB	2 USB 3.2 Gen1, 4 USB 2.0	2 USB 3.2 Gen2, 2 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 DP++, 1 DVI-I (DVI-D signal)	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 mini-DIN-6
	Internal I/O	Serial	3 RS-232	1 RS-232/422/485, 2 RS-232
Internal I/O	USB	2 USB 3.2 Gen1, 4 USB 2.0	2 USB 3.2 Gen2, 4 USB 2.0 (1 USB 2.0 colay vertical Type A)	2 USB 3.2 Gen2, 4 USB 2.0 (1 USB 2.0 colay vertical Type A)
	Audio	Front Audio, S/PDIF	Front Audio, S/PDIF	Front Audio, S/PDIF
	Storage	4 SATA 3.0 (RAID 0/1/5/10) (Opt. 5 SATA 3.0)	6 SATA 3.0 (RAID 0/1/5/10)	6 SATA 3.0 (RAID 0/1/5/10)
	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)	Infineon TPM 1.2/2.0 (Opt.), iAMT 12.0 (Xeon/Core i5/i7 Only)	Infineon dTPM 2.0. (Opt.), iAMT 12.0 (Core i5/i7 Only)
Power	ATX	ATX	ATX	
Operating Temperature	-5°C~65°C	0°C~60°C	-5°C~65°C	

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



Q370



Q370



H310

Model Name		CS332-Q370	CS331-Q370	CS330-Q370
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	35/54/58/65/95W	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® Q370
Memory	BIOS	AMI SPI 128Mbit	AMI SPI 128Mbit	AMI SPI 128Mbit
	Technology	Dual Channel DDR4 2400/2666 MHz	Dual Channel DDR4 2400/2666 MHz	Dual Channel DDR4 2400/2666 MHz
	Max. Capacity	128GB	128GB	128 GB
Graphics	Socket	4 DIMM (non-ECC)	4 DIMM (non-ECC)	4 DIMM
	Connector	1 VGA, 2 DP++	1 DP++, 1 DVI-I (DVI-D signal)	1 VGA, 1 DP++, 1 DVI-I(DVI-D signal)
Expansion	PCIe, PCI	1 PCIe x16 Gen3, 2 PCIe x4 Gen3, 1 PCI	2 PCIe x16 Gen3 (1 x16 or 2 x8), 2 PCIe x4 Gen3	1 PCIe x16 Gen3, 1 PCIe x4 Gen3, 2 PCI
	Mini PCIe / M.2 / SIM	1 mPCIe, 1 M.2 M key 2242/2280, 1 M.2 E key 2230	1 mPCIe, 1 M.2 M key 2242/2260/2280	1 Full mPCIe
Audio	Audio Codec	ALC888S	ALC888	ALC888
Ethernet	Controller	1 Intel® I219LM, 1 Intel® I210AT, 2 Intel® I210AT (Opt.)	1 Intel® I211AT, 1 Intel® I219LM	1 Intel® I210AT, 1 Intel® I219LM
	Ethernet	2 GbE, 2 GbE (Opt.)	2 GbE	2 GbE
Rear I/O	Serial	1 RS-232/422/485	1 RS-232/422/485	1 RS-232/422/485
	USB	2 USB 3.2 Gen1, 2 USB 2.0	2 USB 3.2 Gen2, 2 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 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 mini-DIN-6
	Internal I/O	Serial	3 RS-232	1 RS-232/422/485, 2 RS-232
Internal I/O	USB	2 USB 3.2 Gen1, 4 USB 2.0	2 USB 3.2 Gen2, 4 USB 2.0 (1 USB 2.0 colay vertical Type A)	2 USB 3.2 Gen1, 4 USB 2.0
	Audio	Front Audio, S/PDIF	Front Audio, S/PDIF	Front Audio, S/PDIF
	Storage	4 SATA 3.0 (RAID 0/1/5/10) (Opt. 5 SATA 3.0)	5 SATA 3.0 (RAID 0/1/5/10)	4 SATA 3.0 (RAID 0/1/5/10)
	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 (Core i5/i7 Only)	Infineon TPM 1.2/2.0 (Opt.), iAMT 12.0 (Core i5/i7 Only)	Infineon TPM 1.2/2.0 (Opt.), iAMT 12.0 (Core i5/i7 Only)
Power	ATX	ATX	ATX	
Operating Temperature	-5°C~65°C	0°C~60°C	0°C~60°C	

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



H310



C236

Model Name		CS330-H310	KD331-C236
Platform		Desktop	Workstation
System	Processor	9th/8th Gen Intel® Core™	7th/6th Gen Intel® Core™
	Socket	LGA 1151	LGA 1151
	Max. Speed	2.9~4.6 GHz	2.6~4.2GHz
	TDP	35/54/58/65W	Max. 95W
	Cache	2/4/6/9/12M	2/3/6/8M
	Chipset	Intel® H310	Intel® C236
BIOS		AMI SPI 128Mbit	Insyde SPI 128Mbit
Memory	Technology	Dual Channel DDR4 2400/2666 MHz	Dual Channel DDR4 2133/2400MHz
	Max. Capacity	64 GB	64GB
	Socket	2 DIMM	4 DIMM (ECC/Non-ECC)
Graphics	Connector	1 VGA, 1 DP++, 1 DVI-(DVI-D signal)	1 VGA, 1 DP++, 1 DVI-(DVI-D signal)
Expansion	PCIe, PCI	1 PCIe x16 Gen3, 1 PCIe x4 Gen2, 2 PCI	2 PCIe x16 Gen 3 (1 x16 or 2 x8), 2 PCIe x4 Gen 3
	Mini PCIe / M.2 / SIM	-	1 M.2 M key 2260/2280
Audio	Audio Codec	ALC888	ALC888S
Ethernet	Controller	1 Intel® I210AT, 1 Intel® I219V	3 Intel® I211AT, 1 Intel® I219LM
	Ethernet	2 GbE	4 GbE
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 DP++, 1 DVI-(DVI-D signal)	1 VGA, 1 DP++, 1 DVI-(DVI-D signal)
	Audio	Line-out, Mic-in, 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	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, S/PDIF
	Storage	4 SATA 3.0	5 SATA 3.0, (RAID 0/1/5/10) w/ M.2 M Key
	DIO	8-bit DIO	8-bit DIO
	LPC**	1	1
	SMBus	1	1
	PS/2	-	-
TPM / iAMT		TPM 1.2/2.0 (Opt.)	Infineon TPM2.0/1.2 (Opt.), iAMT 11.0 (Xeon E3/ Core i5/i7 Only)
Power		ATX	ATX
Operating Temperature		0°C~60°C	0°C~60°C

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



C236



Q170

Model Name		SD331-C236	KD331-Q170
Platform		Workstation	Desktop
System	Processor	7th/6th Gen Intel® Core™	7th/6th Gen Intel® Core™
	Socket	LGA 1151	LGA 1151
	Max. Speed	2.6~4.2GHz	2.6~4.2GHz
	TDP	Max. 95W	Max. 95W
	Cache	2/3/4/6/8M	2/3/6/8M
	Chipset	Intel® C236	Intel® Q170
BIOS		Insyde SPI 128Mbit	Insyde SPI 128Mbit
Memory	Technology	Dual Channel DDR4 1866/2133MHz	Dual Channel DDR4 2133/2400MHz
	Max. Capacity	64GB	64GB
	Socket	4 DIMM (ECC/Non-ECC)	4 DIMM
Graphics	Connector	1 VGA, 1 DVI-D (DVI-D signal), 1 DP++	1 VGA, 1 DP++, 1 DVI-(DVI-D signal)
Expansion	PCIe, PCI	2 PCIe x16 Gen3 (1 x16 or 2 x8) , 2 PCIe x4 Gen3	2 PCIe x16 (1 x16 or 2 x8), 2 PCIe x4
	Mini PCIe / M.2 / SIM	-	1 M.2 M key 2260/2280
Audio	Audio Codec	ALC888S	ALC888S
Ethernet	Controller	1 Intel® I210AT, 1 Intel® I219LM	3 Intel® I211AT, 1 Intel® I219LM
	Ethernet	2 GbE	4 GbE
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-D (DVI-D signal), 1 DP++	1 VGA, 1 DP++, 1 DVI-(DVI-D signal)
	Audio	Line-out, Mic-in, 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 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(Line-out/Mic-in)(Opt.), S/PDIF	Front Audio, S/PDIF
	Storage	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
	LPC**	1	1
	SMBus	1	1
	PS/2	-	-
TPM / iAMT		dTPM 2.0. (Opt.), iAMT 11.0 (Xeon E3/ Core i5/i7 Only)	Infineon TPM2.0/1.2 (Opt.), iAMT (Core i5/i7 Only)
Power		ATX	ATX
Operating Temperature		0°C~60°C	0°C~60°C

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





Q170



Q170

Model Name		SD331-Q170	SD330-Q170
Platform		Desktop	Desktop
System	Processor	7th/6th Gen Intel® Core™	7th/6th Gen Intel® Core™
	Socket	LGA 1151	LGA 1151
	Max. Speed	2.6~4.2GHz	2.6~4.2GHz
	TDP	Max. 95W	Max. 95W
	Cache	2/3/4/6/8M	2/3/4/6/8M
	Chipset	Intel® Q170	Intel® Q170
	BIOS	Insyde SPI 128Mbit	Insyde SPI 128Mbit
Memory	Technology	Dual Channel DDR4 1866/2133MHz	Dual Channel DDR4 1866/2133MHz
	Max. Capacity	64GB	64GB
	Socket	4 DIMM	4 DIMM
Graphics	Connector	1 VGA, 1 DVI-D (DVI-D signal), 1 DP++	1 VGA, 1 LVDS, 1 DVI-D (DVI-D signal), 1 DP++
Expansion	PCIe, PCI	2 PCIe x16 Gen3 (1 x16 or 2 x8), 2 PCIe x4 Gen3	1 PCIe x16 Gen3, 1 PCIe x4 Gen3, 2 PCI
	Mini PCIe / M.2 / SIM	-	1 Full mPCIe, 1 SIM(Optional)
Audio	Audio Codec	ALC888S	ALC888S
Ethernet	Controller	1 Intel® I210AT, 1 Intel® I219LM	1 Intel® I210AT, 1 Intel® I219LM
Rear I/O	Ethernet	2 GbE	2 GbE
	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-D (DVI-D signal), 1 DP++	1 VGA, 1 DVI-D (DVI-D signal), 1 DP++
	Audio	Line-out, Mic-in, Line-in (Opt.)	Line-out, Mic-in, 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		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
Audio		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)
DIO		8-bit DIO	8-bit DIO
LPC**		1	1
SMBus		1	1
TPM / iAMT	dTPM 2.0. (Opt.), iAMT 11.0 (Core i5/i7 Only)	dTPM 2.0. (Opt.), iAMT 11.0 (Core i5/i7 Only)	
Power	ATX	ATX	
Operating Temperature	0°C~60°C	0°C~60°C	

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



H110



B650

Model Name		SD330-H110	RAP310-B650
Platform		Desktop	AMD Desktop
System	Processor	7th/6th Gen Intel® Core™	AMD® Ryzen™ 7000 Series
	Socket	LGA 1151	AM5
	Max. Speed	2.6~4.2GHz	5.4GHz
	TDP	Max. 95W	65W
	Cache	2/3/4/6/8M	up to 64MB
	Chipset	Intel® H110	AMD B650
	BIOS	Insyde SPI 128Mbit	AMI SPI 256Mbit
Memory	Technology	Dual Channel DDR4 1866/2133MHz	Dual Channel DDR5 5200 MHz
	Max. Capacity	32GB	128GB
	Socket	2 DIMM	4 UDIMM (ECC/Non-ECC)
Graphics	Connector	1 VGA, 1 LVDS, 1 DVI-D (DVI-D signal), 1 DP++	1 VGA, 1 DP++
Expansion	PCIe, PCI	1 PCIe x16 Gen3, 1 PCIe x4 Gen3., 2 PCI	2 PCIe x16 Gen 4 (1 x16 or 2 x8), 2 PCIe x4 Gen 4
	Mini PCIe / M.2 / SIM	-	1 M.2 M key 2242/2260/2280, 1 M.2 E key 2230
Audio	Audio Codec	ALC888S	ALC888
Ethernet	Controller	1 Intel® I211AT, 1 Intel® I219V	2 Intel® I226V
Rear I/O	Ethernet	2 GbE	2x 2.5GbE
	Serial	1 RS-232/422/485	1 RS-232
	USB	4 USB 3.2 Gen1, 2 USB 2.0	6 USB 3.2 Gen2, 2 USB 2.0
	Display	1 VGA, 1 DVI-D (DVI-D signal), 1 DP++	1 VGA, 1 DP++
	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	1 RS-232/422/485, 4 RS-232
USB		2 USB 2.0, 1 Vertical USB 2.0 (type A)	2 USB 3.2 Gen1, 4 USB 2.0 (colay vertical Type A)
Audio		Front Audio(Line-out/Mic-in)(Opt.), S/PDIF	1 Front Audio, 1 S/PDIF
Storage		4 SATA 3.0	4 SATA 3.0, (RAID 0/1/5/10)
DIO		8-bit DIO	8-bit DIO
LPC**		1	-
SMBus		1	1
TPM / iAMT	dTPM 2.0. (Opt.)	Nuvoton dTPM 2.0.	
Power	ATX	ATX	
Operating Temperature	0°C~60°C	-5°C~65°C	

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

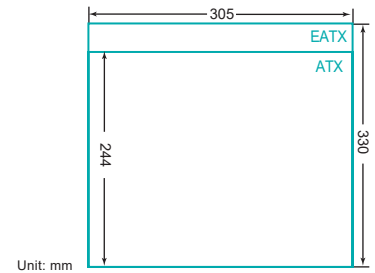
# EATX/ATX

Fast Computing & Highly Reliable Solutions



## Features

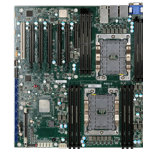
Our EATX/ATX embedded motherboards feature a high computing capability, rich I/O connectivity, high integration, and expansibility which support up to 7 expansion slots (ATX). The form factors of EATX/ATX boards are 330 x 305 mm for EATX and 305 x 244 mm for ATX, making both motherboards an ideal solution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



Q370



Q370



H310

Model Name		ERX810-C741	PR811-C622	PR810-C622
Platform		Server-Grade	Server-Grade	Server-Grade
System	Processor	5th/4th Gen Intel®Xeon® Scalable Family	2nd/1st Gen Intel®Xeon® Scalable Family™	2nd/1st Gen Intel®Xeon® Scalable Family
	Socket	Dual LGA4677	Dual LGA3647	Dual LGA3647
	Max. Speed	up to 4.1GHz (Turbo)	up to 3.9GHz (Turbo)	up to 3.9GHz (Turbo)
	TDP	up to 270W	up to 150W	up to 150W
	Cache	up to 60MB	up to 35.75MB	up to 35.75MB
	Chipset	Intel® C741	Intel® C622	Intel® C622
Memory	BIOS	Insyde	Insyde	Insyde
	Technology	DDR5 Max. 5600MHz	DDR4 Max. 2933MHz	DDR4 Max. 2933MHz
	Max. Capacity	1024GB	768GB	768GB
Graphics	Socket	16 ECC-RDIMM	12 ECC-RDIMM	12 ECC-RDIMM
	Connector	1 DP	1 VGA (with SEM2500/2510*)(Opt.)	1 VGA (with SEM2500/2510*)(Opt.)
Expansion	PCIe, PCI	4 PCIe x16 Gen5, 2 PCIe x8 Gen5	5 PCIe x16 Gen3, 1 PCIe x8 Gen3	4 PCIe x16 Gen3, 1 PCIe x8 Gen3, 1 PCI
	Mini PCIe / M.2 / SIM	1 M.2 M key 2280	1 M.2 M key 2280	1 M.2 M key 2280
Audio	Audio Codec	ALC888S	ALC887	ALC887
Ethernet	Controller	4 Intel®I210AT, IPMI: RTL8211F	Intel®x557-AT2, 2 Intel®I210AT	Intel®x557-AT2, 2, Intel®I210AT, 1 100GbE Module**(Opt.)
Rear I/O	Ethernet	4 GbE, 1 IPMI LAN	2 GbE, 2x 10GbE, 1 IPMI LAN	2 GbE, 2x 10GbE, 1 IPMI LAN (Opt.)
	Serial	1 RS-232/422/485	1 RS-232	1 RS-232
	USB	4 USB 3.2 Gen1	4 USB 3.2 Gen1, 2 USB 2.0 stack	4 USB 3.2 Gen1
	Display	1 DP	1 VGA(Opt.)	1 VGA(Opt.)
	Audio	-	-	-
Internal I/O	PS/2	1	-	-
	Serial	1 RS-232/422/485	1 RS-232	1 RS-232
	USB	2 USB 3.2 Gen1, 2 USB 2.0, 1 Vertical USB 2.0	2 USB 3.2 Gen1, 2 USB 2.0, 1 x USB 2.0 Vertical Type A	2 USB 3.2 Gen1, 2 USB 2.0, 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) w/ M.2 M Key	8 SATA 3.0 (RAID 0/1/5/10)
	DIO	16-bit DIO	-	-
LPC**	1	1	1	
SMBus	1	1	1	
TPM / iAMT		dTPM 2.0.	dTPM 2.0.	dTPM 2.0. (Opt.)
Power		ATX	ATX	ATX
Operating Temperature		0°C~60°C	0°C~40°C	0°C~40°C

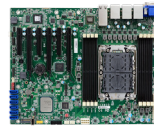
\*SEM2500/2510: DFI proprietary peripheral for IPMI/VGA card.

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

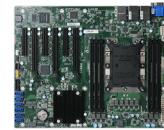
\*\*100GbE Module: DFI proprietary peripheral for LAN Extension Module Card (EXT-100GbE)



C741



C621A



C621

Model Name		ERX610-C741	ICX610-C621A	PR611-C621
Platform		Server-Grade	Server-Grade	Server-Grade
System	Processor	5th/4th Gen Intel® Xeon® Scalable Family	3rd Gen Intel® Xeon® Scalable Family LGA 4189	2nd/1st Gen Intel® Xeon® Scalable Family LGA 3647
	Socket			
	Max. Speed		up to 3.6GHz(Turbo)	up to 3.9GHz(Turbo)
	TDP		Max. 205W	Max. 150W
	Cache		Max 48M	Max. 35.75MB
	Chipset		Intel® C621A	Intel® C621
	BIOS		Insyde SPI 128Mbit	Insyde SPI 128Mbit
Memory	Technology		DDR4 Max. 3200MHz	DDR4 Max. 2933 MHz
	Max. Capacity		512GB	384GB
	Socket		8 ECC-RDIMM	6 ECC-RDIMM
Graphics	Connector		1 VGA	1 VGA (Opt.)
Expansion	PCIe, PCI		3 PCIe x16 Gen4, 3 PCIe x8 Gen4	3 PCIe x16 Gen3, 3 PCIe x8 Gen3
	Mini PCIe / M.2 / SIM		1 M.2 M key 2280	1 M.2 M key 2280, 1 M.2 E key 2230
Audio	Audio Codec		ALC888S	ALC887
Ethernet	Controller		2 Intel® I210AT, 2 Intel® x550-AT2, IPMI: RTL8211F	2 Intel® I210AT, IPMI: RTL8211F (Opt.)
Rear I/O	Ethernet		2 GbE, 2x 10GbE, 1 IPMI LAN	2 GbE, 1 IPMI LAN (Opt.)
	Serial		1 RS-232	1 RS-232
	USB		4 USB 3.2 Gen1, 2 USB 2.0	4 USB 3.2 Gen1, 2 USB 2.0 stack
	Display		1 VGA	1 VGA (Opt.)
	Audio		-	-
Internal I/O	PS/2		-	-
	Serial		1 RS-232	-
	USB		2 USB 3.2 Gen1, 2 USB 2.0, 1 Vertical USB 2.0	2 USB 3.2 Gen1, 2 USB 2.0, 1 Vertical USB 2.0
	Audio		Front Audio	Front Audio
	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		16-bit DIO	-
	LPC**		1	-
SMBus		1	1	
TPM / iAMT			Infineon dTPM 2.0.	dTPM 2.0. (Opt.)
Power			ATX	ATX
Operating Temperature			0°C~55°C	-5°C~65°C



C621



C622

Model Name		PR610-C621	PL610-C622
Platform		Server-Grade	Server-Grade
System	Processor	2nd/1st Gen Intel® Xeon® Scalable Family*	1st Gen Intel® Xeon® Scalable Family LGA 3647
	Socket		LGA 3647
	Max. Speed		up to 3.9GHz(Turbo)
	TDP		Max. 150W
	Cache		Max. 35.75MB
	Chipset		Intel® C621
	BIOS		Insyde SPI 128Mbit
Memory	Technology		DDR4 Max. 2933 MHz
	Max. Capacity		384GB
	Socket		6 ECC-RDIMM
Graphics	Connector		1 VGA (with SEM2500/2510*)
Expansion	PCIe, PCI		2 PCIe x16 Gen3, 2 PCIe x8 Gen3, 1 PCI
	Mini PCIe / M.2 / SIM		1 M.2 M key 2280
Audio	Audio Codec		ALC887
Ethernet	Controller		2 Intel® I210AT, IPMI: RTL8211F with SEM2500*
Rear I/O	Ethernet		2 GbE, 1 IPMI LAN with SEM2500*
	Serial		-
	USB		4 USB 3.2 Gen1, 2 USB 2.0
	Display		1 VGA (with SEM2500/2510*)
	Audio		-
Internal I/O	PS/2		-
	Serial		2 RS-232
	USB		1 USB 3.2 Gen1, 2 USB 2.0, 1 Vertical USB 2.0
	Audio		-
	Storage		6 SATA 3.0, (RAID 0/1/5/10) w/ M.2 M Key
	DIO		-
	LPC**		-
SMBus		1	
TPM / iAMT		dTPM 2.0. (Opt.)	Infineon dTPM 2.0. (Opt.)
Power			ATX
Operating Temperature			0°C~60°C

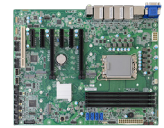
\*SEM2500/2510: DFI proprietary peripheral for IPMI/VGA card.



W880

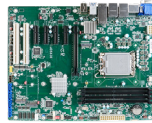


Q870

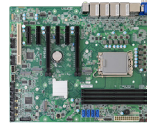


R680E

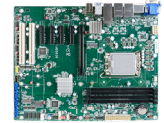
Model Name		ARS630-W880	ARS630-Q870	RPS630-R680E
Platform		Workstation	Desktop	Workstation
System	Processor	Intel® Core™ Ultra	Intel® Core™ Ultra	14th/13th/12th Gen Intel® Core™
	Socket	LGA 1851	LGA 1851	LGA 1700
	Max. Speed	2.4~5.8GHz	2.4~5.8GHz	2.4~5.8GHz
	TDP	35/65/125W	35/65/125W	35/46/60/65/125W
	Cache	20/24/30/36M	20/24/30/36M	4/6/12/18/20/24/25/30/36M
	Chipset	Intel® W880	Intel® Q870	Intel® R680E
Memory	BIOS	AMI SPI 256Mbit	AMI SPI 256Mbit	AMI SPI 256Mbit
	Technology	Dual Channel DDR5 up to 5600 MHz	Dual Channel DDR5 up to 5600 MHz	Dual Channel DDR5 up to 4400 MHz
	Max. Capacity	192GB	192GB	192GB
Graphics	Socket	4 UDIMM (ECC/Non-ECC)	4 UDIMM (Non-ECC)	4 UDIMM (ECC/Non-ECC)
	Connector	1 VGA, 2 DP++	1 VGA, 2 DP++	1 VGA, 2 DP++
Expansion	PCIe, PCI	2 PCIe x16 Gen 5 (16 or 8+8), 1 PCIe x4 Gen 5, (share M.2 M-key), 3 PCIe x4 Gen 4, 1 PCI	2 PCIe x16 Gen 5 (16 or 8+8), 1 PCIe x4 Gen 5, (share M.2 M-key), 3 PCIe x4 Gen 4, 1 PCI	2 PCIe x16 Gen4, (16 or 8+8), 1 PCIe x4 Gen3, (share M.2-M2), 3 PCIe x4 Gen 4, 1 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 A key for M2-OOB, 1 M.2 E key 2230	2 M.2 M key 2242/2260/2280, 1 M.2 A key for M2-OOB, 1 M.2 E key 2230
Audio	Audio Codec	ALC888S	ALC888S	ALC888S
Ethernet	Controller	1 Intel® I226LM, 1 Intel® I210AT, 2 Intel® I226V or 1 Intel® I226LM, 3 Intel® I226V	1 Intel® I226LM, 1 Intel® I210AT or 1 Intel® I226LM, 1 I226V	1 Intel® I226LM, 1 Intel® I210AT (co-lay I226V), 2 Intel® I226V
	Ethernet	3x 2.5GbE, 1x GbE or 4x 2.5GbE	1x 2.5GbE, 1x GbE or 2x 2.5GbE	3x 2.5GbE, 1x 1GbE (Opt. 2.5GbE)
Rear I/O	Serial	-	-	-
	USB	4 USB 3.2 Gen2, 4 USB 3.2 Gen1	4 USB 3.2 Gen2, 4 USB 3.2 Gen1	4 USB 3.2 Gen 2, 4 USB 3.2 Gen 1
	Display	1 VGA, 2 DP++	1 VGA, 2 DP++	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	-	-	-
	Internal I/O	Serial	2 RS-232/422/485, 4 RS-232	2 RS-232/422/485, 4 RS-232
Internal I/O	USB	2 USB 3.2 Gen1, 1 USB 2.0 Vertical Type A, 2 USB 2.0	2 USB 3.2 Gen1, 1 USB 2.0 Vertical Type A, 2 USB 2.0	2 USB 3.2 Gen1, 2 Vertical USB 2.0
	Audio	Front Audio, S/PDIF	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	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	4-IN / 8-OUT DIO
	LPC	-	-	-
	eSPI	1	1	1
	SMBus	1	1	1
	PS/2	1	1	1
TPM / iAMT	dTPM 2.0.	dTPM 2.0.	dTPM 2.0., iAMT (Core i9/i7/i5 Only)	
Power	ATX	ATX	ATX	
Operating Temperature	-5°C~65°C	-5°C~65°C	-5°C~65°C	



R680E

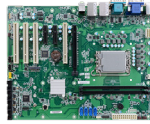
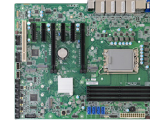


Q670E



Q670E

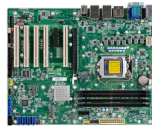
Model Name		ADS630-R680E	RPS630-Q670E	ADS630-Q670E
Platform		Workstation	Desktop	Desktop
System	Processor	14th/13th/12th Gen Intel® Core™	14th/13th/12th Gen Intel® Core™	14th/13th/12th Gen Intel® Core™
	Socket	LGA 1700	LGA 1700	LGA 1700
	Max. Speed	2.4~5.8GHz	2.4~5.8GHz	2.4~5.8GHz
	TDP	35/46/60/65/125W	35/46/60/65/125W	35/46/60/65/125W
	Cache	4/6/12/18/20/24/25/30/33/36M	4/6/12/18/20/24/25/30/36M	4/6/12/18/20/24/25/30/33/36M
	Chipset	Intel® R680E	Intel® Q670E	Intel® Q670E
Memory	BIOS	AMI SPI 256Mbit	AMI SPI 256Mbit	AMI SPI 256Mbit
	Technology	Dual Channel DDR4 3200 MHz	Dual Channel DDR5 up to 4400 MHz	Dual Channel DDR4 3200 MHz
	Max. Capacity	128GB	192GB	128GB
Graphics	Socket	4 UDIMM (ECC/Non-ECC)	4 UDIMM (Non-ECC)	4 UDIMM (Non-ECC)
	Connector	1 VGA, 2 DP++	1 VGA, 2 DP++	1 VGA, 2 DP++
Expansion	PCIe, PCI	1 PCIe x16 Gen5, 4 PCIe x4 Gen4, 2 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, 4 PCIe x4 Gen4, 2 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	2 M.2 M key 2242/2260/2280, 1 M.2 E Key 2230 (Opt.)
Audio	Audio Codec	ALC888	ALC888S	ALC888
Ethernet	Controller	1 Intel® I226LM, 1 Intel® I226V, 2 Intel® x550-AT2(no support WOL)	1 Intel® I226LM, 1 Intel® I226V	1 Intel® I226LM, 1 Intel® I226V
	Ethernet	2x 2.5GbE, 2x 10GbE	2x 2.5GbE	2x 2.5GbE
Rear I/O	Serial	-	-	-
	USB	4 USB 3.2 Gen2, 4 USB 3.2 Gen1	4 USB 3.2 Gen 2, 4 USB 3.2 Gen 1	4 USB 3.2 Gen2, 4 USB 3.2 Gen1
	Display	1 VGA, 2 DP++	1 VGA, 2 DP++	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	-	-	-
	Internal I/O	Serial	2 RS-232/422/485, 4 RS-232	2 RS-232/422/485, 4 RS-232
Internal I/O	USB	2 USB 3.2 Gen2, 1 Vertical USB 2.0, 2 USB 2.0 (colay vertical Type A)	2 USB 3.2 Gen1, 2 USB 2.0 (Colay vertical Type A), 1 Vertical USB 2.0	2 USB 3.2 Gen1, 1 Vertical USB 2.0, 2 USB 2.0 (colay vertical Type A)
	Audio	Front Audio, S/PDIF	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) w/ M.2 M Key	4 SATA 3.0 (RAID 0/1/5/10)
	DIO	8-bit DIO	4-IN / 8-OUT DIO	8-bit DIO
	LPC	-	-	-
	eSPI	1	1	1
	SMBus	1	1	1
	PS/2	1	1	1
TPM / iAMT	dTPM 2.0., iAMT (Core i9/i7/i5 Only)	dTPM 2.0., iAMT (Core i9/i7/i5 Only)	dTPM 2.0., iAMT (Core i9/i7/i5 Only)	
Power	ATX	ATX	ATX	
Operating Temperature	-5°C~65°C	-5°C~65°C	-5°C~65°C	

**H610****W480E****W480E**

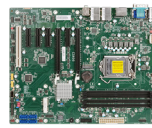
Model Name		RPS631-H610	CMS632-W480E	CMS630-W480E
Platform		Desktop	Workstation	Workstation
System	Processor	14th/13th/12th Gen Intel® Core™	Intel® Xeon® /10th Gen Intel® Core™	Intel® Xeon® / 10th Gen Intel® Core™
	Socket	LGA 1700	LGA 1200	LGA 1200
	Max. Speed	2.4~5.8GHz	3.6~4.8GHz	3.6~4.8GHz
	TDP	35/46/60/65/125W	35/65/80/95/125W	35/65/80/95/125W
	Cache	4/6/12/18/20/24/25/30/33/36M	6/12/16/20M	6/12/16/20M
	Chipset	Intel® H610	Intel® W480E	Intel® W480E
	BIOS	AMI SPI 256Mbit	AMI SPI 128Mbit	Insyde SPI 128Mbit
Memory	Technology	Dual Channel DDR5 up to 5600 MHz	Dual Channel DDR4 2400/2666/2933MHz	Dual Channel DDR4 2400/2666/2933MHz
	Max. Capacity	96GB	128GB	128GB
	Socket	2 UDIMM (Non-ECC)	4 UDIMM (ECC/Non-ECC)	4 UDIMM (ECC/Non-ECC)
Graphics	Connector	1 VGA	1 VGA, 1 DP++	1 VGA, DP++
Expansion	PCIe, PCI	1 PCIe x16 Gen4, 2 PCIe x4 (x2), Gen3, 4 PCI	2 PCIe x16 Gen 3 (1x16 or 2x8), 2 PCIe x4 Gen 3, 2 PCIe x4 (co-lay M.2), 1 PCI	2 PCIe x16 Gen 3 (1 x16 or 2 x8), 3 PCIe x4 Gen 3 (2 x4 and 1 x1), 2 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.)	2 M.2 M key 2242/2260/2280, 1 M.2 E key 2230 (Opt.)
Audio	Audio Codec	ALC888S	ALC888	ALC888
Ethernet	Controller	1 Intel® I226V, 1 Intel® I219V	1 Intel® I210AT, 1 Intel® I219LM	1 Intel® I210AT, 1 Intel® I219LM
Rear I/O	Ethernet	1x 2.5GbE, 1x GbE	2 GbE	2 GbE
	Serial	2 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, 4 USB 2.0	2 USB 3.2 Gen2, 2 USB 3.2 Gen1, 4 USB 2.0
	Display	1 VGA	1 VGA, 1 DP++	1 VGA, 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	-	-
	Serial	4 RS-232	1 RS-232/422/485, 4 RS-232	1 RS-232/422/485, 4 RS-232
Internal I/O	USB	2 USB 2.0, 1 USB 2.0 (colay vertical Type A)	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	Front Audio, S/PDIF
	Storage	4 SATA 3.0	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	16-bit DIO	16-bit DIO
	LPC	-	1	1
	eSPI	1	-	-
	SMBus	1	1	1
	PS/2	-	1 mini-DIN-6	1 mini-DIN-6
	TPM / iAMT	dTPM 2.0.	Nuvoton dTPM 2.0. (Opt.), iAMT 12.0 (Xeon/ Core i5/i7/i9 Only)	Infineon dTPM 2.0. (Opt.), iAMT 12.0 (Xeon/ Core i5/i7/i9 Only)
	Power	ATX	ATX	ATX
Operating Temperature	-5°C~65°C	-5°C~65°C	-5°C~65°C	

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

Model Name		CMS632-Q470E	CMS631-Q470E	CMS630-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	3.0~4.7GHz	3.0~4.7GHz
	TDP	35/58/65/125W	35/58/65/125W	35/58/65/125W
	Cache	2/4/12/16/20M	2/4/8/12/16/20M	2/4/12/16/20M
	Chipset	Intel® Q470E	Intel® Q470E	Intel® Q470E
	BIOS	AMI SPI 128Mbit	AMI	Insyde SPI 128Mbit
Memory	Technology	Dual Channel DDR4 2400/2666/2933MHz	Dual Channel DDR4 2400/2666/2933MHz	Dual Channel DDR4 2400/2666/2933MHz
	Max. Capacity	128GB	128GB	128GB
	Socket	4 UDIMM (Non-ECC)	4 UDIMM (Non-ECC)	4 UDIMM (Non-ECC)
Graphics	Connector	1 VGA, 1 DP++	1 VGA, 1 DP++	1 VGA, 1 DP++
Expansion	PCIe, PCI	2 PCIe x16 Gen 3 (1x16 or 2x8), 2 PCIe x4 Gen 3, 2 PCIe x4 (co-lay M.2), 1 PCI	1 PCIe x16 Gen 3, 1 PCIe x4 Gen 3, 5 PCI	2 PCIe x16 Gen 3 (1 x16 or 2 x8), 3 PCIe x4 Gen 3 (2 x4 and 1 x1), 2 PCI
	Mini PCIe / M.2 / SIM	2 M.2 M key 2242/2260/2280, 1 M.2 E key 2230 (Opt.)	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	ALC888	ALC888	ALC888
Ethernet	Controller	1 Intel® I210AT, 1 Intel® I219LM	1 Intel® I210AT, 1 Intel® I219LM/219V	1 Intel® I210AT, 1 Intel® I219LM
Rear I/O	Ethernet	2 GbE	2 GbE	2 GbE
	Serial	1 RS-232/422/485	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, 2 USB 2.0	2 USB 3.2 Gen2, 2 USB 3.2 Gen1, 4 USB 2.0
	Display	1 VGA, 1 DP++	1 VGA, 1 DP++	1 VGA, 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	-	-	-
	Serial	1 RS-232/422/485, 4 RS-232	1 RS-232/422/485, 4 RS-232	1 RS-232/422/485, 4 RS-232
Internal I/O	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 Gen1, 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	Front Audio, S/PDIF
	Storage	4 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	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
	eSPI	-	-	-
	SMBus	1	1	1
	PS/2	1 mini-DIN-6	1 mini-DIN-6	1 mini-DIN-6
	TPM / iAMT	Nuvoton dTPM 2.0. (Opt.), iAMT 12.0 (Xeon/ Core i5/i7/i9 Only)	Infineon dTPM 2.0. (Opt.), iAMT 12.0 (Core i5/i7/i9 Only)	Infineon dTPM 2.0. (Opt.), iAMT 12.0 (Xeon/ Core i5/i7/i9 Only)
	Power	ATX	ATX	ATX
Operating Temperature	-5°C~65°C	-5°C~65°C	-5°C~65°C	



H420E



C246

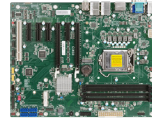


C246

Model Name		CMS631-H420E	CS650-C246	CS632-C246
Platform		Desktop	Workstation	Workstation
System	Processor	10th Gen Intel® Core™	Intel® Xeon® / 9th/8th Gen Intel® Core™	Intel® Xeon® / 9th/8th Gen Intel® Core™
	Socket	LGA 1200	LGA 1151	LGA 1151
	Max. Speed	3.0~4.7GHz	2.9~4.7GHz	2.9~4.7 GHz
	TDP	35/54/65/125W	35/54/58/65/71/80/95W	35/54/58/65/71/80W
	Cache	2/4/6/8/9/12/16/20M	2/4/6/8/9/12/16M	2/4/6/8/9/12/16M
	Chipset	Intel® H420E	Intel® C246	Intel® C246
	BIOS	AMI	AMI SPI 128Mbit	SPI 128Mbit
Memory	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
	Socket	2 UDIMM (Non-ECC)	4 DIMM (ECC/non-ECC)	4 DIMM (ECC/non-ECC)
Graphics	Connector	1 VGA, 1 DP++	1 VGA, 2 DP++	1 VGA, 2 DP++
Expansion	PCIe, PCI	1 PCIe x16 Gen 3, 1 PCIe x4 Gen 3, 5 PCI	2 PCIe x16 Gen3 (1 x16 or 2 x8), 3 PCIe x4 Gen3, 1 PCIe x1 Gen3, 1 PCI	1 PCIe x16 Gen 3 (2 x8 as Opt.), 3 PCIe x4 Gen 3, 2 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	1 mPCIe, 1 M.2 M key 2242/2280
Audio	Audio Codec	ALC888	ALC888	ALC887 / ALC888 (Opt.)
Ethernet	Controller	1 Intel® I210AT, 1 Intel® I219LM/I219V	1 Intel® I210AT, 1 Intel® I219LM	1 Intel® I210AT, 1 Intel® I219LM
Rear I/O	Ethernet	2 GbE	2 GbE	2 GbE
	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 Gen1, 2 USB 2.0
	Display	1 VGA, 1 DP++	1 VGA, 2 DP++	1 VGA, 2 DP++
	Audio	Line-out, Mic-in, Line-in (Opt.)	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	1 RS-232/422/485, 4 RS-232
USB	2 USB 3.2 Gen1, 2 USB 2.0 (Colay vertical Type A, Opt.)	2 USB 3.2 Gen1, 4 USB 2.0 (1 USB 2.0 colay vertical Type A)	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	Front Audio, S/PDIF	
Storage	4 SATA 3.0	4 SATA 3.0 (RAID 0/1/5/10)	4 SATA 3.0 (RAID 0/1/5/10)	
DIO	16-bit DIO	8-bit DIO	8-bit DIO	
LPC	1	1	1	
eSPI	-	-	-	
SMBus	1	1	1	
PS/2	1 mini-DIN-6	-	-	
TPM / iAMT	Infinion dTPM 2.0. (Opt.)	Infinion dTPM 2.0. (Opt.), iAMT 12.0(Xeon/ Core i5/i7 only)	Infinion TPM1.2/2.0 (Opt.), iAMT 12.0 (Xeon/ Core i5/i7 only)	
Power	ATX	ATX	ATX	
Operating Temperature	-5°C~65°C	-5°C~65°C	0°C~60°C	



C246



Q370

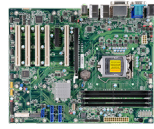


Q370

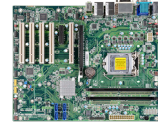
Model Name		CS631-C246	CS650-Q370	CS632-Q370
Platform		Workstation	Desktop	Desktop
System	Processor	Intel® Xeon® / 9th/8th Gen Intel® Core™	9th/8th Gen Intel® Core™	9th/8th Gen Intel® Core™
	Socket	LGA 1151	LGA 1151	LGA 1151
	Max. Speed	2.9~4.7 GHz	2.9~4.6GHz	2.9~4.6 GHz
	TDP	35/54/58/65/71/80W	35/54/58/65/95W	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	SPI 128Mbit
Memory	Technology	Dual Channel DDR4 2400/2666 MHz	Dual Channel DDR4 2400/2666 MHz	Dual Channel DDR4 2400/2666 MHz
	Max. Capacity	128 GB	128GB	128 GB
	Socket	4 DIMM (ECC/non-ECC)	4 DIMM	4 DIMM
Graphics	Connector	1 VGA, 2 DP++	1 VGA, 2 DP++	1 VGA, 2 DP++
Expansion	PCIe, PCI	2 PCIe x16 Gen 3 (1 x16 or 2 x8), 3 x PCIe x4 Gen 3, 1 PCIe x1 Gen 3, 1 PCI	2 PCIe x16 Gen3 (1 x16 or 2 x8), 3 PCIe x4 Gen3, 1 PCIe x1 Gen3, 1 PCI	1 PCIe x16 Gen3 (2 x8 as Opt.), 3 PCIe x4 Gen3, 2 PCI
	Mini PCIe / M.2 / SIM	2 Full mPCIe, 1 M.2 M key 2242/2260/2280	1 Full mPCIe, 1 M.2 M key 2242/2260/2280	1 mPCIe, 1 M.2 M key 2242/2280
Audio	Audio Codec	ALC888	ALC888	ALC887 / ALC888 (Opt.)
Ethernet	Controller	1 Intel® I210AT, 1 Intel® I219LM	1 Intel® I210AT, 1 Intel® I219LM	1 Intel® I210AT, 1 Intel® I219LM
Rear I/O	Ethernet	2 GbE	2 GbE	2 GbE
	Serial	1 RS-232/422/485	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, 2 USB 2.0	4 USB 3.2 Gen1, 2 USB 2.0
	Display	1 VGA, 2 DP++	1 VGA, 2 DP++	1 VGA, 2 DP++
	Audio	Mic-in, Line-out, Line-in (Opt.)	Mic-in, Line-out, Line-in (Opt.)	Mic-in, Line-out, 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	2 USB 3.2 Gen1, 4 USB 2.0 (1 USB 2.0 colay vertical Type A)	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	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 (RAID 0/1/5/10)	
DIO	8-bit DIO	8-bit DIO	8-bit DIO	
LPC	1	1	1	
eSPI	-	-	-	
SMBus	1	1	1	
PS/2	-	-	-	
TPM / iAMT	Infinion TPM1.2/2.0 (Opt.), iAMT 12.0 (Xeon/Core i5/i7 only)	Infinion dTPM 2.0. (Opt.), iAMT 12.0 (Core i5/i7 only)	Infinion TPM1.2/2.0 (Opt.), iAMT 12.0 (Core i5/i7 only)	
Power	ATX	ATX	ATX	
Operating Temperature	0°C~60°C	-5°C~65°C	0°C~60°C	



Q370



Q370



H310

Model Name		CS631-Q370	CS630-Q370	CS630-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	35/54/58/65/95W	35/54/58/65/95W
	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	128 GB	128 GB	64 GB
	Socket	4 DIMM	4 DIMM	2 DIMM
Graphics	Connector	1 VGA, 2 DP++	1 VGA, 1 DVI-I (DVI-D signal), 1 DP++	1 VGA, 1 DVI-I (DVI-D signal), 1 DP++
Expansion	PCIe, PCI	2 PCIe x16 Gen3 (1 x16 or 2 x8), 3 PCIe x4 Gen3, 1 PCIe x1 Gen3, 1 PCI	1 PCIe x16 Gen3 , 1 PCIe x4 Gen3 , 5 PCI	1 PCIe x16 Gen3, 1 PCIe x4 Gen2, 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	ALC888	ALC888	ALC888
Ethernet	Controller	1 Intel® I210AT, 1 Intel® I219LM	1 Intel® I210AT, 1 Intel® I219LM	1 Intel® I210AT, 1 Intel® I219V
Rear I/O	Ethernet	2 GbE	2 GbE	2 GbE
	Serial	1 RS-232/422/485	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	4 USB 3.2 Gen 1, 2 USB 2.0
	Display	1 VGA, 2 DP++	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.)	Mic-in, Line-out, 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	2 USB 3.2 Gen2, 4 USB 2.0	4 USB 2.0	
Audio	Front Audio, S/PDIF	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	4 SATA 3.0	
DIO	8-bit DIO	16-bit DIO	16-bit DIO	
LPC	1	1	1	
eSPI	-	-	-	
SMBus	1	1	1	
PS/2	-	-	-	
TPM / iAMT		Infineon TPM1.2/2.0 (Opt.), iAMT 12.0 (Core i5/i7 only)	dTPM 2.0., iAMT (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



H310



C236



C236

Model Name		CS620-H310	KD632-C236	SD631-C236
Platform		Desktop	Workstation	Workstation
System	Processor	9th/8th Gen Intel® Core™	Intel® Xeon® / 7th/6th Gen Intel® Core™	Intel® Xeon® / 7th/6th Gen Intel® Core™
	Socket	LGA1151	LGA 1151	LGA 1151
	Max. Speed	2.9~4.6 GHz	2.6~4.2 GHz	2.6~4.2 GHz
	TDP	35/54/58/65/95W	Max. 95W	Max. 95W
	Cache	2/4/6/9/12M	2/3/6/8M	2/3/4/6/8M
	Chipset	Intel® H310	Intel® C236	Intel® C236
	BIOS	AMI SPI 128Mbit	Insyde SPI 128Mbit	Insyde SPI 128Mbit
Memory	Technology	Dual Channel DDR4 2400/2666 MHz	Dual Channel DDR4 2133/2400MHz	Dual Channel DDR4 2133/2400MHz
	Max. Capacity	64GB	64GB	64GB
	Socket	2 UDIMM (non-ECC)	4 UDIMM (ECC/Non-ECC)	4 DIMM (ECC/Non-ECC)
Graphics	Connector	1 VGA, 1 DVI-I (DVI-D signal), 1 DP++	1 VGA, 1 DVI (DVI-D signal), 1 DP++	1 VGA, 1 DVI-I (DVI-D signal)
Expansion	PCIe, PCI	1 PCIe x16 Gen 3, 1 PCIe x4 Gen 2, 4 PCI, 2 ISA	2 PCIe x16 Gen 3 (1 x16 or 2 x8), 3 PCIe x4 Gen 3, 2 PCI	2 PCIe x16 Gen 3 (1 x16 or 2 x8), 2 PCIe x4 Gen 3, 3 PCI
	Mini PCIe / M.2 / SIM	-	1 M.2 M key 2260/2280, 1 mPCIe	-
Audio	Audio Codec	ALC888	ALC888S	ALC888S
Ethernet	Controller	1 Intel® I210AT, 1 Intel® I219V	1 Intel® I210AT, 1 Intel® I219LM	1 Intel® I210AT, 1 Intel® I219LM
Rear I/O	Ethernet	2 GbE	2 GbE	2 GbE
	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-I (DVI-D signal), 1 DP++	1 VGA, 1 DVI (DVI-D signal), 1 DP++	1 VGA, 1 DVI-I (DVI-D signal)
	Audio	Mic-in, Line-out (coaly Line-in as opt.)	Mic-in, Line-out, Line-in (Opt.)	Mic-in, Line-out, 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 2.0 (1 colay USB 3.0 vertical Type A as opt.)	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	Front Audio, S/PDIF	S/PDIF	
Storage	4 SATA 3.0 (1 share with mSATA)	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	8-bit DIO	
LPC	1	1	1	
eSPI	-	-	-	
SMBus	1	1	1	
PS/2	-	-	-	
TPM / iAMT		dTPM 2.0. (Opt.)	Infineon TPM1.2/2.0 (Opt.), iAMT 11.0 (Xeon/ Core i5/i7 only)	dTPM 2.0. (Opt.), iAMT 11.0 (Xeon/ Core i5/i7 only)
Power		ATX	ATX	ATX
Operating Temperature		-5°C~65°C	0°C~60°C	0°C~60°C



Q170



Q170



H110

Model Name		KD632-Q170	SD631-Q170	KD630-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	2.6~4.2 GHz	2.6~4.2 GHz	2.6~4.5 GHz
	TDP	Max. 95W	Max. 95W	35/65/91/95W
	Cache	2/3/6/8M	2/3/4/6/8M	2/3/6/8M
	Chipset	Intel® Q170	Intel® Q170	Intel® H110
BIOS		Insyde SPI 128Mbit	Insyde SPI 128Mbit	Insyde SPI 128Mbit
Memory	Technology	Dual Channel DDR4 2133/2400MHz	Dual Channel DDR4 2133/2400MHz	Dual Channel DDR4 up to 2400 MHz
	Max. Capacity	64GB	64GB	32GB
	Socket	4 UDIMM (Non-ECC)	4 DIMM	2 UDIMM
Graphics	Connector	1 VGA, 1 DVI (DVI-D signal), 1 DP++	1 VGA, 1 DVI-I (DVI-D signal)	1 VGA, 1 DVI-I (DVI-D signal)
Expansion	PCIe, PCI	2 PCIe x16 Gen 3 (1 x16 or 2 x8), 3 PCIe x4 Gen 3, 2 PCI	2 PCIe x16 Gen 3 (1 x16 or 2 x8), 2 PCIe x4 Gen 3, 3 PCI	1 PCIe x16 Gen 3, 1 PCIe x4 Gen 2, 5 PCI
	Mini PCIe / M.2 / SIM	1 M.2 M key 2260/2280, 1 mPCIe	-	1 M.2 M key 2242/2260/2280
Audio	Audio Codec	ALC888S	ALC888S	ALC888S
Ethernet	Controller	1 Intel® I210AT, 1 Intel® I219LM	1 Intel® I210AT, 1 Intel® I219LM	1 Intel® I210AT, 1 Intel® I219V
	Ethernet	2 GbE	2 GbE	2 GbE
Rear I/O	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 (DVI-D signal), 1 DP++	1 VGA, 1 DVI-I (DVI-D signal)	1 VGA, 1 DVI-I (DVI-D signal)
	Audio	Mic-in, Line-out, Line-in (Opt.)	Mic-in, Line-out, 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		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.)	4 USB 2.0 or Up to 2 Vertical USB 2.0 Type A (Opt.)
Audio		Front Audio, S/PDIF	S/PDIF	Audio, S/PDIF
Storage		5 SATA 3.0 (RAID 0/1/5/10)	6 SATA 3.0 (RAID 0/1/5/10)	4 SATA 3.0, 1 mSATA
DIO		8-bit DIO	8-bit DIO	8-bit DIO
LPC		1	1	1
eSPI		-	-	-
SMBus		1	1	1
PS/2		-	-	-
TPM / iAMT	Infineon TPM1.2/2.0 (Opt.), iAMT 11.0 (Core i5/i7 only)	dTPM 2.0., iAMT 11.0 (Core i5/i7 only)	Infineon dTPM 2.0./1.2 (Opt.)	
Power	ATX	ATX	ATX	
Operating Temperature	0°C~60°C	0°C~60°C	-5°C~65°C	



H110

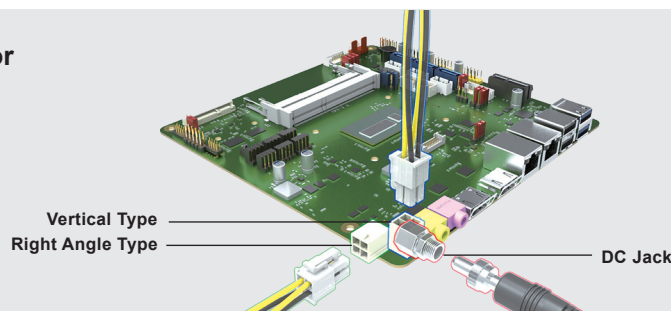


SO630

Model Name		SD630-H110	SO630
Platform		Desktop	AMD
System	Processor	7th/6th Gen Intel® Core™	AMD® EPYC™ 3000 Series
	Socket	LGA 1151	BGA
	Max. Speed	2.6~4.2 GHz	3.0GHz
	TDP	Max. 95W	Max. 100W
	Cache	2/3/6/8M	Max. 32MB
	Chipset	Intel® H110	-
BIOS		Insyde SPI 128Mbit	Insyde SPI
Memory	Technology	Dual Channel DDR3L 1600MHz	DDR4 2666 MHz
	Max. Capacity	16GB	256GB
	Socket	2 DIMM	8 RDIMM/UDIMM
Graphics	Connector	1 VGA, 1 DVI-I (DVI-D signal)	-
Expansion	PCIe, PCI	1 PCIe x16 Gen 3, 1 PCIe x4 Gen 2, 5 PCI	3 PCIe x16 (up to 6 PCIe x8), 1 PCI
	Mini PCIe / M.2 / SIM	-	2 M.2 M key
Audio	Audio Codec	ALC888S	-
Ethernet	Controller	1 Intel® I210AT, 1 Intel® I219V	2 Intel® I210AT
	Ethernet	2 GbE	2 GbE
Rear I/O	Serial	1 RS-232/422/485	1 RS-232/422/485, 1 RS-232
	USB	4 USB 3.2 Gen1, 2 USB 2.0	6 USB 3.2 Gen1
	Display	1 VGA, 1 DVI-I (DVI-D signal)	-
	Audio	Mic-in, Line-out, Line-in (Opt.)	-
	PS/2	1 mini-DIN-6	-
	Internal I/O	Serial	1 RS-232/422/485, 4 RS-232
USB		4 USB 2.0 or 2 USB 2.0 + 1 Vertical USB 2.0 Type A (Opt.)	2 USB 3.2 Gen1
Audio		Audio (Line-out/Mic-in)(Opt.), S/PDIF	-
Storage		4 SATA 3.0	3 SATA 3.0, 2 SATA 3.0 (RAID 0/1) w/ M.2 M Key
DIO		8-bit DIO	-
LPC		1	-
eSPI		-	-
SMBus		1	-
PS/2		-	-
TPM / iAMT	dTPM 2.0. (Opt.)	dTPM 2.0. (Opt.)	
Power	ATX	ATX	
Operating Temperature	0°C~60°C	-5°C~65°C	



## Flexible Power Connector



### Our Applicable Boards:

Processor	Form Factor	Model
Intel® Core™ Ultra Processors	SBC	MTH556, MTH253
12th /13th /14th Gen Intel® Core™	Mini-ITX	ADP253
11th Gen Intel® Core™	Mini-ITX	TGU171/TGU173
10th Gen Intel® Core™	Mini-ITX	CMS101/CMS103
9th/8th Gen Intel® Core™	Mini-ITX	WL551, CS551
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® Amston Lake Processors	SBC	ASL553, ASL253
Intel® Atom® Alder Lake-N Processors	Mini-ITX	ADN553, ADN253
Intel Atom® Processor X Series	Mini-ITX	EHL556, EHL253
Intel Atom® E3900	Mini-ITX	AL171/AL173
	SBC	AL551, AL553
AMD® Ryzen™ Embedded V2000 Series	Mini-ITX	RNO171
AMD® Ryzen™ Embedded V1000/R1000/R2000 Series	Mini-ITX	GH551

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

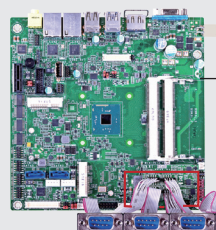
## Our Proprietary LPC Modules



EXT-RS232



EXT-RS485



Proprietary Card

4 COM ports

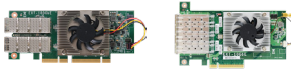
1. Two proprietary cards for expanding extra 4 COM ports via a LPC interface
2. Provides flexibility and system integration on our newest platforms

### Our Applicable Boards:

Processor	Form Factor	Model
Intel® Core™ Ultra Processors	SBC	MTH556, MTH253
12th /13th /14th Gen Intel® Core™	Mini-ITX	ADS101/ADS103,RPS101/RPS103
	SBC	ADP253
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
	SBC	WL551, CS551
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® Amston Lake Processors	SBC	ASL553, ASL253
Intel® Atom® Alder Lake-N Processors	Mini-ITX	ADN171/ADN173
	SBC	ADN553, ADN253
Intel Atom® Processor X Series	Mini-ITX	EHL171/173
	SBC	EHL556, EHL253
Intel Atom® E3900	Mini-ITX	AL171/AL173
	SBC	AL551, AL553
AMD® Ryzen™ Embedded V2000 Series	Mini-ITX	RNO171
AMD® Ryzen™ Embedded V1000/R1000/R2000 Series	Mini-ITX	GH171
	SBC	GH551

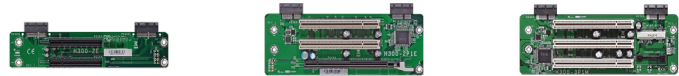
# Peripherals

Providing Expansibility & High Flexibility



Proprietary I/O Cards

Riser Cards



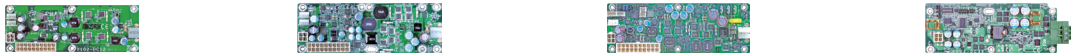
Model Name	EXT-100GbE	EXT-10GbE
Chip	E810-CAM2	XL710-BM1
Mode	100GbE	10GbE
Interface	DFI Proprietary	PCIe Gen3 x8
Dimension	167.7 x 68.9 mm	161.04 x 100.15 mm
Applicable Models	All DFI systems and boards with PCIe interface	

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



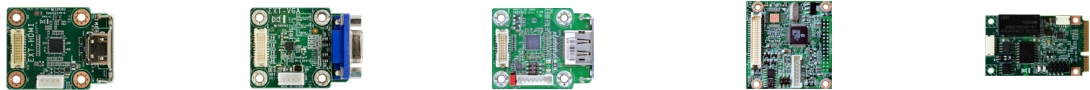
Riser Cards

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	170 x 52.7 mm	140 x 51 mm
Applicable Models	All DFI systems and boards with PCIe interface					



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
	+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	
	-12V	0.2A	2.4W	-12V ±10%	0.2A	-12V ±10%	0.15A		
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	EXT-VGA	EXT-DP	SDVO-LVDS	MPE-CAN2
Chip	ASM1442K	IT6516B	SN75DP130	Chrontel CH7308B	-
Ports	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 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	50.59 x 30 mm
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



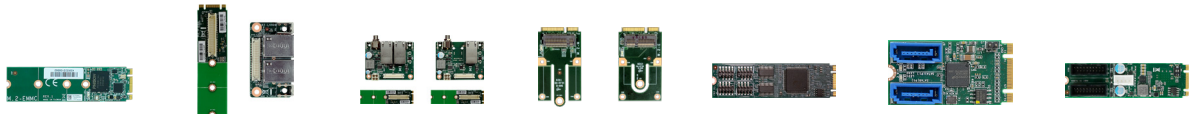
Model Name	EXT-RS232	EXT-RS485	MPE-EXTB	MPE-EXTF	MPE-SATA	MPE-SIM2
Chip	NCT5104	NCT5104	-	-	-	-
Expansion Slots/Ports	4 RS232 Serial Connector	4 RS485 Serial Connector	1 Full-size Mini PCIe	1 Full-size Mini PCIe	1 SATA Connector	2 SIM slots
Interface	1 LPC	1 LPC	1 Half-size Mini PCIe	1 Half-size Mini 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	All DFI systems and boards with PCIe interface		-	-	-	-

M.2 Expansion Modules



Model Name	M2A-eDP/LVDS	M2A-VGA	M2A-	M2A-DP	M2A-M21
Chip	PTN3460	CH7517	PI3HDX1204B1ZHE	-	-
Expansion Slots/Ports	M.2 A Key	M.2 A Key	M.2 A Key	M.2 A Key	M.2 A Key
Interface	eDP/LVDS	VGA	-	DP	M.2 B Key with SIM PCIe x1/USB3/USB2
From Factor	30 x 42 mm (Stand off at 30 x 30 mm)	30 x 42 mm (Stand off at 30 x 30 mm)	30 x 42 mm (Stand off at 30 x 30 mm)	30 x 42 mm (Stand off at 30 x 30 mm)	30 x 60 mm (Stand off at 30 x 30 mm)
Applicable Models	RPP171/RPP173, RPS100, ADN171/ ADN173ARH171/173,HPT171	RPP171/RPP173, RPS100, ADN171/ ADN173ARH171/173,HPT171	RPP171/RPP173, RPS100, ADN171/ ADN173ARH171/173,HPT171	RPP171/RPP173, RPS100, ADN171/ ADN173ARH171/173,HPT171	RPS100, ADN171/ADN173 ARH171/173,HPT171

M.2 Expansion Modules



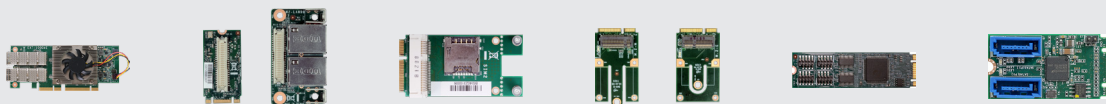
Model Name	M.2-eMMC	M.2-1LAN/2LAN	M.2-1PSE/2PSE	MPE-M2M/M2E	M.2-COM4	M.2-SATA2	M.2-USB314
Chip	-	-	-	-	-	-	uPD720201
Expansion Slots/Ports	-	1 RJ45 / 2 RJ45	1 RJ45 / 2 RJ45	1 M.2 M key/ 1 M.2 E key	RS232/RS422/RS485	2 SATA 3.0	4 USB 3.2 Gen1
Interface	M.2 Key B & Key M Supports PCIe 5Gbps NVME 1.3a	PCIe x1	PCIe x1	PCIe, SATA, USB (based on motherboard input)	PCIe x1	PCIe	PCIe
From 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 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	EXT-OOB	RM101-OOB	M2A-OOB	SEM-2500/2510
Chip	NUC980	NUC980	NUC980	AST2500/2510
Mode	OUT OF BAND	OUT OF BAND	OUT OF BAND	SEM2500: IPMI & VGA SEM2510: VGA
Interface	-	-	Proprietary M.2 A key	DFI Proprietary
Dimension	89.80 x 45.60 mm	89.80 x 45.60 x 27 mm	30 x 42 mm	69.6 x 45 mm
Applicable Models	All DFI systems and boards with M.2-A key OOB interface			PR610-C621/ PR810-C622

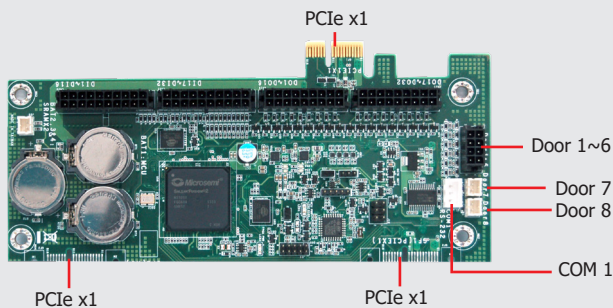
High Speed Modules



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

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    - 64K x16, 512K x16, 1M x16, 2M x16, 4M x16



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