

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 Overview

Embedded SBCs

GHF51

M8MP553

Form Factor	Processor	Platform	Model	Index
1.8"	Intel Atom® E3900	Atom	ALF51	P6
	AMD® Embedded R1000 Series	AMD	GHF51	
2.5"	8th Gen Intel® Core™	ULT	WL051, WL053	P7
	NXP i.MX8M Series	NXP	M8M051	
	Intel Atom® E3900	Atom	AL05P, AL051, AL053	
	Intel® Pentium®/Celeron® N3000	Atom	BW051	
	Freescale i.MX6 Series	NXP	FS053	
3.5"	8th/9th Gen Intel® Core™	Desktop	CS551	P8
	8th Gen Intel® Core™	ULT	WL551	
	7th Gen Intel® Core™	ULT	KU551, KU553	
	6th Gen Intel® Core™	ULT	SU551	
	AMD® Embedded V1000/R1000	AMD	GH551	P9
	Intel Atom® E3900	Atom	AL551, AL553	
	Intel Atom® E3800	Atom	BT553	
	Processor Intel® Pentium®/Celeron® N3000	Atom	BW551	
4"	NXP i.MX 8M Plus Quad	NXP	M8MP553	P10
	12th Gen Intel® Core™	ULT	ADP253	
	6th Gen Intel® Core™	ULT	SU251/SU253, SU256-SCM	
	Intel Atom® E3900	Atom	AL253	
	Intel Atom® E3800	Atom	BT253, BT259	

PICMG 1.3

PIC-Q170/H110

Processor	Platform	Chipset	Model	Index
6th/7th Gen Intel® Core™	Desktop	Q170/H110	PIC-Q170/H110	P11

Mini-ITX


CMS100

TGU171/TGU173

Processor	Platform	Chipset	Model	Index
12th Gen Intel® Core™	Workstation	R680E	ADS101/ADS103-R680E	P12
	Desktop	Q670E/H610E	ADS101/ADS103-Q670E/H610E	
11th Gen Intel® Core™	ULT	-	TGU171/TGU173	P13
	Workstation	W480E	CMS101/CMS103-W480E, CMS100-W480E	
10th Gen Intel® Core™	Desktop	Q470E	CMS100-Q470E	P14
		H420E	CMS101/CMS103-H420E, CMS100-H420E	
		Q470E	CMS101/CMS103-Q470E	
8th/9th Gen Intel® Core™	Workstation	C246	CS103-C246, CS101-C246, CS100-C246, CS170-C246	P15
	Desktop	Q370	CS103-Q370, CS170-Q370, CS181-Q370	
		H310	CS101-Q370, CS100-Q370, CS103-H310, CS101-H310, CS100-H310, CS170-H310, CS181-H310	
8th Gen Intel® Core™	ULT	-	WL171/WL173	P16
7th Gen Intel® Core™	ULT	-	KU171/KU173	
6th/7th Gen Intel® Core™	Desktop	Q170/H110	KD171	P17
	Desktop	Q170/H110	SD100-Q170/H110	
		Q170	SD101/SD103-Q170, SD106-Q170	
6th Gen Intel® Core™	ULT	H110	SD170, SD101/SD103-H110	P18
			SU171/SU173	
Intel Atom® x6000 SoC	Atom	-	EHL171/EHL173	P17
Intel Atom® E3900	Atom	-	AL170, AL171/AL173, AL102	
Intel Atom® E3800	Atom	-	BT100, BT101/BT103, BT160/BT161	P18
AMD® Ryzen Embedded V2000	AMD	-	RNO171	
Intel® Pentium®/Celeron® N3000	Atom	-	BW171/BW173	
AMD® Ryzen Embedded V1000/R1000 Series	AMD	-	GH171	



microATX



ADS310

Processor	Platform	Chipset	Model	Index
12th Gen Intel® Core™	Workstation	R680E	ADS310-R680E	P19
	Desktop	Q670E	ADS310-Q670E	
10th Gen Intel® Core™	Workstation	W480E	CMS310-W480E, CMS311-W480E	P20
		Q470E	CMS330-Q470E, CMS311-Q470E	
		H420E	CMS310-Q470E	P21
8th/9th Gen Intel® Core™	Desktop	C246	CS350-C246, CS331-C246, CS332-C246	
		Q370	CS350-Q370, CS332-Q370, CS331-Q370	
		H310	CS330-Q370	
6th/7th Gen Intel® Core™	Workstation	C236	KD331-C236, SD331-C236	P22
		Q170	KD331-Q170, KD330-Q170, KD300-Q170, SD330-Q170	
	Desktop	H110	KD330-H110, KD300-H110, SD330-H110	P23

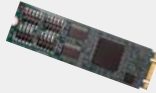
EATX/ATX



ICX610

Processor	Platform	Chipset	Model	Index
1st/2nd Gen Intel® Xeon®	Server-Grade	C622	PR811-C622, PR810-C622	P24
3rd Gen Intel® Xeon®		C621A	ICX610-C621A	
1st Gen Intel® Xeon®		C622	PL610-C622	P25
1st/2nd Gen Intel® Xeon®		C621	PR610-C621, PR611-C621	
AMD EPYC3000	AMD	-	SO630	
12th Gen Intel® Core™	Workstation	R680E	ADS630-R680E	P26
	Desktop	Q670E	ADS630-Q670E	
10th Gen Intel® Core™	Workstation	W480E	CMS632-W480E, CMS630-W480E	P27
		Q470E	CMS631-Q470E, CMS630-Q470E, CMS632-Q470E	
		H420E	CMS631-H420E	
8th/9th Gen Intel® Core™	Desktop	C246	CS650-C246, CS631-C246, CS632-C246	P28
		Q370	CS650-Q370, CS632-Q370, CS631-Q370, CS630-Q370	
		H310	CS620-H310, CS630-H310	P29
6th/7th Gen Intel® Core™	Workstation	C236	KD632-C236, KD631-C236, SD631-C236	
		Q170	KD632-Q170, KD631-Q170, KD600-Q170, SD631-Q170	
		H110	KD600-H110, KD630-H110	P31
	Desktop		SD630-H110	P32

Peripherals



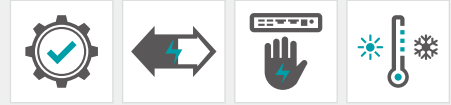
M.2-COM4

	Model	Index
Proprietary I/O Cards	EXT-100GbE, SEM-2500/2510	P34
Riser Cards	H300-2E, H300-2P1E, H300-3P1M, RISER-2PE4, RISER-PE16, X100-2P1M, X100-3PE2, T100-2E, T200-1E	
DC to DC Converters	X102-DC12, X102-DC24, X102-DC30, X103-DC36	
Gaming I/O Board	GM901	
Proprietary Expansion Modules	EXT-DP, SDVO-LVDS, MPE-CAN2	P35
	EXT-RS232, EXT-RS485, MPE-EXTB, MPE-EXTF, MPE-SATA, MPE-SIM2	
M.2 Expansion Modules	M.2-1LAN/2LAN, M.2-1PSE/2PSE, MPE-M2M/M2E, M.2-COM4, M.2-SATA2, M.2-USB314	

DFI Industrial Chassis

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, I²C, Brightness Control, GPIO, Watchdog)
- Remote management utility



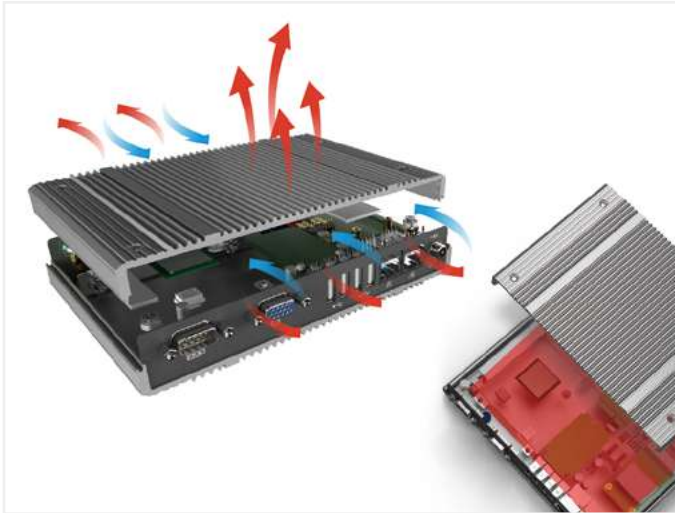
Embedded Total Solution

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



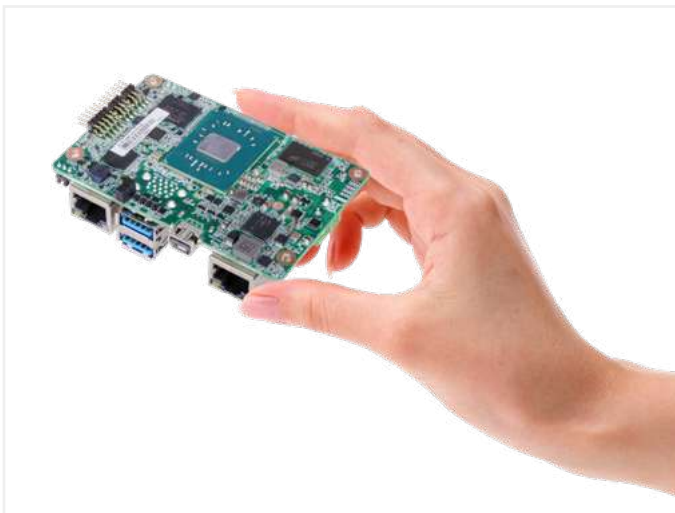
We Provides a Total Solution Designed for Your Embedded Applications





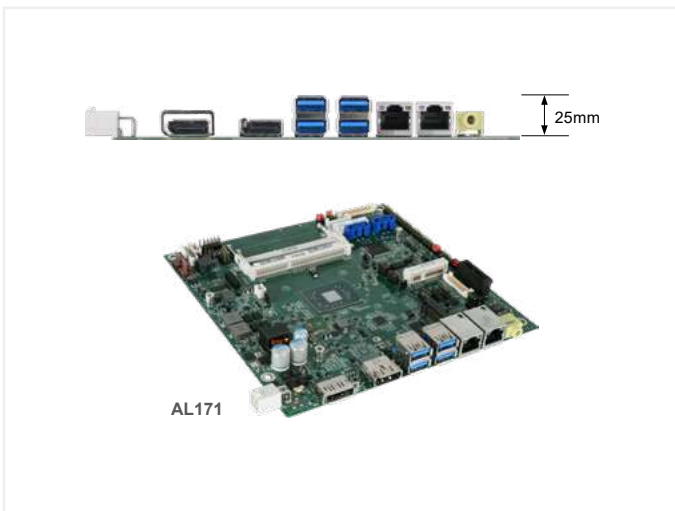
Easy System Integration

- 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

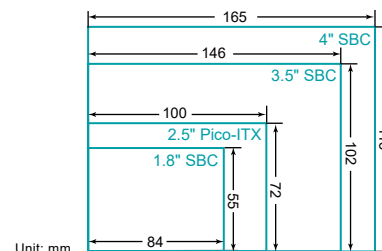
Embedded SBCs

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"



AMD

1.8"



Atom

Model Name		GHF51	ALF51
Platform		AMD R-Series	Atom
System	Processor	AMD® Ryzen™ Embedded R1000 Series	Intel Atom® E3900
	Socket	FP5	BGA 1296
	Max. Speed	up to 3.6GHz(Turbo)	1.3~1.8GHz
	TDP	up to 12W	6W~9.5W
	Cache	2MB	2MB
	Chipset	N/A	-
Memory	BIOS	AMI SPI 64Mbit	Insyde SPI 128Mbit
	Technology	up to DDR4 2400 MHz	Single Channel LPDDR4 2400MHz
	Max. Capacity	8GB	4GB
Graphics	Socket	-	-
	Connector	AMD Vega GPU with up to 3 computing units.	1 Mini DP++
Expansion	PCIe, PCI	-	-
	Mini PCIe/M.2	1 Full-size Mini PCIe	1 Mini PCIe
	SIM	-	-
Audio	Audio Codec	-	-
Ethernet	Controller	1 x Intel® I211AT PCIe (10/100/1000Mbps) / 1 x Intel® I210IT PCIe (10/100/1000Mbps)	2 Intel® I211AT, 2 Intel® I210IT
	Ethernet (GbE)	1	2
Rear I/O	Serial	-	-
	USB	1 USB 3.2 Gen 2 (Type C)	2 USB 3.2 Gen1
	Display	2 Micro HDMI, HDMI 1.4	1 Mini DP++
	Audio	-	-
	PS/2	-	-
	Serial	-	1 RS-232/422/485
Internal I/O	USB	-	1 USB 2.0
	Display	-	-
	Audio	-	-
	SATA	-	-
	DIO	8-bit DIO	8-bit DIO
	LPC	-	-
SMBus	1	1	
TPM / iAMT		fTPM 2.0	fTPM 2.0
Power		12 VDC	12V DC
Operating Temperature		0~60°C / -20~70°C	0~60°C / -20~70°C / -40~85°C

2.5"



ULT

2.5"



ULT

2.5"



ARM

Model Name		WL051	WL053	M8M051
Platform		ULT	ULT	i.MX 8M
System	Processor	8th Gen Intel® Core™	8th Gen Intel® Core™	NXP i.MX 8M Quad/Dual Cortex-A53
	Socket	BGA1528	BGA1528	-
	Max. Speed	2.0~4.4GHz	1.7~4.0GHz	Up to 1.5GHz
	TDP	15W	15W	-
	Cache	2M~8M	2M~8M	-
	Chipset	-	-	-
BIOS		AMI SPI 128Mbit	AMI SPI 128Mbit	-
Memory	Technology	Single Channel DDR4 up to 2400MHz	Single Channel DDR4 up to 2400MHz	Single Channel LPDDR4 up to 3200 MHz
	Max. Capacity	32GB	32GB	2GB/4GB Memory Down
	Socket	1 SODIMM	1 SODIMM	-
Graphics	Connector	1 DP++/HDMI, 1 eDP	1 DP++/HDMI	1 x HDMI/LVDS
Expansion	PCIe, PCI	-	-	-
	Mini PCIe/M.2	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	1 M.2 B key 3042/2242
SIM	SIM	-	-	1 Nano SIM
	Audio Codec	Realtek ALC262	-	SGTL5000
Ethernet	Controller	1 Intel® I219V/LM, 1 Intel® I211AT/I210IT	1 Intel® I219V/I219LM	1 Atheros AR8035 Ethernet
Rear I/O	Ethernet (GbE)	2	1	1
	Serial	-	-	1 RS485
	USB	2 USB 3.2 Gen2	2 USB 3.2 Gen2	1 Micro USB 2.0, 2 USB 3.2 Gen1
	Display	1 COMBO port (DP++/HDMI)	1 COMBO port (DP++/HDMI)	1 HDMI
	Audio	-	-	-
	PS/2	-	-	-
Internal I/O	Serial	1 RS-232/422/485	1 RS-232/422/485	1 RS-232/422/485, 1 RS232
	USB	2 USB 2.0	2 USB 2.0	2 USB 2.0
	Display	1 eDP	-	1 LVDS
	Audio	1 Audio (Line-out, Mic-in)	-	1 Audio (Line-out, Mic-in)
	SATA	-	-	1 eMMC up to 64GB
	DIO	8-bit DIO	8-bit DIO	8-bit DIO
	LPC	-	-	-
SMBus	1	1	1 CANBus 2.0	
TPM / iAMT	ftPM 2.0	ftPM 2.0	-	
Power	12V DC-in	9-36V DC-in	12V DC-in	
Operating Temperature	-5~65°C / -30~80°C	-5~65°C / -30~80°C	-5~65°C / -30~80°C	

2.5"



Atom

2.5"



Atom

2.5"



Atom

Model Name		AL05P	AL053	AL051
Platform		Atom	Atom	Atom
System	Processor	Intel Atom® E3900	Intel Atom® E3900	Intel Atom® E3900
	Socket	BGA 1296	BGA 1296	BGA 1296
	Max. Speed	1.1~1.6GHz	1.1~1.6GHz	1.1~1.6GHz
	TDP	6~9.5W	6~12W	6~12W
	Cache	2M	2M	2M
	Chipset	-	-	-
BIOS		Insyde SPI 128Mbit (supports UEFI boot only)	Insyde SPI 128Mbit (supports UEFI boot only)	Insyde SPI 64Mbit
Memory	Technology	Single Channel LPDDR4 2400MHz	Single Channel DDR3L 1866MHz	Single Channel DDR3L 1866MHz
	Max. Capacity	4GB	8GB	8GB
	Socket	-	1 SODIMM	1 SODIMM
Graphics	Connector	1 Mini DP++	1 Mini DP++, 1 LVDS	1 Mini DP++, 1 VGA, 1 LVDS
Expansion	PCIe, PCI	-	-	-
	Mini PCIe/M.2	1 Mini PCIe	1 Mini PCIe, 1 M.2 B key	1 Mini PCIe, 1 M.2 B key
SIM	SIM	-	-	-
	Audio Codec	-	Realtek ALC262	Realtek ALC262
Ethernet	Controller	1 Intel® I211AT, 1 Intel® I210IT	1 Intel® I211AT, 1 Intel® I210IT	2 Intel® I211AT, 2 Intel® I210IT
Rear I/O	Ethernet (GbE)	1	1	2
	Serial	-	-	-
	USB	2 USB 3.2 Gen1	2 USB 3.2 Gen1	2 USB 3.2 Gen1
	Display	1 Mini DP++	1 Mini DP++	1 Mini DP++, 1 VGA, 1 LVDS
	Audio	-	-	-
	PS/2	-	-	-
Internal I/O	Serial	1 RS-232/422/485	1 RS-232/422/485	1 RS-232/422/485
	USB	2 USB 2.0	2 USB 2.0	2 USB 2.0
	Display	-	1 LVDS, 1 LCD Power	1 LVDS
	Audio	-	1 Audio (Line-out, Mic-in)	1 Audio (Line-out, Mic-in)
	SATA	-	-	1 SATA 3.0
	DIO	8-bit DIO	8-bit DIO	8-bit DIO
	LPC	-	-	-
SMBus	1	1	1	
TPM / iAMT	ftPM 2.0	ftPM 2.0	ftPM 2.0	
Power	48VDC PoE	9-36V DC	12V DC	
Operating Temperature	0~60°C / -20~70°C	0~60°C / -20~70°C / -40~85°C	0~60°C / -40~85°C	

2.5"



Atom

2.5"



ARM

Model Name	BW051		FS053	
Platform	Atom		ARM	
System	Processor	Intel® Pentium®/Celeron® N3000	Freescale i.MX6 Series	
	Socket	BGA 1170	-	
	Max. Speed	1.04~2.56GHz	1.0GHz	
	TDP	4W/5W/6W	-	
	Cache	2M	-	
	Chipset	-	-	
Memory	BIOS	Insyde SPI 64Mbit	4MB NOR Flash	
	Technology	Single Channel DDR3L 1600MHz	Single Channel DDR3L 1600/1866MHz	
	Max. Capacity	8GB	1GB/2GB	
Graphics	Socket	1 SODIMM	SDRAM Memory down	
	Connector	1 VGA*/HDMI, 1 LVDS	1 HDMI, 1 LVDS	
Expansion	PCIe, PCI	-	-	
	Mini PCIe/M.2	1 Mini PCIe, 1 mSATA, 1 E I/O(Opt.)	1 Mini PCIe	
Audio	SIM	-	1 SD	
Ethernet	Audio Codec	Realtek ALC888	-	
Rear I/O	Controller	1 Intel® I211	1 ATHEROS AR8033, 1 LAN7500	
	Ethernet (GbE)	1	2	
	Serial	-	1 RS-485	
	USB	2 USB 3.2 Gen1	2 USB 2.0	
	Display	1 VGA*/HDMI	1 HDMI	
	Audio	-	-	
Internal I/O	PS/2	-	-	
	Serial	1 RS-232/422/485, 1 RS-232	1 x RS-232, 1 RS-232/422/485	
	USB	2 USB 2.0	2 USB 2.0	
	Display	1 LVDS	1 LVDS	
	Audio	Line-out, Mic-in	-	
	SATA	1 SATA 3.0	1 SATA 2.0(Quad processor only)	
	DIO	8-bit DIO	8-bit DIO	
	LPC	-	-	
SMBus	1	-		
TPM / iAMT	TPM (Opt.)	-		
Power	12V DC-in	9~36V DC-in		
Operating Temperature	0~60°C	0~60°C / -20~70°C (Opt.)		

3.5"

C246
Q370
H310

3.5"



ULT

3.5"



ULT

3.5"



ULT

Model Name	CS551	WL551	KU551	KU553
Platform	Desktop	ULT	ULT	ULT
System	Processor	8th/9th Gen Intel® Core™	8th Gen Intel® Core™	7th Gen Intel® Core™
	Socket	LGA 1151	BGA1528	BGA 1356
	Max. Speed	2.1~4.0GHz	1.7~4.0GHz	2.2~3.9GHz
	TDP	35W/25W	15W	15W
	Cache	2M/4M/6M/9M/12M	2M~8M	2M/3M/4M
	Chipset	Intel® Q370/C246/H310	-	-
Memory	BIOS	AMI SPI 128Mbit	AMI SPI 128Mbit	Insyde SPI 128Mbit
	Technology	Single Channel DDR4 2666MHz	Single Channel DDR4 up to 2400MHz	Single Channel DDR4 1866/2133MHz
	Max. Capacity	32GB	32GB	16GB
Graphics	Socket	1 SODIMM	1 SODIMM	1 SODIMM
	Connector	2 DP++, 1 LVDS	1 DP++/HDMI, 1 LVDS/eDP (Opt.)	1 VGA/DDI, 1 LVDS/eDP, 1 DP++/DDI
Expansion	PCIe, PCI	-	-	-
	Mini PCIe/M.2	1 Full size Mini PCIe, 1 M.2 M key 2280	1 M.2 M key 2280/2242 (support Innodisk InnoAge™ SSD), 1 M.2 E key 2230, 1 M.2 B key 3042/2242	1 Mini PCIe, 1 M.2 B key, 1 E I/O(Opt.)
Audio	SIM	1(Opt.)	-	1(Opt.)
Ethernet	Audio Codec	Realtek ALC262	Realtek ALC262	Realtek ALC888
Rear I/O	Controller	1 Intel® I211AT, 1 Intel® I210IT	3 Intel® I211AT/Intel® I210IT	1 Intel® I210AT, 1 Intel® I219LM
	Ethernet (GbE)	2	3	2
	Serial	-	-	-
	USB	4 USB 3.2 Gen2	4 USB 3.2 Gen2	4 USB 3.2 Gen1
	Display	2 DP++	1 COMBO port (DP++/HDMI)	1 VGA, 1 DP++
	Audio	-	-	-
Internal I/O	PS/2	-	-	-
	Serial	1 RS-232/422/485	1 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	1 LVDS/eDP	1 LVDS
	Audio	1 Audio (Line-out, Mic-in)	1 Audio (Line-out, Mic-in)	1 Audio (Line-out, Mic-in)
	SATA	1 SATA 3.0	1 SATA 3.0	1 SATA 3.0, 1 SATA Power
	DIO	8-bit DIO	8-bit DIO	8-bit DIO
	LPC	-	-	-
SMBus	1	1	1	
TPM / iAMT	fTPM 2.0	fTPM 2.0 (default)/dTPM2.0 (Opt.)	fTPM, TPM2.0	fTPM2.0
Power	12V DC-in	12V DC-in	12V DC-in	9~36V DC-in
Operating Temperature	-5~65°C / -30~80°C	-5~65°C / -20 ~ 80°C	0~60°C / -20~70°C (Opt.)	0~60°C / -20~70°C (Opt.)

3.5"



ULT

3.5"



AMD

3.5"



ARM

Model Name	SU551	GH551	M8MP553	
Platform	ULT	AMD R-Series	ARM	
System	Processor	6th Gen Intel® Core™	AMD® Ryzen™ Embedded V1000/ R1000 Series	NXP i.MX 8M Plus Quad/Dual Cortex-A53
	Socket	BGA 1356	FP5	-
	Max. Speed	2.0~3.4GHz	up to 3.6GHz(Turbo)	Up to 1.8GHz
	TDP	15W	up to 15W	-
	Cache	2M/3M/4M	4MB	512 KB L2 cache
	Chipset	-	-	-
Memory	BIOS	Insyde SPI 128Mbit	AMI SPI 64Mbit	-
	Technology	Single Channel DDR3L 1600MHz	up to DDR4 2400 MHz	Single Channel LPDDR4 up to 3733 MHz
	Max. Capacity	8GB	16GB	2GB/4GB Memory Down
Graphics	Socket	1 SODIMM	1 SODIMM	-
	Connector	1 VGA, 1 LVDS, 1 DP++	-	1 HDMI/LVDS
Expansion	PCIe, PCI	-	-	-
	Mini PCIe/M.2	2 Mini PCIe	1 Full-size Mini PCIe, 1 M.2 M key	1 M.2 B key 3042/2242(USB3/2)
Audio	SIM	1(Opt.)	1 Nano SIM (Opt.)	1 Nano SIM
	Audio Codec	Realtek ALC888	Realtek ALC262	SGTL5000
Ethernet	Controller	1 Intel® I210, 1 Intel® I219	3 Intel® I211AT	2 Atheros AR8035 Ethernet
	Ethernet (GbE)	2	3	2
Rear I/O	Serial	-	-	1 RS485
	USB	4 USB 3.2 Gen1	2 USB 3.2 Gen2, 1 USB 2.0	2 USB 3.2 Gen1, 2 USB 2.0
	Display	1 VGA, 1 DP++	4 DP++	1 HDMI
	Audio	-	-	-
	PS/2	-	-	-
	Serial	2 RS-232/422/485, 2 RS-232	1 x RS-232/422/485 (2.0mm pitch)	1 RS-232/422/485, 1 RS232
Internal I/O	USB	2 USB 2.0	1 USB2.0	2 USB 2.0, 1 micro USB 2.0 (down load mode)
	Display	1 LVDS	1 LVDS (optional)	1 LVDS and Backlight PW
	Audio	Line-out, Mic-in	Line-out, Mic-in, Speaker out	1 Audio (Line-out, Mic-in)
	SATA	2 SATA 3.0	1 SATA3, 1 SATA Power	1 eMMC5.1 up to 64GB, 1 SD card
	DIO	8-bit DIO	8-bit DIO	8-bit DIO
	LPC	-	-	1 I2C
	SMBus	1	1	1 CANBus 2.0
TPM / iAMT	only Core i7/i5 supports iAMT)	fTPM 2.0 (default)/dTPM2.0 (Opt.)	-	
Power	12V DC-in	12 VDC	9~36V DC-in	
Operating Temperature	0~60°C	-5~65°C / -30 ~ 80°C	-5~65°C / -30~80°C	

3.5"



Atom

3.5"



Atom

3.5"



Atom

3.5"



Atom

Model Name	AL553	AL551	BW551	BT553	
Platform	Atom	Atom	Atom	Atom	
System	Processor	Intel Atom® E3900	Intel Atom® E3900	Intel® Pentium®/Celeron® N3000	Intel Atom® E3800
	Socket	BGA 1296	BGA 1296	BGA 1170	BGA 1170
	Max. Speed	1.1~2.5GHz	1.1~2.5GHz	2.24~2.56GHz	1.46~2.42GHz
	TDP	6.5W/9.5W/12W	6.5W/9.5W/12W	4W/5W/6W	5W/7W/10W
	Cache	2M	2M	2M	0.5M/1M/2M
	Chipset	-	-	-	-
Memory	BIOS	Insyde SPI 128Mbit	Insyde SPI 128Mbit	Insyde SPI 64Mbit	Insyde SPI 64Mbit
	Technology	Single Channel DDR3L 1866MHz	Single Channel DDR3L 1866MHz	Single Channel DDR3L 1600MHz	Dual Channel DDR3L 1066/1333MHz
	Max. Capacity	8GB	8GB	8GB	2GB/4GB
Graphics	Socket	1 SODIMM	1 SODIMM	1 SODIMM	Memory down
	Connector	1 VGA, 1 LVDS, HDMI	1 VGA, 1 LVDS, 1 DP++	1 VGA, 1 LVDS, 1 DP++	1 VGA, 1 LVDS, 1 DP
Expansion	PCIe, PCI	-	-	-	-
	Mini PCIe/M.2	1 Mini PCIe, 2 M.2 (M key, B key)	1 Mini PCIe, 1 M.2 B key, 1 E I/O(Opt.)	1 Mini PCIe, 1 mSATA	1 Mini PCIe
Audio	SIM	-	-	1(Opt.)	-
	Audio Codec	Realtek ALC262	Realtek ALC262	Realtek ALC888	Realtek ALC888
Ethernet	Controller	2 Intel® I211AT, 2 Intel® I210IT	2 Intel® I211AT, 2 Intel® I210IT	2 Intel® I211	2 Intel® I210
	Ethernet (GbE)	2	2	2	2
Rear I/O	Serial	-	-	-	-
	USB	2 USB 3.2 Gen1, 2 USB 2.0	2 USB 3.2 Gen1, 2 USB 2.0, 1 USB Gen1 Type C OTG (Opt.)	4 USB 3.2	1 USB 3.2 Gen1, 1 USB 2.0
	Display	1 VGA, 1 LVDS, HDMI	1 VGA, 1 DP++, 1 LVDS	1 VGA, 1 DP++	1 VGA, 1 DP
	Audio	-	-	-	-
	PS/2	-	-	-	-
	Serial	1 RS-232/422/485	2 RS-232/422/485	2 RS-232/422/485, 2 RS-232	1 RS-485, 2 RS-232
Internal I/O	USB	2 USB 2.0	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	1 LVDS
	Audio	Audio (Line-out, Mic-in)	Audio (Line-out, Mic-in), Speaker Out(Opt.)	Line-out, Mic-in	Line-out, Mic-in
	SATA	1 SATA 3.0, 1 SATA Power	1 SATA 3.0, 1 SATA Power	1 SATA 3.0	1 SATA 2.0
	DIO	8-bit DIO	8-bit DIO	8-bit DIO	8-bit DIO
	LPC	-	-	-	-
	SMBus	1	1	1	1
TPM / iAMT	fTPM2.0	fTPM2.0*/dTPM 2.0(Opt.)	TPM (Opt.)	TPM (Opt.)	
Power	9~36V DC-in	12V DC-in	12V DC-in	15~36V (BT553)	
Operating Temperature	0~60°C / -20~70°C / -40~85°C	0~60°C / -20~70°C / -40~85°C	0~60°C	0~60°C / -20~70°C / -40~85°C	

*Populated by default



Model Name		ADP253	SU251/SU253	SU256-SCM
Platform		ULT	ULT	ULT
System	Processor	12th Gen Intel® Core™	6th Gen Intel® Core™	6th Gen Intel® Core™
	Socket	BGA 1744	BGA 1356	BGA 1356
	Max. Speed	4.4~4.7GHz	2.0~3.4GHz	2.3~3.9GHz
	TDP	15W	15W	15W
	Cache	up to 12M	2M/3M/4M	3M/4M
	Chipset	-	-	-
BIOS		AMI SPI 256Mbit	Insyde SPI 128Mbit	Insyde SPI 128Mbit
Memory	Technology	Dual Channel DDR4	Dual Channel DDR4 2133MHz	Dual Channel DDR4 2400MHz
	Max. Capacity	8G DDR4 memory onboard	4GB/8GB	4GB/8GB
	Socket	1 SODIMM	Memory down	Memory down
Graphics		Connector 1 HDMI, 1 VGA/DP(Opt.), 2 Type-C Alt. Mode	1 VGA, 1 LVDS*/eDP, 1 DP+*/HDMI	1 HDMI
Expansion		PCIe, PCI	-	-
Mini PCIe/M.2	Mini PCIe/M.2	1 M.2 E key 2230 1 M.2 B key 3052/3042 1 M.2 M key 2280	2 Mini PCIe	1 Mini PCIe
	SIM	1	-	-
	SIM	1	-	-
Audio		Audio Codec Realtek ALC888	Realtek ALC888	-
Ethernet		Controller 3 Intel® I225LM/I225IT(Opt.) 2 Intel® I211AT/I210IT	1 Intel® I210, 1 Intel® I219	3 Intel® I210, 1 Intel® I219
Rear I/O	Ethernet (GbE)	1 x 2.5GbE, 2 GbE	2	4
	Serial	2 RS-232/422/485 2 RS-232	2 RS-232/422/485 (Front), 2 RS-232 (1 Front, 1 Rear)	-
	USB	Up to 4 USB 3.2 Gen2	4 USB 3.2 Gen1 (Rear)	4 USB 3.2
	Display	1 HDMI, 1 VGA/DP(Opt.), 2 Type-C Alt. Mode	1 VGA (Front), 1 DP+*/HDMI(Rear)	1 HDMI
	Audio	1 Audio (Line-out, Mic-in)	-	-
	PS/2	-	-	-
	PS/2	-	-	-
Internal I/O	Serial	2 RS-232	2 RS-232	-
	USB	2 USB 2.0	2 USB 2.0	2 USB 3.2
	Display	-	1 LVDS	-
	Audio	Front Audio	Front Audio	-
	SATA	1 SATA 3.0	2 SATA 3.0	1 mSATA, 1 SATA 3.0
	DIO	Opt. 8-bit DIO via DB9	8-bit DIO	-
	LPC	-	-	1
SMBus		-	1	1
TPM / iAMT		dTPM 2.0 (Default)	-	TPM 2.0 (option)
Power		9~36V DC-in	12V/15~36V DC-in	Wide Range 15~36V
Operating Temperature		-5~65°C / -30~80°C	0~60°C	-20 ~ 70°C



Model Name		AL253	BT253	BT259
Platform		Atom	Atom	Atom
System	Processor	Intel Atom® E3900	Intel Atom® E3800	Intel Atom® E3800
	Socket	BGA1296	BGA 1170	BGA 1170
	Max. Speed	1.8~2.5GHz	1.33~2.41GHz	1.91GHz~2.41GHz
	TDP	6W/9.5W/12W	4.3W/6W/10W	10W
	Cache	2M	1M/2M	2M
	Chipset	-	-	-
BIOS		AMI SPI 128Mbit	AMI SPI 64Mbit	AMI SPI 64Mbit
Memory	Technology	Single Channel DDR3L	Single Channel DDR3L 1066/1333MHz	Single Channel DDR3L 1333MHz
	Max. Capacity	2G/4G/8G DDR3L memory onboard	2GB/4GB	2GB/4GB
	Socket	1 SODIMM	Memory down (ECC/non-ECC)	Memory down
Graphics		Connector 1 DP+*/HDMI, 1 VGA/DP	1 LVDS, 1 VGA*/DVI , 1 HDMI	1 VGA, 1 DVI-I (Opt.)
Expansion		PCIe, PCI	1 Mini PCIe, 1 mSATA	-
Mini PCIe/M.2	Mini PCIe/M.2	1 M.2 E key 2230	2 Mini PCIe, 1 mSATA	2 Mini PCIe
	SIM	1 (Opt.)	1	-
	SIM	1 (Opt.)	1	-
Audio		Audio Codec Realtek ALC262-VC2-GR	Realtek ALC888	-
Ethernet		Controller 4 Intel® I211AT/I210IT	2 Intel® I210	4 Intel® I210
Rear I/O	Ethernet (GbE)	Up to 4	2	4
	Serial	4 RS-232/422/485	4 RS-232/422/485 (3 Front, 1 Rear)	3 RS232/422/485
	USB	Up to 4 USB 3.2	1 USB 3.2 Gen1 (Front), 4 USB 2.0 (Rear)	4 USB 2.0, 1 USB 3.2 Gen1
	Display	1 COMBO port (DP+*/HDMI), 1 VGA/DP	1 HDMI (Front), 1 VGA* / 1 DVI (Rear)	1 VGA, 1 DVI-I (Opt.)
	Audio	-	Line-out (Opt.) (Rear)	-
	Serial	-	2 RS-232	-
	Serial	-	2 RS-232	-
Internal I/O	USB	2 USB 2.0	1 USB 2.0	1 USB 2.0
	Display	-	1 LVDS	-
	Audio	-	Mic-in	-
	SATA	1 SATA 3.0, 1 8G/16G/32G/64G (Opt.)	1 SATA 2.0	1 SATA 2.0, 1 SATA Power
	DIO	8-bit DIO	-	8-bit DIO
	LPC	-	-	1
SMBus		1	-	1
TPM / iAMT		fTPM 2.0	TPM (Opt.)	TPM (Opt.)
Power		9~36V DC-in	16~24V DC-in	16~24VDC-in
Operating Temperature		0~60°C / -40~85°C	-20~85°C / 0~85°C / 0~60°C	0~60°C

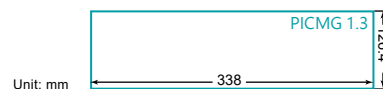
PICMG 1.3

Multiple I/O & Easy Expandable Solutions



Features

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



6th/7th Gen
Intel Core

PICMG
1.3



H110
Q170

Model Name		PIC-Q170/H110
Platform		Desktop
System	Processor	6th/7th Gen Intel® Core™
	Socket	LGA 1151
	Max. Speed	2.4~4.0GHz
	TDP	65W
	Cache	2~8M
	Chipset	Intel® Q170/H110
Memory	BIOS	Insyde SPI 128Mbit
	Technology	Dual Channel DDR4 1866/2133MHz
	Max. Capacity	32GB
Graphics	Socket	2 SODIMM
	Connector	1 VGA, 1 DVI-D
Expansion	PCIe, PCI	1 PCIe x16 (Gen3), 4 PCIe x1 (Gen3), 4 PCI
	Mini PCIe/M.2	1 M.2 M key 2280 (Q170 only)
Audio	SIM	-
Ethernet	Audio Codec	-
	Controller	Q170: 1 Intel® I211AT, 1 Intel® I219LM H110: 1 Intel® I211AT, 1 Intel® I219V
Rear I/O	Ethernet	2
	Ethernet (GbE)	-
	Serial	-
	USB	2 USB 3.2 Gen1
	Display	1 VGA, 1 DVI-D
	Audio	-
Internal I/O	PS/2	-
	Serial	2 RS-232/422/485, 2 RS-232
	USB	2 USB 3.2 Gen1, 6 USB 2.0
	Display	-
	Audio	-
	SATA	4 SATA 3.0 (RAID)
	DIO	8-bit DIO
	LPC	1
SMBus	1	
TPM / iAMT		TPM 2.0 (Opt.)
Power		24-pin ATX
Operating Temperature		0~60°C

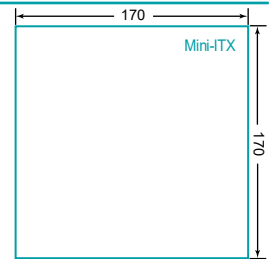
Mini-ITX

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

Unit: mm

12th Gen Intel Core



R680E



Q670E



H610E

Model Name		ADS101/ADS103-R680E	ADS101/ADS103-Q670E	ADS101/ADS103-H610E
Platform		Workstation	Desktop	Desktop
System	Processor	12th Gen Intel® Core™	12th Gen Intel® Core™	12th Gen Intel® Core™
	Socket	LGA 1700	LGA 1700	LGA 1700
	Max. Speed	-	-	-
	TDP	65W	65W	65W
	Cache	4M~25M	4M~25M	4M~25M
	Chipset	Intel® R680E	Intel® Q670E	Intel® H610E
Memory	BIOS	AMI SPI 256Mbit	AMI SPI 256Mbit	AMI SPI 256Mbit
	Technology	Dual Channel DDR4 3200MHz (ECC supported by selected SKU)	Dual Channel DDR4 3200MHz	Dual Channel DDR4 3200MHz
	Max. Capacity	64GB	64GB	64GB
Graphics	Socket	2 SODIMM	2 SODIMM	2 SODIMM
	Connector	1 LVDS/eDP, 2 DP++, 1 DFI EXT-Display Port	1 LVDS/eDP, 2 DP++, 1 DFI EXT-Display Port	1 LVDS/eDP, 2 DP++, 1 DFI EXT-Display Port
	PCIe/PCI	1 PCIe x16 (Gen5)	1 PCIe x16 (Gen5)	1 PCIe x16 (Gen5)
	M.2/Mini PCIe	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
Audio	SIM	1 Nano SIM	1 Nano SIM	
Ethernet(GbE)	Audio Codec	Realtek ALC888	Realtek ALC888	Realtek ALC888
	Controller	1 Intel® I225, 1 Intel® I210, 1 Intel® I219	1 Intel® I225, 1 Intel® I210, 1 Intel® I219	1 Intel® I225, 1 Intel® I210, 1 Intel® I219
Rear I/O	Ethernet(GbE)	Up to 3 LAN	Up to 3 LAN	3 LAN
	Serial	-	-	-
	USB	UP to 6 USB 3.2 Gen2	UP to 6 USB 3.2 Gen2	3 USB 3.2 Gen2, 1 USB 2.0
	Display	1 DP++, 1 DP++/HDMI	1 DP++, 1 DP++/HDMI	1 DP++, 1 DP++/HDMI
	Audio	-	-	-
Internal I/O	Serial	2 RS232/422/485	2 RS232/422/485	2 RS232/422/485
	USB	Up to 2 USB 3.2 Gen 2, Up to 6 USB 2.0	Up to 2 USB 3.2 Gen 2, Up to 6 USB 2.0	4 USB 2.0
	Display	1 LVDS/eDP, 1 DFI EXT-Display Port	1 LVDS/eDP, 1 DFI EXT-Display Port	1 LVDS/eDP, 1 DFI EXT-Display Port
	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, (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**	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	12V/15~36V DC In	12V/15~36V DC In	12V/15~36V DC In	
Operating Temperature	-5~65°C	-5~65°C	-5~65°C	

11th/10th Gen Intel Core



ULT



W480E



W480E



Q470E

Model Name		TGU171/TGU173	CMS101/CMS103-W480E	CMS100-W480E	CMS100-Q470E
Platform		ULT	Workstation	Workstation	Desktop
System	Processor	11th Gen Intel® Core™	10th Gen Intel® Core™	10th Gen Intel® Core™	10th Gen Intel® Core™
	Socket	BGA1499	LGA1200	LGA1200	LGA1200
	Max. Speed	1.5~4.4GHz	up to 4.7GHz	up to 4.7GHz	up to 4.7GHz
	TDP	12W~28W	65W	125W	125W
	Cache	4M~12M	-	-	-
	Chipset	-	Intel® W480E	Intel® W480E	Intel® Q470E
Memory	BIOS	AMI SPI 256Mbit	AMI SPI 256Mbit	AMI SPI 256Mbit	AMI SPI 256Mbit
	Technology	Dual Channel DDR4 3200MHz	Dual Channel DDR4 2933MHz (ECC supported by selected SKU)	Dual Channel DDR4 2933MHz (ECC supported by selected SKU)	Dual Channel DDR4 2933MHz
	Max. Capacity	64GB	64GB	64GB	64GB
Graphics	Socket	2 SODIMM	2 SODIMM	2 SODIMM	2 SODIMM
	Connector	1 LVDS, 1 eDP, 1 DP++, 1 HDMI, 1 USB Type C	1 LVDS/eDP, 2 DP++	1 LVDS/eDP, 1 DP++/HDMI, 1 DVI-I (DVI-D Signal)	1 LVDS/eDP, 1 DP++/HDMI, 1 DVI-I (DVI-D Signal)
Expansion	PCIe/PCI	1 PCIe x4 (Gen3)	1 PCIe x16 (Gen3)	1 PCIe x16 (Gen3)	1 PCIe x16 (Gen3)
	M.2/Mini PCIe	1 M.2 M key 2242/2280, 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, 1 M.2 E key 2230	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	1 Nano SIM
Audio	Audio Codec	Realtek ALC888	Realtek ALC888	Realtek ALC888	Realtek ALC888
Ethernet(GbE)	Controller	1 Intel® I225, 2 Intel® I210/I211	1 Intel® I225, 1 Intel® I211, 1 Intel® I219	1 Intel® I225, 1 Intel® I219	1 Intel® I225, 1 Intel® I219
Rear I/O	Ethernet(GbE)	3 LAN	3 LAN	2 LAN	2 LAN
	Serial	-	-	2 RS232/422/485	2 RS232/422/485
	USB	4 USB 3.2 Gen2, 1 USB Type C	4 USB 3.2 Gen2	6 USB 3.2 Gen2	6 USB 3.2 Gen2
	Display	1 DP++, 1 DP++/HDMI	2 DP++	1 DP++, 1 DP++/HDMI, 1 DVI-I	1 DP++, 1 DP++/HDMI, 1 DVI-I
	Audio	-	-	-	-
Internal I/O	Serial	2 RS232/422/485, 2 RS232	2 RS232/422/485, 2 RS232	2 RS232/422/485	2 RS232/422/485
	USB	4 USB 2.0	4 USB 2.0	4 USB 2.0	4 USB 2.0
	Display	1 LVDS/eDP	1 LVDS/eDP	1 LVDS/eDP	1 LVDS/eDP
	Audio	1 Front Audio	1 Front Audio	1 Front Audio	1 Front Audio
	Storage	2 SATA 3.0 (RAID 0/1)	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**	1	1	1	1
SMBus	1	1	1	1	
TPM/iAMT		dTPM 2.0	dTPM 2.0 (Opt.), iAMT 12.0 (Core i7 & i5 only)	dTPM 2.0 (Opt.), iAMT 12.0 (Core i7 & i5 only)	
Power		12V/15~36V DC In	12V/15~36V DC In	ATX	
Operating Temperature		-20~70°C	-5 ~ 65°C	-5 ~ 65°C	

10th Gen Intel Core



H420E



H420E

Model Name		CMS101/CMS103-H420E	CMS100-H420E
Platform		Desktop	Desktop
System	Processor	10th Gen Intel® Core™	10th Gen Intel® Core™
	Socket	LGA1200	LGA1200
	Max. Speed	up to 4.7GHz	up to 4.7GHz
	TDP	65W	125W
	Cache	-	-
	Chipset	Intel® H420E	Intel® H420E
Memory	BIOS	AMI SPI 256Mbit	AMI SPI 256Mbit
	Technology	Dual Channel DDR4 2933MHz	Dual Channel DDR4 2933MHz
	Max. Capacity	64GB	64GB
Graphics	Socket	2 SODIMM	2 SODIMM
	Connector	1 LVDS/eDP, 2 DP++	1 LVDS/eDP, 1 DP++/HDMI, 1 DVI-I (DVI-D Signal)
Expansion	PCIe/PCI	1 PCIe x16 (Gen3)	1 PCIe x16 (Gen3)
	M.2/Mini PCIe	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, 1 M.2 E key 2230
	SIM	1 Nano SIM	1 Nano SIM
Audio	Audio Codec	Realtek ALC888	Realtek ALC888
Ethernet(GbE)	Controller	1 Intel® I225, 1 Intel® I211, 1 Intel® I219	1 Intel® I225, 1 Intel® I219
Rear I/O	Ethernet(GbE)	3 LAN	2 LAN
	Serial	-	2 RS232/422/485
	USB	4 USB 3.2 Gen1	5 USB 3.2 Gen1
	Display	2 DP++	1 DP++, 1 DP++/HDMI, 1 DVI-I
	Audio	-	-
Internal I/O	Serial	2 RS232/422/485, 2 RS232	2 RS232/422/485
	USB	4 USB 2.0	4 USB 2.0
	Display	1 LVDS/eDP	1 LVDS/eDP
	Audio	1 Front Audio	1 Front Audio
	Storage	2 SATA 3.0	2 SATA 3.0
	DIO	8-bit DIO	8-bit DIO
	LPC**	1	1
SMBus	1	1	
TPM/iAMT		dTPM 2.0 (Opt.), iAMT 12.0 (Core i7 & i5 only)	dTPM 2.0 (Opt.), iAMT 12.0 (Core i7 & i5 only)
Power		12V/15~36V DC In	ATX
Operating Temperature		-5~65°C	-5~65°C

10th/9th/8th Gen Intel Core



Q470E

Thin Mini-ITX



C246

Thin Mini-ITX



C246

Thin Mini-ITX



C246

Model Name		CMS101/CMS103-Q470E	CS170-C246	CS103-C246	CS101-C246
Platform		Desktop	Workstation	Workstation	Workstation
System	Processor	10th Gen Intel® Core™	9th/8th Gen Intel® Core™	9th/8th Gen Intel® Core™	9th/8th Gen Intel® Core™
	Socket	LGA1200	LGA1200	LGA1511	LGA1511
	Max. Speed	up to 4.7GHz	up to 4.7GHz	up to 4.6GHz	up to 4.6GHz
	TDP	65W	95W	65W	80W
	Cache	-	2M~8M	-	-
	Chipset	Intel® Q470E	Intel® C246	Intel® C246	Intel® C246
	BIOS	AMI SPI 256Mbit	AMI SPI 128Mbit	AMI SPI 128Mbit	AMI SPI 128Mbit
Memory	Technology	Dual Channel DDR4 2933MHz	Dual Channel DDR4 2666MHz (ECC supported by selected SKU)	Dual Channel DDR4 2666MHz (ECC supported by selected SKU)	Dual Channel DDR4 2666MHz
	Max. Capacity	64GB	32GB / 64GB	32GB / 64GB	32GB / 64GB
	Socket	2 SODIMM	2 SODIMM	2 SODIMM	2 SODIMM
Graphics	Connector	1 LVDS/eDP, 2 DP++	1 LVDS, 2 DP++, 1 VGA	1 LVDS, 2 DP++	1 LVDS/eDP, 2 DP++, 1 HDMI
	PCIe/PCI	1 PCIe x16 (Gen3)	1 PCIe x16 (Gen3)	1 PCIe x4 (Gen3)	1 PCIe x4 (Gen3)
Expansion	M.2/Mini PCIe	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 M key 2280, 1 M.2 E key 2230	1 M.2 M key 2280, 1 M.2 E key 2230, 1 Mini PCIe
	SIM	1 Nano SIM	-	-	-
	Audio Codec	Realtek ALC888	Realtek ALC888	Realtek ALC888	Realtek ALC888/ALC887
Ethernet(GbE)	Controller	1 Intel® I225, 1 Intel® I211, 1 Intel® I219	1 Intel® I210, 1 Intel® I219	1 Intel® I211, 1 Intel® I219	1 Intel® I210, 1 Intel® I219
	Ethernet (GbE)	3 LAN	2 LAN	2 LAN	2 LAN
Rear I/O	Serial	-	2 RS232	-	-
	USB	4 USB 3.2 Gen2	2 USB 3.2 Gen2, 4 USB 3.2 Gen1	4 USB 3.2 Gen2	4 USB 3.2 Gen2
	Display	2 DP++	2 DP++, 1 VGA	2 DP++	2 DP++, 1 HDMI
	Audio	-	1 Audio Jack (Lin-out/Mic-in/Line-in)	-	-
	Serial	2 RS232/422/485, 2 RS232	-	2 RS232/422/485, 2 RS232	2 RS232/422/485, 2 RS232
Internal I/O	USB	4 USB 2.0	2 USB 2.0	4 USB 2.0	4 USB 2.0
	Display	1 LVDS/eDP	1 LVDS	1 LVDS	1 LVDS/eDP
	Audio	1 Front 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 (RAID 0/1/5) w/ M.2 M Key	2 SATA 3.0 (RAID 0/1/5) w/ M.2 M Key	2 SATA 3.0
	DIO	8-bit DIO	8-bit DIO	8-bit DIO	8-bit DIO
	LPC**	1	1	1	1
	SMBus	1	1	1	1
	TPM / iAMT	dTPM 2.0 (Opt.), iAMT 12.0 (Core i7 & i5 only)	dTPM 2.0	dTPM 2.0	dTPM 2.0, iAMT 12.0 (Core i7 & i5 only)
Power	12V/15~36V DC In	ATX	9~36V DC In	12V DC In	
Operating Temperature	-5 ~ 65°C	-5 ~ 65°C	-10~70°C	0~60°C	

8th/9th Gen Intel Core



C246

Thin Mini-ITX



Q370

Thin Mini-ITX



Q370

Thin Mini-ITX



Q370

Model Name		CS100-C246	CS170-Q370	CS181-Q370	CS103-Q370
Platform		Workstation	Desktop	Desktop	Desktop
System	Processor	9th/8th Gen Intel® Core™	9th/8th Gen Intel® Core™	9th/8th Gen Intel® Core™	9th/8th Gen Intel® Core™
	Socket	LGA1200	LGA1200	LGA1200	LGA1511
	Max. Speed	up to 4.7GHz	up to 4.7GHz	up to 4.7GHz	up to 4.6GHz
	TDP	80W	95W	65W	65W
	Cache	-	2M~8M	2M~8M	-
	Chipset	Intel® C246	Intel® Q370	Intel® Q370	Intel® Q370
	BIOS	AMI SPI 128Mbit	AMI SPI 128Mbit	AMI SPI 128Mbit	AMI SPI 128Mbit
Memory	Technology	Dual Channel DDR4 2666MHz (ECC supported by selected SKU)	Dual Channel DDR4 2666MHz (ECC supported by selected SKU)	Dual Channel DDR4 2666MHz (ECC supported by selected SKU)	Dual Channel DDR4 2666MHz
	Max. Capacity	32GB / 64GB	32GB / 64GB	32GB / 64GB	32GB / 64GB
	Socket	2 SODIMM	2 SODIMM	2 SODIMM	2 SODIMM
Graphics	Connector	1 LVDS, 2 DP++, 1 VGA	1 LVDS, 2 DP++, 1 VGA	1 eDP, 1 DP++/HDMI, 4 DP by MXM module	1 LVDS, 2 DP++
	PCIe/PCI	1 PCIe x16 (Gen3)	1 PCIe x16 (Gen3)	1 MXM Type-A/B/B+	1 PCIe x4 (Gen3)
Expansion	M.2/Mini PCIe	-	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 Codec	Realtek ALC888	Realtek ALC888	Realtek ALC888	Realtek ALC888
Ethernet(GbE)	Controller	1 Intel® I211, 1 Intel® I219	1 Intel® I210, 1 Intel® I219	1 Intel® I210, 1 Intel® I219	1 Intel® I211, 1 Intel® I219
	Ethernet (GbE)	2 LAN	2 LAN	4 LAN	2 LAN
Rear I/O	Serial	1 RS232	2 RS232	-	-
	USB	2 USB 3.2 Gen2, 2 USB 3.2 Gen1, 4 USB 2.0	2 USB 3.2 Gen2, 4 USB 3.2 Gen1	4 USB 3.2 Gen2, 2 USB 2.0	4 USB 3.2 Gen2
	Display	2 DP++, 1 VGA	2 DP++, 1 VGA	1 DP++/HDMI	2 DP++
	Audio	1 Audio Jack (Lin-out/Mic-in/Line-in(Opt.))	1 Audio Jack (Lin-out/Mic-in/Line-in)	-	-
	Serial	-	-	2 RS232/422/485	2 RS232/422/485, 2 RS232
Internal I/O	USB	4 USB 2.0	2 USB 2.0	2 USB 2.0	4 USB 2.0
	Display	1 LVDS	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 x SATA 3.0 (RAID 0/1/5) w/ M.2 M Key	2 SATA 3.0 (RAID 0/1/5) w/ M.2 M Key
	DIO	8-bit DIO	8-bit DIO	8-bit DIO	8-bit DIO
	LPC**	1	1	1	1
	SMBus	1	1	1	1
	TPM / iAMT	dTPM 2.0 (Opt.)	dTPM 2.0	dTPM 2.0	dTPM 2.0
Power	ATX	ATX	19V DC In	9~36V DC In	
Operating Temperature	0~60°C	-5~65°C	-5~65°C	-10~70°C	

*Populated by default

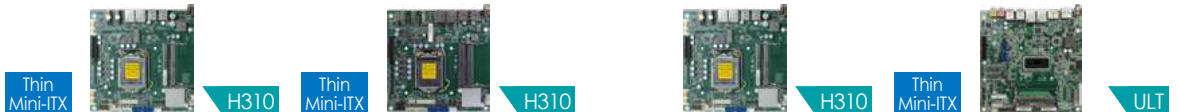
**Supports LPC EXT-RS232/RS485 module

8th/9th Gen Intel Core



Model Name		CS101-Q370	CS100-Q370	CS181-H310	CS170-H310
Platform		Desktop	Desktop	Desktop	Desktop
System	Processor	9th/8th Gen Intel® Core™	9th/8th Gen Intel® Core™	9th/8th Gen Intel® Core™	9th/8th Gen Intel® Core™
	Socket	LGA1511	LGA1200	LGA1200	LGA1200
	Max. Speed	up to 4.6GHz	up to 4.7GHz	up to 4.7GHz	up to 4.7GHz
	TDP	80W	80W	65W	95W
	Cache	-	-	2M~8M	2M~8M
	Chipset	Intel® Q370	Intel® Q370	Intel® H310	Intel® H310
	BIOS	AMI SPI 128Mbit	AMI SPI 128Mbit	AMI SPI 128Mbit	AMI SPI 128Mbit
Memory	Technology	Dual Channel DDR4 2666MHz	Dual Channel DDR4 2666MHz	Dual Channel DDR4 2666MHz (ECC supported by selected SKU)	Dual Channel DDR4 2666MHz (ECC supported by selected SKU)
	Max. Capacity	32GB / 64GB	32GB / 64GB	32GB/64GB	32GB / 64GB
	Socket	2 SODIMM	2 SODIMM	2 SODIMM	2 SODIMM
Graphics	Connector	1 LVDS/eDP, 2 DP++, 1 HDMI	1 LVDS, 2 DP++, 1 VGA	1 eDP, 1 DP++/HDMI, 4 DP by MXM module	1 LVDS, 2 DP++, 1 VGA
Expansion	PCIe/PCI	1 PCIe x4 (Gen3)	1 PCIe x16 (Gen3)	1 MXM Type-A/B/B+	1 PCIe x16 (Gen3)
	M.2/Mini PCIe	1 M.2 M key 2280, 1 M.2 E key 2230, 1 Mini PCIe	-	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	Realtek ALC888/ALC887	Realtek ALC888	Realtek ALC888	Realtek ALC888
Ethernet(GbE)	Controller	1 Intel® I210, 1 Intel® I219	1 Intel® I211, 1 Intel® I219	1 Intel® I210, 1 Intel® I219	1 Intel® I210, 1 Intel® I219
	Ethernet(GbE)	2 LAN	2 LAN	4 LAN	2 LAN
Rear I/O	Serial	-	1 RS232	-	2 RS232
	USB	4 USB 3.2 Gen2	2 USB 3.2 Gen2, 2 USB 3.2 Gen1, 4 USB 2.0	4 USB 3.2 Gen2, 2 USB 2.0	4 USB 3.2 Gen1, 2 USB 2.0
	Display	2 DP++, 1 HDMI	2 DP++, 1 VGA	1 DP++/HDMI	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	2 RS232/422/485, 2 RS232	-	2 RS232/422/485
Internal I/O	USB	4 USB 2.0	-	2 USB 2.0	2 USB 2.0
	Display	1 LVDS/eDP	1 LVDS	1 eDP	1 LVDS
	Audio	1 Front Audio	1 S/PDIF	1 Front Audio	1 Front Audio
	Storage	2 SATA 3.0, (RAID 0/1/5) w/ M.2 M Key	3 SATA 3.0 (RAID 0/1/5)	2 SATA 3.0	2 SATA 3.0
	DIO	8-bit DIO	8-bit DIO	8-bit DIO	8-bit DIO
	LPC**	1	1	1	1
	SMBus	1	1	1	1
TPM / iAMT	dTPM 2.0, iAMT 12.0 (Core i7 & i5 only)	dTPM 2.0 (Opt.)	dTPM 2.0	dTPM 2.0	
Power	12V DC In	ATX	19V DC In	ATX	
Operating Temperature	0~60°C	0~60°C	-5~65°C	-5~65°C	

8th/9th Gen Intel Core



Model Name		CS103-H310	CS101-H310	CS100-H310	WL171/WL173
Platform		Desktop	Desktop	Desktop	ULT
System	Processor	9th/8th Gen Intel® Core™	9th/8th Gen Intel® Core™	9th/8th Gen Intel® Core™	8th Gen Intel® Core™
	Socket	LGA1511	LGA1511	LGA1200	BGA1528
	Max. Speed	up to 4.6GHz	up to 4.6GHz	up to 4.7GHz	up to 4.4GHz
	TDP	65W	80W	80W	15W
	Cache	-	-	-	2M~8M
	Chipset	Intel® H310	Intel® H310	Intel® H310	-
	BIOS	AMI SPI 128Mbit	AMI SPI 128Mbit	AMI SPI 128Mbit	AMI SPI 128Mbit
Memory	Technology	Dual Channel DDR4 2666MHz	Dual Channel DDR4 2666MHz	Dual Channel DDR4 2666MHz	Dual Channel DDR4 2400MHz
	Max. Capacity	32GB / 64GB	32GB / 64GB	32GB / 64GB	32GB
	Socket	2 SODIMM	2 SODIMM	2 SODIMM	2 SODIMM
Graphics	Connector	1 LVDS, 2 DP++	1 LVDS/eDP, 2 DP++, 1 HDMI	1 LVDS, 2 DP++, 1 VGA	1 LVDS/eDP, 2 DP++/HDMI
Expansion	PCIe/PCI	1 PCIe x4 (Gen3)	1 PCIe x4 (Gen3)	1 PCIe x16 (Gen3)	1 PCIe x4 (Gen3)
	M.2/Mini PCIe	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 Mini PCIe	-	1 M.2 M key 2242/2260/2280, 1 M.2 E key 2230
	SIM	-	-	-	-
Audio	Audio Codec	Realtek ALC888	Realtek ALC888/ALC887	Realtek ALC888	Realtek ALC888
Ethernet(GbE)	Controller	1 Intel® I211, 1 Intel® I219	1 Intel® I210, 1 Intel® I219	1 Intel® I211, 1 Intel® I219	1 Intel® I210, 1 Intel® I219
	Ethernet(GbE)	2 LAN	2 LAN	2 LAN	2 LAN
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	4 USB 3.2 Gen2
	Display	2 DP++	2 DP++, 1 HDMI	2 DP++, 1 VGA	2 DP++/HDMI
	Audio	-	-	1 Audio Jack (Lin-out/Mic-in/Line-in(Opt.))	1 Line-out, 1 Mic-in
	Internal I/O	Serial	2 RS232/422/485	2 RS232/422/485, 2 RS232	-
Internal I/O	USB	4 USB 2.0	4 USB 2.0	-	4 USB 2.0
	Display	1 LVDS	1 LVDS/eDP	1 LVDS	1 LVDS/eDP
	Audio	1 Front Audio	1 Front Audio	1 S/PDIF	1 Front Audio
	Storage	2 SATA 3.0	2 SATA 3.0	3 SATA 3.0 (RAID 0/1/5)	2 SATA 3.0 (RAID 0/1/5) w/ M.2 M Key
	DIO	8-bit DIO	8-bit DIO	8-bit DIO	8-bit DIO
	LPC**	1	1	1	1
	SMBus	1	1	1	1
TPM / iAMT	dTPM 2.0	dTPM 2.0	dTPM 2.0 (Opt.)	dTPM 2.0	
Power	9~36V DC In	12V DC In	ATX	12V/9~36V DC In	
Operating Temperature	-10~70°C	0~60°C	0~60°C	-5~65°C/-20~70°C (By SKU)	

*Populated by default

**Supports LPC EXT-RS232/RS485 module

6th/7th Gen Intel Core



Model Name		KU171/KU173	KD171	SD106-Q170	SD101/SD103-Q170
Platform		ULT	Desktop	Desktop	Desktop
System	Processor	7th Gen Intel® Core™	7th Gen Intel® Core™	7th Gen Intel® Core™	6th Gen Intel® Core™
	Socket	BGA1356	LGA1511	LGA1511	LGA1511
	Max. Speed	up to 3.9GHz	up to 4.2GHz	up to 4.0GHz	up to 4.0GHz
	TDP	15W	65W	65W	65W
	Cache	2M~4M	3M~8M	2M~8M	2M~8M
	Chipset	-	Intel® Q170 / H110	Intel® Q170	Intel® Q170
Memory	BIOS	AMI SPI 128Mbit	Insyde SPI 128Mbit	Insyde SPI 128Mbit	Insyde SPI 128Mbit
	Technology	Dual Channel DDR4 2133MHz	Dual Channel DDR4 2400MHz	Dual Channel DDR4 2133MHz	Dual Channel DDR4 2133MHz
	Max. Capacity	32GB	32GB	32GB	32GB
Graphics	Socket	2 SODIMM	2 UDIMM	2 SODIMM	2 SODIMM
	Connector	1 LVDS/eDP, 2 DP++	2 DP++, 1 HDMI	1 LVDS, 1 eDP, 1 DP++	1 LVDS, 1 DP++/HDMI, 1 DVI-I(DVI-D Signal)
Expansion	PCIe/PCI	1 PCIe x4 (Gen3)	1 PCIe x16 (Gen3)	1 PCIe x16 (Gen3)	1 PCIe x4 (Gen3)
	M.2/Mini PCIe	1 M.2 M key 2242/2260/2280, 1 Mini PCIe	-	-	-
	SIM	-	-	-	-
Audio	Audio Codec	Realtek ALC888	Realtek ALC888	Realtek ALC888	Realtek ALC888
Ethernet(GbE)	Controller	1 Intel® I210, 1 Intel® I219	-	1 Intel® I211, 1 Intel® I219	1 Intel® I210, 1 Intel® I219
Rear I/O	Ethernet (GbE)	2 LAN	2 LAN	2 LAN	2 LAN
	Serial	-	2 RS232	2 RS232	-
	USB	4 USB 3.2 Gen1	2 USB 3.2 Gen1, 2 USB 2.0	4 USB 3.2 Gen1	4 USB 3.2 Gen1
	Display	2 DP++	2 DP++, 1 HDMI	1 DP++	1 DP++/HDMI, 1 DVI-I
	Audio	1 Line-out, 1 Mic-in	1 Audio Jack (Lin-out/Mic-in/Line-in)	-	-
Internal I/O	Serial	1 RS232/422/485	-	-	-
	USB	4 USB 2.0	1 USB 3.2 Gen 1 Vertical, 4 USB 2.0	4 USB 2.0	4 USB 2.0
	Display	1 LVDS/eDP	-	-	1 LVDS
	Audio	1 Front Audio, 1 S/PDIF	-	1 Front Audio, 1 Speaker (3W)	1 Front Audio, 1 S/PDIF
	Storage	2 SATA 3.0 (RAID 0/1/5) w/ M.2 M Key	2 SATA 3.0	2 SATA 3.0	2 SATA 3.0 (RAID 0/1/5/10) w/ MiniPCIe
	DIO	8-bit DIO	8-bit DIO	8-bit DIO	8-bit DIO
	LPC**	1	1	1	1
	SMBus	1	1	1	1
TPM / iAMT	dTPM 2.0 (Opt.)	dTPM 2.0	TPM (Opt.)	TPM (Opt.)	
Power	12V/9~36V DC In	12V DC In	15~36V DC In	12V/15~36V DC In	
Operating Temperature	0~60°C / -20~70°C (By SKU)	0~60°C	0~60°C	0~60°C	

6th/7th Gen Intel Core



Model Name		SD100-Q170/H110	SD170-H110	SD101/SD103-H110	SU171/SU173
Platform		Desktop	Desktop	Desktop	ULT
System	Processor	6th Gen Intel® Core™	6th Gen Intel® Core™	6th Gen Intel® Core™	6th Gen Intel® Core™
	Socket	LGA1511	LGA1511	LGA1511	BGA1356
	Max. Speed	up to 4.0GHz	up to 4.0GHz	up to 4.0GHz	up to 3.4GHz
	TDP	65W	65W	65W	65W
	Cache	2M~8M	2M~8M	2M~8M	2M~4M
	Chipset	Intel® Q170/H110	Intel® H110	Intel® H110	-
Memory	BIOS	Insyde SPI 128Mbit	Insyde SPI 128Mbit	Insyde SPI 128Mbit	Insyde SPI 128Mbit
	Technology	Dual Channel DDR4 2133MHz	Dual Channel DDR4 2133MHz	Dual Channel DDR4 2133MHz	Dual Channel DDR3L 1600MHz
	Max. Capacity	32GB	32GB	32GB	16GB
Graphics	Socket	2 SODIMM	2 SODIMM	2 SODIMM	2 SODIMM
	Connector	1 LVDS, 1 DP++, 1 VGA, 1 DVI-I(DVI-D Signal)	1 DP++, 1 HDMI, 1 VGA	1 LVDS, 1 DP++/HDMI, 1 DVI-I(DVI-D Signal)	1 LVDS/eDP
Expansion	PCIe/PCI	1 PCIe x16(Gen3)	1 PCIe x16(Gen3)	1 PCIe x4(Gen3)	1 PCIe x16(Gen3)
	M.2/Mini PCIe	-	1 M.2 M key 2280, 1 Mini PCIe	-	1 Mini PCIe, 1 mSATA
	SIM	-	-	-	1 Nano SIM
Audio	Audio Codec	Realtek ALC888	Realtek ALC888	Realtek ALC888	Realtek ALC888
Ethernet(GbE)	Controller	1 Intel® I210, 1 Intel® I219	-	1 Intel® I210, 1 Intel® I219	1 Intel® I210, 1 Intel® I219
Rear I/O	Ethernet (GbE)	2 LAN	4 LAN	2 LAN	2 LAN
	Serial	-	1 RS232/422/485	-	-
	USB	4 USB 3.2 Gen1, 2 USB 2.0	2 USB 3.2 Gen1	4 USB 3.2 Gen1	4 USB 3.2 Gen1
	Display	1 DP++/HDMI, 1 DVI-I	1 DP++/HDMI, 1 DVI-I	1 DP++/HDMI, 1 DVI-I	1 DP++, 1 DP++/HDMI
	Audio	1 Audio Jack (Lin-out/Mic-in/Line-in (Opt.))	1 Audio Jack (Lin-out/Mic-in/Line-in (Opt.))	-	1 Line-out, 1 Mic-in
Internal I/O	Serial	1 RS232/422/485, 2 RS232	1 RS232/422/485, 2 RS232	-	2 RS232/422/485, 2 RS232
	USB	4 USB 2.0	2 USB 3.2 Gen 1, 4 USB 2.0, 1 USB 2.0 Vertical	4 USB 2.0	4 USB 2.0
	Display	1 LVDS	-	1 LVDS	1 LVDS/eDP
	Audio	1 S/PDIF	1 Front Audio, 1 S/PDIF	1 Front Audio, 1 S/PDIF	1 S/PDIF
	Storage	3 SATA 3.0 (RAID 0/1/5)	2 SATA 3.0	2 SATA 3.0	2 SATA 3.0, (RAID 0/1/5) w/ MiniPCIe
	DIO	8-bit DIO	16-bit DIO	8-bit DIO	8-bit DIO
LPC**	1	1	1	1	
SMBus	1	1	1	1	
TPM / iAMT	TPM (Opt.)	TPM (Opt.)	TPM (Opt.)	TPM (Opt.)	
Power	ATX	ATX	12V/15~36V DC In	12V/15~36V DC In	
Operating Temperature	0~60°C	0~60°C	0~60°C	0~60°C / -20~70°C (By SKU)	

Intel Atom x6000 Soc
/ E3900



Atom

Thin
Mini-ITX



Atom

Thin
Mini-ITX



Atom

Model Name		EHL171/EHL173	AL102	AL170
Platform		Atom	Atom	Atom
System	Processor	Intel® Atom X Series Soc	Intel® Atom E3900	Intel® Atom E3900
	Socket	BGA1493	BGA1296	BGA1296
	Max. Speed	up to 3.0GHz	up to 2.5GHz	up to 2.5GHz
	TDP	6W~12W	6W~12W	6W~12W
	Cache	1M~2M	2M	2M
	Chipset	-	-	-
	BIOS	AMI SPI 256Mbit	AMI SPI 128Mbit	AMI SPI 128Mbit
Memory	Technology	Dual Channel DDR4 3200MHz (ECC supported by selected SKU)	Dual Channel DDR3L 1867MHz	Dual Channel DDR3L 1867MHz
	Max. Capacity	32GB	8GB	8GB
	Socket	2 SODIMM	2 SODIMM	2 SODIMM
Graphics	Connector	1 LVDS/eDP	1 LVDS/eDP	1 LVDS/eDP
	PCIe/PCI	1 PCIe x4 (Gen3)	-	1 PCIe x1 (Gen2)
Expansion	M.2/Mini PCIe	1 M.2 B key 2242/2280/3052, 1 M.2 E key 2230	1 M.2 M key 2242/2280, 1 M.2 E key 2230, 1 Mini PCIe	1 M.2 M key 2242/2280, 1 Mini PCIe
	SIM	1 Nano SIM	-	-
	Audio Codec	Realtek ALC888	Realtek ALC269	Realtek ALC262
Ethernet(GbE)	Controller	2 Intel® I225	-	-
	Ethernet (GbE)	2 LAN	2 LAN	2 LAN
Rear I/O	Serial	-	2 RS232/422/485	2 RS232/422/485
	USB	2 USB 3.2 Gen2, 2 USB 3.2 Gen1	4 USB 3.2 Gen1	4 USB 3.2 Gen1
	Display	1 DP++/VGA, 1 DP++/HDMI	1 HDMI, 1 VGA	1 DP++, 1 DP++/VGA
	Audio	1 Audio Jack (Line-out)	1 Audio Jack (Line-out)	1 Audio Jack (Lin-out/Mic-in/Line-in (Opt.))
	Internal I/O	Serial	2 RS232/422/485, 2 RS232	-
Internal I/O	USB	4 USB 2.0	4 USB 2.0, 1 USB 2.0 Vertical	6 USB 2.0
	Display	1 LVDS/eDP	1 LVDS/eDP	1 LVDS/eDP
	Audio	1 Front Audio, 1 S/PDIF	1 Front Audio	1 Front Audio, 1 S/PDIF
	Storage	2 SATA 3.0	1 SATA 3.0	2 SATA 3.0
	DIO	8-bit DIO	8-bit DIO	8-bit DIO
	LPC**	1	1	1
	SMBus	1	1	1
TPM / iAMT	dTPM 2.0 (Opt.)	dTPM 2.0 (Opt.)	dTPM 2.0 (Opt.)	
Power	12V/9~36V DC In	12V DC In	ATX	
Operating Temperature	-5~65°C	0~50°C	0~60°C	

Intel Atom E3900/
E3800

Thin
Mini-ITX



Atom

Thin
Mini-ITX



Atom



Atom

Thin
Mini-ITX



Atom

Model Name		AL171/AL173	BT160/BT161	BT100	BT101/BT103
Platform		Atom	Atom	Atom	Atom
System	Processor	Intel® Atom E3900	Intel® Atom E3800	Intel® Atom E3800	Intel® Atom E3800
	Socket	BGA1296	BGA1170	BGA1170	BGA1170
	Max. Speed	up to 2.5GHz	up to 2.42GHz	up to 2.42GHz	up to 2.42GHz
	TDP	6W~12W	7W~10W	5W~10W	5W~10W
	Cache	2M	1M~2M	0.5M~2M	0.5M~2M
	Chipset	-	-	-	-
	BIOS	AMI SPI 128Mbit	AMI SPI 64Mbit	AMI SPI 64Mbit	AMI SPI 64Mbit
Memory	Technology	Dual Channel DDR3L 1867MHz	Dual Channel DDR3L 1333MHz	Single/Dual Channel DDR3L 1066/1333MHz	Single/Dual Channel DDR3L 1066/1333MHz
	Max. Capacity	8GB	8GB	4G/8G	4G/8G
	Socket	2 SODIMM	2 SODIMM	1 or 2 SODIMM	1 or 2 SODIMM
Graphics	Connector	1 LVDS/eDP	1 LVDS	1 LVDS	1 LVDS
	PCIe/PCI	1 PCIe x1 (Gen2)	1 PCIe x1 (Gen2), 1 DFI Extension Bus	1 PCIe x4 (Gen2)	1 PCIe x1 (Gen2)
Expansion	M.2/Mini PCIe	1 M.2 B key 2242/2280, 1 Mini PCIe	1 Mini PCIe	-	-
	SIM	-	-	-	1 Nano SIM
	Audio Codec	Realtek ALC262	-	Realtek ALC888	Realtek ALC888
Ethernet(GbE)	Controller	-	-	-	-
	Ethernet (GbE)	2 LAN	2 LAN	2 LAN	2 LAN
Rear I/O	Serial	-	1 RS232	1 RS232/422/485, 1 RS232	1 RS232/422/485, 1 RS232
	USB	4 USB 3.2 Gen1	1 USB 3.2 Gen1, 1 USB 2.0	1 USB 3.2 Gen1, 1 USB 2.0	1 USB 3.2 Gen1, 2 USB 2.0
	Display	1 DP++/VGA, 1 DP++/HDMI	1 VGA	1 VGA, 1 DVI-I	1 DVI-I
	Audio	1 Audio Jack (Line-out)	-	1 Audio Jack (Line-out/Mic-in)	1 Audio Jack (Line-out)
	Internal I/O	Serial	2 RS232/422/485, 4 RS232	1 RS232/422/485, 2 RS232	1 RS232/422/485, 3 RS232
Internal I/O	USB	4 USB 2.0, 1 USB 2.0 Vertical	3 USB 2.0	3 USB 2.0	4 USB 2.0
	Display	1 LVDS/eDP	1 LVDS	1 LVDS	1 LVDS
	Audio	1 Front Audio, 1 S/PDIF	-	1 Front Audio, 1 S/PDIF	1 Front Audio, 1 S/PDIF
	Storage	2 SATA 3.0	2 SATA 3.0	2 SATA 3.0	2 SATA 3.0
	DIO	8-bit DIO	8-bit DIO	8-bit DIO	8-bit DIO
	LPC**	1	-	-	-
	SMBus	1	-	1	1
TPM / iAMT	dTPM 2.0 (Opt.)	TPM (Opt.)	TPM (Opt.)	TPM (Opt.)	
Power	12V/15~36V DC In	ATX (BT160)/12V DC-in (BT161)	ATX	12V/19~24V DC In	
Operating Temperature	0~60°C	0~60°C	0~60°C/ -20~70°C/ -40~85°C (By SKU)	0~60°C/ -20~70°C/ -40~85°C (By SKU)	

*Populated by default

Intel Pentium/
Celeron N3000,
Atom

Thin Mini-ITX



Atom

Model Name		BW171/BW173
Platform		Atom
System	Processor	Intel® Pentium®/Celeron® N3000
	Socket	BGA1170
	Max. Speed	up to 2.56GHz
	TDP	4W~6W
	Cache	2M
	Chipset	-
Memory	BIOS	AMI SPI 64Mbit
	Technology	Dual Channel DDR3L 1600MHz
	Max. Capacity	8GB
Graphics	Socket	2 SODIMM
	Connector	1 LVDS
Expansion	PCIe/PCI	1 PCIe x1 (Gen2)
	M.2/Mini PCIe	-
	SIM	1 Nano SIM
Audio	Audio Codec	Realtek ALC888
Ethernet(GbE)	Controller	-
	Ethernet(GbE)	2 LAN
Rear I/O	Serial	-
	USB	2 USB 3.2 Gen1, 2 USB 2.0
	Display	1 DP++, 1 VGA
	Audio	1 Audio Jack (Line-out)
Internal I/O	Serial	1 RS232/422/485, 3 RS232
	USB	2 USB 3.2 Gen 1, 2 USB 2.0, 1 USB 2.0 Vertical
	Display	1 LVDS + 1 eDP
	Audio	1 Front Audio, 1 S/PDIF
	Storage	2 SATA 3.0
	DIO	8-bit DIO
	LPC**	1
	TPM / iAMT	1
Power	TPM (Opt.)	
Operating Temperature	12V/15~36V DC In	
	0°C~60°C	

Ryzen Embedded
V2000/V1000/
R1000



AMD



AMD

Model Name		RNO171	GH171
Platform		AMD V-Series	AMD R-Series
System	Processor	AMD® Ryzen™ Embedded V2000 Series	AMD® Ryzen™ Embedded V1000/R1000 Series
	Socket	FP6	-
	Max. Speed	up to 4.15GHz	up to 3.8GHz
	TDP	15W~45W	12W~54W
	Cache	3M~4M	1M~2M
	Chipset	-	-
Memory	BIOS	AMI SPI 256Mbit	AMI SPI 64Mbit
	Technology	Dual Channel DDR4 3200MHz	Dual Channel DDR4 3200MHz (ECC supported by selected SKU)
	Max. Capacity	64GB	32GB
Graphics	Socket	2 SODIMM	2 SODIMM
	Connector	-	-
Expansion	PCIe/PCI	1 PCIe x16 (Gen3)	1 PCIe x16 (Gen3)
	M.2/Mini PCIe	1 M.2 M key 2280	1 M.2 M key 2280
	SIM	-	-
Audio	Audio Codec	Realtek ALC888	Realtek ALC887
Ethernet(GbE)	Controller	-	-
	Ethernet(GbE)	2 LAN	2 LAN
Rear I/O	Serial	1 RS232/422/485, 1 RS232	1 RS232/422/485, 1 RS232
	USB	2 USB 3.2 Gen1, 2 USB 2.0	2 USB 3.2 Gen1, 2 USB 2.0
	Display	4 DP++	Up to 4 DP++
	Audio	1 Audio Jack (Lin-out/Mic-in/Line-in)	1 Audio Jack (Lin-out/Mic-in/Line-in)
Internal I/O	Serial	-	-
	USB	4 USB 2.0	4 USB 2.0, 1 USB 3.2 Gen 1 Vertical / 1 USB2.0 Vertical
	Display	-	-
	Audio	1 Front Audio, 1 S/PDIF	1 Front Audio, 1 S/PDIF
	Storage	2 SATA 3.0	2 SATA 3.0
	DIO	8-bit DIO	-
	LPC**	1	-
TPM / iAMT	1	-	
Power	dTPM 2.0 (Opt.)	dTPM 2.0 (Opt.)	
Operating Temperature	12V DC In	12V DC In	
	-5~65°C	0~60°C	

*Populated by default

**Supports LPC EXT-RS232/RS485 module

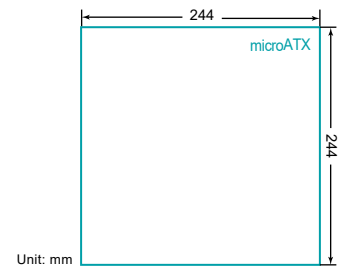
microATX

Cost-Effective & Scalable Solutions



Features

microATX (μ 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.



12th Gen
Intel Core



R680E
Q670E

Model Name		ADS310-R680E/Q670E
Platform		Workstation(R680E) / Desktop(Q670E)
System	Processor	12th Gen Intel® Core™
	Socket	LGA 1700
	Max. Speed	2.4~5.3GHz
	TDP	125W
	Cache	4M~30M
	Chipset	Intel® R680E/Q670E
Memory		Dual Channel DDR4 3200 MHz
Memory	Max. Capacity	128GB
	Socket	R680E: 4 UDIMM (ECC/Non-ECC) Q670E: 4 UDIMM (Non-ECC)
	Graphics	1 VGA, 2 DP++, 1 HDMI
Expansion	Connector	1 VGA, 2 DP++, 1 HDMI
	PCIe/PCI	1 PCIe x16 (Gen 5), 2 PCIe x4 (Gen 4) 1 PCIe x4 (Gen 3) (R680E: x4 signal; Q670E: x1 signal)
	M.2/Mini PCIe	1 M.2 M key, 1 M.2 E key
Audio		-
Ethernet(GbE)		Realtek ALC888
Rear I/O	Controller	2 Intel® I225LM, 1 Intel® x550-AT2 (Opt. no support WOL)
	Ethernet(GbE)	2 x 2.5GbE, 2 x 10GbE
	Serial	-
Internal I/O	USB	4 USB 3.2 Gen 2, 4 USB 3.2 Gen 1
	Display	1 VGA, 2 DP++, 1 HDMI
	Audio	Line-out, Mic-in, Line-in (Opt.)
Internal I/O	Serial	2 RS-232/422/485
	USB	2 USB 3.2 Gen2, 3 USB 2.0 (colay vertical Type A, MOQ required)
	Display	-
	Audio	1 Front Audio, 1 S/PDIF
	Storage	4 SATA 3.0 (RAID 0/1/5/10)
	DIO	8-bit DIO
	LPC**	-
	SMBus	1
TPM / iAMT		Nuvoton TPM 2.0 (Opt.) / iAMT12.0 (Xeon/Core i5/i7/i9)
Power		ATX
Operating Temperature		-5~65°C

10th Gen
Intel Core



W480E



W480E

Model Name		CMS311-W480E	CMS310-W480E
Platform		Workstation	Workstation
System	Processor	10th Gen Intel® Core™	10th Gen Intel® Core™
	Socket	LGA 1200	LGA 1200
	Max. Speed	3.0~5.3GHz	3.0~4.8GHz
	TDP	125W	125W
	Cache	2M~20M	2M~20M
	Chipset	W480E	W480E
Memory	BIOS	AMI SPI 256Mbit	Insyde SPI 256Mbit
	Technology	Dual Channel DDR4 2400/2666/2933MHz	Dual Channel DDR4 2400/2666/2933MHz
	Max. Capacity	128GB	128GB
Graphics	Socket	4 UDIMM (ECC/Non-ECC)	4 UDIMM (ECC/Non-ECC)
	Connector	1 DP++, 1 VGA, 1 HDMI	1 DP++, 1 VGA, 1 HDMI
Expansion	PCIe, PCI	2 PCIe x16 (1x16 or 2x8), 1 PCIe x4, 1 PCIe x1	2 PCIe x16 (1x16 or 2x8), 2 PCIe x4
	Mini PCIe / M.2	1 M.2 M key	1 M.2 M key, 1 M.2 E key
Audio	Audio Codec	Realtek ALC888	Realtek ALC888
Ethernet	Controller	1 Intel® I219LM, 1 Intel® I211AT, 1 Intel® x550-AT2 (no support WOL)	1 Intel® I219LM, 1 Intel® I211AT, 2 Intel® I211AT (Opt.)
Rear I/O	Ethernet (GbE)	2 x 1GbE, 2 x 10GbE	2 x 1GbE, 2 x 1GbE (Opt.)
	Serial	-	-
	USB	2 USB 3.2 Gen2, 4 USB 3.2 Gen1	2 USB 3.2 Gen 2, 4 USB 3.2 Gen 1
	Display	1 DP++, 1 VGA, 1 HDMI	1 DP++, 1 VGA, 1 HDMI
	Audio	Line-out, Mic-in, Line-in (Opt.)	Line-out, Mic-in, Line-in (Opt.)
	PS/2	-	-
Internal I/O	Serial	2 RS-232/422/485	2 RS-232/422/485, 2 RS-232
	USB	2 USB 3.2 Gen 2, 2 USB 3.2 Gen 1, 4 USB 2.0	2 USB 3.2 Gen 2, 4 USB 2.0
	Audio	1 Front Audio, 1 S/PDIF	1 Front Audio, 1 S/PDIF
	SATA	5 SATA 3.0 (RAID 0/1/5/10)	4 SATA 3.0 (RAID 0/1/5/10)
	DIO	16-bit DIO	8-bit DIO
	LPC	1	1
	SMBus	1	1
PS/2	-	1	
TPM / iAMT		Infineon TPM2.0 (Opt.) / iAMT12.0 (Xeon/Core i5/i7/i9)	Infineon TPM2.0 (Opt.) / iAMT12.0 (Xeon/Core i5/i7/i9)
Power		ATX	ATX
Operating Temperature		-5~65°C	-5~65°C

10th Gen
Intel Core



Q470E



Q470E

Model Name		CMS330-Q470E	CMS311-Q470E
Platform		Desktop	Desktop
System	Processor	10th Gen Intel® Core™	10th Gen Intel® Core™
	Socket	LGA 1200	LGA 1200
	Max. Speed	3.0~5.3GHz	3.0~5.3GHz
	TDP	125W	125W
	Cache	2M~20M	2M~20M
	Chipset	Q470E	Q470E
Memory	BIOS	AMI SPI 256Mbit	AMI SPI 256Mbit
	Technology	Dual Channel DDR4 2400/2666/2933MHz	Dual Channel DDR4 2400/2666/2933MHz
	Max. Capacity	128GB	128GB
Graphics	Socket	4 UDIMM	4 UDIMM (ECC/Non-ECC)
	Connector	1 VGA, 1 DP++, 1 HDMI	1 DP++, 1 VGA, 1 HDMI
Expansion	PCIe, PCI	1 PCIe x16, 1 PCIe x4, 2PCI	2 PCIe x16 (1x16 or 2x8), 1 PCIe x4, 1 PCIe x1
	Mini PCIe / M.2	1 M.2 M key, 1 M.2 E key	1 M.2 M key
Audio	Audio Codec	Realtek ALC888	Realtek ALC888
Ethernet	Controller	1 Intel® I219LM, 1 Intel® I211AT	1 Intel® I219LM, 1 Intel® I211AT, 1 Intel® x550-AT2 (no support WOL)
Rear I/O	Ethernet (GbE)	2 x 1GbE	2 x 1GbE, 2 x 10GbE
	Serial	1 RS-232/422/485	-
	USB	2 USB 3.2 Gen2, 2 USB 3.2 Gen1, 4 USB 3.2 Gen1 (Opt.), 2 USB 2.0	2 USB 3.2 Gen2, 4 USB 3.2 Gen1
	Display	1 VGA, 1 DP++, 1 HDMI	1 DP++, 1 VGA, 1 HDMI
	Audio	Line-out, Mic-in, Line-in (Opt.)	Line-out, Mic-in, Line-in (Opt.)
	PS/2	1	-
Internal I/O	Serial	9 RS-232	2 RS-232/422/485
	USB	2 USB 3.2 Gen 1, 4 USB 2.0	2 USB 3.2 Gen 2, 2 USB 3.2 Gen 1, 4 USB 2.0
	Audio	1 Front Audio, 1 S/PDIF	1 Front Audio, 1 S/PDIF
	SATA	4 SATA 3.0	5 SATA 3.0 (RAID 0/1/5/10)
	DIO	16-bit DIO	16-bit DIO
	LPC	1	1
	SMBus	1	1
PS/2	-	-	
TPM / iAMT		Infineon TPM2.0 (Opt.) / iAMT12.0 (Core i5/i7/i9)	Infineon TPM2.0 (Opt.) / iAMT12.0 (Core i5/i7/i9)
Power		ATX	ATX
Operating Temperature		-5~65°C	-5~65°C

10th/9th/8th Gen Intel Core



Q470E



H420E



C246



C246

Model Name		CMS310-Q470E	CMS330-H420E	CS350-C246	CS332-C246
Platform		Desktop	Desktop	Workstation	Workstation
System	Processor	10th Gen Intel® Core™	10th Gen Intel® Core™	8th/9th Gen Intel® Core™	8th/9th Gen Intel® Core™
	Socket	LGA 1200	LGA 1200	LGA 1151	LGA 1151
	Max. Speed	3.0~4.8GHz	3.0~5.3GHz	2.9~5.0 GHz	2.9~4.7 GHz
	TDP	125W	125W	Max. 95W	Max. 95W
	Cache	2M~20M	2M~20M	2M/4M/6M/9M/12M/16M	2M/4M/6M/9M/12M
	Chipset	Q470E	H420E	Intel® C246	Intel® C246
	BIOS	Insyde SPI 256Mbit	AMI SPI 256Mbit	AMI SPI 128Mbit	AMI SPI 128Mbit
Memory	Technology	Dual Channel DDR4 2400/2666/2933MHz	Dual Channel DDR4 2400/2666/2933MHz	Dual Channel DDR4 2400/2666 MHz	Dual Channel DDR4 2400/2666 MHz
	Max. Capacity	128GB	64GB	128GB	128 GB
	Socket	4 UDIMM (ECC/Non-ECC)	2 UDIMM	4 DIMM (ECC/non-ECC)	4 DIMM (ECC/non-ECC)
Graphics	Connector	1 DP++, 1 VGA, 1 HDMI	1 VGA, 1 DP++ / 1 VGA, 1 HDMI / 1 DP++, 1 HDMI	1 DVI-D, 2 DP++	1 VGA, 2 DP++
Expansion	PCIe, PCI	2 PCIe x16 (1x16 or 2x8), 2 PCIe x4	1 PCIe x16, 1 PCIe x4, 2PCI	2 PCIe x16 (1 x16 or 2 x8), 2 PCIe x4	1 PCIe x16, 2 PCIe x4, 1 PCI,
	Mini PCIe / M.2	1 M.2 M key, 1 M.2 E key	-	1 M key, 1 M.2 E key	1 M.2 M key, 1 M.2 E key
Audio	Audio Codec	Realtek ALC888	Realtek ALC888	Realtek ALC888	Realtek AL262
Ethernet	Controller	1 Intel® I219LM, 1 Intel® I211AT, 2 Intel® I211AT (Opt.)	1 Intel® i219V, 1 Intel® I211AT	1 Intel® I211AT, 1 Intel® I219LM	1 Intel® I211AT, 1 Intel® I219V
Rear I/O	Ethernet (GbE)	2 x 1GbE, 2 x 1GbE (Opt.)	2 x 1GbE	2	up to 4
	Serial	-	1 RS-232/422/485	1 RS-232/422/485	1 RS-232/422/485
	USB	2 USB 3.2 Gen 2, 4 USB 3.2 Gen 1	4 USB 3.2 Gen1, 2 USB 2.0	2 USB 3.2 Gen2, 2 USB 3.2 Gen1, 2 USB 2.0	4 USB 3.2 Gen 1, 2 USB 2.0
	Display	1 DP++, 1 VGA, 1 HDMI	1 VGA, 1 DP++ / 1 VGA, 1 HDMI / 1 DP++, 1 HDMI	1 DVI-D, 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.)	Line-out, Mic-in, Line-in (Opt.)
	PS/2	-	1	1	1
	Serial	2 RS-232/422/485, 2 RS-232	9 RS-232	1 RS-232/422/485, 2 RS-232	3 RS-232
Internal I/O	USB	2 USB 3.2 Gen 2, 4 USB 2.0	2 USB 3.2 Gen 1, 2 USB 2.0	2 USB 3.2 Gen2, 4 USB 2.0	2 USB 3.2 Gen 1, 4 USB 2.0, 1 USB 2.0 vertical Type A
	Audio	1 Front Audio, 1 S/PDIF	1 Front Audio, 1 S/PDIF	Front Audio, S/PDIF	Front Audio, S/PDIF
	SATA	4 SATA 3.0 (RAID 0/1/5/10)	4 SATA 3.0	6 SATA 3.0 (RAID)	5 SATA 3.0 (RAID)
	DIO	8-bit DIO	16-bit DIO	8-bit DIO	8-bit DIO
	LPC	1	1	1	1
	SMBus	1	1	1	1
	PS/2	1	-	1	1
	TPM / iAMT	Infineon TPM2.0 (Opt.) / iAMT12.0 (Core i5/i7/i9)	Infineon TPM2.0 (Opt.)	TPM (Opt.) / iAMT (Xeon/Core i5/i7 only)	TPM (Opt.) / iAMT (Xeon/Core i5/i7 only)
Power	ATX	ATX	ATX	ATX	
Operating Temperature	-5~65°C	-5~65°C	-5~65°C	-5~65°C	



C246



Q370



Q370



Q370

8th/9th Gen Intel Core

Model Name		CS331-C246	CS350-Q370	CS332-Q370	CS331-Q370
Platform		Workstation	Desktop	Desktop	Desktop
System	Processor	8th/9th Gen Intel® Core™	8th/9th Gen Intel® Core™	8th/9th Gen Intel® Core™	8th/9th Gen Intel® Core™
	Socket	LGA 1151	LGA 1151	LGA 1151	LGA 1151
	Max. Speed	2.9~4.7 GHz	2.9~5.0 GHz	2.9~4.7 GHz	2.9~4.7 GHz
	TDP	Max. 95W	Max. 95W	Max. 95W	Max. 95W
	Cache	2M/4M/6M/9M/12M	2M/4M/6M/9M/12M/16M	2M/4M/6M/9M/12M	2M/4M/6M/9M/12M
	Chipset	Intel® C246	Intel® Q370	Intel® Q370	Intel® Q370
	BIOS	AMI SPI 128Mbit	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	Dual Channel DDR4 2400/2666 MHz
	Max. Capacity	128GB	128GB	128GB	128GB
	Socket	4 DIMM (ECC/Non ECC)	4 DIMM	4 DIMM	4 DIMM
Graphics	Connector	1 HDMI, 1 DVI-D, 1 DP++	1 DVI-D, 2 DP++	1 VGA, 2 DP++	1 HDMI, 1 DVI-D, 1 DP++
Expansion	PCIe, PCI	2 PCIe x16 (1 x16 or 2 x8), 2 PCIe x4	2 PCIe x16 (1 x16 or 2 x8), 2 PCIe x4	1 PCIe x16, 2 PCIe x4, 1 PCI,	2 PCIe x16 (1 x16 or 2 x8), 2 PCIe x4
	Mini PCIe / M.2	1 mini PCIe, 1 M.2 M key	1 M key, 1 M.2 E key	1 M.2 M key, 1 M.2 E key	1 mini PCIe, 1 M.2 M key
Audio	Audio Codec	Realtek ALC888	Realtek ALC888	Realtek ALC262	Realtek ALC888
Ethernet	Controller	1 Intel® I211AT, 1 Intel® I219LM	1 Intel® I211AT, 1 Intel® I219LM	1 Intel® I211AT, 1 Intel® I219LM	1 Intel® I211AT, 1 Intel® I219LM
Rear I/O	Ethernet (GbE)	2	2	4	2
	Serial	1 RS-232/422/485	1 RS-232/422/485	1 RS-232/422/485	1 RS-232/422/485
	USB	2 USB 3.2 Gen 2, 2 USB 3.2 Gen 1, 2 USB 2.0	2 USB 3.2 Gen2, 2 USB 3.2 Gen1, 2 USB 2.0	4 USB 3.2 Gen 1, 2 USB 2.0	2 USB 3.2 Gen 2, 2 USB 3.2 Gen 1, 2 USB 2.0
	Display	1 HDMI, 1 DVI-D, 1 DP++	1 DVI-D, 2 DP++	1 VGA, 2 DP++	1 HDMI, 1 DVI-D, 1 DP++
	Audio	Line-out, Mic-in, Line-in (Opt.)	Line-out, Mic-in, Line-in (Opt.)	Line-out, Mic-in, Line-in (Opt.)	Line-out, Mic-in, Line-in (Opt.)
	PS/2	1	1	1	1
	Serial	1 RS-232/422/485, 2 RS-232	1 RS-232/422/485, 2 RS-232	3 RS-232	1 RS-232/422/485, 2 RS-232
Internal I/O	USB	2 USB 3.2 Gen 2, 4 USB 2.0	2 USB 3.2 Gen2, 4 USB 2.0	2 USB 3.2 Gen 1, 4 USB 2.0, 1 USB 2.0 vertical Type A	2 USB 3.2 Gen 2, 4 USB 2.0
	Audio	Front Audio, S/PDIF	Front Audio, S/PDIF	Front Audio, S/PDIF	Front Audio, S/PDIF
	SATA	6 SATA 3.0 (RAID)	6 SATA 3.0 (RAID)	5 SATA 3.0 (RAID)	5 SATA 3.0 (RAID)
	DIO	8-bit DIO	8-bit DIO	8-bit DIO	8-bit DIO
	LPC	1	1	1	1
	SMBus	-	1	1	1
	PS/2	1	1	1	1
	TPM / iAMT	TPM (Opt.) / iAMT (Xeon/Core i5/i7 only)	TPM (Opt.), iAMT (Core i5/i7 only)	TPM (Opt.) / iAMT (Core i5/i7 only)	TPM (Opt.) / iAMT (Core i5/i7 only)
Power	ATX	ATX	ATX	ATX	
Operating Temperature	0~60°C	-5~65°C	-5~65°C	0~60°C	

9th/8th/7th/6th Gen Intel Core



Q370



H310



C236



C236

Model Name		CS330-Q370	CS330-H310	KD331-C236	SD331-C236
Platform		Desktop	Desktop	Workstation	Workstation
System	Processor	8th/9th Gen Intel® Core™	8th/9th Gen Intel® Core™	Intel® Xeon®/6th/7th Gen Intel® Core™	Intel® Xeon®/6th/7th Gen Intel® Core™
	Socket	LGA 1151	LGA 1151	LGA 1151	LGA 1151
	Max. Speed	2.9~4.7 GHz	2.9~4.7 GHz	2.6~4.2GHz	2.6~4.2GHz
	TDP	Max. 95W	Max. 95W	Max. 95W	Max. 95W
	Cache	2M/4M/6M/9M/12M	2M/4M/6M/9M/12M	2M/3M/6M/8M	2M/3M/4M/6M/8M
	Chipset	Intel® Q370	Intel® H310	Intel® C236	Intel® C236
	BIOS	AMI SPI 128Mbit	AMI SPI 128Mbit	Insyde SPI 128Mbit	Insyde SPI 128Mbit
Memory	Technology	Dual Channel DDR4 2400/2666 MHz	Dual Channel DDR4 2400/2666 MHz	Dual Channel DDR4 2133/2400MHz	Dual Channel DDR4 1866/2133MHz
	Max. Capacity	128 GB	64 GB	64GB	64GB
	Socket	4 DIMM	2 DIMM	2 DIMM (ECC/Non-ECC)	4 DIMM (ECC/Non-ECC)
Graphics	Connector	1 VGA, 1 DVI-D, 1 DP++	1 VGA, 1 DVI-D, 1 DP++	1 DVI-D, 1 VGA, 1 DP++	1 VGA, 1 DVI-D, 1 DP++
	PCIe, PCI	1 PCIe x16, 1 PCIe x4, 2 PCI	1 PCIe x16, 1 PCIe x4, 2 PCI	2 PCIe x16 (1 x16 or 2 x8), 2 PCIe x4	2 PCIe x16 (1 x16 or 2 x8), 2 PCIe x4
Expansion	Mini PCIe / M.2	1 Full-sized Mini PCIe	-	1 M.2 M key	-
	SIM	-	-	-	-
	Audio	Realtek ALC888	Realtek ALC888	Realtek ALC888	Realtek ALC888
Ethernet	Controller	1 Intel® I211AT, 1 Intel® I219LM	1 Intel® I211AT, 1 Intel® I219V	3 Intel® I211AT, 1 Intel® I219LM	1 Intel® I210AT, 1 Intel® I219LM
	Ethernet (GbE)	2	2	4	2
Rear I/O	Serial	1 RS-232/422/485	1 RS-232/422/485	1 RS-232/422/485	1 RS-232/422/485
	USB	2 USB 3.2 Gen 2, 2 USB 3.2 Gen 1, 2 USB 2.0	4 USB 3.2 Gen 1, 2 USB 2.0	4 USB 3.2 Gen1, 2 USB 2.0	4 USB 3.2 Gen1, 2 USB 2.0
	Display	1 VGA, 1 DVI-D, 1 DP++	1 VGA, 1 DVI-D, 1 DP++	1 DVI-D, 1 VGA, 1 DP++	1 VGA, 1 DVI-D, 1 DP++
	Audio	Line-out, Mic-in, Line-in (Opt.)	Line-out, Mic-in, Line-in (Opt.)	-	Line-out, Mic-in, Line-in (Opt.)
	PS/2	1	1	1	1
	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	1 RS-232/422/485, 4 RS-232
	USB	2 USB 3.2 Gen 1, 4 USB 2.0	4 USB 2.0	2 USB 3.2 Gen1, 4 USB 2.0	4 USB 3.2 Gen1, 4 USB 2.0
Internal I/O	Display	-	-	-	-
	Audio	Front Audio, S/PDIF	Front Audio, S/PDIF	Front Audio, S/PDIF	Front Audio (Opt.), S/PDIF
	SATA	4 SATA 3.0 (RAID)	4 SATA 3.0	5 SATA 3.0 (RAID)	6 SATA 3.0 (RAID)
	DIO	8-bit DIO	8-bit DIO	8-bit DIO	8-bit DIO
	LPC	1	1	1	1
	SMBus	1	1	1	1
	TPM / iAMT	TPM (Opt.) / iAMT (Core i5/i7 only)	TPM 1.2/2.0 (Opt.)	TPM (Opt.) / iAMT (Xeon/Core i5/i7 only)	TPM (Opt.) / iAMT (Xeon/Core i5/i7 only)
	Power	ATX	ATX	ATX	ATX
Operating Temperature	0~60°C	0~60°C	0~60°C	0~60°C	

6th/7th Gen Intel Core



Q170



Q170



Q170



Q170

Model Name		KD300-Q170	KD331-Q170	KD330-Q170	SD330-Q170
Platform		Desktop	Desktop	Desktop	Desktop
System	Processor	6th/7th Gen Intel® Core™	6th/7th Gen Intel® Core™	6th/7th Gen Intel® Core™	6th/7th Gen Intel® Core™
	Socket	LGA 1151	LGA 1151	LGA 1151	LGA 1151
	Max. Speed	2.6~4.2GHz	2.6~4.2GHz	2.6~4.2GHz	2.6~4.2GHz
	TDP	Max. 95W	Max. 95W	Max. 95W	Max. 95W
	Cache	2M/3M/6M/8M	2M/3M/6M/8M	2M/3M/6M/8M	2M/3M/4M/6M/8M
	Chipset	Intel® Q170	Intel® Q170	Intel® Q170	Intel® Q170
	BIOS	Insyde SPI 128Mbit	Insyde SPI 128Mbit	Insyde SPI 128Mbit	Insyde SPI 128Mbit
Memory	Technology	Dual Channel DDR4 2133/2400MHz	Dual Channel DDR4 2133/2400MHz	Dual Channel DDR4 2133/2400MHz	Dual Channel DDR4 1866/2133MHz
	Max. Capacity	64GB	64GB	64GB	64GB
	Socket	4 DIMM	4 DIMM	4 DIMM	4 DIMM
Graphics	Connector	1 VGA, 1 DVI-D, 1 DP++	1 DVI-D, 1 VGA, 1 DP++	1 DVI-D, 1 VGA, 1 DP++	1 VGA, 1 LVDS, 1 DVI-D, 1 DP++
	PCIe, PCI	4 PCI	2 PCIe x16 (1 x16 or 2 x8), 2 PCIe x4	1 PCIe x16, 1 PCIe x4, 1 PCI	1 PCIe x16, 1 PCIe x4, 2 PCI
Expansion	Mini PCIe / M.2	1 M.2 M key	1 M.2 M key	1 Full-size Mini PCIe	1 Full-sized Mini PCIe
	Sim	-	-	-	1
Audio	Audio Codec	Realtek ALC888	Realtek ALC888	Realtek ALC888	Realtek ALC888
	Ethernet	1 Intel® I211AT, 1 Intel® I219LM	3 Intel® I211AT, 1 Intel® I219LM	1 Intel® I211AT, 1 Intel® I219LM	1 Intel® I210AT, 1 Intel® I219LM
Rear I/O	Ethernet (GbE)	2	4	2	2
	Serial	1 RS-232/422/485	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	4 USB 3.2 Gen1, 2 USB 2.0
	Display	1 VGA, 1 DVI-D, 1 DP++	1 DVI-D, 1 VGA, 1 DP++	1 DVI-D, 1 VGA, 1 DP++	1 VGA, 1 DVI-D, 1 DP++
	Audio	Line-out, Mic-in, Line-in (Opt.)	-	Line-out, Mic-in, Line-in (Opt.)	Line-out, Mic-in, Line-in (Opt.)
	PS/2	1	1	1	1
	Serial	1 RS-232/422/485, 4 RS-232	1 RS-232/422/485, 4 RS-232	1 RS-232/422/485, up to 8 RS-232	1 RS-232/422/485, 4 RS-232
Internal I/O	USB	2 USB 3.2 Gen1, 4 USB 2.0, 1 vertical USB 2.0 (Opt.)	2 USB 3.2 Gen1, 4 USB 2.0	2 USB 3.2 Gen1, 4 USB 2.0	2 USB 3.2 Gen1, 4 USB 2.0
	Audio	Front Audio, S/PDIF	Front Audio, S/PDIF	S/PDIF	Front Audio (Opt.), S/PDIF
	SATA	4 SATA 3.0 (RAID)	5 SATA 3.0 (RAID)	4 SATA 3.0 (RAID)	4 SATA 3.0 (RAID)
	DIO	8-bit DIO	8-bit DIO	8-bit DIO	8-bit DIO
	LPC**	1	1	1	1
	SMBus	1	1	1	1
TPM / iAMT	TPM (Opt.) / iAMT (Core i5/i7 only)	TPM (Opt.) / iAMT (Core i5/i7 only)	TPM (Opt.) / iAMT (Core i5/i7 only)	TPM (Opt.) / iAMT (Core i5/i7 only)	
Power	ATX	ATX	ATX	ATX	
Operating Temperature	0~60°C	0~60°C	0~60°C	0~60°C	

*Populated by default

**Supports LPC EXT-RS232/RS485 module

6th/7th Gen Intel Core



Q170



H110

Model Name		SD331-Q170	KD300-H110
Platform		Desktop	Desktop
System	Processor	6th/7th Gen Intel® Core™	6th/7th Gen Intel® Core™
	Socket	LGA 1151	LGA 1151
	Max. Speed	2.6~4.2GHz	2.6~4.2GHz
	TDP	Max. 95W	Max. 95W
	Cache	2M/3M/4M/6M/8M	2M/3M/6M/8M
	Chipset	Intel® Q170	Intel® H110
BIOS		Insyde SPI 128Mbit	Insyde SPI 128Mbit
Memory	Technology	Dual Channel DDR4 1866/2133MHz	Dual Channel DDR4 2133/2400MHz
	Max. Capacity	64GB	32GB
	Socket	4 DIMM	2 DIMM
Graphics	Connector	1 VGA, 1 DVI-D, 1 DP++	1 VGA, 1 DVI-D, 1 DP++
Expansion	PCIe, PCI	2 PCIe x16 (1 x16 or 2 x8), 2 PCIe x4	4 PCI
	Mini PCIe / M.2	-	-
	SIM	-	-
Audio	Audio Codec	Realtek ALC888	Realtek ALC888
Ethernet	Controller	1 Intel® I210AT, 1 Intel® I219LM	1 Intel® I211AT, 1 Intel® I219V
Rear I/O	Ethernet (GbE)	2	2
	Serial	1 RS-232/422/485	1 RS-232/422/485
	USB	4 USB 3.2 Gen1, 2 USB 2.0	4 USB 3.2 Gen1, 2 USB 2.0
	Display	1 VGA, 1 DVI-D, 1 DP++	1 VGA, 1 DVI-D, 1 DP++
	Audio	Line-out, Mic-in, Line-in (Opt.)	Line-out, Mic-in, Line-in (Opt.)
	PS/2	1	1
Internal I/O	Serial	1 RS-232/422/485, 4 RS-232	1 RS-232/422/485, 4 RS-232
	USB	4 USB 3.2 Gen1, 2 USB 2.0+ 1 Vertical USB 2.0 (type A)	4 USB 2.0, 1 Vertical USB 2.0(Opt.)
	Display	-	-
	Audio	Front Audio (Opt.), S/PDIF	Front Audio, S/PDIF
	SATA	6 SATA 3.0 (RAID)	4 SATA 3.0 (RAID)
	DIO	8-bit DIO	8-bit DIO
LPC**		1	1
SMBus		1	1
TPM / iAMT		TPM (Opt.) / iAMT (Core i5/i7 only)	TPM 1.2/2.0 (Opt.)
Power		ATX	ATX
Operating Temperature		0~60°C	0~60°C

6th/7th Gen Intel Core



H110



H110

Model Name		KD330-H110	SD330-H110
Platform		Desktop	Desktop
System	Processor	6th/7th Gen Intel® Core™	6th/7th Gen Intel® Core™
	Socket	LGA 1151	LGA 1151
	Max. Speed	3.4~4.2GHz	2.6~4.2GHz
	TDP	Max. 95W	Max. 95W
	Cache	2M/3M/6M/8M	2M/3M/4M/6M/8M
	Chipset	Intel® H110	Intel® H110
BIOS		Insyde SPI 128Mbit	Insyde SPI 128Mbit
Memory	Technology	Dual Channel DDR4 2133/2400MHz	Dual Channel DDR4 1866/2133MHz
	Max. Capacity	32GB	32GB
	Socket	2 DIMM	2 DIMM
Graphics	Connector	1 DVI-D, 1 VGA, 1 DP++	1 VGA, 1 LVDS, 1 DVI-D, 1 DP++
Expansion	PCIe, PCI	1 PCIe x16, 1 PCIe x4, 1 PCI	1 PCIe x16, 1 PCIe x4, 2 PCI
	Mini PCIe / M.2	-	-
	SIM	-	-
Audio	Audio Codec	Realtek ALC888	Realtek ALC888
Ethernet	Controller	1 Intel® I211AT, 1 Intel® I219V	1 Intel® I211AT, 1 Intel® I219V
Rear I/O	Ethernet (GbE)	2	2
	Serial	1 RS-232/422/485	1 RS-232/422/485
	USB	4 USB 3.2 Gen1, 2 USB 2.0	4 USB 3.2 Gen1, 2 USB 2.0
	Display	1 DVI-D, 1 VGA, 1 DP++	1 VGA, 1 DVI-D, 1 DP++
	Audio	Line-out, Mic-in, Line-in (Opt.)	Line-out, Mic-in, Line-in (Opt.)
	PS/2	1	1
Internal I/O	Serial	1 RS-232/422/485, up to 8 RS-232	1 RS-232/422/485, 4 RS-232
	USB	4 USB 2.0	2 USB 2.0, 1 Vertical USB 2.0 (type A)
	Display	-	-
	Audio	S/PDIF	Front Audio (Opt.), S/PDIF
	SATA	4 SATA 3.0	4 SATA 3.0
	DIO	8-bit DIO	8-bit DIO
LPC**		1	1
SMBus		1	1
TPM / iAMT		TPM2.0/1.2 (Opt.)	TPM 1.2/2.0 (Opt.)
Power		ATX	ATX
Operating Temperature		0~60°C	0~60°C

*Populated by default

**Supports LPC EXT-RS232/RS485 module

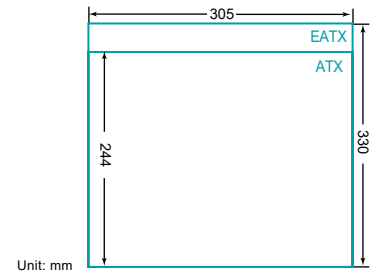
EATX/ATX

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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.



1st/2nd Gen Intel Xeon EATX



C622



C622

Model Name		PR811-C622	PR810-C622
Platform		Server-Grade	Server-Grade
System	Processor	1st/2nd Gen Intel® Xeon® Scalable Dual Processor	1st/2nd Gen Intel® Xeon® Scalable Dual Processor
	Socket	Dual LGA3467	Dual LGA3467
	Max. Speed	up to 3.9GHz(Turbo)	up to 3.9GHz(Turbo)
	TDP	up to 150W	up to 150W
	Cache	up to 35.75MB	up to 35.75MB
	Chipset	Intel C622	Intel C622
Memory	BIOS	Insyde SPI	Insyde SPI
	Technology	Single Channel DDR4 Max. 2933MHz	Single Channel DDR4 Max. 2933MHz
	Max. Capacity	384GB	384GB
Graphics	Socket	12 ECC RDIMM	12 ECC RDIMM
	Connector	1 VGA (with SEM2510/2500*)	1 VGA (with SEM2510/2500*)
Expansion	PCIe, PCI	5 PCIe x16, 1 PCIe x8	4 PCIe x16, 1 PCIe x8, 1 PCI
	Mini PCIe / M.2	1 M.2 M key	1 M.2 M key
Audio	SIM	-	-
	Audio Codec	ALC888S	ALC888S
Ethernet	Controller	Intel® x557, 2 Intel® I210AT	Intel® x557, 2, Intel® I210AT, 1 100GbE Module*(Opt.)
	Ethernet (GbE)	2 GbE, 2 10GbE, 1 IPMI LAN	2 GbE, 2 10GbE
Rear I/O	Serial	1 RS-232	1 RS-232
	USB	4 USB 3.2 Gen1	4 USB 3.2 Gen1
	Display	VGA(Opt.)	VGA(Opt.)
	Audio	-	-
Internal I/O	PS/2	-	-
	Serial	1 RS-232	1 RS-232
	USB	2 USB 3.2 Gen1, 2 USB2.0, 1 Vertical USB 2.0	2 USB 3.2 Gen1, 2 USB2.0, 1 Vertical USB 2.0
	Display	-	-
	Audio	1	1
	SATA	8 SATA3	8 SATA3
	DIO	-	-
LPC	1	1	
SMBus	1	1	
TPM / iAMT	TPM2.0 (Opt.)	TPM2.0 (Opt.)	
Power	ATX	ATX	
Operating Temperature	0~40°C	0~40°C	

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

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

3rd/2nd/1st Gen
Intel Xeon ATX



C621A



C622



C621



C621

Model Name		ICX610-C621A	PL610-C622	PR611-C621	PR610-C621
Platform		Server-Grade	Server-Grade	Server-Grade	Server-Grade
System	Processor	3rd Gen Intel® Xeon® Scalable Family	1st Gen Intel® Xeon® Scalable Processor	1st/2nd Gen Intel® Xeon® Scalable Processor	1st/2nd Gen Intel® Xeon® Scalable Processor
	Socket	LGA 4189	LGA 3647	LGA 3647	LGA 3647
	Max. Speed	up to 3.6GHz(Turbo)	up to 3.7GHz(Turbo)	up to 3.9GHz(Turbo)	up to 3.9GHz(Turbo)
	TDP	Max. 205W	Max. 145W	Max. 150W	Max. 165W
	Cache	Max 48M	Max 27.5M	Max. 35.75MB	Max. 35.75MB
	Chipset	Intel® C621A	Intel® C622	Intel® C621	Intel® C621
	BIOS	Insyde SPI	Insyde SPI	Insyde SPI	Insyde SPI
Memory	Technology	Single Channel DDR4 Max. 3200MHz	Single Channel DDR4 Max. 2666MHz	Single Channel DDR4 Max. 2933 MHz	Single Channel DDR4 Max. 2933 MHz
	Max. Capacity	512GB	192GB	192GB	192GB
	Socket	8 ECC RDIMM	6 ECC RDIMM	6 ECC RDIMM	6 ECC RDIMM
Graphics	Connector	1 VGA	1 VGA	1 VGA	VGA (with SEM2510/2500)
Expansion	PCIe, PCI	3 PCIe x16 (Gen4), 2 PCIe x8 (Gen4)	2 PCIe x16, 1 PCIe x8, 2 PCIe x4	3 PCIe x16, 3 PCIe x8	2 PCIe x16, 2 PCIe x8, 1 PCI
	Mini PCIe / M.2	1 M.2 M key 2280	1 M.2 M key	1 M.2 M key, 1 M.2 E key	1 M.2 M key
Audio	Audio Codec	Realtek ALC888S	-	ALC888S	ALC888S
Ethernet	Controller	2 Intel® I210AT, 2 Intel® X550-AT2, IPMI: RTL8211F	GbE: i350-AM2, 10GbE: CS4227, IPMI: RTL8211F	2 Intel® I210AT	2 Intel® I210AT
Rear I/O	Ethernet (GbE)	2 GbE, 2 10GbE, 1 IPMI LAN	2 GbE, 1 10GbE, 1 IPMI LAN	2 GbE	2 GbE
	Serial	1 RS-232	-	1 RS-232	-
	USB	4 USB 3.2 Gen1, 2 USB 2.0	2 USB 2.0	4 USB 3.2 Gen1, 2 USB2.0	4 USB 3.2 Gen1, 2 USB 2.0
	Display	1 VGA	1 VGA	1 VGA	1 VGA (Opt.)
	Audio	-	-	-	-
	PS/2	-	1	-	-
	Serial	-	1 RS-232	-	2 RS-232
Internal I/O	USB	2 USB 3.2 Gen1, 2 USB2.0, 1 Vertical USB 2.0	2 USB 3.2 Gen1, 2 USB 2.0, 1 Vertical USB 2.0	2 USB 3.2 Gen1, 2 USB 2.0, 1 Vertical USB 2.0	1 USB 3.2 Gen1, 2 USB 2.0, 1 Vertical USB 2.0
	Display	-	-	-	-
	Audio	1	-	1	-
	SATA	6 SATA 3.0	6 SATA 3.0	6 SATA 3.0	6 SATA 3.0
	LPC	1	-	-	-
	SMBus	1	1	1	1
TPM / iAMT	TPM2.0	TPM 2.0 (Opt.)	TPM2.0(Opt.)	TPM 2.0 (Opt.)	
Power	ATX	ATX	ATX	ATX	
Operating Temperature	0 ~ 60°C	0 ~ 60°C	-5 ~ 65°C	0 ~ 60°C	



AMD EPYC3000

AMD

Model Name		SO630
Platform		AMD
System	Processor	AMD® EPYC 3000 series
	Socket	BGA
	Max. Speed	up to 3.0GHz
	TDP	Max. 100W
	Cache	Max. 32MB
	Chipset	-
	BIOS	Insyde SPI
Memory	Technology	DDR4 2666 MHz
	Max. Capacity	256GB
	Socket	8 ECC RDIMM/UDIMM
Graphics	Connector	-
Expansion	PCIe, PCI	3 PCIe x16, 3 PCIe x8, 1 PCI
	Mini PCIe / M.2	2 M.2 M key
Audio	Audio Codec	-
Ethernet	Controller	2 Intel® I210AT
Rear I/O	Ethernet (GbE)	2
	Serial	1 RS-232/422/485, 1 RS-232
	USB	6 USB 3.2 Gen1
	Display	-
	Audio	-
	PS/2	-
Internal I/O	Serial	-
	USB	2 USB 3.2 Gen1
	Display	-
	Audio	-
	SATA	5 SATA 3.0
	LPC	-
SMBus	-	
TPM / iAMT	TPM2.0(Opt.)	
Power	ATX	
Operating Temperature	-5 ~ 65°C	

12th Gen
Intel Core



R680E/Q670E

Model Name		ADS630-R680E/Q670E
Platform		Workstation(R680E) / Desktop(Q670E)
System	Processor	12th Gen Intel® Core™
	Socket	LGA 1700
	Max. Speed	2.4~5.3GHz
	TDP	125W
	Cache	4M~30M
	Chipset	Intel® R680E/Q670E
Memory	BIOS	AMI SPI 256Mbit
	Technology	Dual Channel DDR4 3200 MHz
	Max. Capacity	128GB
Graphics	Socket	R680E: 4 UDIMM (ECC/Non-ECC) Q670E: 4 UDIMM (Non-ECC)
	Connector	1 VGA, 2 DP++, 1 HDMI
Expansion	PCIe	1 PCIe x16 (Gen 5), 3 PCIe x4 (Gen 4), 1 PCIe x4 (Gen 4, co-lay M.2 M key), 2 PCI
	M.2	1 M.2 M key, 1 M.2 M key (Opt.), 1 M.2 E key (Opt.)
	SIM	-
Audio	Audio Codec	Realtek ALC888S
Ethernet	Controller	2 Intel® I225LM, 1 Intel® x550-AT2 (Opt. no support WOL)
	Ethernet (GbE)	2 x 2.5GbE, 2 x 10GbE
Rear I/O	Serial	-
	USB	4 USB 3.2 Gen 2, 4 USB 3.2 Gen 1
	Display	1 VGA, 2 DP++, 1 HDMI
	Audio	Line-out, Mic-in, Line-in (Opt.)
	PS/2	-
Internal I/O	Serial	2 RS-232/422/485, 4 RS-232
	USB	2 USB 3.2 Gen 2, 1 USB 2.0 Type A, 2 USB 2.0 (colay vertical Type A, MOQ required)
	Display	-
	Audio	1 Front Audio
	Storage	4 SATA 3.0 (RAID 0/1/5/10)
	DIO	8-bit DIO
	LPC	-
	eSPI	1
	SMBus	1
	PS/2	1
TPM / iAMT		Nuvoton TPM 2.0 (Opt.) / iAMT 12.0 (Xeon/Core i5/i7/i9)
Power		ATX
Operating Temperature		-5~65°C



W480E



W480E

Xeon / 10th Gen
Intel Core

Model Name		CMS630-W480E	CMS632-W480E
Platform		Workstation	Workstation
System	Processor	Xeon® / 10th Gen Intel® Core™	Xeon® / 10th Gen Intel® Core™
	Socket	LGA 1200	LGA 1200
	Max. Speed	3.0~5.3GHz	3.0~5.3GHz
	TDP	125W	125W
	Cache	2M~20M	2M~20M
	Chipset	Intel® W480E	Intel® W480E
Memory	BIOS	Insyde SPI 256Mbit	AMI SPI 256Mbit
	Technology	Dual Channel DDR4 2400/2666/2933MHz	Dual Channel DDR4 2400/2666/2933MHz
	Max. Capacity	128GB	128GB
Graphics	Socket	4 UDIMM (ECC/Non-ECC)	4 UDIMM (ECC/Non-ECC)
	Connector	1 VGA, DP++, 1 HDMI	1 VGA, 1 DP++, 1 HDMI
Expansion	PCIe, PCI	2 PCIe x16 (1x16 or 2x8), 2 PCIe x4, 1 PCIe x1, 2 PCI	2 PCIe x16 (1x16 or 2x8), 2 PCIe x4, 2 PCIe x4 (co-lay M.2), 1 PCI
	Mini PCIe / M.2	2 M.2 M key, 1 M.2 E key (Opt.)	1 M.2 M key, 1 M.2 M key (Opt.), 1 M.2 E key (Opt.)
Audio	Audio Codec	Realtek ALC888	Realtek ALC888S
Ethernet	Controller	1 Intel® I211AT, 1 Intel® I219LM	1 Intel® I211AT, 1 Intel® I219LM
	Ethernet (GbE)	2	2
Rear I/O	Serial	1 RS-232/422/485	1 RS-232/422/485
	USB	2 USB 3.2 Gen2, 2 USB 3.2 Gen1, 4 USB 2.0	2 USB 3.2 Gen2, 2 USB 3.2 Gen1, 4 USB 2.0
	Display	1 VGA, DP++, 1 HDMI	1 VGA, DP++, 1 HDMI
	Audio	Line-out, Mic-in, Line-in (Opt.)	Line-out, Mic-in, Line-in (Opt.)
	Serial	1 RS-232/422/485, 4 RS-232	1 RS-232/422/485, 4 RS-232
Internal I/O	USB	2 USB 3.2 Gen 2, 2 USB 2.0, 1 USB 2.0 Type A	2 USB 3.2 Gen 2, 2 USB 2.0, 1 USB 2.0 Type A
	Audio	1 Front Audio, 1 S/PDIF	1 Front Audio
	SATA	4 SATA 3.0 (RAID 0/1/5/10)	4 SATA 3.0 (RAID 0/1/5/10)
	DIO	16-bit DIO	16-bit DIO
	LPC	1	1
	SMBus	1	1
	PS/2	1	1
TPM / iAMT		Infineon TPM2.0 (Opt.) / iAMT 12.0 (Xeon/Core i5/i7/i9)	
Power		ATX	
Operating Temperature		-5~65°C	

10th Gen Intel Core



Q470E



Q470E



Q470E



H420E

Model Name		CMS632-Q470E	CMS630-Q470E	CMS631-Q470E	CMS631-H420E
Platform		Desktop	Desktop	Desktop	Desktop
System	Processor	10th Gen Intel® Core™	10th Gen Intel® Core™	10th Gen Intel® Core™	10th Gen Intel® Core™
	Socket	LGA 1200	LGA 1200	LGA 1200	LGA 1200
	Max. Speed	3.0~5.3GHz	3.0~5.3GHz	3.0~5.3GHz	3.0~5.3GHz
	TDP	125W	125W	125W	125W
	Cache	2M~20M	2M~20M	2M~20M	2M~20M
	Chipset	Intel® Q470E	Intel® Q470E	Intel® Q470E	Intel® H420E
	BIOS	AMI SPI 256Mbit	Insyde SPI 256Mbit	Insyde SPI 256Mbit	Insyde SPI 256Mbit
Memory	Technology	Dual Channel DDR4 2400/2666/2933MHz	Dual Channel DDR4 2400/2666/2933MHz	Dual Channel DDR4 2400/2666/2933MHz	Dual Channel DDR4 2400/2666/2933MHz
	Max. Capacity	128GB	128GB	128GB	64GB
	Socket	4 UDIMM (Non-ECC)	4 UDIMM (Non-ECC)	4 UDIMM	2 UDIMM
Graphics	Connector	1 VGA, 1 DP++, 1 HDMI	1 VGA, DP++, 1 HDMI	1 VGA, 1 DP++, 1 HDMI	1 VGA, 1 DP++, 1 HDMI
Expansion	PCIe, PCI	2 PCIe x16 (1x16 or 2x8), 2 PCIe x4, 2 PCIe x4 (co-lay M.2), 1 PCI	2 PCIe x16 (1x16 or 2x8), 2 PCIe x4, 1 PCIe x1, 2 PCI	1 PCIe x16, 1 PCIe x4, 5 PCI	1 PCIe x16, 1 PCIe x4, 5 PCI
	Mini PCIe / M.2	1 M.2 M key, 1 M.2 M key (Opt.), 1 M.2 E key (Opt.)	2 M.2 M key, 1 M.2 E key (Opt.)	Up to 2 M.2 M key, 1 M.2 E key (Opt.)	1 M.2 M key
Audio	Audio Codec	Realtek ALC888S	Realtek ALC888	Realtek ALC888	Realtek ALC888
Ethernet	Controller	1 Intel® I211AT, 1 Intel® I219LM	1 Intel® I211AT, 1 Intel® I219LM	1 Intel® I211AT, 1 Intel® I219LM/I219V	1 Intel® I211AT, 1 Intel® I219LM/I219V
Rear I/O	Ethernet (GbE)	2	2	2	2
	Serial	1 RS-232/422/485	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, 4 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, DP++, 1 HDMI	1 VGA, DP++, 1 HDMI	1 VGA, DP++, 1 HDMI	1 VGA, DP++, 1 HDMI
Internal I/O	Audio	Line-out, Mic-in, Line-in (Opt.)	Line-out, Mic-in, Line-in (Opt.)	Line-out, Mic-in, Line-in (Opt.)	Line-out, Mic-in, Line-in (Opt.)
	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	1 RS-232/422/485, 4 RS-232
	USB	2 USB 3.2 Gen2, 2 USB 2.0, 1 USB 2.0 Type A	2 USB 3.2 Gen2, 2 USB 2.0, 1 USB 2.0 Type A	2 USB 3.2 Gen1, 4 USB 2.0, 1 USB 2.0 Type A	2 USB 3.2 Gen1, 2 USB 2.0
	Audio	1 Front Audio	1 Front Audio, 1 S/PDIF	1 Front Audio, 1 S/PDIF	1 Front Audio, 1 S/PDIF
	SATA	4 SATA 3.0 (RAID 0/1/5/10)	4 SATA 3.0 (RAID 0/1/5/10)	6 SATA 3.0 (RAID 0/1/5/10)	4 SATA 3.0
	DIO	16-bit DIO	16-bit DIO	16-bit DIO	16-bit DIO
	LPC	1	1	1	1
	SMBus	1	1	1	1
	PS/2	1	1	-	-
TPM / iAMT	Infineon TPM2.0 (Opt.) / iAMT 12.0 (Core i5/i7/i9)	Infineon TPM2.0 (Opt.) / iAMT 12.0 (Core i5/i7/i9)	Infineon TPM2.0 (Opt.) / iAMT 12.0 (Core i5/i7/i9)	Infineon TPM2.0 (Opt.)	
Power	ATX	ATX	ATX	ATX	
Operating Temperature	-5 ~ 65°C	-5 ~ 65°C	-5 ~ 65°C	-5 ~ 65°C	



C246



C246



C246

Xeon/8th/9th Gen Intel Core

Model Name		CS650-C246	CS632-C246	CS631-C246
Platform		Workstation	Workstation	Workstation
System	Processor	Xeon®/8th/9th Gen Intel® Core™	Xeon®/8th/9th Gen Intel® Core™	Xeon®/8th/9th Gen Intel® Core™
	Socket	LGA 1151	LGA 1151	LGA 1151
	Max. Speed	2.9~5.0 GHz	2.9~4.7 GHz	2.9~4.7 GHz
	TDP	Max. 95W	Max. 95W	Max. 95W
	Cache	2M/4M/6M/9M/12M/16M	2M/4M/6M/9M/12M	2M/4M/6M/9M/12M
	Chipset	Intel® C246	Intel® C246	Intel® C246
	BIOS	AMI SPI 128Mbit	AMI SPI 128Mbit	AMI SPI 128Mbit
Memory	Technology	Dual Channel DDR4 2400/2666 MHz	Dual Channel DDR4 2400/2666 MHz	Dual Channel DDR4 2400/2666 MHz
	Max. Capacity	128GB	128 GB	128 GB
	Socket	4 DIMM (ECC/non-ECC)	4 DIMM (ECC/non-ECC)	4 DIMM (ECC/non-ECC)
Graphics	Connector	1 VGA, 2 DP++	1 VGA, 2 DP++	1 VGA, 2 DP++
Expansion	PCIe, PCI	2 PCIe x16 (1 x16 or 2 x8), 3 PCIe x4, 1 PCIe x1, 1 PCI	1 PCIe x16 (2 x8 as Opt.), 3 PCIe x4, 2 PCI	2 PCIe x16 (1 x16 or 2 x8), 3 x PCIe x4, 1 PCIe x1, 1 PCI
	Mini PCIe / M.2	1 mini PCIe, 1 M.2 M key	1 mini PCIe, 1 M.2 M key	2 Mini PCIe, 1 M.2 M key
Audio	Audio Codec	Realtek ALC888	Realtek ALC888	Realtek ALC888
Ethernet	Controller	1 Intel® I211AT, 1 Intel® I219LM	1 Intel® I211AT, 1 Intel® I219LM	1 Intel® I219LM, 1 Intel® I211AT
Rear I/O	Ethernet (GbE)	2	2	2
	Serial	1 RS-232/422/485	1 RS-232/422/485	1 RS-232/422/485
	USB	2 USB 3.2 Gen2, 2 USB 3.2 Gen1, 2 USB 2.0	4 USB 3.2 Gen1, 2 USB 2.0	2 USB 3.2 Gen2, 2 USB 3.2 Gen1, 2 USB 2.0
	Display	1 VGA, 2 DP++	1 VGA, 2 DP++	1 VGA, 2 DP++
Internal I/O	Audio	Mic-in, Line-out, Line-in (Opt.)	Mic-in, Line-out, Line-in (Opt.)	Mic-in, Line-out, Line-in (Opt.)
	Serial	1 RS-232/422/485, 4 RS-232	5 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, 1 USB 2.0 vertical Type A	2 USB 3.2 Gen1, 4 USB 2.0
	Audio	Front Audio, S/PDIF	Front Audio, S/PDIF	Front Audio, S/PDIF
	SATA	4 SATA 3.0 (RAID)	4 SATA 3.0 (RAID)	5 SATA3.0 (RAID)
	DIO	8-bit DIO	8-bit DIO	8-bit DIO
	LPC	1	1	1
	SMBus	1	1	1
	PS/2	1	1	1
TPM / iAMT	TPM (Opt.), iAMT (Xeon/Core i5/i7 only)	TPM (Opt.) / iAMT (Xeon/Core i5/i7 only)	TPM (Opt.) / iAMT (Xeon/Core i5/i7 only)	
Power	ATX	ATX	ATX	
Operating Temperature	-5 ~ 65°C	0 ~ 60°C	0 ~ 60°C	

8th/9th Gen
Intel Core



Q370



Q370

Model Name		CS650-Q370	CS632-Q370
Platform		Desktop	Desktop
System	Processor	8th/9th Gen Intel® Core™	8th/9th Gen Intel® Core™
	Socket	LGA 1151	LGA 1151
	Max. Speed	2.9~5.0 GHz	2.9~4.7 GHz
	TDP	Max. 95W	Max. 95W
	Cache	2M/4M/6M/9M/12M/16M	2M/4M/6M/9M/12M
	Chipset	Intel® Q370	Intel® Q370
Memory	BIOS	AMI SPI 128Mbit	AMI SPI 128Mbit
	Technology	Dual Channel DDR4 2400/2666 MHz	Dual Channel DDR4 2400/2666 MHz
	Max. Capacity	128GB	128 GB
Graphics	Socket	4 DIMM	4 DIMM
	Connector	1 VGA, 2 DP++	1 VGA, 2 DP++
Expansion	PCIe, PCI	2 PCIe x16 (1 x16 or 2 x8), 3 PCIe x4, 1 PCIe x1, 1 PCI	1 PCIe x16 (2 x8 as Opt.), 3 PCIe x4, 2 PCI
	Mini PCIe / M.2	1 mini PCIe, 1 M.2 M key	1 mini PCIe, 1 M.2 M key
Audio	Audio Codec	Realtek ALC888	Realtek ALC888
Ethernet	Controller	1 Intel® I211AT, 1 Intel® I219LM	1 Intel® I211AT, 1 Intel® I219LM
Rear I/O	Ethernet (GbE)	2	2
	Serial	1 RS-232/422/485	1 RS-232/422/485
	USB	2 USB 3.2 Gen2, 2 USB 3.2 Gen1, 2 USB 2.0	4 USB 3.2 Gen1, 2 USB 2.0
	Display	1 VGA, 2 DP++	1 VGA, 2 DP++
	Audio	Mic-in, Line-out, Line-in (Opt.)	Mic-in, Line-out, Line-in (Opt.)
	PS/2	1	1
Internal I/O	Serial	1 RS-232/422/485, 4 RS-232	5 RS-232
	USB	2 USB 3.2 Gen1, 4 USB 2.0	2 USB 3.2 Gen2, 4 USB 2.0, 1 USB 2.0 vertical Type A
	Audio	Front Audio, S/PDIF	Front Audio, S/PDIF
	SATA	4 SATA 3.0 (RAID)	4 SATA 3.0 (RAID)
	DIO	8-bit DIO	8-bit DIO
	LPC	1	1
TPM / iAMT	SMBus	1	1
		TPM (Opt.), iAMT (Core i5/i7 only)	TPM (Opt.) / iAMT (Core i5/i7 only)
Power		ATX	ATX
Operating Temperature		-5~65°C	0~60°C

8th/9th Gen
Intel Core



Q370



Q370

Model Name		CS631-Q370	CS630-Q370
Platform		Desktop	Desktop
System	Processor	8th/9th Gen Intel® Core™	8th/9th Gen Intel® Core™
	Socket	LGA 1151	LGA 1151
	Max. Speed	2.9~4.7 GHz	2.9~4.7 GHz
	TDP	Max. 95W	Max. 95W
	Cache	2M/4M/6M/9M/12M	2M/4M/6M/9M/12M
	Chipset	Intel® Q370	Intel® Q370
Memory	BIOS	AMI SPI 128Mbit	AMI SPI 128Mbit
	Technology	Dual Channel DDR4 2400/2666 MHz	Dual Channel DDR4 2400/2666 MHz
	Max. Capacity	128 GB	128 GB
Graphics	Socket	4 DIMM	4 DIMM
	Connector	1 VGA, 2 DP++	1 VGA, DVI, 1 DP++
Expansion	PCIe, PCI	2 PCIe x16 (1 x16 or 2 x8), 3 x PCIe x4, 1 PCIe x1, 1 PCI	5 PCI, 1 PCIe x16, 1 PCIe x4
	Mini PCIe / M.2	2 Mini PCIe, 1 M.2 M key	1 mPCIe, 1 M.2 M key
Audio	Audio Codec	Realtek ALC888	Realtek ALC888
Ethernet	Controller	1 Intel® I219LM, 1 Intel® I211AT	1 Intel® I219LM, 1 Intel® I211AT
Rear I/O	Ethernet (GbE)	2	2
	Serial	1 RS-232/422/485	1 RS-232/422/485
	USB	2 USB 3.2 Gen2, 2 USB 3.2 Gen1, 2 USB 2.0	4 USB 3.2 Gen1, 2 USB2.0
	Display	1 VGA, 2 DP++	1 VGA, DVI, 1 DP++
	Audio	Mic-in, Line-out, Line-in (Opt.)	Mic-in, Line-out, Line-in (Opt.)
	PS/2	1	1
Internal I/O	Serial	1 RS-232/422/485, 4 RS-232	1 RS-232/422/485, 4 RS-232
	USB	2 USB 3.2 Gen1, 4 USB 2.0	2 USB 3.2 Gen2, 4 USB2.0
	Audio	Front Audio, S/PDIF	Front Audio, S/PDIF
	SATA	5 SATA3.0 (RAID)	5 SATA3.0 (RAID)
	DIO	8-bit DIO	8-bit DIO
	LPC	1	1
TPM / iAMT	SMBus	1	1
		TPM (Opt.) / iAMT (Core i5/i7 only)	TPM (Opt.) / iAMT (Core i5/i7 only)
Power		ATX	ATX
Operating Temperature		0~60 C	0~60 C

*Populated by default

**Supports LPC EXT-RS232/RS485 module

8th/9th Gen
Intel Core



H310



H310

Model Name		CS630-H310	CS620-H310
Platform		Desktop	Desktop
System	Processor	8th/9th Gen Intel® Core™	8th/9th Gen Intel® Core™
	Socket	LGA 1151	LGA1151
	Max. Speed	2.9~4.7 GHz	2.9~5.0 GHz
	TDP	Max. 95W	Max. 95W
	Cache	2M/4M/6M/9M/12M	2M/4M/6M/9M/12M/16M
	Chipset	Intel® H310	Intel® H310
BIOS		AMI SPI 128Mbit	AMI SPI 128Mbit
Memory	Technology	Dual Channel DDR4 2400/2666 MHz	Dual Channel DDR4 2400/2666 MHz
	Max. Capacity	64 GB	64GB
	Socket	2 DIMM	2 DIMM
Graphics		1 VGA, DVI, 1 DP++	1 VGA, 1 DVI-I, 1 DP++
Expansion	PCIe, PCI	5 PCI, 1 PCIe x16, 1 PCIe x4	1 PCIe x 16, 1 PCIe x 4, 4 PCI, 2 ISA
	Mini PCIe / M.2	-	1 mSATA
Audio		Realtek ALC888	Realtek ALC888
Ethernet		1 Intel® I219V, 1 Intel® I211AT	1 Intel® I211AT, 1 Intel® I219V
Rear I/O	Ethernet (GbE)	2	2
	Serial	1 RS-232/422/485	1 RS232/422/485
	USB	4 USB 3.2 Gen 1, 2 USB2.0	4 USB 3.2 Gen1, 2 USB 2.0
	Display	1 VGA, DVI, 1 DP++	1 VGA, 1 DVI-I, 1 DP++
	Audio	Mic-in, Line-out, Line-in (Opt.)	Mic-in, Line-out, Line-in (Opt.)
	PS/2	1	1
Internal I/O	Serial	1 RS-232/422/485, 4 RS-232	1 RS-232/422/485, 4 RS-232
	USB	4 USB 2.0	4 USB2.0
	Audio	Front Audio, S/PDIF	Front Audio, S/PDIF
	SATA	4 SATA3.0	4 SATA3.0 (1 share with mSATA)
	DIO	8-bit DIO	8-bit DIO
	LPC	1	1
	SMBus	1	1
TPM / iAMT		TPM 1.2/2.0 (Opt.)	TPM (Opt.),
Power		ATX	ATX
Operating Temperature		0 ~ 60°C	-5 ~ 65°C



C236



C236



C236

Xeon®/6th/7th Gen
Intel Core

Model Name		KD632-C236	KD631-C236	SD631-C236
Platform		Workstation	Workstation	Workstation
System	Processor	Intel® Xeon®/6th/7th Gen Intel® Core™	6th/7th Gen Intel® Core™	Intel® Xeon®/6th/7th Gen Intel® Core™
	Socket	LGA 1151	LGA 1151	LGA 1151
	Max. Speed	2.6~4.2 GHz	2.6~4.2 GHz	2.6~4.2 GHz
	TDP	Max. 95W	Max. 95W	Max. 95W
	Cache	2M/3M/6M/8M	2M/3M/6M/8M	2M/3M/4M/6M/8M
	Chipset	Intel® C236	Intel® C236	Intel® C236
BIOS		Insyde SPI 128Mbit	Insyde SPI 128Mbit	Insyde SPI 128Mbit
Memory	Technology	Dual Channel DDR4 2133/2400MHz	Dual Channel DDR4 2133/2400 MHz	Dual Channel DDR4 1866/2133MHz
	Max. Capacity	64GB	64GB	64GB
	Socket	4 DIMM (ECC/Non ECC)	4 DIMM (ECC/Non-ECC)	4 DIMM (ECC/Non ECC)
Graphics		1 VGA, 1 DVI, 1 DP++	1 VGA, 1 DVI-D, 1 HDMI	1 VGA, 1 DVI-D, 1 HDMI
Expansion	PCIe, PCI	2 PCIe x16 (1 x16 or 2 x8), 3 PCIe x4, 2 PCI	2 PCIe x16 (1 x16 or 2 x8), 2 PCIe x4, 3 PCI	2 PCIe x16 (1 x16 or 2 x8), 2 PCIe x4, 3 PCI
	Mini PCIe / M.2	1 M.2 M key, 1 Mini PCIe	1 M.2 M key	-
Audio		Realtek ALC888	Realtek ALC888	Realtek ALC888
Ethernet		1 Intel® I211AT, 1 Intel® I219LM	1 Intel® I210AT, 1 Intel® I219LM	1 Intel® I210AT, 1 Intel® I219LM
Rear I/O	Ethernet (GbE)	2	2	2
	Serial	1 RS-232/422/485	1 RS-232/422/485	1 RS-232/422/485
	USB	4 USB 3.2 Gen1, 2 USB 2.0	4 USB 3.2 Gen1, 2 USB 2.0	4 USB 3.2 Gen1, 2 USB 2.0
	Display	1 VGA, 1 DVI, 1 DP++	1 VGA, 1 DVI-D, 1 HDMI	1 VGA, 1 DVI-D, 1 HDMI
	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	1	1
Internal I/O	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
	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	2 USB 3.2 Gen1, 6 USB 2.0
	Display	-	-	-
	Audio	Front Audio, S/PDIF	Front Audio, S/PDIF	Front Audio (Opt.), S/PDIF
	SATA	5 SATA 3.0 (RAID)	5 SATA 3.0 (RAID)	6 SATA 3.0 (RAID)
	DIO	8-bit DIO	8-bit DIO	8-bit DIO
	LPC	1	1	1
SMBus	1	1	1	
TPM / iAMT		TPM (Opt.) / iAMT (Xeon/Core i5/i7 only)	TPM (Opt.) / iAMT (Xeon/Core i5/i7 only)	TPM (Opt.) / iAMT (Xeon/Core i5/i7 only)
Power		ATX	ATX	ATX
Operating Temperature		0 ~ 60°C	0 ~ 60°C	0 ~ 60°C

*Populated by default

**Supports LPC EXT-RS232/RS485 module

6th/7th Gen
Intel Core



Q170



Q170

Model Name		KD632-Q170	KD631-Q170
Platform		Desktop	Desktop
System	Processor	6th/7th Gen Intel® Core™	6th/7th Gen Intel® Core™
	Socket	LGA 1151	LGA 1151
	Max. Speed	2.6~4.2 GHz	2.6~4.2 GHz
	TDP	Max. 95W	Max. 95W
	Cache	2M/3M/6M/8M	2M/3M/6M/8M
	Chipset	Intel® Q170	Intel® Q170
BIOS		Insyde SPI 128Mbit	Insyde SPI 128Mbit
Memory	Technology	Dual Channel DDR4 2133/2400MHz	Dual Channel DDR4 2133/2400 MHz
	Max. Capacity	64GB	64GB
	Socket	4 DIMM	4 DIMM
Graphics	Connector	1 VGA, 1 DVI, 1 DP++	1 VGA, 1 DVI-D, 1 HDMI
Expansion	PCIe, PCI	2 PCIe x16 (1 x16 or 2 x8), 3 PCIe x4, 2 PCI	2 PCIe x16 (1 x16 or 2 x8), 2 PCIe x4, 3 PCI
	Mini PCIe	1 M.2 M key, 1 Mini PCIe	1 M.2 M key
Audio	Audio Codec	Realtek ALC888	Realtek ALC888
Ethernet	Controller	1 Intel® I211AT, 1 Intel® I219LM	1 Intel® I210AT, 1 Intel® I219LM
Rear I/O	Ethernet (GbE)	2	2
	Serial	1 RS-232/422/485	1 RS-232/422/485
	USB	4 USB 3.2 Gen1, 2 USB 2.0	4 USB 3.2 Gen1, 2 USB 2.0
	Display	1 VGA, 1 DVI, 1 DP++	1 VGA, 1 DVI-D, 1 HDMI
	Audio	Mic-in, Line-out, Line-in (Opt.)	Mic-in, Line-out, Line-in (Opt.)
	PS/2	1	1
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
	Audio	Front Audio, S/PDIF	Front Audio, S/PDIF
	SATA	5 SATA 3.0 (RAID)	6 SATA 3.0 (RAID)
	DIO	8-bit DIO	8-bit DIO
	LPC**	1	1
	SMBus	1	1
TPM / iAMT		TPM (Opt.) / iAMT (Core i5/i7 only)	TPM (Opt.) / iAMT (Core i5/i7 only)
Power		ATX	ATX
Operating Temperature		0~60°C	0~60°C

6th/7th Gen Intel
Core



Q170



Q170

Model Name		KD600-Q170	SD631-Q170
Platform		Desktop	Desktop
System	Processor	6th/7th Gen Intel® Core™	Intel® Xeon™/6th/7th Gen Intel® Core™
	Socket	LGA 1151	LGA 1151
	Max. Speed	2.6~4.2 GHz	2.6~4.2 GHz
	TDP	Max. 95W	Max. 95W
	Cache	2M/3M/6M/8M	2M/3M/4M/6M/8M
	Chipset	Intel® Q170	Intel® Q170
BIOS		Insyde SPI 128Mbit	Insyde SPI 128Mbit
Memory	Technology	Dual Channel DDR4 2133/2400 MHz	Dual Channel DDR4 1866/2133MHz
	Max. Capacity	64GB	64GB
	Socket	4 DIMM	4 DIMM
Graphics	Connector	1 VGA, 1 DVI-D, 1 DP++	1 VGA, 1 DVI-D, 1 HDMI
Expansion	PCIe, PCI	6 PCI, 1 PCIe x16	2 PCIe x16 (1 x16 or 2 x8), 2 PCIe x4, 3 PCI
	Mini PCIe / M.2	1 Mini PCIe	-
Audio	Audio Codec	Realtek ALC888	Realtek ALC888
Ethernet	Controller	1 Intel® I219LM, 1 Intel® I211AT	1 Intel® I210AT, 1 Intel® I219LM
Rear I/O	Ethernet (GbE)	2	2
	Serial	1 RS-232/422/485	1 RS-232/422/485
	USB	4 USB 3.2 Gen1, 2 USB 2.0	4 USB 3.2 Gen1, 2 USB 2.0
	Display	1 VGA, 1 DVI-D, 1 DP++	1 VGA, 1 DVI-D, 1 HDMI
	Audio	Mic-in, Line-out, Line-in (Opt.)	Mic-in, Line-out, Line-in (Opt.)
	PS/2	1	1
Internal I/O	Serial	1 RS-232/422/485, 8 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, 6 USB 2.0
	Display	-	-
	Audio	Front Audio, S/PDIF	Front Audio (Opt.), S/PDIF
	SATA	4 SATA 3.0 (RAID), 1 mSATA	6 SATA 3.0 (RAID)
	DIO	8-bit DIO	8-bit DIO
	LPC	1	1
SMBus	1	1	
TPM / iAMT		TPM (Opt.) / iAMT (Core i5/i7 only)	TPM (Opt.) / iAMT (Core i5/i7 only)
Power		ATX	ATX
Operating Temperature		0~60°C	0~60°C

6th/7th Gen Intel
Core



H110



H110

Model Name		KD630-H110	KD600-H110
Platform		Desktop	Desktop
System	Processor	6th/7th Gen Intel® Core™	6th/7th Gen Intel® Core™
	Socket	LGA 1151	LGA 1151
	Max. Speed	2.6~4.5 GHz	2.6~4.2 GHz
	TDP	95W	Max. 95W
	Cache	2M~8M	2M/3M/6M/8M
	Chipset	Intel® H110	Intel® H110
	BIOS	Insyde SPI 128Mbit	Insyde SPI 128Mbit
Memory	Technology	Dual Channel DDR4 up to 2400 MHz	Dual Channel DDR4 2133/2400 MHz
	Max. Capacity	64GB	32GB
	Socket	2 UDIMM	2 DIMM
Graphics	Connector	Dual Display: 1 VGA, 1 DVI-I / 1 VGA, 1 HDMI / 1 DVI-I, 1 HDMI	1 VGA, 1 DVI-D, 1 DP++
Expansion	PCIe, PCI	1 PCIe x16, 1 PCIe x4, 5 PCI, 1 mSATA	6 PCI, 1 PClex16
	Mini PCIe	1 M.2 M key	-
Audio	Audio Codec	Realtek ALC888	RealtekALC888
Ethernet	Controller	1 Intel® I211AT, 1 Intel® I219V	1 Intel® I219V, 1 Intel® I211AT
Rear I/O	Ethernet (GbE)	2	2
	Serial	1 RS-232/422/485	1 RS-232/422/485
	USB	4 USB 3.2 Gen1, 2 USB 2.0	4 USB 3.2 Gen1, 2 USB 2.0
	Display	1 VGA, 1 DVI, 1 HDMI	1 VGA, 1 DVI-D, 1 DP++
	Audio	Line-out, Mic-in, Line-in (Opt.)	Mic-in, Line-out, Line-in (Opt.)
	PS/2	1	1
Internal I/O	Serial	1 RS-232/422/485, 4 RS-232	1 RS-232/422/485, 8 RS-232
	USB	4 USB 2.0 / Up to 2 Vertical USB 2.0 Type A (Opt.)	4 USB 2.0
	Display	-	-
	Audio	1 Audio, 1 S/PDIF	Front Audio, S/PDIF
	SATA	4 SATA 3.0	4 SATA 3.0 (RAID), 1 mSATA
	DIO	8-bit DIO	8-bit DIO
	LPC**	1	1
	SMBus	1	1
TPM / iAMT		Infineon TPM2.0/1.2 (Opt.)	TPM 1.2/2.0 (Opt.)
Power		ATX	ATX
Operating Temperature		-5 ~ 65°C	0 ~ 60°C

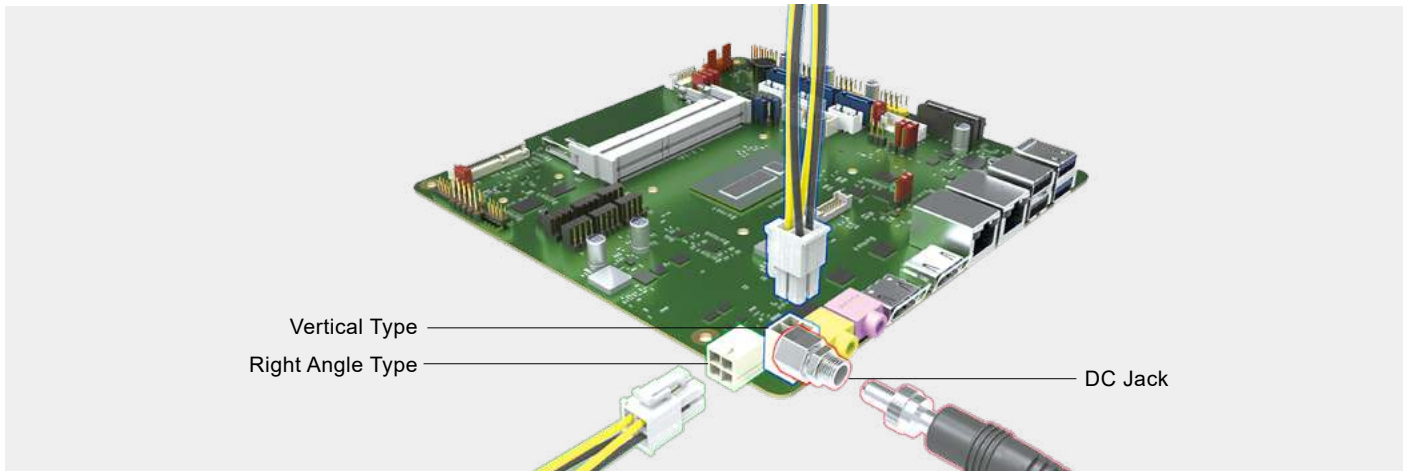
6th/7th Gen Intel
Core



H110

Model Name		SD630-H110
Platform		Desktop
System	Processor	6th/7th Gen Intel® Core™
	Socket	LGA 1151
	Max. Speed	2.6~4.2 GHz
	TDP	Max. 95W
	Cache	2M/3M/4M/6M/8M
	Chipset	Intel® H110
	BIOS	Insyde SPI 128Mbit
Memory	Technology	Dual Channel DDR3L 1600MHz
	Max. Capacity	16GB
	Socket	2 DIMM
Graphics	Connector	1 VGA, 1 DVI-D, 1 HDMI
Expansion	PCIe, PCI	1 PCIe x16, 1 PCIe x4, 5 PCI
Audio	Audio Codec	Realtek ALC888
Ethernet	Controller	1 Intel® I211AT, 1 Intel® I219V
Rear I/O	Ethernet (GbE)	2
	Serial	1 RS-232/422/485
	USB	4 USB 3.2 Gen1, 2 USB 2.0
	Display	1 VGA, 1 DVI-D, 1 HDMI
	Audio	Mic-in, Line-out, Line-in (Opt.)
	PS/2	1
Internal I/O	Serial	1 RS-232/422/485, 4 RS-232
	USB	4 USB 2.0
	Audio	Front Audio (Opt.), S/PDIF
	SATA	4 SATA 3.0
	DIO	8-bit DIO
	LPC**	1
	SMBus	1
TPM / iAMT		TPM 2.0/1.2 (Opt.)
Power		ATX
Operating Temperature		0~60°C

Flexible Power Connector



Our Applicable Boards:

Processor	Form Factor	Model
9th/8th Gen Intel® Core™	Mini-ITX	WL171/WL173, CS103-Q370/C246/H310, CS101-Q370/C246/H310
7th Gen Intel® Core™	Mini-ITX	KD171, KU171/173
	SBC	KU551, KU553
6th Gen Intel® Core™	Mini-ITX	SD101/SD103-Q170, SD101/SD103-H110, SU171/SU173
	SBC	SU551
Intel Atom® E3900	Mini-ITX	AL170, AL171/AL173
	SBC	AL551, AL553
Intel® Pentium®/Celeron® N3000	SBC	BW051
AMD® Ryzen™ Embedded V1000/R1000 Series	Mini-ITX	GH171

Our Proprietary LPC Modules

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

Our Applicable Boards:

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

Peripherals

Providing Expansibility & High Flexibility

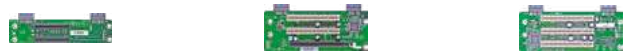


Proprietary I/O Cards



Model Name	EXT-100GbE	SEM-2500/2510
Chip	E810-CAM2	AST2500/2510
Mode	100GbE	SEM2500: IPMI & VGA SEM2510: VGA
Interface	DFI Proprietary	DFI Proprietary
Dimension	167.7mm x 68.9mm	69.6mm x 45mm
Applicable Models	PR810-C622	PR610-C621/ PR610-C622

Riser Cards



Model Name	H300-2E	H300-2P1E	H300-3P1M
Expansion Slots	2 PCIe x8	1 PCIe x16, 2 PCI	3 PCI, 1 Mini PCIe
Interface	2 Proprietary Extension Bus		
Dimensions	170 x 37 mm	170 x 64 mm	170 x 64 mm
Applicable Models	CS103-Q370/C246, CS103-H310		

Riser Cards



Model Name	RISER-2PE4	RISER-PE16	X100-2P1M	X100-3PE2	T100-2E	T200-1E	
Expansion Slots	2 PCIe x4	1 PCIe x16	2 PCI, 1 Mini PCIe	1 PCIe x1, 1 PCI, 1 Mini PCIe	2 PCIe x16 (PCIe x8 signal)	1 PCIe x16 (PCIe x16 signal)	
Interface	1 PCIe x8	1 PCIe x16	1 PCIe x1	1 PCIe x1	PCIe x16	PCIe x16	
Dimensions	170 x 52.7 mm	137.1 x 31.3 mm	170 x 52.7 mm	170 x 52.7 mm	170mm x 52.70mm	140mm x 51mm	
Applicable Models						All our systems and boards with PCIe x16 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	DC 12V Jack 4-pin ATX +12V Power Connector 20-pin ATX Power Connector				3-pin DC-in Connector 4-pin ATX 12V Power Connector 20-pin ATX Power Connector 4-pin FDD Power Connector		3-pin DC-in Connector 4-pin ATX 12V Power Connector 20-pin ATX Power Connector 4-pin FDD Power Connector		DC-in Jack(default)/ 4-pin Power Connector
Dimensions	146 x 50 mm				146 x 50 mm		146 x 50 mm		146 x 55 mm

Gaming I/O Board



Model Name	GM901
Expansion Slots/Ports	1 PCIe x1 Connector/ PCIe x1 36-pin connector (Opt. ,PCIe x1 signal)
Digital I/O	32 ESD-protected Inputs/Output
Security	Intrusion detection x8
Dimension	170mm x 80mm
Features	5- year SRAM data retention 2-year Event log data retention
SW Support	Security API SDK, Logic processor SDK

Proprietary Expansion Modules



Model Name	EXT-DP	SDVO-LVDS	MPE-CAN2
Chip	SN75DP130	Chrontel CH7308B	-
Ports	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 DP	1 SDVO	1 Mini PCIe/USB (Opt.)
Dimensions	50 x 40 mm	45 x 38 mm	50.59mm x 30mm
Applicable Models	-	-	-

Proprietary Expansion Modules



Model Name	EXT-RS232	EXT-RS485	MPE-EXTB	MPE-EXTF	MPE-SATA	MPE-SIM2
Chip	NCT5104	NCT5104	-	-	-	-
Expansion Slots/Ports	4 RS232 Serial Connector	4 RS485 Serial Connector	1 Full-size Mini PCIe	1 Full-size Mini PCIe	1 SATA Connector	2 SIM slots
Interface	1 LPC	1 LPC	1 Half-size Mini PCIe	1 Half-size Mini PCIe	1 mSATA	Mini PCIe (USB 3.2 Gen 1/ USB 2.0, PCIe)
Dimensions	48 x 30 mm	48 x 30 mm	30 x 26.8 mm	30 x 26.8 mm	35 x 25 mm	61.45 x 30 mm
Applicable Models	SD631-C236/Q170, SD630-H110, SD331-C236/Q170, SD331-Q170/H110, SD101/SD103-Q170/H110, SD100-Q170/H110, SU171/SU173, WL171/WL173, CS100-Q370/C246/H310			-	-	ALF51, AL551, AL553

M.2 Expansion Modules



Model Name	M.2-1LAN/2LAN	M.2-1PSE/2PSE	MPE-M2M/M2E	M.2-COM4	M.2-SATA2	M.2-USB314
Expansion Slots/Ports	1 RJ45 / 2 RJ45	1 RJ45 / 2 RJ45	1 M.2 M key/ 1 M.2 E key	RS232/RS422/RS485	2 x SATA 3.0	4 x USB 3.2 Gen1
Interface	PCIe x1	PCIe x1	PCIe, SATA, USB (based on motherboard input)	PCIe x1	PCIe x1	PCIe x1
Form Factor	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 42 mm)	M.2 B-M key (22 x 42 mm)	M.2 B-M key
Applicable Models	All our systems and boards with M.2 interface.					All DFI systems and boards with M.2 interface

High Speed Modules

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

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

Gaming I/O Board

PCIe x1

Door 1 ~6

Door 7

Door 8

COM 1

PCIe x1

PCIe x1

GM901

Expand gaming ports and provide FPGA for API usage

Gaming IO	Digital IO	Security ROM
Intrusion switch inputs: - 6 via 2x4 micro-fit connector - 2 via 2-pin box headers	<ul style="list-style-type: none"> 32 ESD-protected inputs 32 ESD-protected outputs 	<ul style="list-style-type: none"> 2 x SRAM (BGA type): 64K x16, 512K x16, 1M x16, 2M x16, 4M x16



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