

**Micro-ATX Motherboard
12/13/14th Gen Intel® Core™ & Core
200S Processor
(codename: Alder Lake-S/Raptor Lake-S/
Raptor Lake-S Refresh/Bartlett Lake-S)**



WISE-DeviceOn

- Intel® 12/13/14th Gen Core™ i9/i7/i5/i3 processors with Q670E/ R680E/ H610E chipsets
- 3 2.5GbE LAN and 1 GbE LAN for digital devices
- Up to 192GB DDR5 UDIMMs for data transfer
- High speed expansions: PCIe x16 Gen5, 8 USB3.2, 1 USB3.2 Type C
- 1 internal USB3.2 type A to support USB keylock functions
- Quad displays by 2 DPs, HDMI, and eDP
- WISE-DeviceOn and Embedded Software APIs

SMBus H/W Monitor Watchdog GPIO

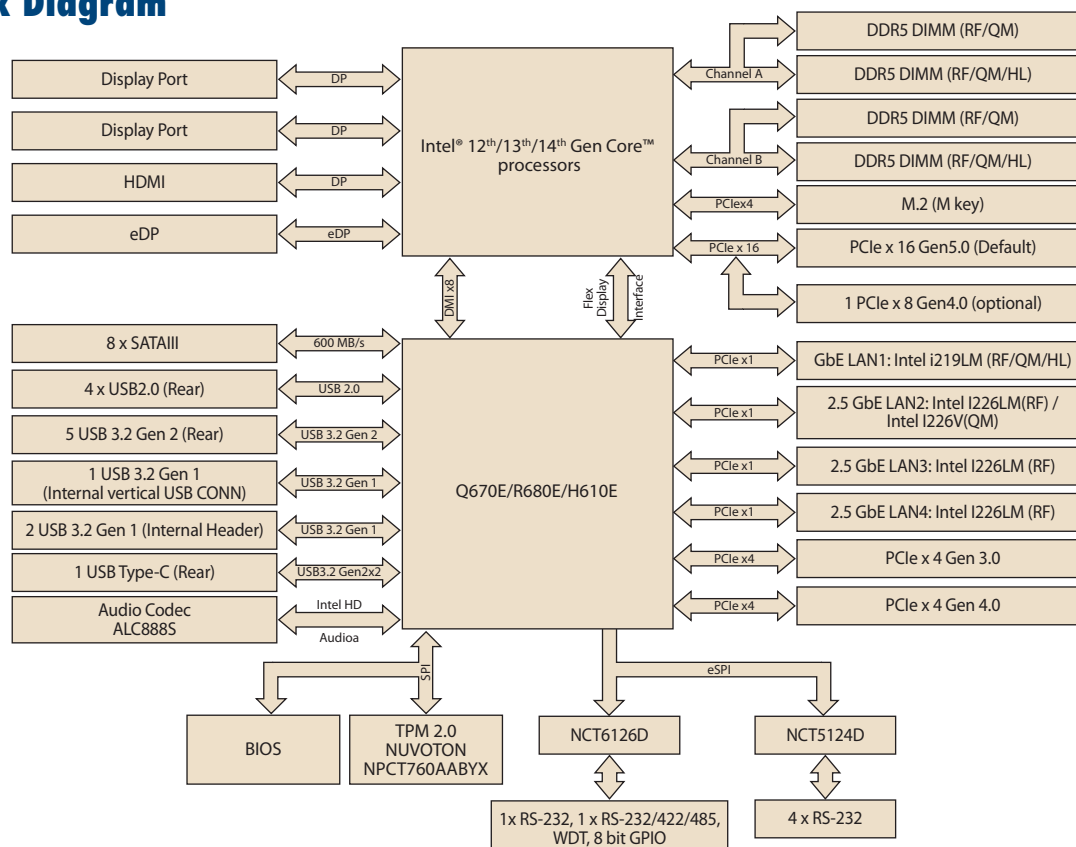
BIOS flash Monitoring

14th Processor System	CPU	i9-14900/ i9-14900T	i7-14700/ i7-14700T	i5-14500/ i5-14500T	i5-14400/ i5-14400T	i3-14100/ i3-14100T						
	Core Number (Performance and Efficient core)	8P+16E	8P+12E	6P+8E	6P+4E	4P						
	Max. Speed	5.8/ 5.5GHz	5.4/ 5.2GHz	5.0GHz/ 4.8GHz	4.7GHz/ 4.5GHz	4.7GHz/ 4.4GHz						
	Smart cache	36M	33M	24M	20M	12M						
	TDP	65W/35W	65W/35W	65W/35W	65W/35W	60W/35W						
	ECC memory support (with chipset R680E)	Yes	Yes	Yes	No	No						
13th Processor System	CPU	i9-13900E/ i9-13900TE	i7-13700E/ i7-13700TE	i5-13500E/ i5-13500TE	i3-13100E/ i3-13100TE	i9-13900	i7-13700	i5-13500	i5-13400	i3-13100		
	Core Number (Performance and Efficient core)	8P+16E	8P+8E	6P+8E	4P+0E	8P+16E	8P+8E	6P+8E	6P+4E	4P+0E		
	Max. Speed	5.20GHz/ 5.00GHz	5.10 GHz/ 4.80 GHz	4.60 GHz/ 4.50 GHz	4.40 GHz/ 4.10 GHz	5.60 GHz	5.20 GHz	4.80 GHz	4.80 GHz	4.50 GHz		
	Intel Smart Cache	36MB/36MB	30MB/30MB	24MB/24MB	12MB/12MB	36MB	30MB	24MB	20MB	12MB		
	TDP (W)	65W/35W	65W/35W	65W/35W	60W/35W	65W	65W	65W	65W	60W		
	ECC memory support (with chipset R680E)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No		
12th Processor System	CPU	i9-12900E/ i9-12900TE	i7-12700E/ i7-12700TE	i5-12500E/ i5-12500TE	i3-12100E/ i3-12100TE	G7400E/ G7400TE	G6900E/ G6900TE	i9-12900	i7-12700	i5-12500	i5-12400	i3-12100
	Core Number (Performance and Efficient core)	8P+8E	8P+4E	6P+0E	4P+0E	2P+0E	2P+0E	8P+8E	8P+4E	6P+0E	6P+0E	4P+0E
	Max. Speed	5.0GHz/ 4.8GHz	4.8GHz/ 4.7GHz	4.5GHz/ 4.3GHz	4.2GHz/ 4.0GHz	3.6GHz/ 3.0GHz	3.0GHz/ 2.4GHz	5.10GHz	4.9GHz	4.6GHz	4.4GHz	4.3GHz
	Intel Smart Cache	30MB/30MB	25MB/25MB	18MB/18MB	12MB/12MB	6MB/6MB	4MB/4MB	30MB	25MB	18MB	18MB	12MB
	TDP (W)	65W/35W	65W/35W	65W/35W	60W/35W	46W/35W	46W/35W	65W	65W	65W	65W	60W
	ECC memory support (with chipset R680E)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
Processor System	Chipset	Q670E/R680E/H610E										
	BIOS	AMI BIOS UEFI 256 Mbits SPI										
Expansion Slot	PCIe x16 (Gen5)	1 slot										
	PCIe x8 (Gen4)	(1 slot, optional)										
	PCIe x4 (Gen3)	1 slot										
	PCIe x4 (Gen4)	1 slot										
Memory	Technology	Dual Channel DDR5 up to 4400 MT/s, ECC memory supported by all CPU only with Chipset R680E										
	Max. Capacity	192GB (48 GB per DIMM)										
	Frequency	4400MT/s (2DPC - 1DIMM 1R&2R), 4000MT/s (2DPC – 2DIMM 1R), 3600MT/s (2DPC – 2DIMM 2R)										
	Socket	588RF/588QM: Four 288-pin DDR5 UDIMM sockets(Dual Channel, Two DIMMs per channel) 588HL: Two 288-pin DDR5 UDIMM sockets, (Dual Channel, One DIMM per channel)										
Graphics	Controller	Intel UHD Graphics 770 Supports DirectX12, OpenGL 4.5										
	HDMI	1, up to resolution 4096 x 2160 @ 60Hz. Supports HDR										
	eDP	1, up to resolution 3840 x 2160 @ 60 Hz (Internal pin header)										
	Display Port	2, up to 4096 x 2304 @ 60Hz										
	Multi-Display	Up to 4 independent displays (4 with R680E/Q670E)										
Ethernet	Controller	LAN1: 1GbE Intel I219-LM (AIMB-588RF/AIMB-588QM/AIMB-588HL) LAN2: 2.5GbE Intel I226LM (AIMB-588RF); 2.5GbE Intel I226V (AIMB-588QM) LAN3: 2.5GbE Intel I226LM (AIMB-588RF) LAN4: 2.5GbE Intel I226LM (AIMB-588RF)										
	Connector	RJ45 x2 (588QM) / RJ45 x4 (588RF) / RJ45 x1 (588HL)										

Specifications (Cont.)

SATA	Max Data Transfer Rate	600 MB/s Max. (SATA 3.0)			
	Q'ty	AIMB-588RF/AIMB-588QM: 8 AIMB-588HL: 4			
Rear I/O	Display Port	2			
	HDMI	1			
	Ethernet	2 (AIMB-588QM); 4 (AIMB-588RF);1(AIMB-588HL)			
	USB	AIMB-588QM: 4 USB 3.2 Gen2 type A; 1 USB 3.2 Gen1 type A; 1 USB3.2 Gen2 Type C; 4 USB 2.0 type A AIMB-588RF: 5 USB 3.2 Gen2 type A; 1 USB 3.2 Gen2 Type C; 4 USB 2.0 type A AIMB-588HL: 2 USB 3.2 Gen2 type A; 4 USB 2.0			
	Audio	2 (Mic-in/ Line-out)			
Internal Connector	USB 3.2	AIMB-588QM: 3 USB 3.2 Gen1 AIMB-588RF: 3 USB 3.2 Gen1 AIMB-588HL: 2 USB 3.2 Gen1			
	Serial	6 (5 x RS-232, 1 x RS-232/422/485 with auto flow control)			
	SATA 3.0	8			
	Extended Display Port (eDP)	1			
	M.2 (M key)	1 2280 NVMe PCIe4 (AIMB-588QM/AIMB-588RF)			
	GPIO	8-bit GPIO			
Watchdog Timer	Output	System reset			
	Interval	Programmable 1 ~ 255 sec/min			
Power Requirements	Operation	+5V	3.3V	12V	12V_8P
	Configuration: Intel® Core™ i9-14900 24-Core Processor 2.00GHz with UDIMM DDR5 4800 48GB*4pcs	1.316A	0.856A	0.192A	24.29910A
	Standby (5Vsb)	3A			
Environment		Operating			Non-Operating
	Temperature	0 ~ 60 °C (32 ~ 140 °F), depends on CPU speed and cooler solution			-40 ~ 85 °C (-40 ~ 185 °F)
Physical Characteristics	Dimensions	244 mm x 244 mm (9.6" x 9.6")			
Power	Input Mode	ATX input			

Block Diagram



Ordering Information

P/N	Chipset	USB 3.2 Gen 2	USB 3.2 Gen1	USB Typc-C Gen 2x2	USB 2.0	PCIe x16 (Gen 5)	PCIe x8 (Gen 4)	PCIe x4 (Gen 3)	PCIe x4 (Gen 4)	1GbE LAN	2.5 GbE LAN	DP	HDMI	eDP	SATA III	COM	M.2 M-key	TPM
AIMB-588RF-0AB1	R680E	5	3	1	4	1	0	1	1	1	3***	2	1	1	8	6	1	1
AIMB-588RF-1AB1	R680E	5	3	1	4	1*	1	1	1	1	3***	2	1	1	8	6	1	1
AIMB-588QM-0AB1	Q670E	4	4	1	4	1	0	1	1	1	1**	2	1	1	8	6	1	1
AIMB-588HL-0AB1	H610E	2	2	0	4	1	0	1	0	1	0	2	1	1	4	6	0	1
AIMB-588RF-1AB1U	R680E	5	3	1	4	1*	1	1	1	1	3***	2	1	1	8	6	1	1
AIMB-588QM-0AB1U	Q670E	4	4	1	4	1	0	1	1	1	1**	2	1	1	8	6	1	1

* PCIe x8 lanes at 1 PCIe16 physical slot
** LAN2: 2.5GbE Intel I226V
*** LAN2: 2.5GbE Intel I226LM; LAN3: 2.5GbE Intel I226LM; LAN4: 2.5GbE Intel I226LM

Packing List

Part Number	Description	Quantity
1700003194	SATA HDD cable	2
19Z0002619T000	I/O port bracket	1
1930006770-01	M.2 device screw	2
2046058811	AIMB-588 B1 Startup Manual	1

Optional Accessories

Part Number	Description
1700020277-01	Dual port USB 3.0 cable 30cm with IO bracket
1700034131-01	1-to-2 serial ports cable, 60cm (for COM1/2)
1700000447	1-to-4 serial ports cable kit, 45cm
1701400181	1-to-4 serial ports cable kit, 18cm
1970005349T001	LGA1700 CPU Cooler (for CPU TDP <= 65W), H: 56.5mm
1970005672T001	LGA1700 CPU Cooler (for CPU TDP <= 35W), H: 32mm

Note: screws P/N: 1933030500 for ACP-1010MB, 1930004607 for HPC-7120S

I/O View



Embedded OS/API

OS/API	Part No.	Description
Windows 10	20706WX1HS0148	img W10 21HL 64b 21H2 ENU
	20706WX1VS0148	img W10 21VL 64b 21H2 ENU
	20706WX1ES0148	img W10 21EL 64b 21H2 ENU
Windows 11	20706WLE1S0012	img W11 24EL 64b 24H2 ENU
	20706WLH1S0012	img W11 24HL 64b 24H2 ENU
	20706WLV1S0012	img W11 24VL 64b 24H2 ENU
Ubuntu	20706U22DS0009	img UbuntuD 64b 22.04 ENU