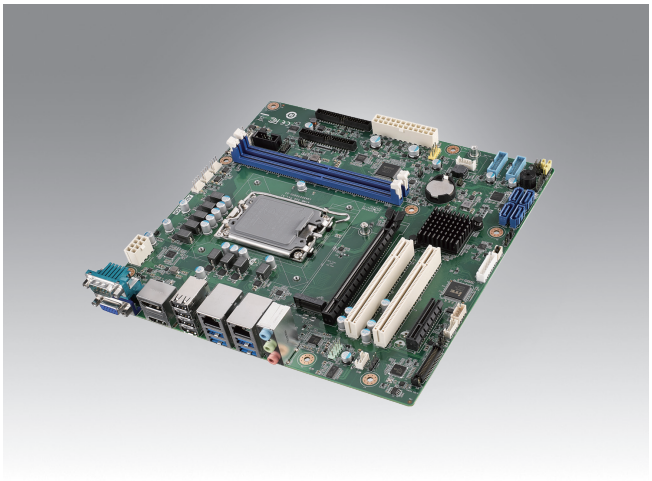
AIMB-508

Micro-ATX Motherboard 12th/13th/14th Gen Intel® Core™ Processor LGA1700



Windows 10 ubuntu **WISE-DeviceOn** RoHS COMPLIANT 2002/95/EC

Features

- Intel® Core™ 12th/13th/14th Gen processors with H610E chipset
- Up to 64GB DDR4 UDIMMs for data transfer
- PCIe x16 slot Gen4, PCIe x4 slot Gen3, PCI slot
- Numerous expansion: 8 USB 3.2 ports, 6 USB 2.0 ports, and 10 COM
- WISE-DeviceOn and Embedded Software APIs
- Win10 / Win11 support

Software APIs: SMBus, H/W Monitor, Watchdog, GPIO

Utilities: BIOS flash, Monitoring

Specifications

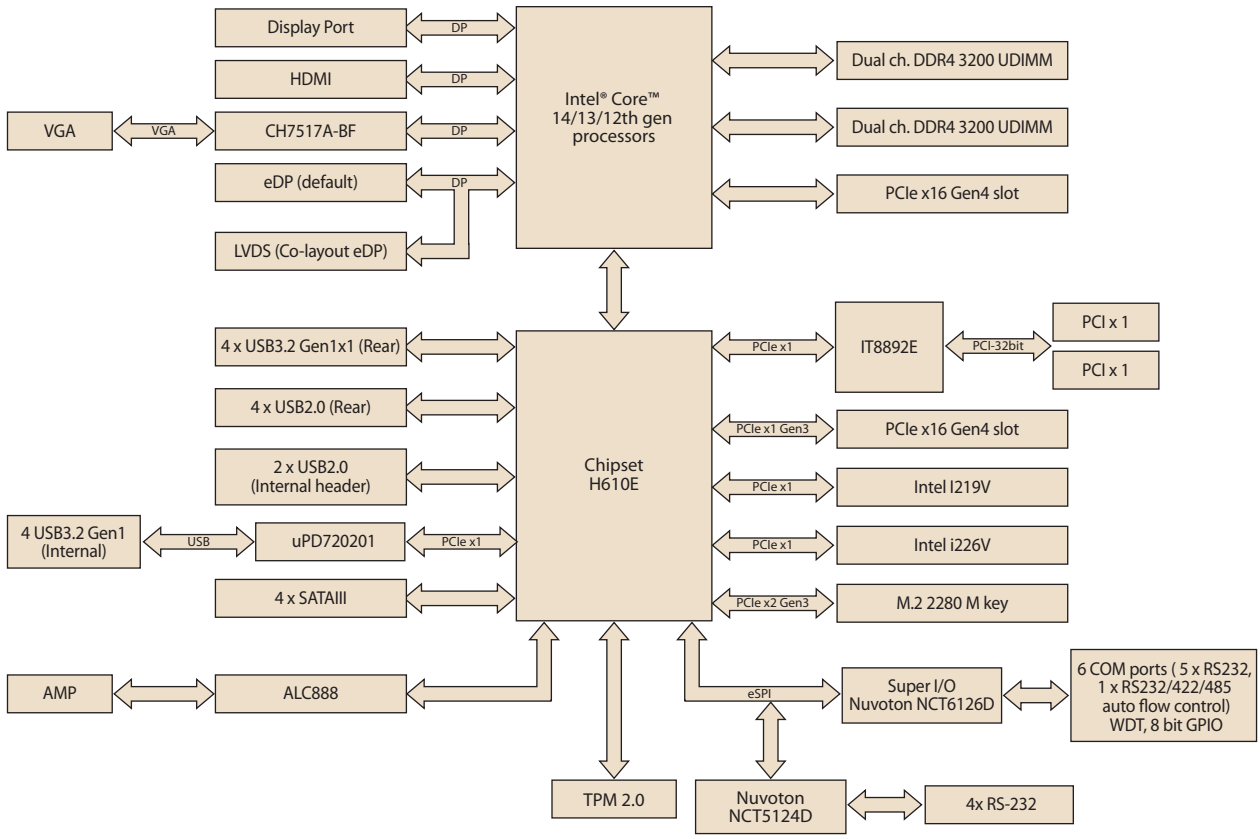
14th Processor System	CPU	i9-14900/ i9-14900T	i7-14700/ i7-14700T	i5-14500/ i5-14500T	i5-14400/ i5-14400T	i3-14100/ i3-14100T						
	Core Number (Performance and Efficient core)	8P+16E	8P+12E	6P+8E	6P+4E	4P						
	Max. Speed	5.8/ 5.5GHz	5.4/ 5.2GHz	5.0GHz/ 4.8GHz	4.7GHz/ 4.5GHz	4.7GHz/ 4.4GHz						
	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	H610E										
	BIOS	AMI BIOS UEFI 256 Mbits SPI										
Expansion Slot	PCIe x16	1 x PCIe x16 Gen4										
	PCI	2 slots										
	PCIe x4	1 x PCIe x4 slot with x1 Gen3 lanes										
Memory	Technology	Dual Channel DDR4 3200 MT/s										
	Max. Capacity	64GB (32 GB per DIMM)										
	Frequency	3200 MT/s										
	Socket	2 x 288-pin DDR4 UDIMM Sockets (Non-ECC)										
Graphics	Controller	Intel UHD Graphics 770 Supports DirectX12, OpenGL 4.5										
	HDMI	1, up to resolution 4096*2160@ 30Hz										
	eDP	1, up to resolution 3840 x 2160 @ 60 Hz, co-design with LVDS, default eDP										
	Display Port	1, up to 4096 x 2304 @ 60Hz										
	LVDS	1, default eDP										
	Triple Display	eDP+HDMI+DP, eDP+VGA+DP, HDMI+DP+VGA, HDMI+eDP+VGA										
	Dual Display	DP +VGA, DP+eDP, DP +HDMI, HDMI + eDP, HDMI + VGA, eDP+VGA										
Ethernet	Controller	LAN1: 1GbE Intel I219V (AIMB-508HF/AIMB-508HL) LAN2: 2.5GbE Intel I226V (AIMB-508HF)										
	Connector	RJ45 x2										
SATA	Max Data Transfer Rate	600 MB/s Max. (SATA 3.0)										
	Q'ty	4										

Last updated: 10-Sep-2025

Specifications (Cont.)

Rear I/O	Display Port	1 (AIMB-508HF)				
	HDMI	1 (AIMB-508HF)				
	Serial	1 (RS232/422/485 auto flow control)				
	VGA	1				
	Ethernet	2 (AIMB-508HF); 1 (AIMB-508HL)				
	USB	4 USB3.2 Gen1; 4 USB2.0				
	Audio	3 (Line-out, Mic-In, Line-in)				
Internal Connector	USB 3.2	4 (AIMB-508HF)				
	USB 2.0	2 USB2.0				
	Serial	9 (AIMB-508HF); 4 (AIMB-508HL)				
	SATA 3.0	4				
	Extended Display Port (eDP)	1 (AIMB-508HF) optional (AIMB-508HL)				
	M.2 (M key)	1 2280 NVMe				
	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™ i9-13900E 24-Core Processor 1.8GHz with UDIMM DDR4 3200 32GB*2pcs	1.85050A	1.26153A	0.61588A	25.49300A	
	Standby (5Vsb)	3A				
Environment		Operating				Non-Operating
	Temperature	0 ~ 60° C (14 ~ 158° 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

Part Number	Chipset	Memory (Non-ECC)	USB 3.2 Gen 1	USB 2	PCIex16 slot Gen4	PCI slot	PCIex4 slot Gen3	GbE LAN	2.5GbE LAN	DP	HDMI	VGA	eDP/ LVDS	SATA III	COM	M.2 M-key 2280	TPM module	AMP
AIMB-508HF-EAA1	H610E	2 x DDR4	8	6	1	2	1	1	1	1	1	1	1/(1)	4	10	1	*(1)	1
AIMB-508HF-EAA1U	H610E	2 x DDR4	8	6	1	2	1	1	1	1	1	1	1/(1)	4	10	1	*(1)	1
AIMB-508HL-0AA1	H610E	2 x DDR4	4	6	1	2	1	1	0	0	0	1	(1)/(1)	4	5	1	*(1)	(1)

() means BOM option
*Please refer to the Optional Accessories for TPM module

Packing List

Part Number	Description	Quantity
1960113372T001	I/O port bracket	1
2046050803	AIMB-508 Startup manual	1
1700003194	SATA HDD cable	2
1930006770-01	M.2 screws	2

I/O View

AIMB-508HF/AIMB-508HM

AIMB-508HL

Optional Accessories

Part Number	Description
1970005349T001	LGA1700 CPU Cooler (for CPU TDP <= 65W), H: 56.5mm
1700020710-02	Dual port USB 2.0 cable 25cm
1700001788	1 to 1 COM cable 30cm
1700000321-01	1 to 1 COM cable 75cm
17AD14GS1400013V04	4 in 1 COM cable 500mm
AIMB-TPMSPI-0IA1	TPM 2.0 SPI module (SLB9672 FW15.23)

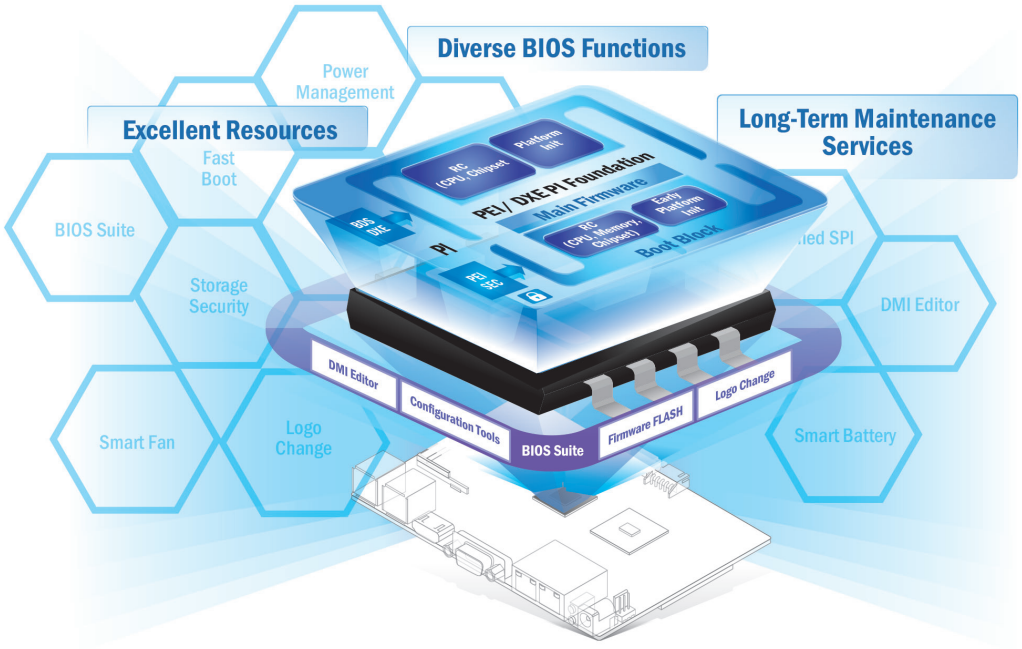
Embedded OS/API

OS/API	Part No.	Description
Windows 10	20706WX1HS0072 20706WX1VS0072 20706WX1ES0072	Windows 10 IoT Enterprise 2021 LTSC 64bit
Ubuntu	20706U22DS0029	Ubuntu Desktop 22.04 LTS 64bit
Windows 11	20706WXH1S0002 20706WXV1S0002 20706WXE1S0002	Windows 11 IoT Enterprise 64bit

Reliable Embedded BIOS Solutions

Custom BIOS services with long-term support

Advantech's high-quality embedded BIOS solutions deliver rapid execution and feature expert BIOS team support. These solutions feature multi-functional designs that ensure security and enable power/boot management. Advantech further provides 10+ years of BIOS version management, internal management, and longevity support for both hardware and BIOS — enhancing application efficiency, diversifying functionality, and optimizing performance.



Embedded BIOS Solution Advantages

Sufficient Sources

- Strong partnership with BIOS vendors
- 50+ engineers with extensive industrial BIOS experience

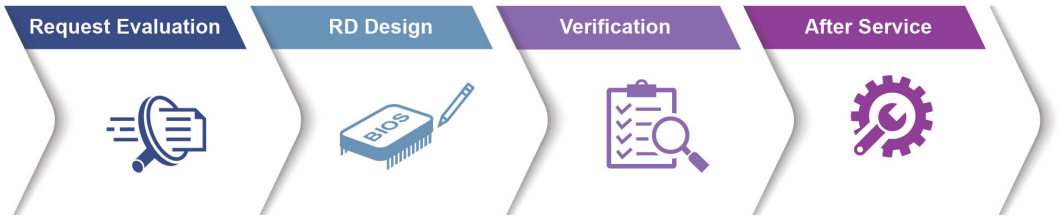
Diverse BIOS Functions

- Multi-layer security
- 3 second fast boot
- Power management
- BIOS suite utility

Long-Term Maintenance Services

- Platform longevity support
- 10-year BIOS version control
- BIOS remote backup

Value-Added Customization Process



WISE-DeviceOn

Massive IoT Device Management Utility

IoT deployment and management typically involves numerous disparate devices installed on multiple sites. These devices require effective monitoring, managing, and tracking. Advantech's easy-to-use WISE-DeviceOn interface enables users to remotely monitor device health, troubleshoot problems, and send software/firmware updates over-the-air (OTA). In sum, DeviceOn empowers quick real-time responsiveness to emerging problems.

Features

Comprehensive Management	Remote Access	Efficient Operations
• Devices status • Peripherals/firmware • Open for extension	• Real-time monitoring • Remote controls • Troubleshooting	• Zero-touch on-boarding • OTA updates • Batch control

Product Highlights

SOM-6883
High-performance 11th Gen Intel® COMe Type 6 Module

MIO-5375
Compact 11th Gen Intel® Outdoor Focused 3.5" SBC

EPC-B5587
10th Gen Intel® Xeon® based Edge server

EPC-R3220
Arm based IoT Edge Gateway

Edge AI Suite

AI development for diverse application at the Edge

Increasing demand for AI inference/analytic capabilities at the Edge make AI training models, software development environments, and hardware configuration key factors in successful solution deployment. Advantech's Edge AI Suite helps users build AI demo devices quickly and choose optimal hardware solutions easily.

5x Performance Boost	All-in-one Installation	One Click AI Experience	Plug-and-play Environment	Discover Cost-effective Hardware
• Integrated Intel® OpenVINO™ technology • Boost AI using Advantech hardware	• Build AI environment in under 5 minutes • Ready-to-use configuration	• User friendly configuration guidance • One-click Benchmark acquisition	• Easy access to 100+ AI inference extensions • Software development package available	• Diverse CPU/RAM options • Find hardware solutions for AI development

Embedded Linux Support and Design-in Services

Hardware Certified Ubuntu and Yocto with Eco Partner Services

Linux is the most popular embedded OS for transportation, outdoor services, factory automation, and mission critical applications. Its open source and kernel reliability features ease security updates, and make it particularly adaptable to new AI and Edge computing technology. Advantech has cooperated with Canonical and other software partners to provide hardware certified Ubuntu image and Yocto BSP as Linux offerings. The Advantech, Embedded Linux, and Android Alliance (ELAA) delivers local software services and consultation.

Features

Certified OS and BSP

- Platform compatibility tests
- Preloaded functional driver and software stacks

Licensed Services

- License authorized Canonical delivers 10-years of bug fixes and security updates
- In-house bundled service

Numerous AI and Edge Resources

- Containerized technology for service provision and deployment
- AI resources from Caffe, TensorFlow, and mxnet

Local Partner Alliance

- Embedded Linux and Android Alliance (ELAA)