

# AIMB-587

## Micro-ATX Motherboard 10th Gen Intel® Xeon® Processor LGA1200



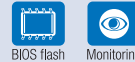
### Features

- Supports Intel® Xeon® W10th Gen Core™ (Comet Lake-S) i9/i7/i5/i3 processor with W480E/ Q470E/ H420E chipset
- Supports triple displays. (2DP++, eDP, VGA display)
- Supports Intel AMT 12.0 and Intel vPro competent
- Supports PCIe Gen3, max up to 4 x USB 3.2 Gen2, 6 x USB 3.2 Gen1, 6 x USB 2.0, 8 x SATAIII, 2 x GbE LANs, 2 x 10GbE LANs, M.2 (M Key)
- Supports Software RAID 0, 1, 5, 10, TPM 2.0 (optional)
- Supports DeviceOn and Embedded Software APIs
- Supports Dual BIOS feature (F sku)
- Supports Win10 / Win11

#### Software APIs:



#### Utilities:

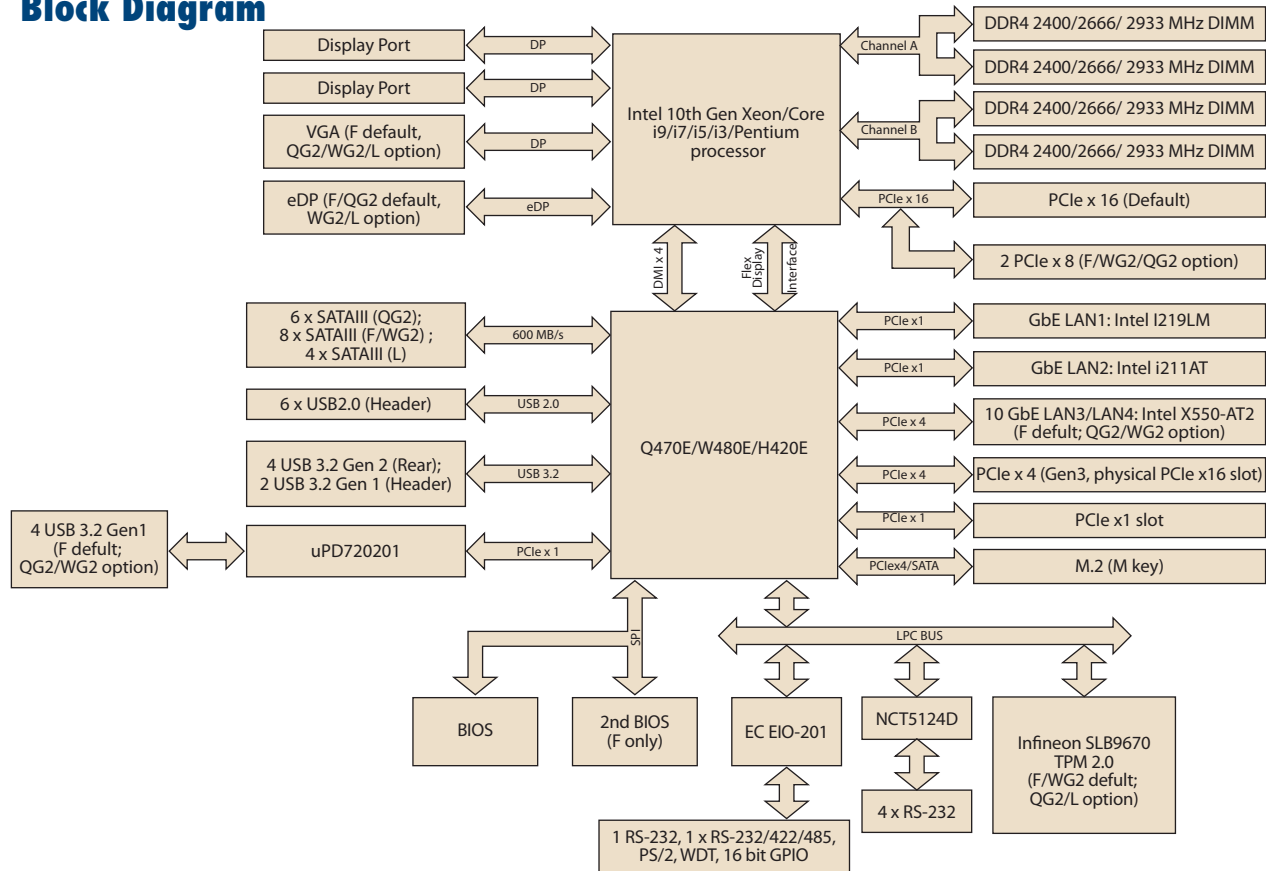


WISE-DeviceOn Quiet

### Specifications

Processor System	CPU	*W1290E/ *W1290TE	*W1270E/ *W1270TE	*W1250E/ *W1250TE	i9-10900E/ i9-10900TE	i7-10700E/ i7-10700TE	i5-10500E/ i5-10500TE	i3-10100E/ i3-10100TE	G6400E/ G6400TE	G5900E/ G5900TE	
	Core Number	10/10	8/8	6/6	10/10	8/8	6/6	4/4	2/2	2/2	
	Max. Speed	3.5GHz/ 1.8GHz	3.4GHz/ 2.0GHz	3.5GHz/ 2.4GHz	2.8GHz/ 1.8GHz	2.9GHz/ 2.0GHz	3.1GHz/ 2.3GHz	3.2GHz/ 2.3GHz	3.8GHz/ 3.2GHz	3.2GHz/ 3.0GHz	
	L3 Cache	20MB/20MB	16MB/16MB	12MB/12MB	20MB/20MB	16MB/16MB	12MB/12MB	6MB/6MB	4MB/4MB	2MB/2MB	
	TDP (W)	95W/35W	80W/35W	80W/35W	65W/35W	65W/35W	65W/35W	65W/35W	58W/35W	58W/35W	
	Supports Model	WG2/F	WG2/F	WG2/F	QG2/WG2/F/L	QG2/WG2/F/L	QG2/WG2/F/L	QG2/WG2/F/L	QG2/L	QG2/L	
	Chipset	Q470E/W480E/H420E									
BIOS	AMI EFI 256 Mbit SPI, i9/i7/i5/i3/pentium/ celeron supports Legacy mode										
Expansion Slot	PCIe x1 (Gen3)	1 GB/s per direction, 1 slot									
	PCIe x4 (Gen3)	4 GB/s per direction, 1 slot (Gen3, physical PCIe x16 slot)									
	PCIe x8 (Gen3)	8 GB/s per direction, 1 slot (Gen3, via BOM option for QG2/WG2/F)									
	PCIe x16 (Gen3)	16 GB/s per direction, 1 slot (Gen3, x8 link when PCIe x8 slot is on board)									
Memory	Technology	Supports Dual Channel DDR4 2933 (Xeon/i9/i7 CPU) / 2666 (i5/i3 CPU) / 2400 (Pentium/ Celeron CPU), ECC memory supported by CPU in WG2/ F									
	Max. Capacity	128GB (32GB per DIMM)									
	Socket	4 x 288 pin U DIMM (QG2/WG2/F); 2x 288pin U DIMM (L)									
Graphics	Controller	Intel HD Graphics Supports DirectX11.1, OpenGL 5.0 and OpenCL 2.1									
	VGA	1, Max resolution 1920 x 1200 @ 60Hz (BOM option in QG2/WG2)									
	eDP	1, Internal pin header, supports max. resolution 3840 x 2160 @ 60 Hz (Internal pin header) (default in QG2/ F sku, BOM option in WG2)									
	Display Port	2, Supports max resolution 4096 x 2304 @ 60 Hz									
	Triple Display	eDP + DP++ + VGA, eDP + DP++ + DP++, DP++ + DP++ + VGA									
	Dual Display	DP++ + VGA, DP++ + DP++ DP++ + eDP, VGA + eDP									
Ethernet	Controller	LAN1: Intel i219LM LAN2: Intel i211AT (QG2/WG2/F) LAN3/4: Intel X550-AT2 (F default; BOM option on QG2/WG2)									
	Connector	RJ 45 x 2 (Max up to 4 ports via BOM option on QG2/WG2) / RJ 45 x 4 (F)									
	SATA	Max Data Transfer Rate	600 MB/s Max. (SATA 3.0)								
Rear I/O	Q'ty	6 (QG2); 8 (WG2/F), 1 colay with M.2 M key; 4(L)									
	Display Port	2									
	VGA	1 (F default; QG2/WG2/L via BOM option)									
	Ethernet	2 (Default in QG2/WG2, Max 4 ports via BOM option); 4 (F); 1 (L)									
	USB	(4 USB 3.2 Gen2; USB3.2 Gen1 for L sku)									
Internal Connector	Audio	2 (Mic-in/ Line-out) (Mic-in could be configured as "Line-in" under Win OS.)									
	USB 3.2 Gen1	2 (QG2/WG2/L, Max 6 ports via BOM option); 6 (F)									
	USB 2.0	6 (QG2/WG2/F); 2 (L)									
	Serial	6 (5 x RS-232, 1 x RS-232/422/485 with auto flow control supported on QG2/F) 2 (1x RS-232, 1 x RS-232/422/485with auto flow control supported on WG2/L)									
	SATA 3.0	6 (QG2); 8 (WG2/F); 4(L)									
	Extended Display Port (eDP)	1 (QG2/ F), 0 (WG2/L)									
	PS/2 (KBMS1)	1									
	M.2 (M key)	1 (2280 NVMe PCIe4 and SATA M.2 support, QG2/WG2/F)									
Watchdog Timer	GPIO	16-bit GPIO									
	Output Interval	System reset Programmable 1 ~ 255 sec/min									
Power Requirements	Operation	+5V	3.3V	12V	12V_8P						
	Configuration: Intel® Xeon® W-1250E 6-Core Processor 3.5GHz, with UDIMM DDR4 3200 32G*4pcs	2.407A	0.602A	0.350A	4.807A						
	Standby (5Vsb)	2A									
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

P/N	Chipset	USB3.2 Gen2	USB3.2 Gen1	USB2.0	DP/VGA	eDP	GbE LAN	10GbE LAN	SATA III	COM	PCIex16***	PCIex8***	PCIex4	PCIex1	M.2 M-key	TPM	Dual BIOS
AIMB-587QG2-00A1E	Q470E	4	2+(4)**	6	2(1)	1	2	(2)	6	6	1	(2)	1	1	1	(1)	No
AIMB-587F-00A1E	W480E	4	6	6	2/1	1	2	2	8	6	1	(2)	1	1	1	1	Yes
AIMB-587WG2-00A1E	W480E	4	2+(4)**	6	2(1)	(1)	2	(2)	8	2+(4)	1	(2)	1	1	1	1	No
AIMB-587L-00A1E	H420E	0	6+(4)**	2	2(1)	(1)	1	0	4	2	1	0	1	0	0	(1)	No

\* () means BOM option

\*\* BOM option with added USB 3.2 Gen 1 from controller IC

\*\*\* (PCIEX16\_1 / PCIEX8\_1: single at x16 (PCIEX16\_1); dual at x8 (PCIEX16\_1)/ x8 (PCIEX8\_1)

## Riser Card

Part Number	Description
AIMB-RF10F-01A1E	1U riser card with 1 PCIe16 expansion

## Packing List

Part Number	Description	Quantity
1700003194	SATA HDD cable	2
1700022749-13	SATA power cable	2
1960101473T001	I/O port bracket	1
2046058700	Startup manual	1
1930006770-01	M.2 device screw	2

## I/O View



AIMB-587F-00A1E

AIMB-587L-00A1E

AIMB-587QG2-00A1E

## Optional Accessories

Part Number	Description
1700026162-01	Dual port USB 2.0 (pitch 2.0) cable 30cm with bracket
1700020277-01	Dual port USB 3.0 cable 30cm with bracket
1960067860N001	LGA1155 CPU cooler for 4U and wallmount chassis, for CPU TDP ≤ 125W
1960047669N001	LGA1155 CPU cooler for 4U and wallmount chassis, for CPU TDP ≤ 84W, 4.72" (W) x 4.72" (L) x 3.03" (H)
1960052651N021	LGA1155 CPU for cooler 2U and backplane version of chassis, for CPU TDP ≤ 65W, 3.54" (W) x 3.54" (L) x 2.68" (H)
1960053207N001	LGA1155 CPU for cooler 2U and wallmount chassis, for CPU TDP ≤ 45W, 3.66" (W) x 3.66" (L) x 1.81" (H)
1700018699	1-to-2 PS/2 KB/MS cable cable 25cm
1700000447	1-to-4 serial ports cable kit, 45cm
1701400181	1-to-4 serial ports cable kit, 18cm
1960109853T000	1U IO bracket for chassis ACP-1010MB & HPC-7120S (should order screws separately)
1700022363-01	1-to-1 serial port cable kit, 17cm
1700030647-01	1-to-1 serial port cable kit, 30cm
1700032328-01	2-to-2 serial port cable kit with IO bracket, 45 cm

Note: Purchasing AIMB-587's proprietary CPU cooler from Advantech is a must, other CPU cooler might be not compatible with AIMB-587.  
Note: screws P/N: 1933030500 for ACP-1010MB, 1930004607 for HPC-7120S

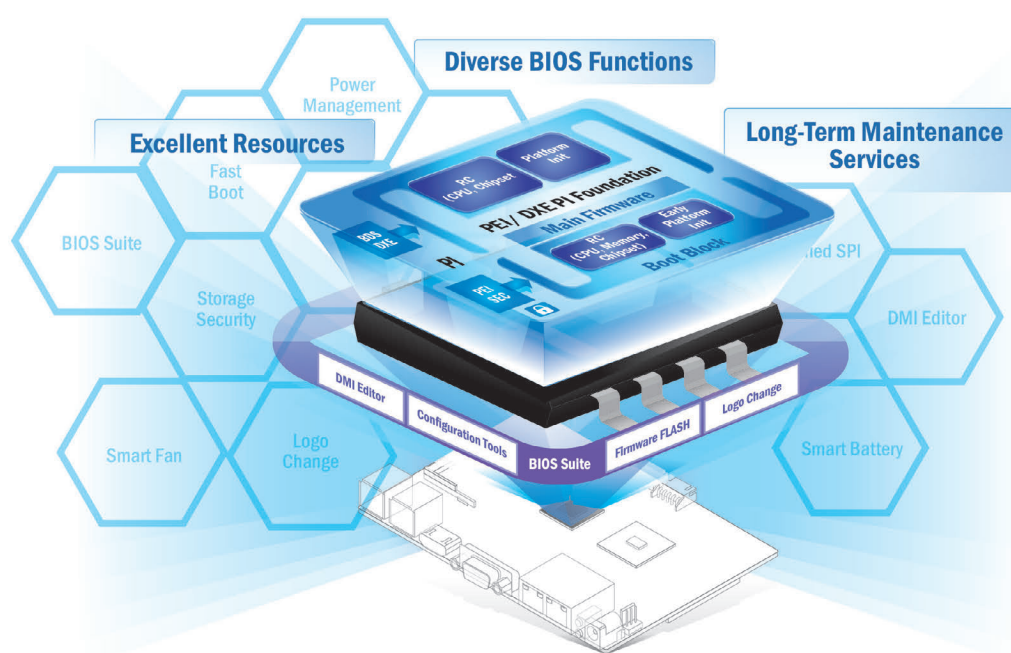
## Embedded OS/API

OS/API	Part No.	Description
win10 IoT Ent	20706WX9HS0136	img W10 1809HL(Eng)
Ubuntu20.4	20706WX9ES0150	img W10 1809VL(Eng)
	20706U20DS0040	Ubuntu Desktop 20.04 LTS 64bit Image & license sticker for AIMB-587

# 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

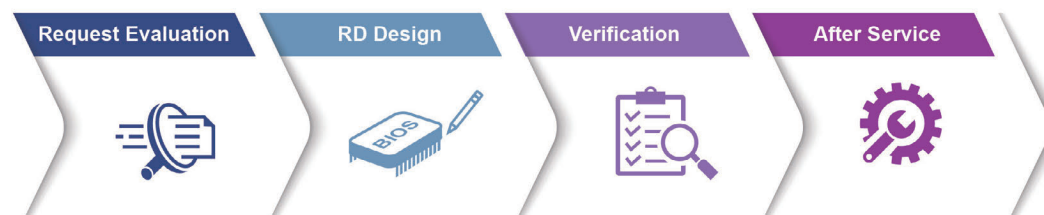
### Diverse BIOS Functions

- 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
<ul style="list-style-type: none"> <li>• Devices status</li> <li>• Peripherals/firmware</li> <li>• Open for extension</li> </ul>	<ul style="list-style-type: none"> <li>• Real-time monitoring</li> <li>• Remote controls</li> <li>• Troubleshooting</li> </ul>	<ul style="list-style-type: none"> <li>• Zero-touch on-boarding</li> <li>• OTA updates</li> <li>• Batch control</li> </ul>

### Product Highlights

 <p><b>SOM-6883</b> High-performance 11<sup>th</sup> Gen Intel® COMe Type 6 Module</p>	 <p><b>MIO-5375</b> Compact 11<sup>th</sup> Gen Intel® Outdoor Focused 3.5" SBC</p>	 <p><b>EPC-B5587</b> 10<sup>th</sup> Gen Intel® Xeon® based Edge server</p>	 <p><b>EPC-R3220</b> Arm based IoT Edge Gateway</p>
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# 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
<ul style="list-style-type: none"> <li>Integrated Intel® OpenVINO™ technology</li> <li>Boost AI using Advantech hardware</li> </ul>	<ul style="list-style-type: none"> <li>Build AI environment in under 5 minutes</li> <li>Ready-to-use configuration</li> </ul>	<ul style="list-style-type: none"> <li>User friendly configuration guidance</li> <li>One-click Benchmark acquisition</li> </ul>	<ul style="list-style-type: none"> <li>Easy access to 100+ AI inference extensions</li> <li>Software development package available</li> </ul>	<ul style="list-style-type: none"> <li>Diverse CPU/RAM options</li> <li>Find hardware solutions for AI development</li> </ul>

# 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	Licensed Services	Numerous AI and Edge Resources	Local Partner Alliance
<ul style="list-style-type: none"> <li>Platform compatibility tests</li> <li>Preloaded functional driver and software stacks</li> </ul>	<ul style="list-style-type: none"> <li>License authorized Canonical delivers 10-years of bug fixes and security updates</li> <li>In-house bundled service</li> </ul>	<ul style="list-style-type: none"> <li>Containerized technology for service provision and deployment</li> <li>AI resources from Caffe, TensorFlow, and mxnet</li> </ul>	<ul style="list-style-type: none"> <li>Embedded Linux and Android Alliance (ELAA)</li> </ul>