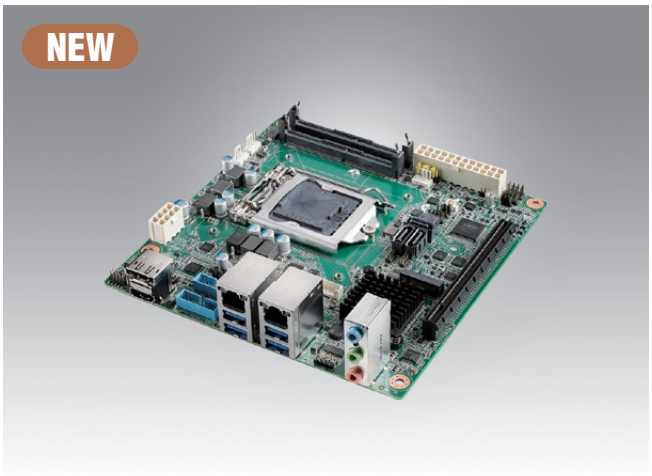
AIMB-277

Intel® 10th Gen Core™ processor, LGA1200 Mini-ITX motherboard



Windows 10 ubuntu WISE-DeviceOn CE FC RoHS

Features

- Supports Intel® 10th Gen Core™ i processor (LGA1200) with Intel Q470E/ H420E chipset
- Two 260-pin SO-DIMM up to 64GB DDR4 2933 MHz SDRAM
- Supports displays of HDMI2.0a/DP1.2/VGA/LVDs (or eDP)
- Supports 1 M.2 M key & 1 M.2 E key
- Supports 4 USB3.2 Gen2 & 4 USB3.2 Gen1, and 3 SATAIII
- Supports TPM2.0 and dual channel 3.2W amplifier
- Supports Intel vPro, AMT, Software RAID 0,1,5 (G2 sku)
- Supports SUSI, WISE-DeviceOn and Edge AI Suite

Software APIs: Hardware Monitor, Brightness, Watch Dog Timer, GPIO, Smart Fan, SMBus

Specifications

Processor System	CPU	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	4/4	2/2	2/2
	Max Speed	2.8GHz/ 1.8GHz	2.9GHz/ 2.0GHz	3.1GHz/ 2.3GHz	3.2GHz/ 2.3GHz	3.8GHz/ 3.2GHz	3.2GHz/ 3.0GHz
	SmartCache	20MB/20MB	16MB/16MB	12MB/12MB	6MB/6MB	2MB/2MB	2MB/2MB
	TDP	65W/35W	65W/35W	65W/35W	65W/35W	58W/35W	58W/35W
	Chipset	Q470E/H420E					
	BIOS	AMI EFI 256 Mbit SPI					
Expansion Slot	M.2	1 x M key for SSD and 3G/4G (Type: 2280), on top side 1 x E key for wireless (Type: 2230mm), on bottom side					
	PCIe x16 (Gen3)	16 GB/s per direction, 1 slot					
Memory	Technology	Dual Channel DDR4 2933 MHz SDRAM					
	Max. Capacity	64GB (up to 32GB per SO-DIMM)					
	Socket	2 x 260 PIN DDR4 SO-DIMM (Non-ECC)					
Graphics	Controller	Intel HD Graphics					
	HDMI 2.0a	Yes, supports max. resolution 4096 x 2160 @ 60 Hz (Only for G2 sku)					
	DP1.2	Yes, supports max. resolution 4096 x 2304 @ 60 Hz					
	LVDs	Yes, with internal pin header, supports singel/dual channel 18/24-bit with maximum resolution up to 1920 x 1200 @ 60 Hz (LVDs colay with eDP)					
	eDP	Yes, with internal pin header, supports max. resolution 4096 x 2304 @ 60 Hz (eDP colay with LVDs)					
	VGA	Yes, with internal pin header, supports max. resolution 1920 x 1200 @ 60 Hz					
	Triple Display (G2 sku)	HDMI+DP+VGA, HDMI+DP+LVDS (or eDP), HDMI+VGA+LVDS (or eDP), DP+VGA+LVDs (or eDP)					
	Dual Display (L sku)	VGA+LVDS (or eDP), DP+VGA, DP+LVDs (or eDP)					
Ethernet	Interface	10/100/1000 Mbps					
	Controller	GbE LAN1: Intel i219LM GbE LAN2: Intel I211AT and I210AT compatible					
	Connector	RJ-45 x 2					
SATA	Max Data Transfer Rate	600 MB/s (SATA 3.0)					
	Channel	3 SATAIII (for G2 sku), 2 SATAIII (for L sku)					
Rear I/O	DP 1.2 (DP++)	1					
	HMDI 2.0	1					
	Ethernet	2					
	USB	G2 sku: 4 USB3.2 Gen2 L sku: 4 USB3.2 Gen1					
	Audio	1 (Line in/Line out/Mic in)					
Internal Connector	USB	G2 sku: 4 USB3.2 Gen1 L sku: 2 USB3.2 Gen1					
	VGA	1 (pin header)					
	LVDs/eDP	1 (LVDs colay with eDP)					
	Serial	2 (RS232/422/485)					
	SATA	G2 sku: 3 SATAIII; L sku: 2 SATAIII					
	M.2	1 x M key for SSD, Type: 2280mm (on top side) 1 x E key for wireless, Type: 2230mm (on bottom side)					
	GPIO	8-bit					
Watchdog Timer	Output	System reset					
	Interval	Programmable 1 ~ 255 sec/min					
Power Requirements	Boost	117.882W (Intel Core i9-10900E, DDR4 3200MHz 32GB x 2pcs)					
	Typical	102W (Intel Core i9-10900E, DDR4 3200MHz 32GB x 2pcs)					
Environment					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	170 mm x 170 mm (6.69" x 6.69")					

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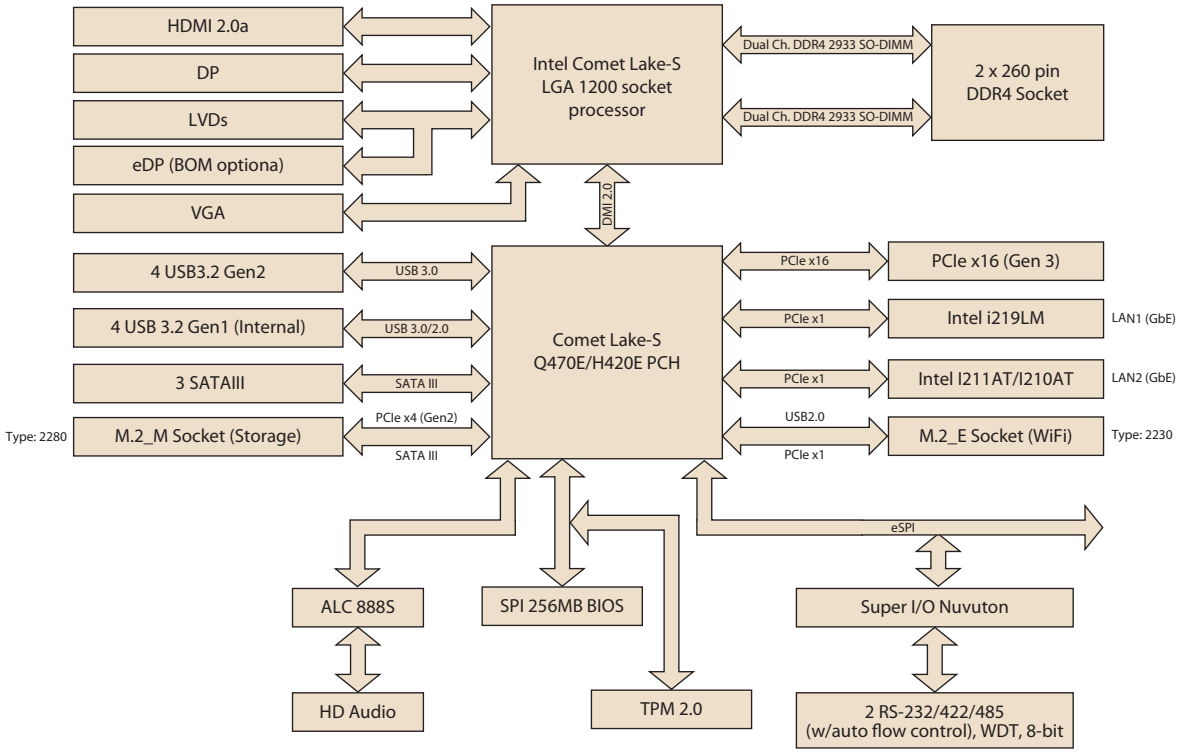
All product specifications are subject to change without notice.

Block Diagram



Ordering Information

P/N	Chipset	HDMI 2.0	LVDS/eDP	DP 1.2	VGA	GbE LAN	COM	SATAIII	USB3.2 Gen 2	USB 3.2 Gen1	USB 2.0	M.2 M key	M.2 E key	PCIe x16	TPM2.0	AMP	Rugged CPU Plate
AIMB-277G2-FLA1E	Q470E	1	1/(1)	1	1	2	2	3	4	4	0	1	1	1	1	1	Y
AIMB-277G2-00A1E	Q470E	1	0/(1)	1	0	2	2	3	4	4	0	1	1	1	0	0	Y
AIMB-277L-00A1E	H420E	1	1/(1)	1	0	2	2	2	0	6	0	1	1	1	(1)	(1)	N

*() BOM options available on MP version.

Packing List

Part Number	Description	Quantity
1700003194	SATA HDD cable	1
1700031130-01	1-to-2 serial port cable, 20cm	1
1960101983T001	I/O port bracket	1
2046027700	Startup manual	1

Optional Chassis

Part Number	Description
AIMB-B2000-15ZE	Mini-ITX chassis with 150W ATX power supply

I/O View

Optional Accessories

Part Number	Description
1700020277-01	Dual port USB 3.0 cable 30cm with IO bracket
1960047669N001	C.L R3 I-LGA1156 S-95W 12V0.4A 95.0x95.0x69.37mm
1960053207N001	C.L R3 I-LGA1155 S-95W 92.9x92.9x46-SS 12V0.4A (for CPU TDP <= 65W)
1960060732N001	LGA1150 CPU cooler for CPU TDP ≦ 45W, 80 (W) x 80 (L) x 32.2 (H) mm
1970004564T010	C.L.R3 Kaby Lake 35W 75x75x25 sunflower

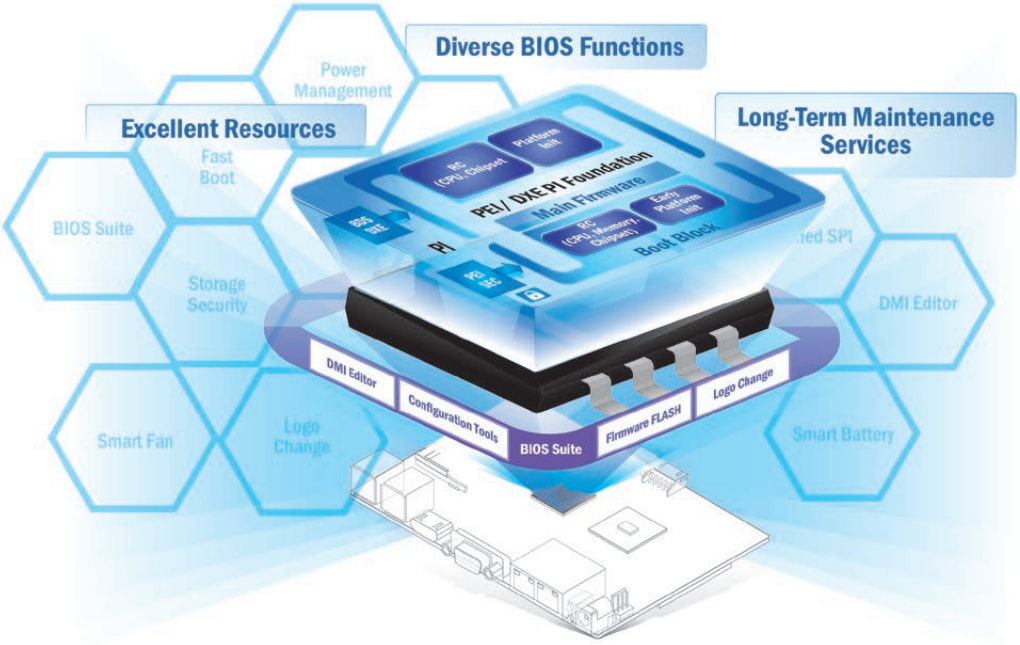
Embedded OS/API

OS/API	Part No.	968 P/N	Description
Windows 10	20706WX9ES0144	968QW19ELE	img W10 19EL AIMB-277 64b 1809 ENU
Windows 10	20706WX9HS0130	968QW19HLE	img W10 19HL AIMB-277 64b 1809 ENU
Windows 10	20706WX9VS0134	968QW19VLE	img W10 19VL AIMB-277 64b 1809 ENU
Ubun20.4	20706U20DS0028	968MOU204D	Ubuntu20.4 AIMB-277 64b 2004 ENU

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

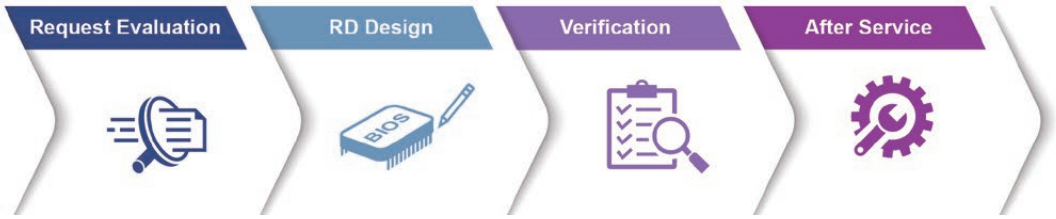
Diverse BIOS Functions

- 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	Licensed Services	Numerous AI and Edge Resources	Local Partner Alliance
• Platform compatibility tests • Preloaded functional driver and software stacks	• License authorized Canonical delivers 10-years of bug fixes and security updates • In-house bundled service	• Containerized technology for service provision and deployment • AI resources from Caffe, TensorFlow, and mxnet	• Embedded Linux and Android Alliance (ELAA)