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# AIMB-286

## Intel® Core™ i7/i5/i3 LGA 1151 Mini-ITX with DP++/HDMI/LVDS(eDP), 6 COM, Dual LAN, PCIe x4, M.2, DDR4, DC Input

**WISE-DeviceOn**

### Features

- Supports Intel® 9th/8th Gen Core™ i processor (LGA1151) with Intel H310 chipset
- Two 260-pin SO-DIMM up to 64GB DDR4 2666 MHz SDRAM
- Supports dual display of DP++/HDMI/LVDS (or eDP)
- Supports PCIe x4 (Gen 3), 1 M.2 B key & 1 M.2 E key, 4 USB 3.0 & 4 USB 2.0 and 3 SATA III
- Supports 12V DC Input and low profile height
- Supports TPM 1.2 / 2.0
- Supports WISE-PaaS/DeviceOn and Embedded Software APIs

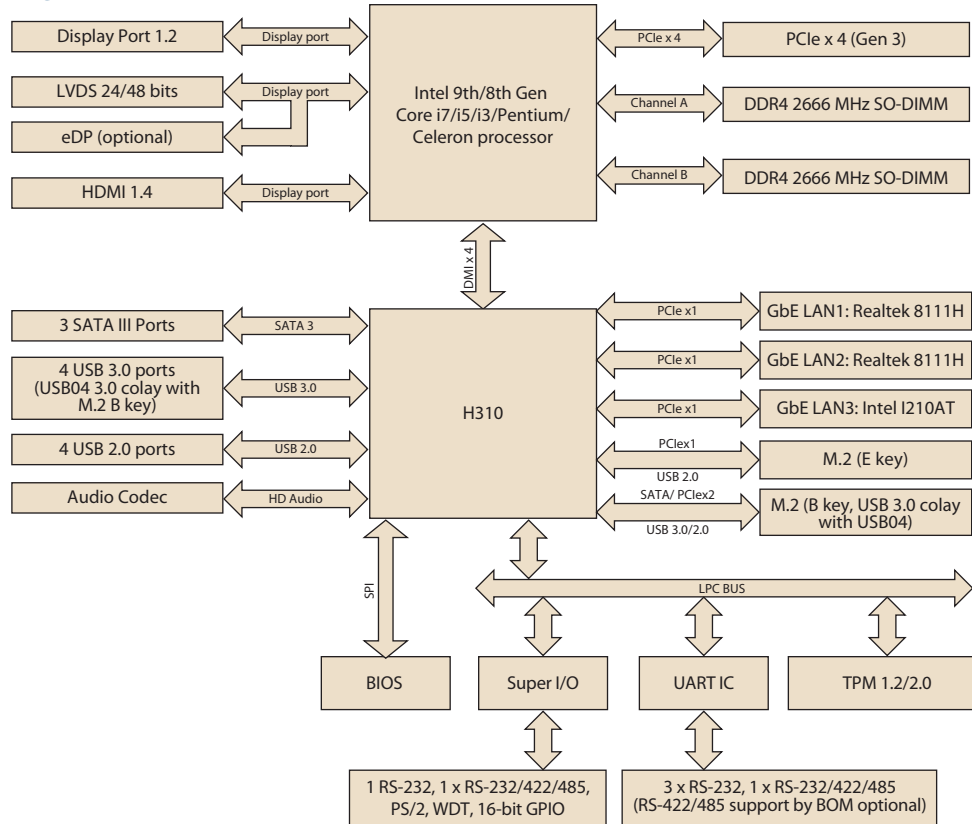
**Software APIs:**

### Specifications

	CPU	i7-9700E/ i7-9700TE	i7-8700/ i7-8700T	i5-9500E/ i5-9500TE	i5-8500/ i5-8500T	i3-9100E/ i3-9100TE	i3-8100/ i3-8100T	G5400/ G5400T	G4900/ G4900T	
Processor System	Core Number	8/8	6/6	6/6	6/6	4/4	4/4	2/2	2/2	
	Max Speed	2.6GHz/ 1.8GHz	3.2GHz/ 2.4GHz	3.0GHz/ 2.2GHz	3.0GHz/ 2.1GHz	3.1GHz/ 2.2GHz	3.6GHz/ 3.1GHz	3.7GHz/ 3.1GHz	3.1GHz/ 2.9GHz	
	SmartCache	12/MB/12MB	12/MB/12MB	9MB/9MB	9MB/9MB	6MB/6MB	6MB/6MB	2MB/2MB	2MB/2MB	
	TDP	65W/35W	65W/35W	65W/35W	65W/35W	65W/35W	65W/35W	58W/35W	54W/35W	
	Chipset	H310								
	BIOS	AMI EFI 128 Mbit SPI								
Expansion Slot	M.2	2, 1 x B key for SSD and 3G/4G (Type: 2242, 3042mm); with SIM card holder 1 x E key for wireless (Type: 2230mm)								
	PCIe x4 (Gen3)	4 GB/s per direction, 1 slot								
Memory	Technology	Dual Channel DDR4 2666 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								
	LVDS	Supports dual channel 24-bit up to 1920 x 1200 (colay with eDP)								
	HDMI 1.4	Yes, supports max. resolution 4096 x 2160 @ 24 Hz								
	eDP	Yes, with internal pin header, supports max. resolution 4096 x 2304 @ 60 Hz (BOM optional)								
	Display Port 1.2	Yes, supports 1 x DP++ with max resolution 4096 x 2304 @ 60 Hz								
Dual Display	DP+HDMI, DP+LVDS (or eDP), HDMI + LVDS (or eDP)									
Ethernet	Interface	10/100/1000 Mbps								
	Controller	GbE LAN1/2: Realtek 8111H GbE LAN3: Intel I210AT								
	Connector	RJ-45 x 3								
SATA	Max Data Transfer Rate	600 MB/s (SATA 3.0)								
	Channel	3 (SATA III)								
Rear I/O	HDMI	1 (HDMI 1.4)								
	Display Port 1.2	1								
	Ethernet	3								
	USB	4 USB 3.0 (USB04 colay with M.2 B key for USB 3.0)								
	Audio	2 (Mic-in, Line-out)								
	DC Jack	1								
Internal Connector	USB	4 (USB 2.0)								
	LVDS/inverter	1								
	Serial	6 x RS-232 (COM1: RS-232, supports 5V/12V by jumper selection; COM2/3: RS-232/422/485 w/auto flow control, supports RS-232 by default, RS-422/485 supports by BOM option; COM4/5/6: RS-232)								
	SATA	3 (SATA 3.0)								
	M.2	2, 1 x B key for SSD and 3G/4G (M.2 B key USB 3.0 colay with USB04), Type: 2242, 3042mm; 1 x E key for wireless, Type: 2230mm								
	IrDA	-								
	GPIO	16-bit								
Watchdog Timer	Output	System reset								
	Interval	Programmable 1 ~ 255 sec/min								
Power Requirements	Input power	12V DC Input								
		Intel Core i7-8700 3.2GHz, 2pcs 16GB DDR4 2666MHz SDRAM, +12V @ 11.095A								
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	170 mm x 170 mm (6.69" x 6.69")								



## Block Diagram



## Ordering Information

P/N	Chipset	DP	LVDS/eDP	HDMI 1.4	GbE LAN	COM	SATAIII	USB3.0/2.0	M.2 B key	M.2 E key	PCIex4	TPM2.0	AMP
AIMB-286F-00A1E	H310	1	1 / (1)	1	3	6	3	4/4	1	1	1	(1)	(1)
AIMB-286G2-00A1E	H310	1	1 / (1)	1	2	2	3	4/4	1	1	1	(1)	(1)
AIMB-286L-00A1E	H310	1	0	1	1	2	2	4/0	1	1	0	0	0
AIMB-286FL-00A1E	H310	1	1 / (1)	1	3	6	3	4/4	1	1	1	1	1

\*( ) BOM options available on MP version.

## Packing List

Part Number	Description	Quantity
1700003194	SATA HDD cable	1
1700018785	SATA power cable (1 port, 35cm)	1
1701200220	1-to-2 serial port cable, 22cm	1
1960090424T001	I/O port bracket	1
1700029538-01	1-to-4 serial port cable, 35cm	1
2046028600	Startup manual	1
1700023082-11	ATX 2*10P to 1*3P-2.0 15cm cable	1

## Optional Accessories

Part Number	Description
1700029428-01	M cable USB-A 4P(F)*2/2*4P-2.0 25cm
1960053207N001	LGA1150 CPU cooler for CPU TDP ≤ 65W, 92.9 (W) x 92.9 (L) x 46 (H) mm
1960060732N001	LGA1150 CPU cooler for CPU TDP ≤ 45W, 80 (W) x 80 (L) x 32.2 (H) mm
1970004564T010	C.L R3 Sunflower LGA115X KabyLake 35W 90 (W) x 90 (L) x 25 (H) mm
96PSA-A120W12V1-3	ADP A/D 100-240V 120W 12V C14 DC Plug
96PSA-A150W12W7-3	ADP A/D 100-240V 150W 12V LOCKABLE DC JACK

## Optional Chassis

Part Number	Description
AIMB-B2000-15ZE	Mini-ITX chassis with 150W ATX power supply
AIMB-B2000-00YE	Mini-ITX chassis (Optional external AC-DC 60W/84W Adaptor)

## Embedded OS/API

OS/API	Part No.	968 P/N	Description
Windows 10	20706WX9ES0051	968QW19ELE	img W10 19EL AIMB-286 64b 1809 ENU
Windows 10	20706WX9HS0038	968QW19HLE	img W10 19HL AIMB-286 64b 1809 ENU
Windows 10	20706WX9VS0041	968QW19VLE	img W10 19VL AIMB-286 64b 1809 ENU
Ubuntu 20.4	20706U20DS0038	968MOU204D	img Ubun20.4 AIMB-286 64b 2004 ENU

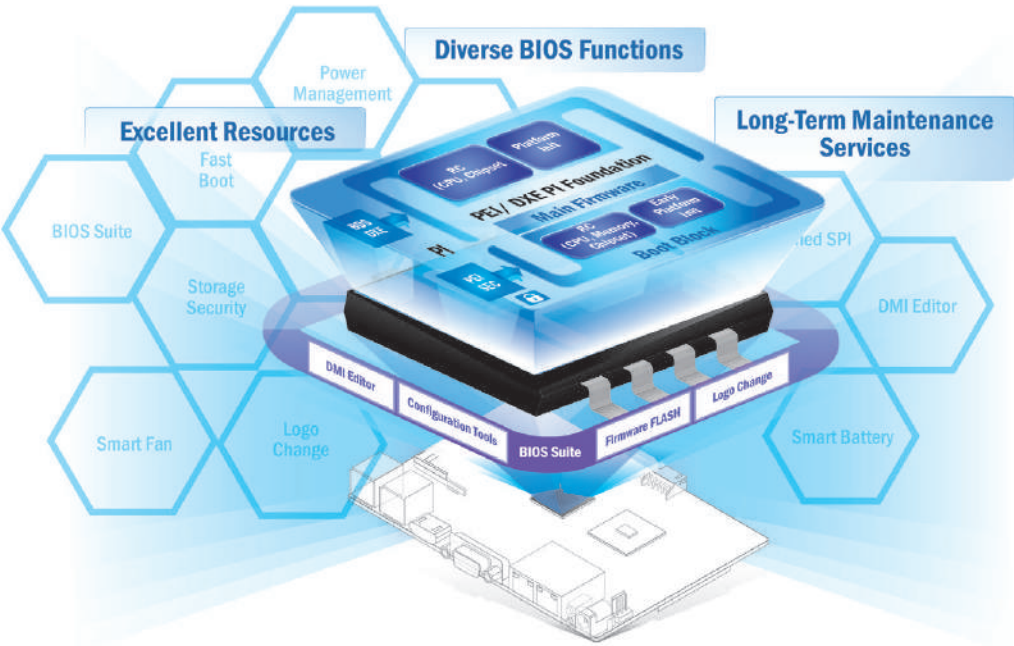
## I/O View



# 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>

# 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>