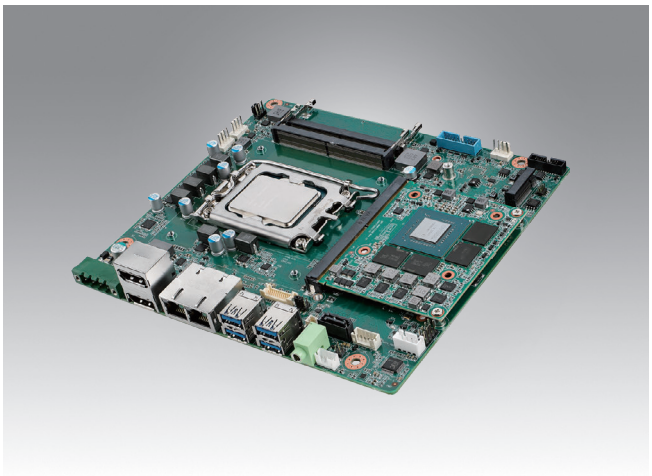
AIMB-288E

1U THIN Motherboard
12th Gen Intel® Core™ Processor LGA1700
MXM GPU module Integration



Features

- 12th Gen Intel® Core™ Desktop Processors, max. 16Core, support H610E chipset
- Integrated Graphics, NVIDIA RTX/Quadro or Intel Arc™
- Up to 64GB DDR5 4800MT/s with two SO-DIMM
- Triple displays with 2 DP and 1 eDP, up to 4K
- Abundant Expansion: 1 M.2 M-key & 1 M.2 B-key, 6 USB 3.2 Gen1x1, 1 SATA III
- Qualified for Edge AI SRP of WISE-DeviceOn and Embedded Software APIs

Software APIs: SMBus, H/W Monitor, Watchdog

Utilities: BIOS flash, Monitoring

Windows 10 ubuntu NVIDIA intel. WISE-DeviceOn CE FC RoHS

Specifications

Processor System	CPU	i9-12900E/i9-12900TE	i7-12700E/i7-12700TE	i5-12500E/i5-12500TE	i3-12100E/i3-12100TE	G7400E/G7400TE
	Core Number	16/16	12/12	6/6	4/4	2/2
	Max Speed	5.0GHz/ 4.8GHz	4.8GHz/ 4.7GHz	4.5GHz/ 4.3GHz	4.2GHz/ 4.0GHz	3.6GHz/ 3.0GHz
	SmartCache	30MB/30MB	25MB/25MB	18MB/18MB	12MB/12MB	2.5MB/2.5MB
	TDP	65W/35W	65W/35W	65W/35W	65W/35W	46W/35W
	Chipset	H610E				
	BIOS	AMI EFI 256 Mbit SPI				
Expansion Slot	M.2	1, M-key for storage (Type: 2280; NVMe supported) 1, B-key for storage (Type: 2242)				
Memory	Technology	2, Dual Channel DDR5 4800 MT/s SO-DIMM				
	Max. Capacity	64GB (up to 32GB per SO-DIMM)				
	Socket	2, 262 PIN DDR5 SO-DIMM (Non-ECC)				
Graphics	GPU	Intel Arc A370M	Quadro® T1000	Quadro® A500	Quadro® A2000	
	Cores	8 Xe-cores	896 CUDA® cores	2048 CUDA® cores	2560 CUDA® cores	
	FP32 Performance (TFLOPS)	4.198	2.6	6.54	8.25	
	Memory	GDDR6 4 GB	GDDR6 4GB	GDDR6 4GB	GDDR6 8GB	
Display (From Intel® UHD Graphics)	DP	2 Ports DP++, DP1.4a, up to 4096 x 2304 @ 60 Hz				
	eDP	1 Port, up to 3840 x 2160 @ 60 Hz				
	Triple Display	DP+DP+eDP				
Ethernet	Controller	LAN1: 1 GbE Intel I219-LM LAN2: 1 GbE Intel I226V				
	Connector	RJ45 x 2				
Audio	Codec	Realtek ALC888S, High Definition Audio (HD), Line-Out (default)				
	Amplifier	Yes (Option, 3.2W)				
SATA	Max Data Transfer Rate	6.0 Gb/s				
	Channel	1 (SATA III)				
Rear I/O	Display Port	2				
	Ethernet	2				
	USB	4 USB 3.2 Gen1x1				
	Audio	1 (Line out by default, (Line in/Line out/Mic in programable)				
	Power Connector	1 Terminal block (4P, Phoenix Contact)				
Internal Connector	USB	2, USB 3.2 Gen1x1				
	eDP	1				
	Serial	2, (RS-232/422/485 with auto flow control)				
	SATA	1				
	M.2	1 x M-key (2280, for NVMe Storage) 1 x B-key (2242, for LTE wireless connectivity)				
	SATA Power Connector	1				
Watchdog Timer	Output	System reset				
	Interval	Programmable 1 ~ 255 (second or minute)				
Power Requirements	Input voltage	19-24V DC-in				
	Connector	4-pin Terminal block				
Environment		Operating			Non-Operating	
	Temperature	0 ~ 60° C (32 ~ 140° F), depends on STD or THIN GPU cooler			-40 ~ 85° C (-40 ~ 185° F)	
Physical Characteristics	Dimensions	170 mm x 190 mm (6.69" x 7.48")				

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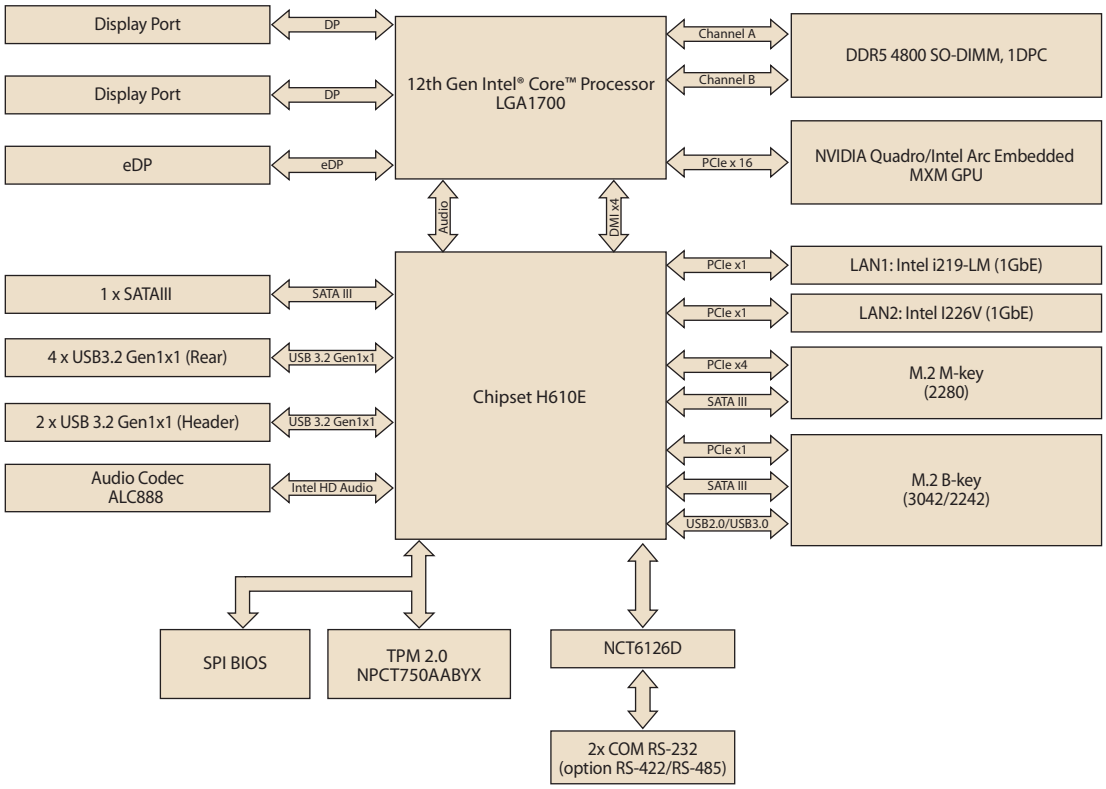
All product specifications are subject to change without notice.

Last updated: 20-Oct-2023

Block Diagram



Ordering Information

P/N	GPU SKU	DP	eDP	GbE	COM	SATA III	USB 3.2	M.2 M-key	M.2 B-key	TPM2.0	AMP	Cooler type	Temperature
AIMB-288EH-00A1	Nvidia T1000	2	1	2	2	1	6	1	1	1	(1)	STD GPU cooler	0 ~ 55 °C
AIMB-288EH-01A1	Nvidia A500	2	1	2	2	1	6	1	1	1	(1)	STD GPU cooler	0 ~ 55 °C
AIMB-288EH-02A1	Nvidia A2000	2	1	2	2	1	6	1	1	1	(1)	STD GPU cooler	0 ~ 55 °C
AIMB-288EH-03A1	Intel Arc A370M	2	1	2	2	1	6	1	1	1	(1)	STD GPU cooler	0 ~ 60°C

*() Supports by BOM options

AIMB-288E Kit

P/N	GPU	CPU	Memory	Storage	DP	eDP	GbE	COM	SATA III	USB 3.2	M.2 M-key	M.2 B-key	TPM2.0	AMP	Cooler type	Temperature
AIMB-288EH-K1A1	Nvidia T1000	i3-12100E	32GB	512G NVMe	2	1	2	2	1	6	1	1	1	(1)	THIN cooler	0 ~ 60 °C
AIMB-288EH-K2A1	Nvidia A2000	i3-12100E	32GB	512G NVMe	2	1	2	2	1	6	1	1	1	(1)	THIN cooler	0 ~ 60 °C
AIMB-288EH-K3A1	Intel Arc A370M	i3-12100E	32GB	512G NVMe	2	1	2	2	1	6	1	1	1	(1)	THIN cooler	0 ~ 60 °C

*() Supports by BOM options

Packing List

Part Number	Description	Quantity
1700003194	SATA HDD cable	1
1700018785	SATA power cable (1 port, 25cm)	1
1700031130-01	1-to-2 serial port cable, 22cm	1
19Z0002598T001	I/O port bracket	1
AIMB-288E Board	Assembly of AIMB-288E and MXM GPU and GPU cooler	1

I/O View

Optional Accessories

Part Number	Description
1700029719-01	M cable USB-A 9P(F)*2/2*10P-2.0 30CM (B2000)
96PSA-A230W24P4-3	ADP A/D 100-240V 230W 24V C14 TERMINAL BLOCK 4P
1970005349T001	ADL-S CPU cooler, 78x78x55.4mm (for CPU TDP max. 65W)
98R1X100010	Quadro RTX GPU T1000 STD MXM Cooler (55 °C)
98R1X050010	Quadro RTX GPU A500 STD MXM Cooler (55 °C)
98R1X200011	Quadro RTX A2000 MXM Cooler (55 °C)
1970005694T001	Intel Arc A370M Fansink (60 °C)
THIN Cooler	Thermal module of CPU & GPU Cooler for 1U system (need pre-assemble, please contact local sales or FAE)

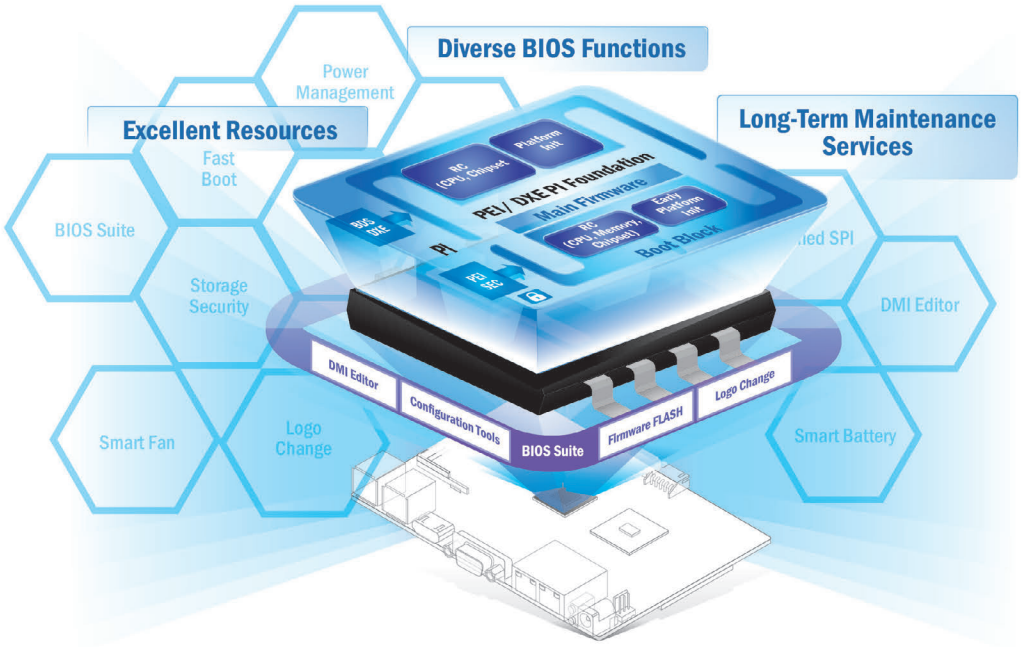
Embedded OS/API

OS/API	Part No.	968 P/N	Description
Windows 10	20706WX1ES0007	968QW21ELE	img W10 21EL AIMB-288E 64b 21H2 ENU
Windows 10	20706WX1HS0007	968QW21HLE	img W10 21HL AIMB-288E 64b 21H2 ENU
Windows 10	20706WX1VS0007	968QW21VLE	img W10 21VL AIMB-288E 64b 21H2 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

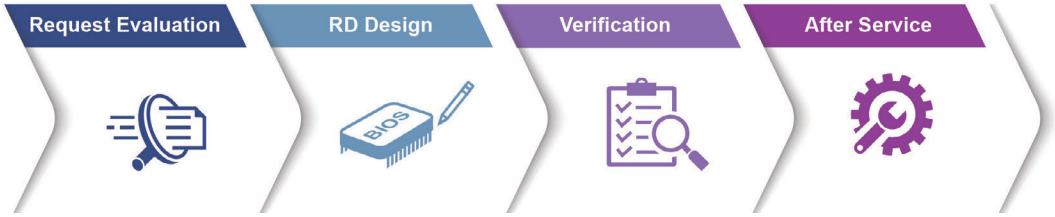
Diverse BIOS Functions

- 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

Edge AI OTA and Container Management

WISE-DeviceOn End-to-End Solution for Edge AI

Even if all datasets, algorithms, trainings, UI/UX, and more are functioning, how can you easily deploy an AI application to hundreds, or thousands, of inference devices in production? How can you efficiently manage AI models (software updates, CI/CD), in addition to all remote, hardware devices, such as sensors?

Solution Advantages

Performance Booster

- Inference optimization
- Open Neural Network Compiler (ONNC)
- Save over 45% DRAM consumption

Fleet Management

- Remote batch control for power management, reboot, terminal and screenshot
- Real-time monitoring, diagnostics and notification
- Over 10,000 devices around the globe

Container and OTA

- Streamlined deployment process
- Docker container management
- Software OTA (over-the-air) updates

AI Security

- AI containers deployed via Azure Container Registry and Harbor
- Secured data connection (TLS/SSL)
- Integrity protection based on digital signature

☞ **Find More Information about** WISE-DeviceOn End-to-End Solution for Edge AI

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)