Industrial Motherboards

A Full-Spectrum Provider to Rule Core Technology at the Edge

- Technological Breakthroughs
- Latest Platform Series
- Domain-Focused Design-in Services
- Vertical-Oriented Solutions

ADVANTECH

Enabling an Intelligent Planet

intel. AMD NVIDIA.

www.advantech.com

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Vision

Redefine next-generation applications at the Edge

Mission

- Fulfill emerging workloads at the Edge with high-performance core platform and GPU-accelerated computing
- Architect industry-specific functions to accommodate demands in healthcare, automation, and Telecom

Data-Driven to Take on Challenges

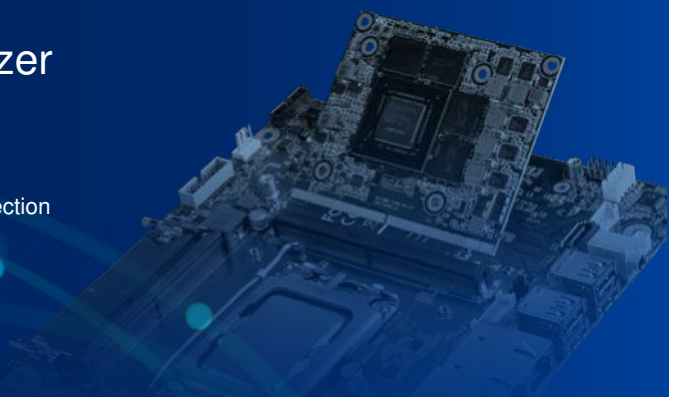
GPU-Accelerated Industry-Specific Platforms

With the increasing number of connected IoT devices, the volume of data has significantly grown, posing a new challenge in terms of data analysis. The industry is responding by embracing GPU-Accelerated capabilities to make sense of this vast amount of data. By leveraging GPU-Accelerated solutions, the industry aims to derive numerous benefits. Advantech, a leading provider of industrial motherboards, offers integrated CPU core power and GPU capabilities, enabling customers to seamlessly adopt GPU-Accelerated technology and develop the capacity to make informed decisions. Through Advantech's GPU-Accelerated industry-specific platform, which combines embedded boards with GPU-Accelerated technologies, industries are experiencing a significant intelligent upgrade.

Intelligent Workload Optimizer

Up to 8.6 TFLOPs (with GPU)

- AMR/AGV
- AI-Enabled Kiosk
- Automated Visual Inspection
- Surgical Robots



AIMB-278

Latest iGPU Platform

- 12th/13th Gen Intel® Core™
- 64GB DDR5 5600MHz SODIMM
- First 2.5 GbE LAN Port in Mini-ITX

AIMB-288E

Smallest GPU-Accelerated Motherboard

- Powerful built-in CPU & GPU
- Total 1U height
- Ultra-THIN thermal module

Deep Learning Booster

> 30 TFLOPs

- IoT Edge Workstation
- AI-assisted Factory Automation
- Diagnostic Informatics Workstation

AIMB-588

High Performance Graphic Solution

- PCIe x16 Gen5
- 3 x 2.5GbE LAN
- 4 x independent displays with 4K

AIMB-522

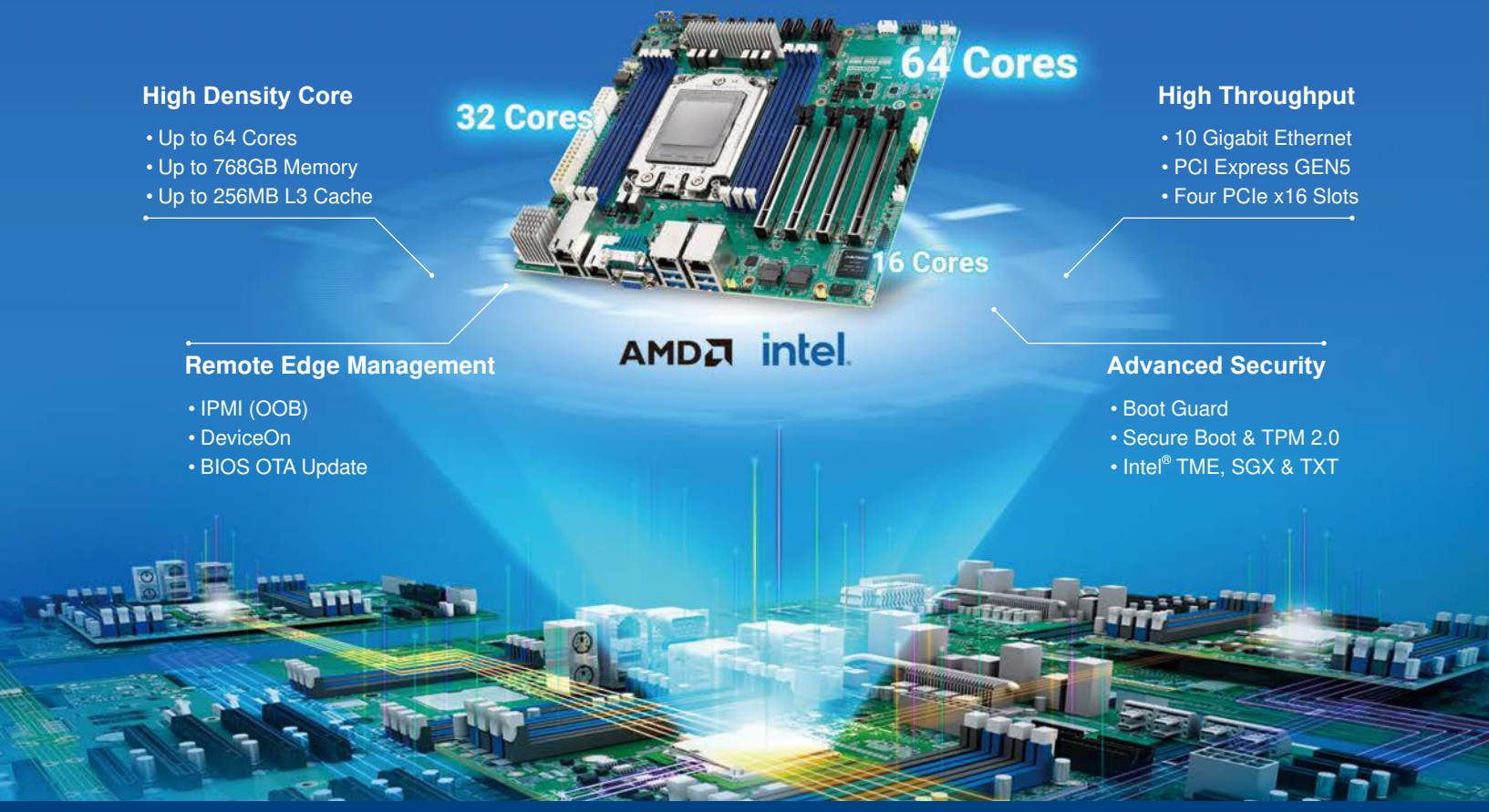
Machine Vision Focused Processing

- AMD Ryzen™ Embedded 5000 Series
- 4 x LAN Ports
- 8 x USB 3.2

High-Performance Edge Computing

Redefine next-generation applications at the edge

The advent of edge computing has revolutionized the IoT landscape, taking it to new heights by enabling local nodes to host individual services and applications. Key requirements for successful edge computing in various industries include computing power, low latency, data security, analytics, and AI capabilities. Advantech's High-Performance Edge Platform, featuring the latest industrial motherboards, delivers a comprehensive range of cutting-edge benefits for edge computing. This platform empowers customers to effortlessly upgrade their edge devices, equipping them to handle the escalating demand for local services.



High Density Core

- Up to 64 Cores
- Up to 768GB Memory
- Up to 256MB L3 Cache

High Throughput

- 10 Gigabit Ethernet
- PCI Express GEN5
- Four PCIe x16 Slots

Remote Edge Management

- IPMI (OOB)
- DeviceOn
- BIOS OTA Update

Advanced Security

- Boot Guard
- Secure Boot & TPM 2.0
- Intel® TME, SGX & TXT

16 Cores | 32 Cores | 64 Cores

AIMB-278

- 12th/13th Gen Intel® Core™ i9
- High-Speed Tester

AIMB-587

- 10th Gen Intel® Xeon
- Medical Workstation

AIMB-588

- 12th/13th Gen Intel® Core™ i9
- IoT Edge Workstation

AIMB-592

- AMD EPYC™ 7003 Series
- Hyperscale & Supercomputing Networking

Latest Platform Series

Ultimate Performance

Drives Workload Breakthroughs

Massive data processing and data-driven analytics via hardware acceleration, multi-task, and parallel processing

- Multi-core processors with up to 64-cores for parallel processing
- Maximize 768GB of DDR4 memory
- Double the throughput support to 128GB of DDR5

// Up to four steel-reinforced PCIe x16 Gen 4 slots

// 8-port USB 3.2 and 4-port 2.5 GbE Ethernet

// 10GbE LAN port

High-bandwidth peripheral slots and high-speed connectivity improve functionality for plug-and-plug industrial devices

- Multiple PCIex16 slots (Gen4/Gen5)
- M.2 for high-speed and endurance storage
- Capable of high-end GPU card installed

High throughput expandability facilitates low-latency data transmission and enables network-connected devices for deploying data-intensive applications

- 10GbE LAN port
- Four 2.5 GbE Ethernet ports on board
- TPM 2.0
- Intel® Boot Guard
- Multiple USB 3.2 ports

// **Incorporate software supports to simplify device deployment**

DeviceOn Windows Server **IPMI 2.0**

Micro ATX

Mainstream

Innovative Design with a Small Footprint

Meets alternative computing challenges at the edge

- Max. 24-cores processor
- DDR5 memory
- Powerful native GPU for demanding workload

Compact thermal solution for heat dissipation and various computational spaces

- 1U THIN cooling system
- Release 65W computing power
- No throttling in 60 °C

intel. CORE i7 | intel. CORE i9 | intel. CORE i5 | intel. CORE i3

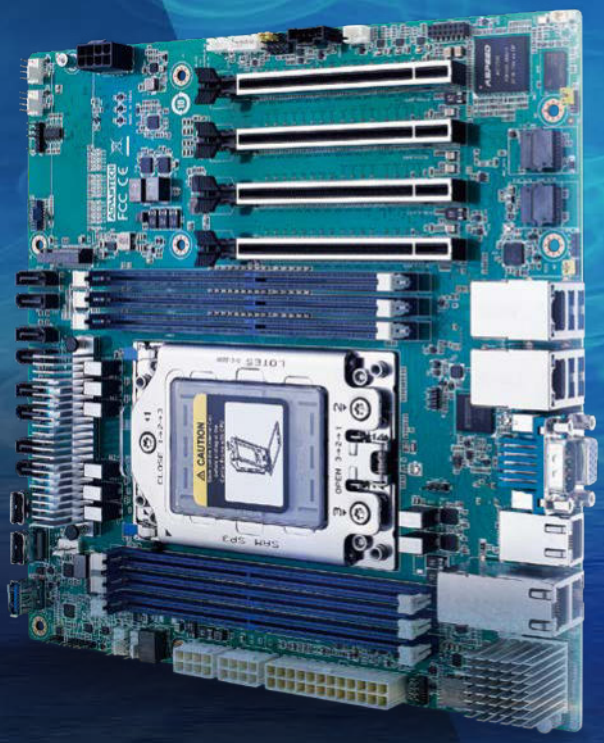
AMD RYZEN Embedded

// Slim thermal design

Versatile and advanced expansion technology enrich functionality

- PCIe x16 Gen5 doubles the bandwidth per lane
- M.2 M Key for NVMe storage to achieve speedy responsiveness
- M.2 B/E Key for remote transmission

// PCIe x16 Gen 5



Super-speed I/O improves data exchange efficiency

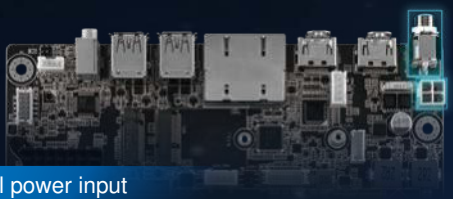
- Accelerate information interchange with diverse LANs reaching speeds of up to 2.5Gbps
- USB 3.2 Gen2 offers seamless data transitions
- Four 4K displays supports simultaneously working flow

// Up to 4 x 4K displays

// Up to 3 x GbE LAN ports

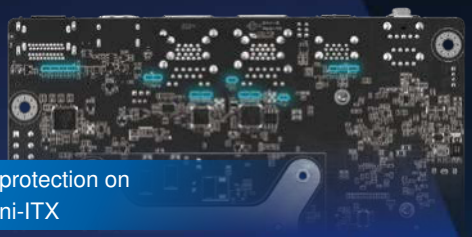
Reliable and durable operation with industrial standard compliance

- Up to ESD Level-4 protection
- IEC60068-2 design validation
- 12-24V wide range power input



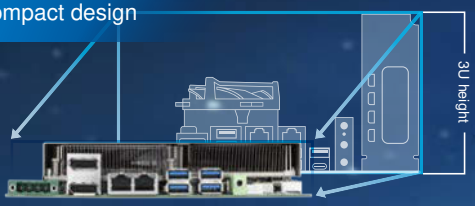
// Dual power input

DC 12-24V or ATX power input to support diverse power supplies



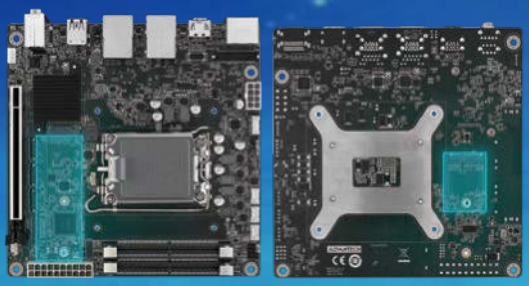
// ESD protection on all Mini-ITX

// Compact design



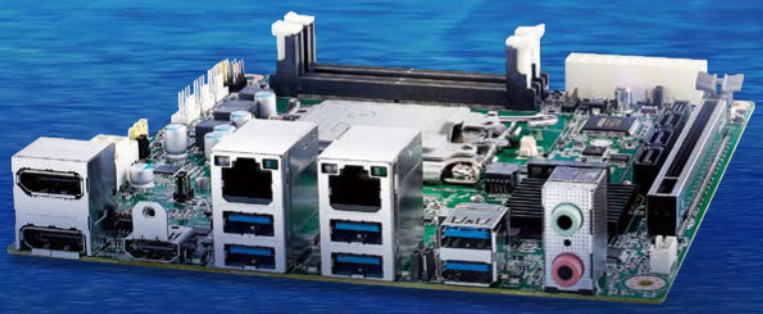
THIN Mini-ITX with a slim cooling system achieves 100% performance and enables easy integration of ultra-slender systems at the edge

// M.2 slots for extension cards



M-key E-key

Mini-ITX



Mini-IT

THIN

Performance Efficiency

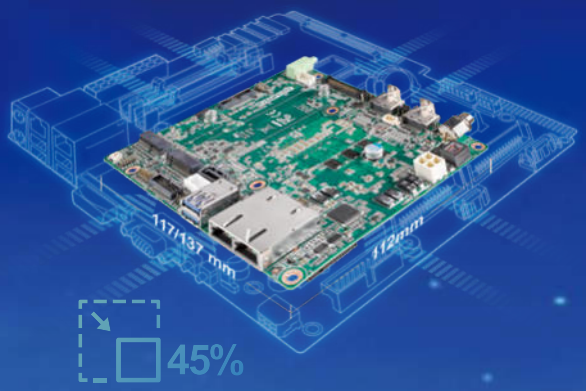
Start Small Scale Fast

High Adaptability in Industrial Environments

- Support -20~70°C industrial grade
- CPU no throttling commitment in 60°C operation
- Value-added software services

Small and functional

- 45% smaller footprint when compared to Mini-ITX form factor solutions
- Core i7 platform with off-the-shelf thermal solution with a height of 37 mm (1.45 in)
- Up to 3 x M.2 expansions and 3 x LAN ports



UTX

// AIMB-288E

Computing power plus GPU-accelerator, All-in-One edge intelligence

Domain-Focused Design-in Services

Advantech offers a one-stop service model for the integration of embedded boards, systems, software, displays, and peripherals. This model uses customer-centric design-in services to accelerate domain-focus applications integration with latest embedded technologies and value-added software.

Advanced Thermal Design

Ensure 100% Computing Power

- Utilize CPU & GPU(115W) power at the same time
- 65W CPU @ 60 °C (132 °F) No throttling

Thin & Robust

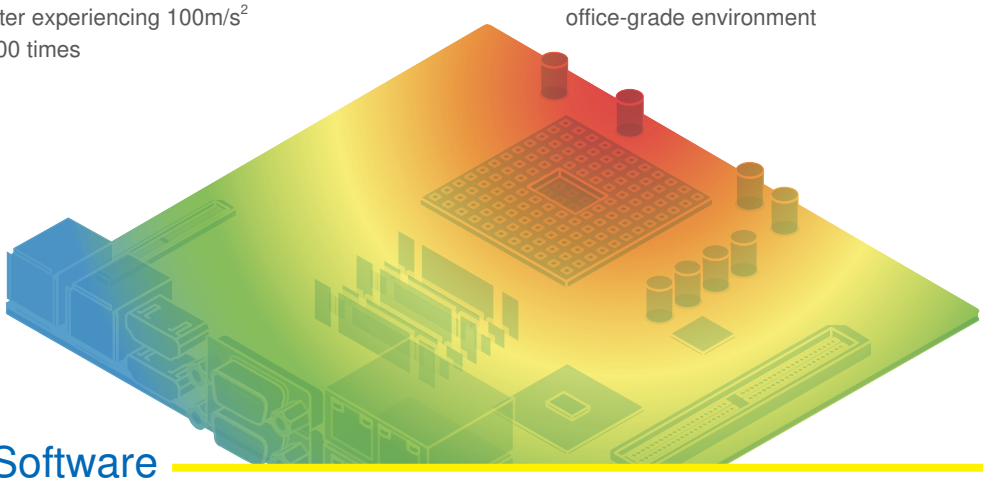
Overall height fit 1U enclosure with off-the-shelf THIN thermal solution

Mechanical Shock-Proof Capability

- Reference to IEC 60068-2-27 shock test
- Receive no damage and maintains stable operation even after experiencing 100m/s^2 shocks over 20,000 times

Silent Operation

- Smart fan control
- 52.7 dB @ (115W) ensures a business office-grade environment



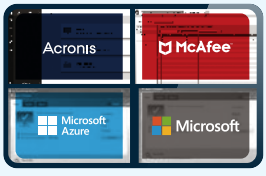
Comprehensive Software

Embedded Software Device

- IE Aggregation for NVIDIA and Intel Accelerators
- Cross-platform support for windows and Ubuntu

Device Management

- Remote management
- Alert and action
- IT/OT total security



Software and Cloud Integration

- Acronis back up and recovery
- McAfee IoT security solution
- Azure migration and consulting

Accelerate Certification Stage

Advantech motherboards and systems are designed with certification compliance principles. These comprehensive offerings simplify customer development and accelerate time-to-market.

— Globally recognized industrial standards

EMC
EN55011
EN55035

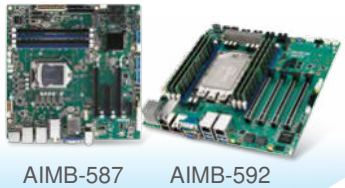
ESD
ESD
level 4

Advantech Lab
ISO17025

Quality One-Stop Solutions

Micro ATX Motherboard

- Designed for high-performance computing devices, such as medical and 5G networking applications
- Support 4 x expansion slots for comprehensive functionality



AIMB-587 AIMB-592

EPC-B5000 Series

- 4 x full-height PCI-E expansions
- Up to 1200W power budget
- Server-grade CPU thermal design

Mini ITX Motherboard

- Designed for GPU-Acceleration platforms such as service robotics, high-speed digital testing equipment
- Small footprint with low power consumption

AIMB-229 AIMB-288E

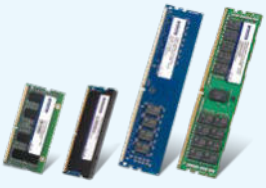
EPC-T3000 Series

- 1 x full-height PCI-E expansion
- 1U slim design
- Desktop CPU thermal design

Integrated Industrial-Grade Peripherals

SQFlash

- The IoT market's premier solid-state drive (SSD) and memory solution.
- Offers complete power failure protection, guaranteeing exceptional performance and reliability.



SQRAM

- Comprehensive DRAM series includes pioneer DDR5 and DDR4
- Extended temperature support (-20~ 85 ºC /-40 ~ 85 ºC)

Industrial Wireless

- Full coverage wireless technology — 5G/Wi-Fi 6/BLE5.2/ LPWA
- Ruggedized industrial solution -40 ~ 85 ºC

// Vertical-Oriented Hardware Design

Computing Solutions for MEDICAL & HEALTHCARE

Meeting the challenges and driving success in the current medical market involves achieving precision medicine, digitalizing healthcare, and enhancing the efficiency of clinicians. Key factors for achieving these goals include AI-assisted precision processing for clinical decision-making, establishing virtual networks of medical experts, and implementing high-efficiency operations to provide actionable information. Advanced medical devices rely on these factors for their effectiveness. Advantech, with its integration of cutting-edge computing technology, high-speed data connectivity, GPU-accelerated platforms, and reliable design-in services, offers solutions that assist medical equipment builders in addressing these challenges. Advantech's contributions aid healthcare providers in making precise diagnoses and delivering appropriate treatments, ultimately improving human health and well-being.

Why Advantech?

World-Class Partner

Advantech is global leader in the fields of IoT intelligent systems and embedded platforms. Advantech has over 30 years of experience in medical computing design and manufacturing facilities that are FDA registered and ISO13485 and ISO9001 certified. Advantech is trusted by the majority of the top 50 medical device manufacturers as well as countless hospitals, research centers, and Healthcare facilities.

Medical Certifications

Advantech holds the most comprehensive ISO certifications in the IPC industry, which demonstrates our ability to manufacture products for diverse industries as well as our commitment to worldwide regulations and standards compliance. For the healthcare industry, we offer the following:

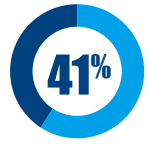
ISO 13485-certified factory and design processes ensure the transparency and traceability of medical products

Collaboration with customers to develop IEC60601-1-compliant medical electrical equipment

Product development, validation, and consultation services related to securing U.S. FDA approval

40 Years
Professional Experience
Headquarters: Taipei, Taiwan EST. 1983

WORLDS LARGEST IPC COMPANY
Advantech IPC WW Market Share



Advantech Other IPC Companies

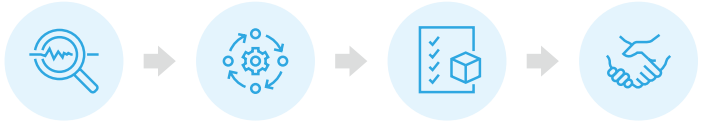
Comprehensive Portfolio

Advantech Full range of embedded core solutions from High-Performance computing to GPU accelerated and value and compact platform enable medical equipment to build data analytics, imaging processing, and digital management capabilities

Medical-Focused Design-in Services

Advantech Design-in services help medical equipment builders with embedded technologies, certification compliance design, proprietary manufacturing service, and lengthy lifecycle management.

Expert-Integrated Service Reduce Time to Market



Validation	Integration	Production	EOL & Upgrade
Trouble shooting & risk management	Custom software & thermal solutions	Assure quality & delivery	Product lifecycle management

Medical Equipment Challenges

Signal Quality

Ensuring signal integrity is of paramount importance for medical devices, as the hardware must be capable of consistently delivering reliable data. This requires the ability to collect high-quality signals while effectively filtering out any environmental noise.

Acoustic Conditions

Maintaining effective sound control is of utmost importance throughout healthcare facilities, as both patients and medical staff benefit from quieter environments. Excessive noise levels can lead to distractions and anxiety, potentially impacting the well-being and comfort of individuals involved.

Privacy Protection

Medical practitioners and IoT device manufacturers often encounter security and privacy concerns related to the personal health information collected through IoT devices.

How Can Advantech Help?

IEC 60601-1 Compliance Design

Ensure reliable operation

- Quality design-in services to comply with medical-grade equipment
- Customized signal measurement, ESD/EMI pre-test

Thermal Solution with Smart Fan Management

Meets acoustic requirements for healthcare

Smart Fan thermal design technology to handle high TDP computing without performance loss

Secure Operating Environment

Secure patient's privacy and confidential medical research archives

- Latest security technology to protect data in boot-up environment by Secure Boot and TPM technology.
- McAfee Embedded Security software prevents unauthorized changes and will lock a system down to a known application

Medical-Focused Design-In Services

Embedded Technologies and Software

- ISO 13485-certified DFMEA process
- System level thermal design and simulation for high performance GPU cards
- Industrial peripheral integration, verification, and test services
- Signal integrity simulation and EMC design-in services
- BIOS customization services for secure, silent operation
- Embedded OS design-in services
- Firmware and remote management API development

Manufacturing and Certifications

- Wide selection of application-oriented key components
- Fixed BOM and revision control services
- Proprietary serial production
- Strict product change control management
- ISO 13485-certified traceability and transparency
- IEC 60601-1-2 compliant design
- RoHS, REACH, and FDA contract manufacturing services
- CB/UL 60601-1-1 compliant design

Diagnostics Imaging

CT / MRT / X-ray / Ultrasound

High-performance computing power and seamless connectivity are essential for accurate diagnosis imaging, enabling efficient medical data processing. The incorporation of a discrete GPU card is crucial for video reconstruction and image inference, ensuring precise results. The challenge faced by high-end medical equipment builders lies in establishing a reliable and expandable processing ability to support clinical decision-making effectively.

// What Advantech offered

Medical-Focused Design-in Capability

- High-speed interfaces designed for high-quality signal integrity
- Medical-grade compliance design
- Multiple high-speed I/O and expansions for latest medical devices

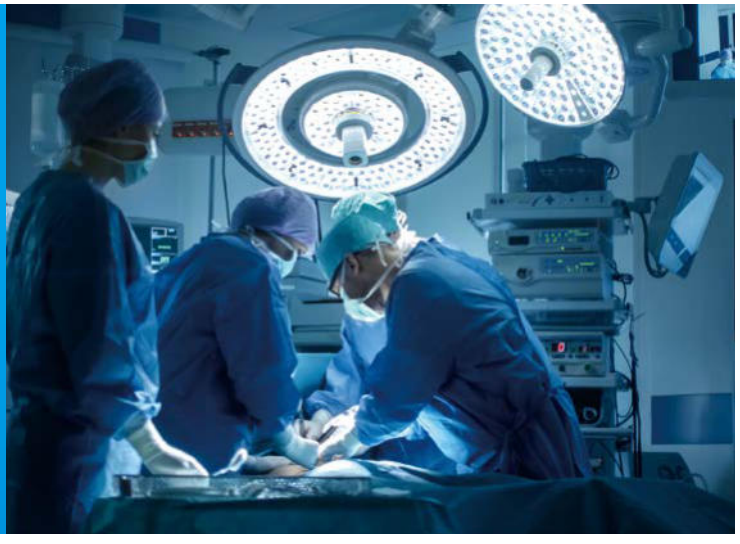
AIMB-588

- PCIe Gen5 and DDR5 memory
- ESD level 4 design
- Up to 9x USB 3.2 ports connection to high-speed devices

Surgery Simulator

Surgical Robotics/Surgical Navigation

The success rate of surgeries can be significantly improved through accurate surgical simulation. Medical professionals rely on simulation technology to enhance treatment outcomes, making it crucial to have excellent image processing performance and real-time response. These key elements ensure the quality and security of service by enabling dependable and safe operation during surgical simulations.



// What Advantech offered

Medical-Focused Design-in Capability

- Compact size with optimal computing performance and essential expansion
- Latest generation super speed I/O technology
- TPM2.0 security protection to secure patients information

AIMB-278

- 13th Gen Intel Core, up to 24 cores processors and DDR5
- PCIe x16 Gen5 (32GT/s) for powerful GPU module
- USB3.2 Gen2 and 2.5GbE for HD camera

In Vitro Diagnostics

Infectious Disease Testing/Molecular Diagnostics

Ensuring long-term uninterrupted service without territorial limitations necessitates the creation of a mobile and compact IVD (In Vitro Diagnostics) device. The device should be capable of withstanding transportation challenges while operating quietly. Crucially, it should be designed to minimize electromagnetic interference and vibrations that could potentially impact its accuracy.

// What Advantech offered

Medical-Focused Design-in Capability

- Onboard CPU and M.2 SSD that prevent vibration
- Low power consumption and silent heat sink design
- 10 Year longevity save maintenance efforts

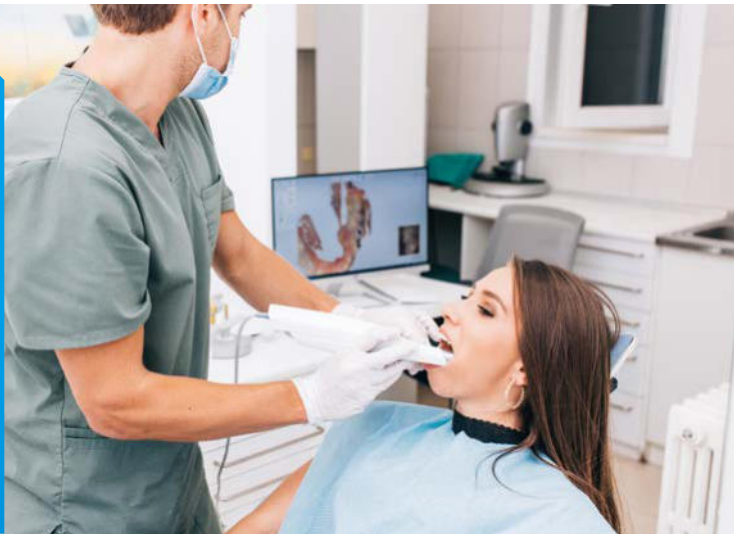
AIMB-218

- Lockable connectors design for USB3, serial ports.
- WiFi connectivity by M.2 for mobility device
- Fanless thermal design for 60°C operating temperature

Dental Imaging

X-ray/3D Scan Solution

Dental imaging analysis devices require high accuracy in image analysis and reliable computing performance to process high-quality images effectively and predict potential dental issues. Overcoming these challenges within limited space is crucial for providing precise diagnoses and effective treatment planning for patients



// What Advantech offered

Medical-Focused Design-in Capability

- GPU accelerated motherboard boosts imaging processing capability
- Reliable design with IEC/EN 61000-4-2 compliance
- All-in-One design with extreme thermal performance simplify system integration

AIMB-288E

- Nvidia Quadro A2000 GPU integration offers 8.64 TFLOPS computing power
- 1U THIN cooler release 100% power of CPU and GPU
- 4K Display port deliver delicate image

// Vertical-Oriented Hardware Design

Computing Solutions for INTELLIGENT INDUSTRIAL AUTOMATION

Achieving optimal productivity and profitability in future factory automation hinges upon effectively managing complex manufacturing lines. Key success factors in this endeavor encompass data-intensive computing, networked production, sustainable high quality, and process automated optimization. To address the challenge of insufficient data analysis, it is crucial to enhance flexibility and quality in high-complexity production while efficiently managing utilities across production sites.

Advantech's industrial motherboards provide the ideal solution by offering high-performance computing power, seamless connectivity, scalability, and expandability. These motherboards enable the construction of new equipment such as autonomous robots, visual inspection systems, and digital test equipment, catering to the emerging market needs expected in the next decade.

Intelligent Automation Challenges

Increase Productivity

Productivity efficiency plays a crucial role in today's supply chain. The workflow must maintain high-speed and low-latency operations, whether it is within individual work stages or between various edge devices.

Sustainable High Quality

The success of high-complexity manufacturing relies heavily on a dependable quality inspection system. This system must consistently provide sustainable signal integrity and continuous support for machine vision-based add-on cards, operating 24/7.

Auto-Optimizing Process

Efficient data collection flow and robust computation capabilities are crucial for implementing an automated optimization process. It should be capable of performing real-time updates and intelligent data analysis at the edge.

How Can Advantech Help?

High-Speed Connectivity for Industrial Robot Applications

Seamless functionality allows customers to complete latest device integration

- Hardware design supports high-speed peripherals
- Low latency data transmission

GPU-Accelerated Computing Platform

Efficiently complete visual test & inspection to secure quality

- Multiple expansion slot for high-performance add-on cards
- Compatible with embedded GPU card in the market

High-Performance Hardware-Acceleration Architecture

Automated massive data analytics to improve manufacturing efficiency

- High-bandwidth interfaces
- High-performance computing power
- Remote management capability

Parcel Logistics

Automated Sortation Equipment / AMR in Smart Warehouse

Logistics sorting poses significant challenges in both space and time. Therefore, there is a need for reliable and abundant I/O interfaces, such as USB and LAN, to connect high-speed sensors and cameras. Additionally, a compact form factor and an embedded OS-ready solution are necessary to accelerate deployment and enhance work efficiency without incurring additional maintenance costs.

// What Advantech offered

Automation-Focused Design-in Capability

- Small form factor with multiple I/O expansion
- Win10 and Linux Ubuntu OS ready for end product development
- DeviceOn software for remote control and management

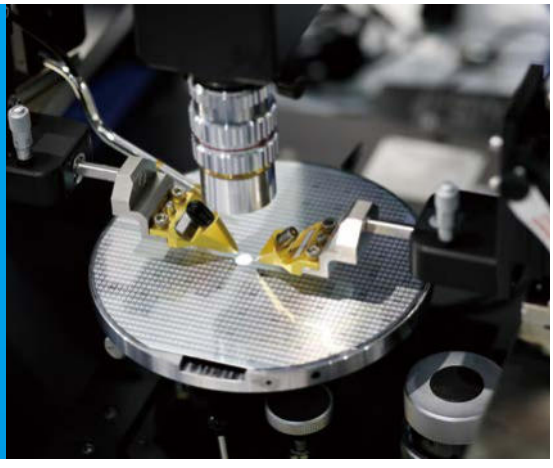
AIMB-208

- Mini-ITX latest generation support longer life cycle
- Up to 6 GbE for multiple camera
- 8 x USB and 8 x GPIO for LiDAR sensor

Computer Vision in Manufacturing

Automated Visual Inspection/Vision-Guided Robot System

Advanced high-complexity manufacturing demands substantial computing power to handle data-driven production. Additionally, graphics capability is essential for visual-based production and inspections. Furthermore, flexible expansion is required to support the new generation of high-throughput end devices.



// What Advantech offered

Automation-Focused Design-in Capability

- High-performance computing based on the latest CPU technology
- GPU integration capability to meet industry applications
- Products designed to handle multiple high-speed device workloads

AIMB-522

- AMD Ryzen™ Embedded 5000
- PCIe x16 Gen 4 for advanced GPU integration
- 4 x LAN ports

Industrial Motherboards

UTX

Intel® Core™ i Platform | Intel Atom® Platform



Model Name		AIMB-U233	AIMB-U217	AIMB-U117
Form Factor		UTX-E	UTX-E	UTX
Processor System	CPU	8th Gen Intel® Core™ i7/i5/i3/Celeron®	Intel® E3950	Intel® E3950/E3930
	Socket	BGA1528	FCBGA	FCBGA
	Max Speed	2.2/1.7/1.6 GHz	QC 1.6 GHz	QC 1.6 / DC 1.3 GHz
	TDP	15W	12W	12W/6.5W
	L2 Cache	8MB/6MB/4MB/2MB	2MB	2MB
	L3 Cache	-	-	-
	Chipset	-	-	-
	BIOS	AMI EFI 256Mbit SPI	AMI EFI 128Mbit SPI	AMI EFI 128Mbit SPI
Expansion Slot	M.2	3 (M-key, E-key, B-Key)	1 (E-Key)	1 (E-Key)
	PCI	-	-	-
	Mini PCIe	-	1 (F/S)	1 (F/S)
	PCIe	-	-	-
Memory	Technology	DDR4 2400 MHz SDRAM	Single Channel DDR3L 1866/1600/1333 Mhz SDRAM	Single Channel DDR3L 1866/1600/1333 Mhz SDRAM
	Max Capacity	32GB	8GB	8GB
	Socket	1 x 260-pin SODIMM	1 X 204-pin SODIMM	1 X 204-pin SODIMM
Graphics	Controller	Intel® HD Graphics	Intel® HD Graphics	Intel® HD Graphics
	VGA/DVI-D/HDMI/DP	-/-/2/-	-/-/1/1	-/-/1/1
	Dual Channel 24-bit LVDS/eDP	1/1 (LVDS is optional)	1/1 (LVDS is optional)	1/1 (LVDS is optional)
	Multiple Display	2 HDMI+eDP 2 HDMI+LVDS	DP+HDMI+eDP DP+HDMI+LVDS	DP+HDMI+eDP DP+HDMI+LVDS
Ethernet	Interface	10/100/1000 Mbps	10/100/1000 Mbps	10/100/1000 Mbps
	Controller	LAN1: Intel® I219LM LAN2: Intel® I210	LAN1: Intel® I210 LAN2: Intel® I210 LAN3: Realtek RTL8111H	LAN1: Realtek RTL8111H LAN2: Realtek RTL8111H
	Connector	RJ45 x 2	RJ-45 x 3	RJ-45 x 2
TPM		Optional	Optional	Optional
SATA	Max Data Transfer Rate	600 MB/s	600 MB/s	600 MB/s
	Channel	1	1	1
	eSATA/mSATA	-/-	-/-	-/-
External I/O	VGA/DVI/HDMI/DP	-/-/2/-	-/-/1/1	-/-/1/1
	Ethernet	2	3	2
	USB	2 x USB 3.0	4 x USB 3.0	4 x USB 3.0
	Audio	Line Out	Line out	Line out
	Serial	-	-	-
	PS/2	-	-	-
	DC Jack	1	1	1
Internal Connector	LVDS & Inverter	1 (optional)	1 (optional)	1 (optional)
	DVI	-	-	-
	USB	2	2	-
	Serial	4 (2 x RS-232, 2 x RS-232 or 422 or 485)	4 (2 x RS-232, 2 x RS-232 or 422 or 485)	2 (1 x RS-232; 1 x RS-422 or 485)
	Parallel	-	-	-
	SATA	1	1	1
	CompactFlash / eMMC	-	-/1 x 153 ball eMMC (optional)	-/1 x 153 ball eMMC (optional)
	GPIO	16-bit GPIO	16-bit GPIO	8-bit GPIO
	CANBus (2.0B)	-	1 (optional)	1 (optional)
	MDB	-	-	1 (co-lay with RS-232)
	ccTALK	-	-	1 (co-lay with RS-422/485)
Power Input		12V DC-in Rear: DC Jack	12~24V DC-in Rear: DC Jack	12~24V DC-in Rear: DC Jack
Certification		CE/FCC Class B	CE/FCC Class B	CE/FCC Class B

Note: "-" : means Not Applicable (N/A)

Mini-ITX

Intel Atom® Platform — NEW

AMD Platform — NEW





Model Name		AIMB-218	AIMB-217	AIMB-215	AIMB-229	AIMB-228
Form Factor		THIN Mini-ITX	THIN Mini-ITX	THIN Mini-ITX	THIN Mini-ITX	THIN Mini-ITX
Processor System	CPU	Intel® Pentium® J6426/Celeron® J6413/Celeron® N6211/Atom® x6413E	Intel® Pentium® N4200/Celeron® N3350/Atom® x7-E3950	Intel® Celeron® J1900/ N2930/N2807	AMD Embedded Ryzen V2000	Automation-Focused Design-in Capability
	Socket	FCBGA	FCBGA	FCBGA	BGA	BGA
	Max Speed	QC 2.0 / QC 1.8 / DC 1.2 / QC 1.5 GHz	QC 1.1 / DC 1.1 / QC 1.6 GHz	QC 2.0 / 1.83 GHz DC 1.58 GHz	8C 4.15Ghz / 6C 3.95GHz	QC 3.35GHz / QC 2.00GHz / DC 2.30GHz
	TDP	Up to 10W	Up to 12W	Up to 10W	Up to 54W	Up to 54W (V1000) Up to 15W (R1000)
	L2 Cache	1.5MB	2MB	2MB/2MB/1MB	4MB	2M
	L3 Cache	-	-	-	8MB	2MB
	Chipset	-	-	-	-	-
	BIOS	AMI EFI 256Mbit, SPI	AMI EFI 128Mbit, SPI	AMI EFI 16Mbit, SPI	AMI EFI 128Mbit, SPI	AMI EFI 128Mbit, SPI
Expansion Slot	M.2	1 B-Key & 1 E-Key	1 E-Key	-	1 M-Key & 1 E-Key	1 B-Key & 1 E-Key
	Mini PCIe	-	1	2	-	-
	PCIe	1 x PCIe x1	1 x PCIe x1	1 x PCIe x1	1 x PCIe x8	1 x PCIe x8 (Only PCIex4 signal for R1000)
Memory	Technology	2-CH DDR4 3200MHz SDRAM	2-CH DDR3L 1600MHz SDRAM	2-CH/2-CH/1-CH DDR3L 1333MHz SDRAM	2-CH DDR4 3200MHz SDRAM (ECC/ non-ECC)	2-CH DDR4 3200MHz SDRAM (ECC/ non-ECC)
	Max Capacity	32GB / up to 16GB per DIMM	16GB/ up to 8GB per DIMM	8GB / up to 4GB per DIMM	64GB / 32GB per DIMM	32GB / up to 16GB per DIMM
	Socket	2 x 260-pin SODIMM	2 x 204-pin SODIMM	2 / 2 / 1 x 204-pin SODIMM	2 x 260-pin SODIMM	2 x 260-pin SODIMM
Graphics	Controller	Intel® UHD Graphics	Intel® HD Graphics	Intel® HD Graphics	AMD Radeon	AMD Radeon
	VGA/DVI-D/ HDMI/DP++	-/-/1/1	1/-/1/1	1/-/-/1	-/-/2/2	-/-/-/4 (V1000) -/-/-/3 (R1000)
	Dual Channel 24-bit LVDS/eDP	1/1 differ by SKU	1/1 (eDP is optional)	1/1 (eDP is optional)	1(eDP is optional)	1/- (LVDS is optional)
	Type C Alt.	-	-	-	2	-
	Multiple Display	Triple displays: DP+HDMI+LVDS(or eDP)	Triple displays: VGA(or EDP)+ DP(or LVDS)+HDMI	Dual displays: VGA+DP(or eDP), VGA+LVDS, LVDS+DP(or eDP)	Quad displays: HDMI+HDMI+DP+DP, eDP+HDMI+DP+DP	Quad displays: DP+DP+DP+DP LVDS+DP+DP+DP
Ethernet	Interface	10/100/1000 Mbps	10/100/1000 Mbps	10/100/1000 Mbps	10/100/1000 Mbps	10/100/1000 Mbps
	Controller	LAN1: Realtek RTL8111H LAN2: Realtek RTL8111H	LAN1: Realtek RTL8111H LAN2: Realtek RTL8111H	LAN1: Realtek RTL8119I LAN2: Realtek RTL8119I	LAN1: Realtek RTL8111H LAN2: Realtek RTL8111H	LAN1: Realtek RTL8111H LAN2: Realtek RTL8111H
	Connector	RJ-45 x 2	RJ-45 x 2	RJ-45 x 2	RJ-45 x 2	RJ-45 x 2
TPM		TPM 2.0 (by SKU)	Optional	Optional	TPM 2.0	Optional
SATA	Max Data Transfer Rate	600 MB/s	600 MB/s	300 MB/s	600 MB/s	600MB/s
	Channel	1	2	2	2	2
	eSATA/mSATA	-/-	-/1	-/1	-/-	-/-
Rear I/O	VGA/DVI-D/ HDMI/DP	-/-/1/1	1/-/1/1	1/-/-/1	-/-/2/2	-/-/-/V1000: 4 -/-/-/R1000: 3
	Type-C Alt.	-	-	-	2	-
	Ethernet	2	2	2	2	2
	USB	4 (3 x USB 3.2 Gen2 / 1 x USB 2.0)	4 (USB 3.2 Gen1)	4 (1 x USB 3.2 Gen1 / 3 x USB 2.0)	2 x USB 3.2 Gen2 / 2 x USB 3.2 Gen1	4 (2 USB 3.2 Gen2 / 2 USB 2.0)
	Audio	Line-out	Line-out	Line-out	Line-out + Mic/Line-in	Line-out + Mic/Line-in
	Serial	-	-	-	-	-
	PS/2	-	-	-	-	-
	DC Jack	1	1	1	1	1
Internal Connector	LVDS/eDP	1/1 (optional) eDP co-lay with LVDS	1/1 (optional) LVDS co-lay with DP, eDP co-lay with VGA	1/1 (optional) eDP co-lay with DP	1 (optional)	1 (optional) / LVDS co-lay with DP
	USB	4 (USB 2.0)	8 (USB 2.0), USB 9/10/11/12 is optional	4 (USB 2.0)	2 (USB 2.0)	2 (USB 2.0)
	Serial	6 (5 x RS-232, 1 x RS-232/422/485) COM3~6 (optional)	6 (5 x RS-232; 1 x RS-232/422/485)	6 (5 x RS-232; 1 x RS-232/422/485) COM3~6 (optional)	6 (4 x RS-232; 2 x RS-232/422/485)	6 (4 x RS-232, 2 x RS-232/422/485, 1 supports CCTalk, 1 supports TTL)
	Parallel	-	-	-	-	-
	SATA	1	2	2	2	2
	eMMC/UFS	-/-	-/-	-/-	-/-	-/-
	GPIO	8-bit GPIO	8-bit GPIO	8-bit GPIO	16-bit GPIO	16-bit GPIO
Power Input		12V DC-in Rear: DC Jack Internal: ATX 4-pin	12V DC-in Rear: DC Jack Internal: ATX 4-pin	12V DC-in Rear: DC Jack Internal: ATX 4-pin	12V DC-in Rear: DC Jack Internal: ATX 4-pin	12~24V DC-in Rear: DC Jack Internal: ATX 4-pin
Certification		CE/FCC Class B	CE/FCC Class B	CE/FCC Class B	CE/FCC Class B	CE/FCC Class B

Note: "-" : means Not Applicable (N/A)

Industrial Motherboards

Mini-ITX

Intel® Core™ i Platform

NEW NEW






Model Name		AIMB-288E	AIMB-278	AIMB-287	AIMB-277	AIMB-286	AIMB-286EF
Form Factor		THIN Mini-ITX extended (170 x 190 mm)	Mini-ITX	THIN Mini-ITX	Mini-ITX	THIN Mini-ITX	THIN Mini-ITX
Processor System	CPU	13th/12th Gen Intel® Xeon®/ Core™/i9/i7/i5/i3/ Pentium®/ Celeron®	13th/12th Gen Intel® Xeon®/ Core™/i9/i7/i5/i3/ Pentium®/ Celeron®	10th Gen Intel® Core™ i9/i7/i5/i3/Celeron®	10th Gen Intel® Core™ i9/i7/i5/i3/Celeron®	8th/9th Gen Intel® Core™ i7/i5/i3/Pentium®/Celeron®	8th/9th Gen Intel® Core™ i7/i5/i3/Pentium®/Celeron®
	Socket	LGA1700	LGA1700	LGA1200	LGA1200	LGA1151	LGA1151
	Max. Speed	P-core up to 5.0 GHz E-core up to 3.8 GHz	P-core up to 5.0 GHz E-core up to 3.8 GHz	2.8/2.9/3.1/3.2/3.8/ 3.2 GHz	2.8/2.9/3.1/3.2/3.8/3.2 GHz	3.7/3.6/3.2/3.1/3.0/2.9/ 2.4/2.1GHz	3.7/3.6/3.2/3.1/3.0/2.9/2. 4/2.1GHz
	TDP	65W/60W/46W/35W	65W/60W/46W/35W	65W/58W/35W	65W/58W/35W	65W/54W/35W	65W/54W/35W
	L2 Cache	-	-	-	-	-	-
	L3 Cache	Up to 30MB	Up to 30MB	20MB/16MB/12MB/ 6MB/2MB	20MB/16MB/12MB/ 6MB/2MB	12MB/9 MB/6 MB/ 4 MB/2 MB	12MB/9MB/6MB/ 4MB/2MB
	Chipset	Intel® H610E	Intel® Q670E	Intel® H420E	Intel® Q470E	Intel® H310	Intel® H310
	BIOS	AMI EFI 256Mbit SPI	AMI EFI 256Mbit SPI	AMI EFI 256Mbit SPI	AMI EFI 256Mbit SPI	AMI EFI 128Mbit, SPI	AMI EFI 128Mbit, SPI
Expansion Slot	M.2	1 M-Key & 1 B-Key	1 M-Key & 1 E-Key	1 M-Key & 1 E-Key	1 M-Key & 1 E-Key	1 B-Key & 1 E-Key	1 B-Key & 1 E Key
	Mini PCIe	0	0	0	0	0	0
	PCIe	1 x MXM	1 x PCIe x16	0	1 x PCIe x16	1 x PCIe x4	1 x PCIe x16
Memory	Technology	2-CH DDR5 4800 MHz SDRAM	2-CH DDR5 4800 MHz SDRAM	2-CH DDR4 2933 MHz SDRAM	2-CH DDR4 2933 MHz SDRAM	2-CH DDR4 2666 MHz SDRAM	Single-CH DDR4 2666 MHz SDRAM
	Max. Capacity	64GB / up to 32GB per DIMM	64GB / up to 32GB per DIMM	64GB / up to 32GB per DIMM	64GB / up to 32GB per DIMM	64GB / up to 32GB per DIMM	32GB / up to 32GB per DIMM
	Socket	2 x 262-pin SODIMM	2 x 262-pin SODIMM	2 x 260-pin SODIMM	2 x 260-pin SODIMM	2 x 260-pin SODIMM	1 x 260-pin SODIMM
Graphics	Controller	TBD	Intel® HD Graphics	Intel® HD Graphics	Intel® HD Graphics	Intel® HD Graphics	Intel® HD Graphics
	VGA/DVI-D/HDMI/ DP++	-/-/-/2	-/-/-/2	-/-/2/-	1/-/1/1	-/-/1/1	-/-/1/1
	Dual Channel 24-bit LVDS/eDP	0/1	1/1 (LVDS is optional)	0/1	1/1	1/1 (eDP is optional)	1/1 (eDP is optional)
	Type-C Alt.	-	-	-	-	-	-
	Multiple Display	Triple displays: DP+DP+eDP	Quad displays: DP+DP+HDMI+eDP (or LVDS)	Dual display: HDMI + HDMI, HDMI+eDP	Triple displays: DP+DP+HDMI, DP+HDMI+LVDS (or eDP), LVDS(or eDP)+DP+DP	Dual display: DP+HDMI, DP+LVDS(or eDP), HDMI+LVDS(or eDP)	Dual display: DP+HDMI, DP+LVDS(or eDP), HDMI+LVDS(or eDP)
Ethernet	Interface	10/100/1000 Mbps	10/100/1000/2500 Mbps	10/100/1000 Mbps	10/100/1000 Mbps	10/100/1000 Mbps	10/100/1000 Mbps
	Controller	LAN1: Intel® I219LM LAN2: Intel® I226 (1GbE)	LAN1: Intel® I219LM LAN2: Intel® I226 (2.5GbE)	LAN1: Intel® I219LM LAN2: Intel® I211AT	LAN1: Intel® I219LM LAN2: Intel® I211AT	LAN1: Realtek RTL8111H LAN2: Realtek RTL8111H (only for FL/F/G2 SKU) LAN3: Intel® I211AT (only for FL/F SKU)	LAN1: Realtek RTL8111H LAN2: Realtek RTL8111H LAN3: Intel® I211AT
	Connector	RJ-45 x 2	RJ-45 x 2	RJ-45 x 2	RJ-45 x 2	RJ-45 x 3 (AIMB-286FL/F: AIMB-286G2: 2; AIMB-286L: 1)	RJ-45 x 3
TPM		TPM 2.0	TPM 2.0	TPM 2.0	Optional	Optional	Optional
SATA	Max Data Transfer Rate	600 MB/s	600 MB/s	600 MB/s	600 MB/s	600 MB/s	600 MB/s
	Channel	1	3	2	3	3	3
	eSATA/mSATA	-/-	-/-	-/-	-/-	-/-	-/-
Rear I/O	VGA/DVI/HDMI/DP	-/-/-/2	-/-/1/2	-/-/2/-	-/-/1/1	-/-/1/1	-/-/1/1
	Type-C Alt.	-	-	-	-	-	-
	Ethernet	2	2	2	2	FL/F SKU: 3 G2 SKU: 2 L SKU: 1	3
	USB	4 (USB 3.2 Gen1)	6 (USB 3.2 Gen2)	4 (USB 3.2 Gen1)	4 (USB 3.2 Gen2)	4 (USB 3.2 Gen1)	4 (USB 3.2 Gen1)
	Audio	Line out	Mic-in, Line-out, Line-in	Line out	Mic-in, Line-out, Line-in	Mic-in, Line-out	Mic-in, Line-out
	Serial	-	-	-	-	-	-
	PS/2	-	-	-	-	-	-
	DC Jack	1 (4-pin phoenix connector)	-	1	-	1	1
Internal Connector	LVDS/eDP	-/1	1/1 (LVDS optional)	-/1	1/1 (eDP optional)	1/1 (optional) LVDS co-lay with eDP	1/1 (optional) LVDS co-lay with eDP
	VGA	-	-	-	1 (pin header)	-	-
	USB	2 x USB 3.2 Gen1 (5Gb/s)	2 USB 2.0	4 (2 x USB 3.2 Gen1, 2 x USB 2.0)	4 (USB 3.2 Gen1)	4 USB 2.0 (only for FL/F/G2 SKU)	4 (USB 2.0)
	Serial	2 (RS-232/422/485; support by BOM optional)	2 (RS232/422/485 + RS232)	4 (2 x RS-232, 2 x RS-232/422/485; RS-422/485 support by BOM optional)	2 (RS232/422/485)	FL/F SKU: 6 (4 x RS-232, 2 x RS-232/422/485, RS-422/485 support by BOM optional) G2/L SKU: 2 (1 x RS-232, 1 x RS-232/422/485, RS-422/485 support by BOM optional)	2 (1 x RS-232, 1 x RS-232/422/485; RS-422/485 support by BOM optional)
	Parallel	-	-	-	-	-	-
	SATA	1	3	2	3	FL/F/G2 SKU: 3 L SKU: 2	3
	eMMC/UFS	-/-	-/-	-/-	-/-	-/-	-/-
	GPIO	0	8-bit GPIO	8-bit GPIO	8-bit GPIO	16-bit GPIO	16-bit GPIO
Power Input		19~24V Rear: Phoenix	ATX Internal: ATX 20-pin + 8-pin (12V)	12~24V DC-in Rear: DC Jack Internal: ATX 4-pin	ATX Internal: ATX 24-pin + 8-pin (12V)	12V DC-in Rear: DC Jack Internal: ATX 4-pin	12V DC-in Rear: DC Jack Internal: ATX 4-pin
Certification		CE/FCC Class B	CE/FCC Class B	CE/FCC Class B	CE/FCC Class B	CE/FCC Class B	CE/FCC Class B

Note: "-" : means Not Applicable (N/A)

Mini-ITX

Intel® Core™ i Platform






Model Name		AIMB-276	AIMB-285	AIMB-275	AIMB-205	AIMB-233	AIMB-232
Form Factor		Mini-ITX	THIN Mini-ITX	Mini-ITX	Mini-ITX	THIN Mini-ITX	THIN Mini-ITX
Processor System	CPU	8th/9th Gen Intel® Core™ i7/i5/i3/ Pentium®/ Celeron®	6th/7th Gen Intel® Core™ i7/ i5/i3/ Pentium®/ Celeron®	6th/7th Gen Intel® Core™ i7/ i5/i3/ Pentium®/ Celeron®	6th/7th Gen Intel® Core™ i7/i5/i3/ Pentium®/ Celeron®	8th Gen Intel® Core™ ULT i7/i5/i3/ Celeron®	6th Gen Intel® Core™ i7/i5/i3/ Celeron®
	Socket	LGA1151	LGA1151	LGA1151	LGA1151	BGA1528	BGA1356
	Max Speed	3.7/3.6/3.2/3.1/3.0/2.9/ 2.4/2.1 GHz	3.6/3.3/2.4/3.4/3.2/ 2.8/2.6 GHz	3.6/3.3/2.4/3.4/3.2/ 2.8/2.6 GHz	3.6/3.3/2.4/3.4/3.2/ 2.8/2.6 GHz	2.2/1.7/1.6/2.0 GHz	2.6/2.4/2.3/2 GHz
	TDP	65W/58W/54W/35W	65W/54W/51W/35W	65W/54W/51W/35W	65W/51W/54W/35W	15W	15W
	L2 Cache	-	-	-	-	-	-
	L3 Cache	12MB/9MB/6MB/4MB/2MB	8MB/6MB/4MB/3MB/2MB	8MB/6MB/4MB/3MB/2MB	8MB/6MB/4MB/ 3MB/2MB	8MB/6MB/4MB/2MB	4MB/3MB/3MB/2MB
	Chipset	Intel® Q370	Intel® H110	Intel® Q170	Intel® H110	-	-
	BIOS	AMI EFI 256 Mbits, SPI	AMI EFI 128 Mbits,SPI	AMI EFI 128 Mbits,SPI	AMI EFI 128 Mbits,SPI	AMI EFI 256 Mbits, SPI	AMI uEFI 16 Mbits, SPI
Expansion Slot	M.2	1 B-Key & 1 E-Key	-	1 B-Key	1 B-Key	1 M-Key & 1 E-Key	-
	Mini PCIe	0	2	1	1	1 (F/S), optional	2
	PCIe	1 x PCIe x16	1 x PCIe x4	1 x PCIe x16	1 x PCIe x16	1 x PCIe x1	-
Memory	Technology	2-CH DDR4 2666 MHz SDRAM	2-CH DDR4 2400 MHz SDRAM	2-CH DDR4 2400 MHz SDRAM	2-CH DDR4 2400 MHz SDRAM	2-CH DDR4 2400MHz SDRAM	2-CH DDR4 2400 MHz SDRAM
	Max Capacity	64GB / up to 32GB per DIMM	32GB / up to 16GB per DIMM	32GB / up to 16GB per DIMM	32GB / up to 16GB per DIMM	32GB / up to 16GB per DIMM	32GB / up to 16GB per DIMM
	Socket	2 x 260-pin SODIMM	2 x 260-pin SODIMM	2 x 260-pin SODIMM	2 x 260-pin SODIMM	2 x 260-pin SODIMM	2 x 260-pin SODIMM
Graphics	Controller	Intel® UHD Graphics	Intel® HD Graphics	Intel® HD Graphics	Intel® HD Graphics	9th Gen Intel® Graphics	Intel® HD Graphics 520
	VGA/DVI-D/HDMI/ DP++	-/-/1/2	1/-/1/1 (VGA by pin header)	-/-/1/1	1/1/-/1	-/-/1/-	-/-/1/1
	Dual Channel 24-bit LVDS/eDP	1/1 (eDP is optional)	1/- (LVDS only for LV SKU)	1/1 (eDP is optional)	1/1 (eDP is optional)	1/1 (eDP is optional)	1/1 (eDP is optional)
	Type-C Alt.	-	-	-	-	1	-
	Multiple Display	Triple displays: DP+DP+HDMI, DP+DP+LVDS(or eDP), DP+HDMI+LVDS(or eDP)	Dual displays: DP+HDMI, DP+VGA, HDMI+VGA, DP+LVDS, HDMI+LVDS, VGA+LVDS	Triple displays: DP+HDMI+LVDS DP+HDMI+eDP	Dual displays: DP+VGA, DP+LVDS(or eDP), DP+DVI-D, DVI-D+VGA, DVI-D+LVDS(or eDP), VGA+LVDS(or eDP)	Triple displays: Type C Alt. + HDMI+LVDS(or eDP)	Triple displays: DP+HDMI+ LVDS(or eDP)
Ethernet	Interface	10/100/1000 Mbps	10/100/1000 Mbps	10/100/1000 Mbps	10/100/1000 Mbps	10/100/1000 Mbps	10/100/1000 Mbps
	Controller	LAN1: Intel® I219LM LAN2: Intel® I225-AT	LAN1: Realtek RTL8119I LAN2:Realtek RTL8119I	LAN1: Intel® I219LM LAN2: Intel® I210-AT	LAN1: Realtek RTL8119I LAN2:Realtek RTL8119I	LAN1: Intel® I219LM LAN2: Intel® I210-AT	LAN1: Intel® I219LM LAN2: Intel® I210-AT
	Connector	RJ-45 x 2	RJ-45 x 2	RJ-45 x 2	RJ-45 x 2	RJ-45 x 2	RJ-45 x 2
TPM		Optional	Optional	Optional	Optional	Optional	Optional
SATA	Max Data Transfer Rate	600 MB/s	600 MB/s	600 MB/s	600 MB/s	600 MB/s	600 MB/s
	Channel	3	3	3	2	2	2
	eSATA/mSATA	-/-	-/1	-/1	-/1	-/-	-/1
Rear I/O	VGA/DVI/HDMI/DP	-/-/1/2	-/-/1/1	-/-/1/1	1/1/-/1	-/-/1/1(Type-C Alt.) Type-C Alt. is optional	-/-/1/1
	Type-C Alt.	1 (optional)	-	-	-	1 (optional)	-
	Ethernet	2	2	2	2	2	-
	USB	8 (6 x USB 3.2 Gen2/ 2 USB 3.2 Gen1), 1 optional Type-C	4 (USB 3.2 Gen1)	4 (USB 3.2 Gen1)	8 (4 x USB 3.2 Gen1/ 4 x USB 2.0)	4 (USB 3.2 Gen2) (3 Type-A+1 Type-C, Type-C is optional)	4 (USB 3.2 Gen1)
	Audio	Mic-in, Line-out, Line-in	Mic-in, Line-out	Mic-in, Line-out, Line-in	Mic-in, Line-in, Line-out	Mic-in, Line-out	Mic-in, Line-out
	Serial	-	-	-	-	-	Mic-in, Line-out
	PS/2	1 (4-pin phoenix connector)	-	-	-	-	-
	DC Jack	1/1 (optional) LVDS co-lay with eDP	1	-	-	-	-
Internal Connector	LVDS/eDP	-	1/- (LVDs only for LV SKU)	1/1 (optional) LVDS co-lay with eDP	1/1 (optional) eDP co-lay with DP	1/1 eDP (optional)	1/1 eDP (optional)
	VGA	-	1	-	-	-	-
	USB	2 (USB 3.2 Gen1)	4 (USB 2.0)	6 (2 x USB 3.2 Gen1/ 4 x USB 2.0)	6 (USB 2.0), USB 11/12/13/14 is optional	4 (2 x USB 3.2 Gen1, 2 x USB 2.0)	4 (2 x USB 3.2 Gen1, 2 x USB 2.0)
	Serial	2 (1 x RS-232; 1 x RS-232/422/485)	2 (1 x RS-232; 1 x RS-232/422/485)	2 (1 x RS-232; 1 x RS-232/422/485)	8 (7 x RS-232; 1 x RS-232/422/485)	6 (5 x RS-232, 1 x RS-232/422/485)	2 (RS-232)
	Parallel	-	-	-	-	-	-
	SATA	3	3	3	2	2	2
	eMMC/UFS	-/-	-/-	-/-	-/-	-/-	-/-
	GPIO	8-bit GPIO	8-bit GPIO	8-bit GPIO	8-bit GPIO	8-bit GPIO	8-bit GPIO
Power Input		12~24V DC-in, Rear:Phoenix connector 12V DC-in, Rear:DC Jack; Internal:ATX 4-pin	12V DC-in Rear: DC Jack Internal: ATX 4-pin	12~24V DC-in Rear: Phoenix connector Internal: ATX 4-pin	ATX Internal: ATX 20 pin 4-pin (12V)	12~24V DC-in Rear: Phoenix connector	12V DC-in Rear: DC Jack Internal: ATX 4-pin
Certification		CE/FCC Class B	CE/FCC Class B	CE/FCC Class B	CE/FCC Class B	CE/FCC Class B	CE/FCC Class B

Note: "-" : means Not Applicable (N/A)

Industrial Motherboards

Micro-ATX

Intel® Core™ i Platform — AMD Platform

NEW — NEW

Model Name		AIMB-588	AIMB-587	AIMB-506	AIMB-586	AIMB-505	AIMB-585	AIMB-522
Form Factor		Micro-ATX	Micro-ATX	Micro-ATX	Micro-ATX	Micro-ATX	Micro-ATX	Micro-ATX
Processor System	CPU	12th Gen Intel® Core™ i9/ i7/i5/i3/	10th Gen Intel® Xeon®/ Core™/i9/i7/i5/i3/Pentium®/ Celeron®	8th/9th Gen Intel® Core™ i7/i5/i3/ Pentium®/ Celeron®	8th/9th Gen Intel® Xeon®/ Core™ i7/i5/i3/ Pentium®/ Celeron®	6th/7th Gen Intel® Core™ i7/i5/i3/ Pentium®/ Celeron®	6th/7th Gen Intel® Xeon®/ Core™ i7/i5/i3/ Pentium®/ Celeron®	AMD Ryzen 5000 series
	Socket	LGA1700	LGA1200	LGA1151	LGA1151	LGA1151	Core i7/i5/i3/Pentium/Celeron	AM4
	Max speed	Up to 5.1GHz	3.8/ 3.5/3.4/3.2/3.1/3.0/2.9/2.8/2.4/2.3/2.0/1.8 Ghz	3.7/3.6/3.2/3.0/ 2.9 GHz	3.7/3.6/3.4/3.2/3.1/ 3.0/2.9/2.4/2.1 GHz	3.4/3.2/2.8/2.7/2.6/ 2.4/2.3 GHz	3.6/3.3/2.4/ 3.4/3.2/2.8/ 2.6 GHz	Up to 4.9 GHz
	TDP	65W/ 60W/ 46W/ 35W	95W/ 80W/ 65W/ 58W/ 35W	65W/ 58W/ 35W	80W/ 71W/ 65W/ 35W	65W/ 51W/ 35W	80W/ 65W/ 51W/ 35W	105W/ 65W
	L2 cache		-	-	-	-	-	-
	L3 cache	Up to 30MB	20MB/ 16MB/ 12MB/ 6MB/ 4MB/ 2MB	12MB/ 9MB/ 6MB/ 2MB	12MB/ 9MB/ 8MB/ 6MB/ 4MB/ 2MB	8MB/ 6MB/ 4MB/ 3MB/ 2MB	8MB/ 6MB/ 4MB/ 3MB/ 2MB	Up to 64MB
	Chipset	Q670E/ R680E/ H610E	Q470E/ W480E/ H420	Intel® H310	Intel® Q370/ C246/H310	Intel® H110	Intel® Q170/ C236/H110	X570
	BIOS	AMI EFI 256Mbit, SPI	AMI EFI 256Mbit, SPI	AMI EFI 128Mbit, SPI	AMI EFI 256Mbit, SPI	AMI EFI 128Mbit, SPI	AMI EFI 128Mbit, SPI	AMI EFI 256Mbit, SPI
Expansion Slot	PCI	-	-	2 (L SKU: 0)	-	1	-	-
	PCIe x16	1	1	1	1 (QG2/L: x16 link, WG2: x8 link)	1	1	1
	PCIe x 8	-	1 (WG2 only)	-	1 (WG2 only)	-	1(L SKU: 0)	-
	PCIe x4	2	1	-	1	-	1(L SKU: 0)	2
	PCIe x1	-	1 (option for QG2/F/WG2)	1	1 (QG2/WG2 only)	2	1(L SKU: 2)	-
	mini-PCIe/ M.2	-/1(M-Key)	- / 1(M-Key for QG2/F/ WG2)	-/ 1 (B-Key, L SKU:0)	-/ 2 (M-Key & E-Key, QG2/ WG2 only)	1/-	1/-	- / 2 (M-Key & E-Key) Dual Channel DDR4
Memory	Technology	Dual Chaneel DDR5 4400 MHz SDRAM	Dual Channel DDR4 2400/2666/2933 MHz SDRAM	Dual Channel DDR4 2400/2666 MHz SDRAM	Dual Channel DDR4 2400/2666 MHz SDRAM	Dual Channel DDR4 2133/2400 MHz SDRAM	Dual Channel DDR4 2133/2400 MHz SDRAM	Dual Channel DDR4 3200MHz SDRAM
	Max. Capacity	128GB / up to 32GB per DIMM	128GB / up to 32GB per DIMM	64GB / up to 32GB per DIMM	128GB / up to 32GB per DIMM	32GB	64GB	128GB / up to 32GB per DIMM
	Socket	4 x 288-pin DIMM	4 x 288-pin DIMM (QG2/F/WG2), 2 x 288-pin DIMM (L)	2 x 288-pin DIMM	4 x 288-pin DIMM	2 x 288-pin DIMM	4 x 288-pin DIMM	4 x 288-pin DIMM
Graphics	Controller	TBD	Intel® HD Graphics	Intel® HD Graphics	Intel® HD Graphics	Intel® HD Graphics	Intel® HD Graphics	Radeon Graphics (APU only)
	VRAM	TBD	Shared system memory up to 1GB	Shared system memory up to 1GB	Shared system memory up to 1GB	Shared system memory up to 1GB	Shared system memory up to 1GB	Shared system memory
	VGA	-	1 (F default)	1	-	1	1 (optional)	1
	LCD	-	-	Dual Channel 48-bit LVDS (optional)	Dual Channel 48-bit LVDS (optional)	Dual Channel 48-bit LVDS (optional)	-	-
	DVI-D	-	-	1	-	1	1	-
	HDMI	-	1	1	1 (optional HDMI 2.0a)	-	1 (optional HDMI 2.0a)	1
	DP/eDP	2/1	2/1 (F/WG2: eDP is option)	1/1 (G2/ L SKU without eDP)	2 / 1 (L: eDP is option)	1/1	1 / 1	1 / -
	Dual Display	DP++ + DP++ ,DP++ + eDP, DP++ + HDM, HDMI + eDP	DP++ + VGA, DP++ + DP++ DP++ + eDP, VGA + eDP	DP+ DVI-D, DP+VGA, DVI-D+VGA, DP+eDP(LVDS), DVI-D+eDP(LVDS), VGA+eDP(LVDS)	DP++ + HDMI, DP++ + DP++, DP++ + eDP/LVDS, HDMI + eDP/LVDS	VGA + DVI, VGA + DP, VGA + eDP, DVI + DP, DVI + eDP, DP + eDP	DP++ + HDMI, DP++ + DVI-D, DP++ + eDP/ VGA, HDMI + DVI-D, HDMI + eDP/ VGA, eDP, VGA + DVI-D	VGA+DP, VGA+HDMI, HDMI+DP
	Triple Display	eDP + HDMI + DP++, eDP + DP++ + DP++, HDMI + DP++ + DP++	DP++ + DP++ + VGA, DP++ + DP++ + eDP, DP++ + VGA + eDP	-	DP++ + DP++ + HDMI, DP++ + DP++ + eDP/LVDS, DP++ + HDMI + eDP/LVDS	-	eDP/ VGA + DP++ + HDMI, eDP/ VGA + HDMI + DVI-D, DP++ + eDP/ VGA + DVI-D, DVI-D + DP++ + HDMI	VGA+DP+HDMI
Ethernet	Interface	10/100/1000/2.5Gbe Mbps	10/100/1000/10GbE Mbps	10/100/1000 Mbps	10/100/1000 Mbps	10/100/1000 Mbps	10/100/1000 Mbps	10/100/1000 Mbps / 2.5 GbE
	Controller	LAN1: Intel® I219LM LAN2: Intel® I225LM LAN3/4: Intel® I225LM	LAN1: Intel® I219LM (QG2/WG2/L) LAN2: Intel® I211AT (QG2) I210AT (F/WG2) LAN3/4: X550-AT2 (F defult; QG2/WG2 optional)	LAN1: Realtek RTL8111H LAN2: Realtek RTL8111H	LAN1: Intel® I219LM (QG2/WG2/L) LAN2: Intel® I211AT (QG2) I210AT (WG2) LAN3/4: Realtek RTL8111H (optional)	LAN1: Realtek RTL8111H LAN2: Realtek RTL8111H	LAN1: Intel® I219LM LAN2: Intel® I211AT (WG2: I210)	LAN 1/2: Intel® I225LM LAN 3/4: RTL8119i
	Connector	RJ-45 x 4 (2 optional)	RJ-45 x 4 (2 optional)	RJ-45 x2	RJ-45 x 4 (2 optional)	RJ-45 x2	RJ-45 x2	RJ-45 x 4
TPM		TPM 2.0	Optional	Optional	Optional	Optional	Optional	TPM 2.0
SATA	Max Data Transfer	600 MB/S	600 MB/S	600 MB/s	600 MB/s	600 MB/s	600 MB/s	600 MB/S
	Channel	4	6 -QG2 SKU; 8 - WG2/F SKU (SW RAID)	3	6 -QG2 SKU; 8 - WG2 SKU	3	4 (SW RAID, QG2/WG2 only)	4
	mSATA/M.2	- / 1 (M-Key)	- / 1 (M-Key)	- /1 (B-Key, F, G2 SKU)	- / 1 (M-Key)	1 / -	1 / -	- / 1 (M-Key)
I/O Interface	VGA	-	1 (QG2/WG2/L)	1	-	1	1 (on board, option)	1
	USB	4 x USB (2.0) / 5 x USB (3.2 Gen1) / 3 x USB (3.2 Gen2) / 1 x USB (Type-C)	6 x USB (2.0)/ 6 x USB (3.2 Gen1)/ 4 x USB (3.2 Gen2)	F SKU: 20 (8 USB 3.0 + 12 USB 2.0) G2 SKU: 12 (4 USB 3.0 + 8 USB 2.0) L SKU: 8 (4 USB 3.0 + 4 USB 2.0)	WG2 / QG2 SKU: 4 USB 3.1 +2 USB 3.0 + 8 USB 2.0, 2 option) L SKU: 4 USB 3.0 + 8 USB 2.0	6 x USB 2.0 8 x USB 3.0	2 (USB 2.0), 12 (USB 3.0)	8 x USB 3.2 Gen 2 4 x USB 3.0 3 x USB 2.0
	Serial	6 (4 x RS-232; 2 x RS-232/422/485)	6 (5 x RS-232; 1 x RS-232/422/485)	F SKU: 14 (12 x RS-232; 2 x RS-232/422/485) G2 SKU: 10 (8 x RS-232; 2 x RS-232/422/485) L SKU: 2 (2 x RS-232)	6 (QG2/WG2: 5 x RS-232, 1 x RS-232/422/485) 2 (L: 1x RS-232, 1 x RS-232/422/485)	10 (8 x RS-232; 2 x RS-232/422/485)	6 (5 x RS-232; 1 x RS-232/422/485)	6 (4 x RS-232; 2 x RS-232/422/485)
	Parellel	-	-	-	-	1	-	-
	SIM Card Holder	-	-	1 (L SKU:0)	-	-	-	-
	PS/2	-	1 (on board)	1 (on board)	1 (on board)	1 (on board)	1 (on board)	-
	Ethernet (GbE)	4 (2 optional)	4 (2 x 10GbE optional)	2	4 (2 optional)	2	2	4
	IEEE 1394	-	-	-	-	-	-	-
	Audio	Mic-in, Line-out	Mic-in, Line-out	Mic-in, Line-out	Mic-in, Line-out	Mic-in, Line-out	Mic-in, Line-out	Mic-in, Line-out
	GPIO	8-bit	16-bit	16-bit	16-bit	8-bit	16-bit	8-bit
Power Input		ATX Internal: ATX 24-pin + 8-pin (12V)	ATX Internal: ATX 24-pin + 8-pin (12V)	ATX Internal: ATX 24-pin + 4-pin (12V)	ATX or 12V DC-in Internal: ATX 24-pin+4-pin(12V) or 8-pin(12V)	ATX Internal:ATX 24-pin+4-pin(12V)	ATX Internal: ATX 24-pin + 4-pin (12V)	ATX Internal: ATX 24-pin + 8-pin (12V)
Certification		CE/FCC Class B	CE/FCC Class B	CE/FCC Class B	CE/FCC Class B	CE/FCC Class B	CE/FCC Class B	CE/FCC Class B

Note: "-" : means Not Applicable (N/A)

Memo