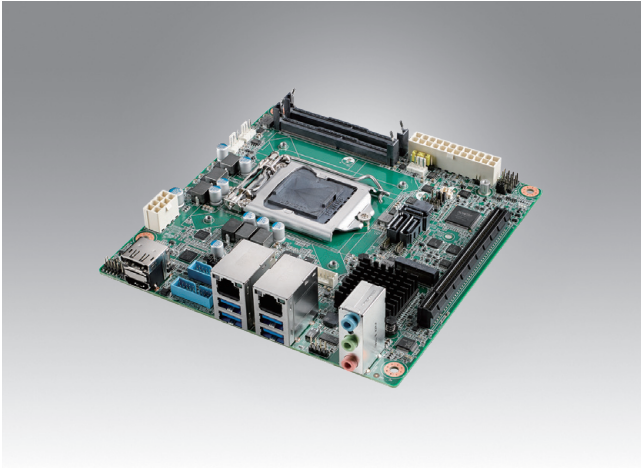


AIMB-277

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



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

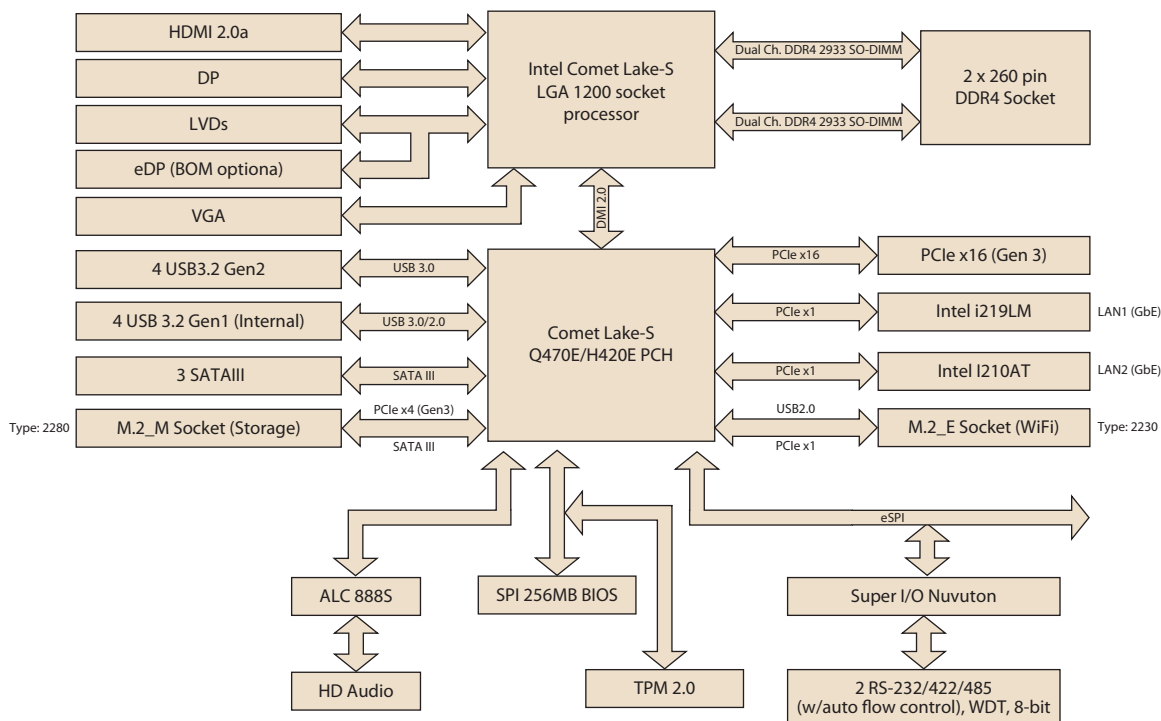
Software APIs:



Specifications

| | CPU | i9-10900E/i9-10900TE | i7-10700E/i7-10700TE | i5-10500E/i5-10500TE | i3-10100E/i3-10100TE | G6400E/G6400TE | G5900E/G5900TE | |
|--------------------------|-------------------------|---|----------------------|----------------------|----------------------|----------------|----------------------------|--|
| Processor System | 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 single/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) | | | | | | |
| Ethernet | Dual Display (L sku) | VGA+LVDS (or eDP), DP+VGA, DP+LVDS (or eDP) | | | | | | |
| | Interface | 10/100/1000 Mbps | | | | | | |
| | Controller | GbE LAN1: Intel i219LM GbE LAN2: Intel I210AT compatible | | | | | | |
| SATA | Connector | RJ-45 x 2 | | | | | | |
| | Max Data Transfer Rate | 600 MB/s (SATA 3.0) | | | | | | |
| Rear I/O | Channel | 3 SATAIII (for G2 sku), 2 SATAIII (for L sku) | | | | | | |
| | DP 1.2 (DP++) | 1 | | | | | | |
| | HDMI 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") | | | | | | |

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 |
| 1700025832-01 | VGA cable 20cm |
| 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 |

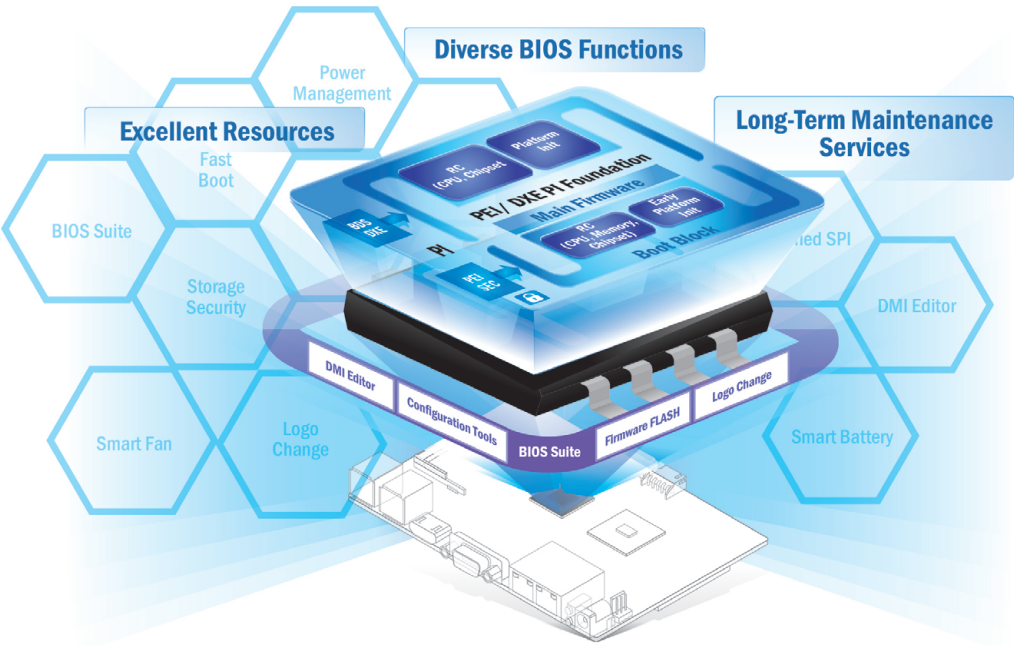
Embedded OS/API

| 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 |
| Ubuntu20.4 | 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

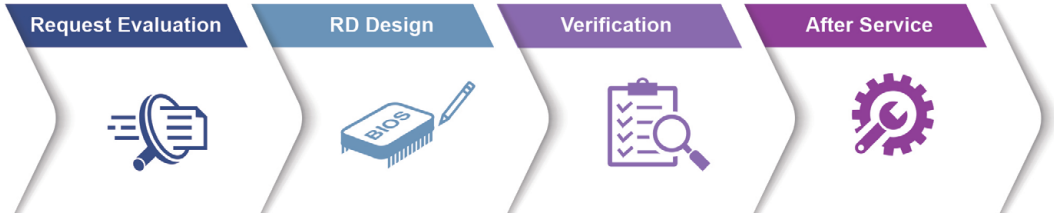
Diverse BIOS Functions

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

Product Highlights

| | | | |
|---|--|--|---|
|  SOM-6883 High-performance 11 th Gen Intel [®] COMe Type 6 Module |  MIO-5375 Compact 11 th Gen Intel [®] Outdoor Focused 3.5" SBC |  EPC-B5587 10 th 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.

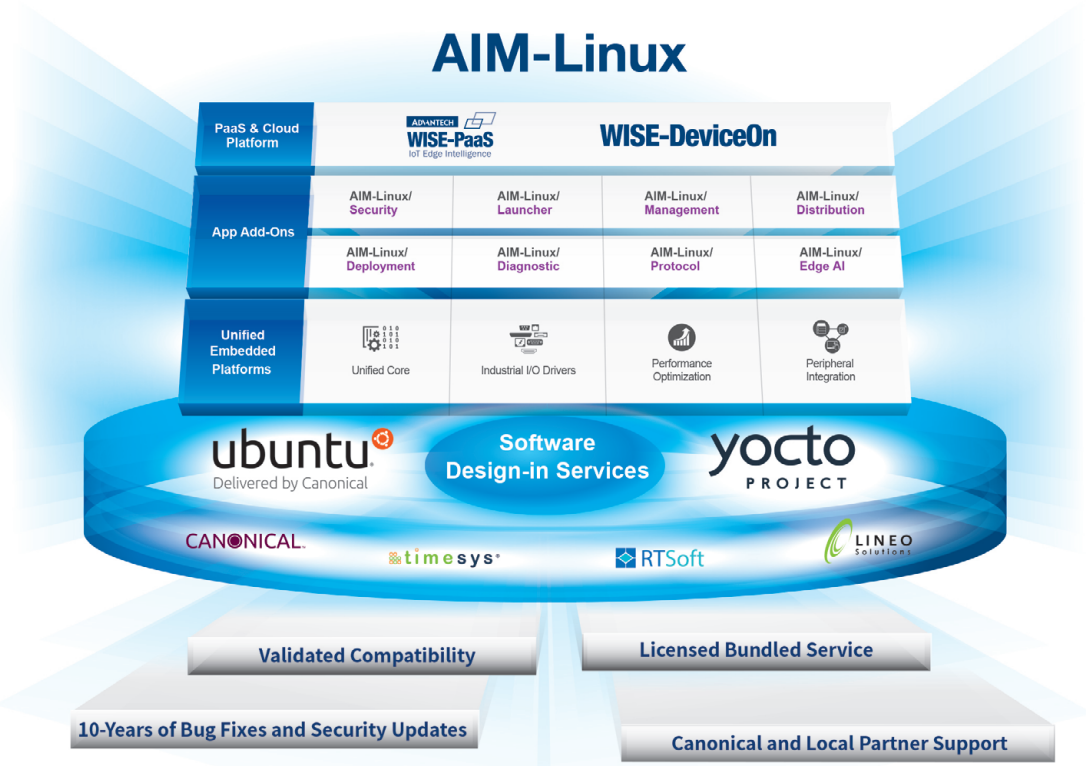


| 5x Performance Boost | All-in-one Installation | One Click AI Experience | Plug-and-play Environment | Discover Cost-effective Hardware |
|--|--|--|--|--|
| <ul style="list-style-type: none">Integrated Intel® OpenVINO™ technologyBoost AI using Advantech hardware | <ul style="list-style-type: none">Build AI environment in under 5 minutesReady-to-use configuration | <ul style="list-style-type: none">User friendly configuration guidanceOne-click Benchmark acquisition | <ul style="list-style-type: none">Easy access to 100+ AI inference extensionsSoftware development package available | <ul style="list-style-type: none">Diverse CPU/RAM optionsFind 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 |
|---|--|---|--|
| <ul style="list-style-type: none"> Platform compatibility tests Preloaded functional driver and software stacks | <ul style="list-style-type: none"> License authorized Canonical delivers 10-years of bug fixes and security updates In-house bundled service | <ul style="list-style-type: none"> Containerized technology for service provision and deployment AI resources from Caffe, TensorFlow, and mxnet | <ul style="list-style-type: none"> Embedded Linux and Android Alliance (ELAA) |

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