

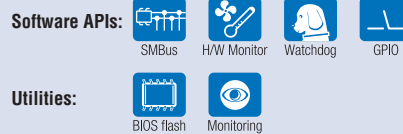
# AIMB-508

**Intel® 12/13th Gen Core™ processors (Alder Lake-S/Raptor Lake-S) i9/i7/i5/i3 LGA1700, MicroATX with DP/HDMI/VGA/ eDP(LVDS), 1xGbE LAN, 1x2.5GbE LAN, 8xUSB 3.2, 2xPCI slot, 10xCOM**



## Features

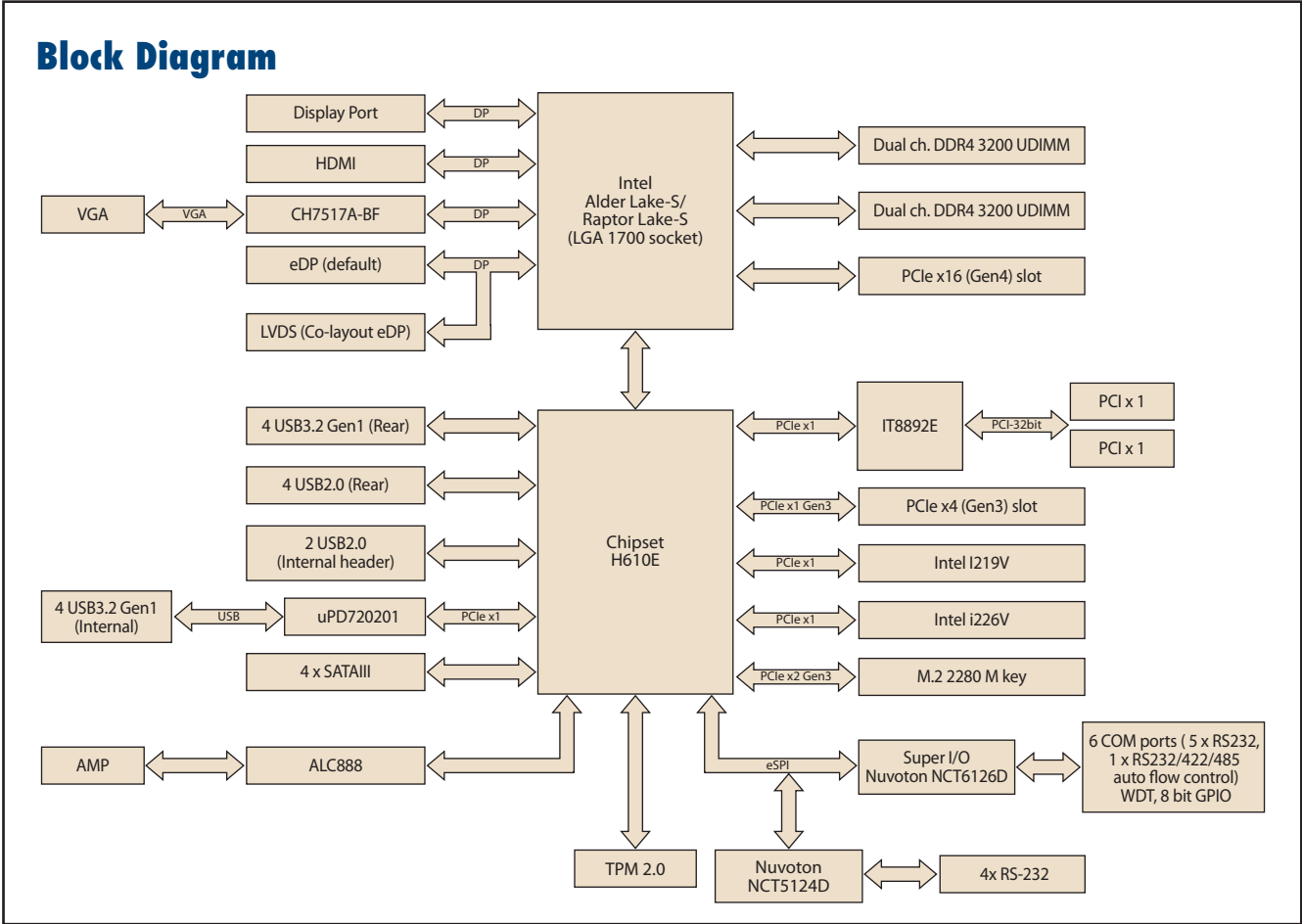
- Supports Intel® 12/13th Gen Core™ processors (Alder Lake-S/Raptor Lake-S) with H610E chipset
- Supports up to 32GB DDR4 3200 MT/S with two UDIMMs
- PCIe x16 slot Gen4, PCIe x4 slot Gen3, PCI slot
- Max up to 8x USB 3.2, 6x USB 2.0, 4x SATAIII, 1x GbE LAN, 1x 2.5GbE LAN, 1x M.2 M-Key
- WISE-DeviceOn and Embedded Software APIs
- Win10 / Win11 support



## Specifications

|                            | CPU  | i9-13900E/<br>i9-13900TE  | i7-13700E/<br>i7-13700TE | i5-13500E/<br>i5-13500TE | i3-13100E/<br>i3-13100TE | i9-13900           | i7-13700                   | i5-13500 | i5-13400 | i3-13100 |          |          |
|----------------------------|--|---|--------------------------|--------------------------|--------------------------|--------------------|----------------------------|----------|----------|----------|----------|----------|
| 13th Generation Processors | Core Number (Performance and Efficient core) | 8P+16E  | 8P+8E                    | 6P+8E                    | 4P+0E                    | 8P+16E             | 8P+8E                      | 6P+8E    | 6P+4E    | 4P+0E    |          |          |
|                            | Max. Speed                                   | 5.20GHz/<br>5.00GHz   | 5.10 GHz/<br>4.80 GHz    | 4.60 GHz/<br>4.50 GHz    | 4.40 GHz/<br>4.10 GHz    | 5.60 GHz           | 5.20 GHz                   | 4.80 GHz | 4.80 GHz | 4.50 GHz |          |          |
|                            | Intel Smart Cache                            | 36MB/ 36MB  | 30MB/ 30MB               | 24MB/ 24MB               | 12MB/ 12MB               | 36MB               | 30MB                       | 24MB     | 20MB     | 12MB     |          |          |
|                            | TDP (W)                                      | 65W/35W   | 65W/35W                  | 65W/35W                  | 60W/35W                  | 35W                | 35W                        | 65W      | 65W      | 60W      |          |          |
| 12th Generation Processors | CPU  | i9-12900E/<br>i9-12900TE  | i7-12700E/<br>i7-12700TE | i5-12500E/<br>i5-12500TE | i3-12100E/<br>i3-12100TE | G7400E/<br>G7400TE | G6900E/<br>G6900TE         | i9-12900 | i7-12700 | i5-12500 | i5-12400 | i3-12100 |
|                            | Core Number (Performance and Efficient core) | 8P+8E   | 8P+4E                    | 6P+0E                    | 4P+0E                    | 2P+0E              | 2P+0E                      | 8P+8E    | 8P+4E    | 6P+0E    | 6P+0E    | 4P+0E    |
|                            | Max. Speed                                   | 5.0GHz/<br>4.8GHz   | 4.8GHz/<br>4.7GHz        | 4.5GHz/<br>4.3GHz        | 4.2GHz/<br>4.0GHz        | 3.6GHz/<br>3.0GHz  | 3.0GHz/<br>2.4GHz          | 5.10GHz  | 4.9GHz   | 4.6GHz   | 4.4GHz   | 4.3GHz   |
|                            | Intel Smart Cache                            | 30MB/ 30MB  | 25MB/ 25MB               | 18MB/ 18MB               | 12MB/ 12MB               | 6MB/ 6MB           | 4MB/ 4MB                   | 30MB     | 25MB     | 18MB     | 18MB     | 12MB     |
|                            | TDP (W)                                      | 65W/35W   | 65W/35W                  | 65W/35W                  | 60W/35W                  | 46W/35W            | 46W/35W                    | 65W      | 65W      | 65W      | 65W      | 60W      |
| Processor System           | Supports Model                               | AIMB-508HF-EAA1 / AIMB-508HL-QAA1   |                          |                          |                          |                    |                            |          |          |          |          |          |
|                            | Chipset                                      | H610E   |                          |                          |                          |                    |                            |          |          |          |          |          |
|                            | BIOS   | AMI BIOS UEFI 256 Mbits SPI   |                          |                          |                          |                    |                            |          |          |          |          |          |
| Expansion Slot             | PCIe x16 (Gen4)                              | 1 slot  |                          |                          |                          |                    |                            |          |          |          |          |          |
|                            | PCI  | 2 slots   |                          |                          |                          |                    |                            |          |          |          |          |          |
|                            | PCIe x4 (Gen3)                               | 1 slot  |                          |                          |                          |                    |                            |          |          |          |          |          |
| Memory                     | Technology                                   | Dual Channel DDR4 3200 MHz SDRAM  |                          |                          |                          |                    |                            |          |          |          |          |          |
|                            | Max. Capacity                                | 64GB (32 GB per DIMM)   |                          |                          |                          |                    |                            |          |          |          |          |          |
|                            | Frequency                                    | 3200 MT/s   |                          |                          |                          |                    |                            |          |          |          |          |          |
|                            | Socket                                       | 2 x 288-pin DDR4 DIMM Sockets (Non-ECC)   |                          |                          |                          |                    |                            |          |          |          |          |          |
| Graphics                   | Controller                                   | Intel UHD Graphics 770<br>Supports DirectX12, OpenGL 4.5                                |                          |                          |                          |                    |                            |          |          |          |          |          |
|                            | HDMI   | 1, up to resolution 4096*2160@ 30Hz   |                          |                          |                          |                    |                            |          |          |          |          |          |
|                            | eDP  | 1, up to resolution 3840 x 2160 @ 60 Hz, co-design with LVDS, default eDP               |                          |                          |                          |                    |                            |          |          |          |          |          |
|                            | Display Port                                 | 1, up to 4096 x 2304 @ 60Hz   |                          |                          |                          |                    |                            |          |          |          |          |          |
|                            | LVDS   | 1, default eDP  |                          |                          |                          |                    |                            |          |          |          |          |          |
|                            | Triple Display                               | eDP+HDMI+DP, eDP+VGA+DP, HDMI+DP+VGA, HDMI+eDP+VGA                                      |                          |                          |                          |                    |                            |          |          |          |          |          |
| Ethernet                   | Dual Display                                 | DP +VGA, DP+eDP, DP +HDMI, HDMI + eDP, HDMI + VGA, eDP+VGA                              |                          |                          |                          |                    |                            |          |          |          |          |          |
|                            | Controller                                   | LAN1: 1GbE Intel I219V (AIMB-508HF/AIMB-508HL)<br>LAN2: 2.5GbE Intel I226V (AIMB-508HF) |                          |                          |                          |                    |                            |          |          |          |          |          |
| SATA                       | Connector                                    | RJ45 x2   |                          |                          |                          |                    |                            |          |          |          |          |          |
|                            | Max Data Transfer Rate                       | 600 MB/s Max. (SATA 3.0)  |                          |                          |                          |                    |                            |          |          |          |          |          |
| Rear I/O                   | Qty  | 4   |                          |                          |                          |                    |                            |          |          |          |          |          |
|                            | Display Port                                 | 1 (AIMB-508HF)  |                          |                          |                          |                    |                            |          |          |          |          |          |
|                            | HDMI   | 1 (AIMB-508HF)  |                          |                          |                          |                    |                            |          |          |          |          |          |
|                            | Serial                                       | 1 (RS232/422/485 auto flow control)   |                          |                          |                          |                    |                            |          |          |          |          |          |
|                            | VGA  | 1   |                          |                          |                          |                    |                            |          |          |          |          |          |
|                            | Ethernet                                     | 2 (AIMB-508HF); 1 (AIMB-508HL)  |                          |                          |                          |                    |                            |          |          |          |          |          |
|                            | USB  | 4 USB3.2 Gen1; 4 USB2.0   |                          |                          |                          |                    |                            |          |          |          |          |          |
|                            | Audio  | 3 (Line-out, Mic-in, Line-in)   |                          |                          |                          |                    |                            |          |          |          |          |          |
| Internal Connector         | USB 3.2                                      | 4 (AIMB-508HF)  |                          |                          |                          |                    |                            |          |          |          |          |          |
|                            | USB 2.0                                      | 2 USB2.0  |                          |                          |                          |                    |                            |          |          |          |          |          |
|                            | Serial                                       | 9 (AIMB-508HF); 4 (AIMB-508HL)  |                          |                          |                          |                    |                            |          |          |          |          |          |
|                            | SATA 3.0                                     | 4   |                          |                          |                          |                    |                            |          |          |          |          |          |
|                            | Extended Display Port (eDP)                  | 1 (AIMB-508HF)<br>optional (AIMB-508HL)   |                          |                          |                          |                    |                            |          |          |          |          |          |
|                            | M.2 (M key)                                  | 1 2280 NVMe   |                          |                          |                          |                    |                            |          |          |          |          |          |
|                            | GPIO   | 8-bit GPIO  |                          |                          |                          |                    |                            |          |          |          |          |          |
| Watchdog Timer             | Output                                       | System reset  |                          |                          |                          |                    |                            |          |          |          |          |          |
|                            | Interval                                     | Programmable 1 ~ 255 sec/min  |                          |                          |                          |                    |                            |          |          |          |          |          |
| Power Requirements         | Power On                                     | +5 V  | 3.3 V                    | 12 V                     | 12V_8P                   | 5 Vsb              |                            |          |          |          |          |          |
|                            |  | 19.6A   | 24.04A                   | 19A                      | 18.5A                    | 2.5A               |                            |          |          |          |          |          |
| Environment                | Operating                                    | 0 ~ 60° C (14 ~ 158° F), depends on CPU speed and cooler solution                       |                          |                          |                          |                    | Non-Operating              |          |          |          |          |          |
|                            |  |   |                          |                          |                          |                    | -40 ~ 85° C (-40 ~ 185° F) |          |          |          |          |          |
| Physical Characteristics   | Dimensions                                   | 244 mm x 244 mm (9.6" x 9.6")   |                          |                          |                          |                    |                            |          |          |          |          |          |
|                            | Input Mode                                   | ATX input   |                          |                          |                          |                    |                            |          |          |          |          |          |

### Block Diagram



### Ordering Information

| P/N             | Chipset | Memory (Non-ECC) | USB 3.2 Gen 1 | USB 2.0 | PCIex16 slot Gen4 | PCI slot | PCIex4 slot Gen3 | GbE LAN | 2.5GbE LAN | DP | HDMI | VGA | eDP/LVDS | SATA III | COM | M.2 M-key 2280 | TPM       | AMP |
|-----------------|---------|------------------|---------------|---------|-------------------|----------|------------------|---------|------------|----|------|-----|----------|----------|-----|----------------|-----------|-----|
| AIMB-508HF-EAA1 | H610E   | 2 x DDR4         | 8             | 6       | 1                 | 2        | 1                | 1       | 1          | 1  | 1    | 1   | 1/(1)    | 4        | 10  | 1              | Reference | 1   |
| AIMB-508HL-OAA1 | H610E   | 2 x DDR4         | 4             | 6       | 1                 | 2        | 1                | 1       | 0          | 0  | 0    | 1   | (1)/(1)  | 4        | 5   | 1              | Reference | (1) |

() means BOM option  
 Reference: Refer to optional accessories for TPM module

### Packing List

| Part Number    | Description             | Quantity |
|----------------|-------------------------|----------|
| 1960113372T001 | I/O port bracket        | 1        |
| 2046050802     | AIMB-508 Startup manual | 1        |
| 1700003194     | SATA HDD cable          | 1        |
| 1930006770-01  | M.2 screws              | 2        |

### Optional Accessories

| Part Number        | Description  |
|--------------------|--|
| 1970005349T001     | LGA1700 CPU cooler for 2U chassis, for CPU TDP 65W, 78.0(W) x 78(L) x 55.4 (H) |
| 1700020710-02      | Dual port USB 2.0 cable 25cm   |
| 1700026163-01      | 1 to 1 COM cable 60cm  |
| 17AD14GS1400013V04 | 4 in 1 COM cable 500mm   |
| AIMB-TPMSPI-0IA1   | TPM 2.0 SPI module   |

### I/O View



AIMB-508HF

AIMB-508HL

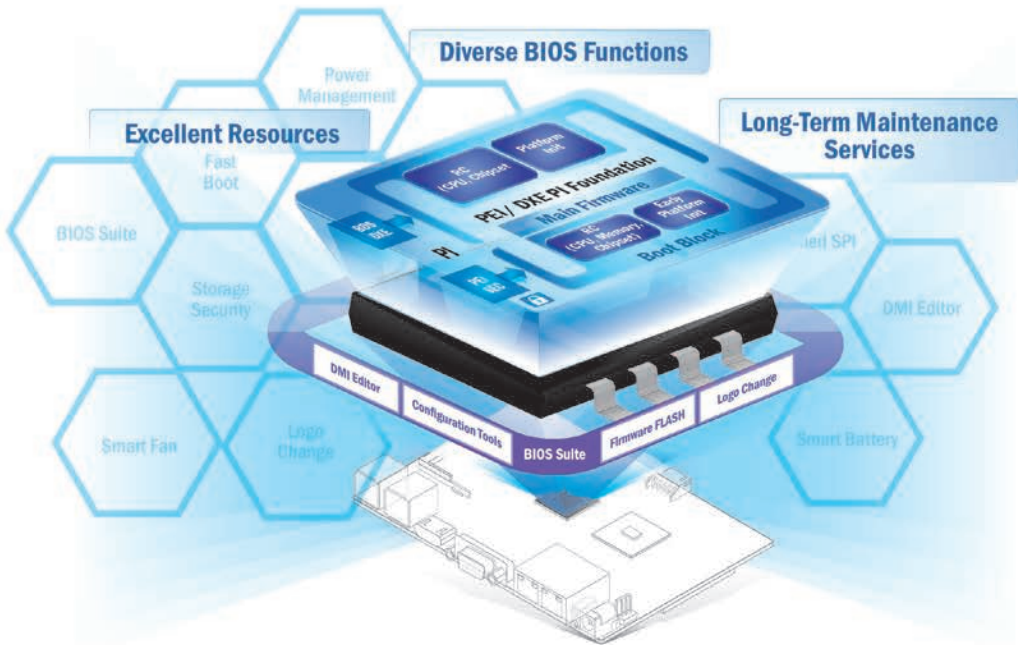
### Embedded OS/API

| OS/API     | Part No.       | Description                               |
|------------|----------------|---|
| Windows 10 | 20706WX1HS0072 | Windows 10 IoT Enterprise 2021 LTSC 64bit |
|            | 20706WX1VS0072 |   |
|            | 20706WX1ES0072 |   |
| Ubuntu     | 20706U22DS0029 | Ubuntu Desktop 22.04 LTS 64bit            |
| Windows 11 | 20706WXH1S0002 | Windows 11 IoT Enterprise 64bit           |
|            | 20706WXV1S0002 |   |
|            | 20706WXE1S0002 |   |

# 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> |

### Product Highlights

|  |   |  |  |
|--|---|--|--|
|  <p><b>SOM-6883</b><br/>High-performance 11<sup>th</sup> Gen Intel<sup>®</sup> COMe Type 6 Module</p> |  <p><b>MIO-5375</b><br/>Compact 11<sup>th</sup> Gen Intel<sup>®</sup> Outdoor Focused 3.5" SBC</p> |  <p><b>EPC-B5587</b><br/>10<sup>th</sup> Gen Intel<sup>®</sup> Xeon<sup>®</sup> based Edge server</p> |  <p><b>EPC-R3220</b><br/>Arm based IoT Edge Gateway</p> |
|--|---|--|--|

# 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> |