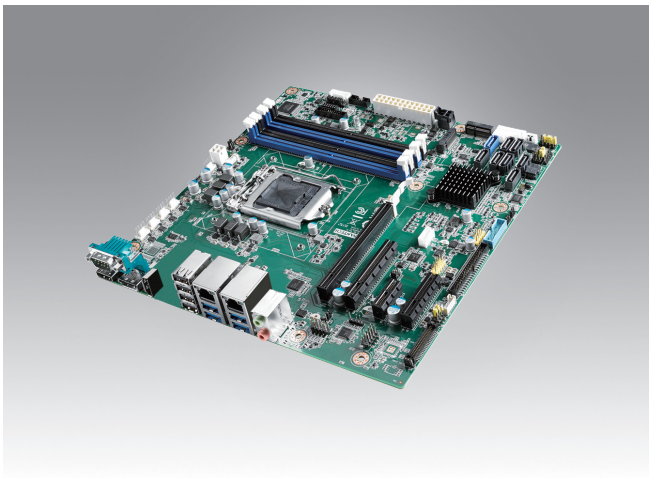
# AIMB-586

## Intel® Xeon® E3/ 8th & 9th Gen Core™ i7/i5/i3 LGA1151, MicroATX with HDMI/2 DP++/eDP (LVDS)/6 COM, 4 LANs, USB 3.1, ATX or 12V DC-IN



## Features

- Supports Intel® Xeon® 8th / 9th Gen Core™ i7/i5/i3 processor with Q370/ C246/H310 chipset
- Supports triple displays. (HDMI, 2DP++, eDP or LVDS display)
- Supports Intel AMT 12.0 and Intel vPro competent
- Supports PCIe Gen3, max up to 4x USB 3.1 (Gen2), 2x USB 3.0, 8x SATAIII, 4 GbE LAN, 2x M.2 (M & E Key)
- Supports Software RAID 0, 1, 5, 10, TPM 1.2/2.0 (optional)
- Supports DeviceOn and Embedded Software APIs

**Software APIs:** SMBus, H/W Monitor, Watchdog, GPIO

**Utilities:** BIOS flash, Monitoring

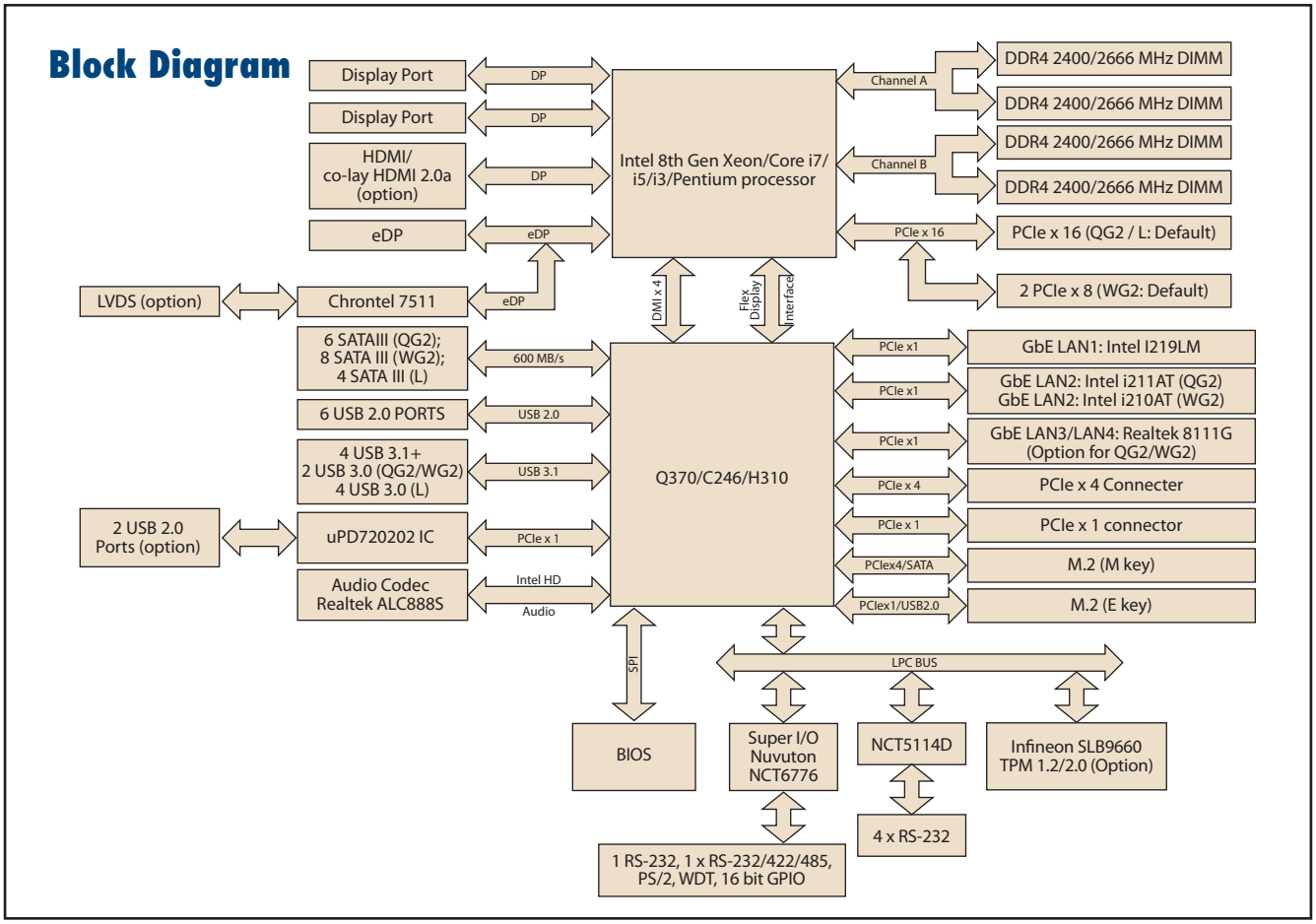
## Specifications

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Processor System | CPU | E-2176G/ E-2124G | E-2278GE/ E-2278GEL | E-2226GE | i7-9700E/ i7-9700TE | i7-8700/ i7-8700T | i5-9500E/ i5-9500TE | i5-8500/ i5-8500T | i3-9100E/ i3-9100TE | i3-8100/ i3-8100T | G5400/ G5400T | G4900/ G4900T |
| | Core Number | 6/ 4 | 8/ 8 | 6 | 8/ 8 | 6/6 | 6/6 | 6/6 | 4/4 | 4/4 | 2/2 | 2/2 |
| | Max. Speed | 3.7GHz/ 3.4 GHz | 3.3GHz/ 2.0 GHz | 3.4GHz | 2.6GHz/ 1.8GHz | 3.2GHz/ 2.4GHz | 3.0GHz/ 2.2GHz | 3.0GHz/ 2.1GHz | 3.1GHz/ 2.2GHz | 3.6GHz/ 3.1GHz | 3.7GHz/ 3.1GHz | 3.1GHz/ 2.9GHz |
| | L3 Cache | 12MB/ 8MB | 16MB/ 16MB | 12MB | 12MB/12MB | 12MB/12MB | 9MB/9MB | 9MB/9MB | 6MB/6MB | 6MB/6MB | 4MB/4MB | 2MB/2MB |
| | TDP (W) | 80W/ 71W | 80W*/ 35W | 80W* | 65W*/35W | 65W/35W | 65W/35W | 65W/35W | 65W/35W | 65W/35W | 58W/25W | 54W/35W |
| | Supports Model | WG2 | WG2 | WG2 | WG2/QG2/L | WG2/QG2/L | WG2/QG2/L | WG2/QG2/L | WG2/QG2/L | WG2/QG2/L | WG2/QG2/L | WG2/QG2/L |
| | Chipset | Q370/C246/H310 | | | | | | | | | | |
| | BIOS | AMI EFI 256 Mbit SPI | | | | | | | | | | |
| Expansion Slot | PCIe x1 (Gen3) | 1 GB/s per direction, 1 slot (QG2/WG2 only) | | | | | | | | | | |
| | PCIe x4 (Gen3) | 4 GB/s per direction, 1 slot | | | | | | | | | | |
| | PCIe x8 (Gen3) | 8 GB/s per direction, 1 slot (Default on WG2 sku, BOM Option on QG2 sku) | | | | | | | | | | |
| | PCIe x16 (Gen3) | 16 GB/s per direction, 1 slot (Only x8 Link on WG2 sku) | | | | | | | | | | |
| Memory | Technology | Dual Channel DDR4 2400/2666MHz Non-ECC SDRAM/ ECC SDRAM (WG2 only) | | | | | | | | | | |
| | Max. Capacity | 128GB (32GB per DIMM) | | | | | | | | | | |
| | Socket | 4 x 288 pin U DIMM (QG2/WG2)<br>2 x 288 pin U DIMM (L) | | | | | | | | | | |
| Graphics | Controller | Intel HD Graphics<br>Supports DirectX11.1, OpenGL 5.0 and OpenCL 2.1 | | | | | | | | | | |
| | HDMI | 1, Supports max resolution HDMI 1.2 1920 x 1200 @ 60 Hz (Colay HDMI 2.0a 4096 x 2160 @ 60 Hz, via BOM Option) | | | | | | | | | | |
| | eDP | 1, Internal pin header, supports max. resolution 3840 x 2160 @ 60 Hz (Internal pin header) | | | | | | | | | | |
| | LVDS | 1 (option), Supports dual channel 48 bits up to 1920 x 1200 (colay wiht eDP) | | | | | | | | | | |
| | Display Port | 2, Supports max resolution 4096 x 2304 @ 60 Hz | | | | | | | | | | |
| | Triple Display | eDP (LVDS) + DP++ + HDMI, eDP (LVDS) + DP++ + DP++, DP++ + DP++ + HDMI | | | | | | | | | | |
| | Dual Display | DP++ + HDMI, DP++ + DP++, DP++ + eDP (LVDS), HDMI + eDP (LVDS) | | | | | | | | | | |
| Ethernet | Controller | LAN1: Intel I219LM (QG2/WG2/L)<br>LAN2: Intel I211AT (QG2)<br>Intel I210AT (WG2)<br>LAN3/4: Realtek 8111G (BOM Option on QG2/WG2 sku) | | | | | | | | | | |
| | Connector | RJ 45 x 2 (Max up to 4 ports via BOM option on QG2/WG2) | | | | | | | | | | |
| SATA | Max Data Transfer Rate | 600 MB/s Max. (SATA 3.0) | | | | | | | | | | |
| | Q'ty | 6 (QG2); 8 (WG2), 1 colay with M.2 M key; 4 (L) | | | | | | | | | | |
| Rear I/O | Display Port | 2 | | | | | | | | | | |
| | HDMI | 1 | | | | | | | | | | |
| | Ethernet | 2 (Default, Max 4 ports via BOM option on QG2/WG2) | | | | | | | | | | |
| | USB | 8 (4 USB 3.1, 4 USB 2.0 on QG2/WG2)<br>8 (4 USB 3.0, 4 USB 2.0 on L ) | | | | | | | | | | |
| | Audio | 2 (Mic-in/ Line-out) (Mic-in could be configured as "Line-in" under Win OS.) | | | | | | | | | | |
| | Serial | 1 (RS-232) | | | | | | | | | | |
| Internal Connector | USB 3.0 | 2 (QG2/WG2 only) | | | | | | | | | | |
| | USB 2.0 | 2; can up to 4 (via BOM option) | | | | | | | | | | |
| | Serial | 5 (4 x RS-232, 1 x RS-232/422/485 with auto flow control supported on QG2/WG2)<br>1 (1 x RS-232/422/485with auto flow control supported on L ) | | | | | | | | | | |
| | SATA 3.0 | 6 (QG2); 8 (WG2), 1 colay M.2 M-key; 4 (L) | | | | | | | | | | |
| | Extended Display Port (eDP)/LVDS | 1 (Default: eDP) | | | | | | | | | | |
| | PS/2 (KBMS1) | 1 | | | | | | | | | | |
| | M.2 (M key) | 1 (2280 NVMe PCIex4 and SATA M.2 support, QG2/WG2 only) | | | | | | | | | | |
| | M.2 (E key) | 1 ( 2230 for WIFI, QG2/WG2 only) | | | | | | | | | | |
| | GPIO | 16-bit GPIO | | | | | | | | | | |
| Watchdog Timer | Output | System reset | | | | | | | | | | |
| | Interval | Programmable 1 ~ 255 sec/min | | | | | | | | | | |
| Power Requirements | Power On | Intel Core i7-8700, 16 GB DDR4 x 4pcs | | | | | | | | | | |
| | | +5 V | | 3.3 V | | 12 V | | 12V_4P | | 5 Vsb | | -12 V |
| | | +1.361A | | 0.473A | | 0.365A | | 5.985A | | 0A | | 0A |
| Environment | | Operating | | | | | | Non-Operating | | | | |
| | Temperature | 0 ~ 60° C (14 ~ 158° F), depends on CPU speed and cooler solution | | | | | | -40 ~ 85° C (-40 ~ 185° F) | | | | |
| Physical Characteristics | Dimensions | 244 mm x 244 mm (9.6" x 9.6") | | | | | | | | | | |
| Power | Input Mode | ATX input (Default)/DC-IN 12V (BOM option) | | | | | | | | | | |

*The performance of CPUs will be limited due to power design.

研伟科技 15323776600

## Block Diagram




## Ordering Information

| P/N | Chipset | USB3.1 | USB 3.0 | USB 2.0 | DP/HDMI | eDP (LVDS) | GbE LAN | SATA III | COM | PCIex16 | PCIex8 | PCIex4 | PCIex1 | M.2 E-key | M.2 M-key | TPM |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AIMB-586QG2-00A1E | Q370 | 4 | 2 | 6+(2)*** | 2/1** | 1/(1) | 2+(2) | 6 | 6 | 1 | (2) | 1 | 1 | 1 | 1 | (1) |
| AIMB-586WG2-00A1E | C246 | 4 | 2 | 6+(2)*** | 2/1** | 1/(1) | 2+(2) | 8 | 6 | (1) | 2 | 1 | 1 | 1 | 1 | (1) |
| AIMB-586L-00A1E | H310 | 0 | 4 | 6+(2)*** | 2/1 | (1)/0 | 1 | 4 | 2+(4) | 1 | 0 | 1 | 0 | 0 | 0 | (1) |

*() BOM options available on MP version.
** Default: HDMI 1.2, co-layout HDMI 2.0 (BOM Option)
*** BOM option with added USB 2.0 from controller IC

## Riser Card

| Part Number | Description |
|---|---|
| AIMB-RF10F-01A1E | 1U riser card with 1 PCIex16 expansion |

## Packing List

| Part Number | Description | Quantity |
|---|---|---|
| 1700003194 | SATA HDD cable | 2 |
| 1700022749-13 | SATA power cable | 2 |
| 1960088075T000 | I/O port braket | 1 |
| 2006B58610 | Startup manual | 1 |
| 1930001071 | M.2 device screw | 2 |

## I/O View

## Optional Accessories

| Part Number | Description |
|---|---|
| 1700020277-01 | Dual port USB 3.0 cable 30cm with IO bracket |
| 1700002204 | Dual port USB 2.0 cable 27cm with bracket |
| 1960047669N001 | LGA1156 CPU cooler for 4U and wallmount chassis, for CPU TDP ≦ 84W, 4.72" (W) x 4.72" (L) x 3.03" (H) |
| 1960052651N021 | LGA1155 CPU for cooler 2U and backplane version of chassis, for CPU TDP ≦ 65W, 3.54"(W) x 3.54"(L) x 2.68"(H) |
| 1960053207N001 | LGA1155 CPU cooler for 2U and wallmount chassis, for CPU TDP ≦ 45W, D=3.66"(W) x 3.66"(L) x 1.81"(H) |
| 1700018699 | PS/2 KB/MS cable (KMBS1) 1*6P-2.5/M-DIN 6P(F)*2 25cm |
| 1700000447 | 1-to-4 serial ports cable kit, 45cm |
| 1701400181 | 1-to-4 serial ports cable kit, 18cm |
| 1700026163-01 | COM2,1 to 1 COM cable 60cm (IDE 10P-2.0) w/ Braket |
| 1960087944N001 | 1U IO bracket for chassis ACP-1010MB & HPC-7120S (should order screws separately) |

Note: Purchasing AIMB-586's proprietary CPU cooler from Advantech is a must, other CPU cooler might be not compatible with AIMB-586.
Note: screws P/N: 1933030500 for ACP-1010MB, 1930004607 for HPC-7120S

## Embedded OS/API

| OS/API | Part No. | |
|---|---|---|
| win10 IoT Ent | 20706WX9HS0019 | img W10 16HL(Eng) |
| | 20706WX9VS0022 | img W10 16VL(Eng) |