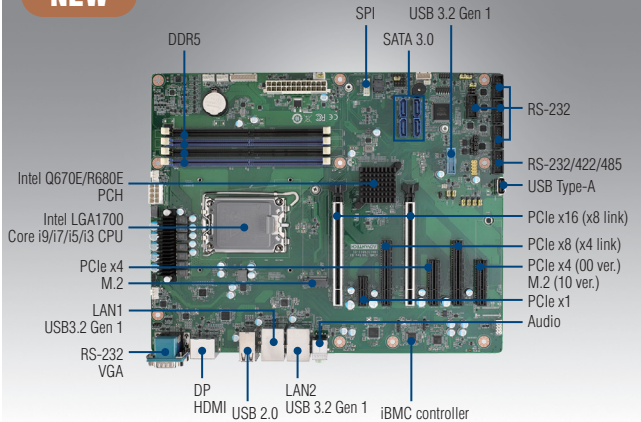


AIMB-788E

LGA1700 12th/13th/14th Generation Intel® Core™ i9/i7/i5/i3 ATX Motherboard with DP/HDMI/VGA, DDR5, USB 3.2, M.2

NEW



Features

- Intel® 12th/13th/14th generation Core™ i9/i7/i5/i3 & Pentium®/Celeron® processor with Q670E/R680E chipset
- Dual PCIe x16 expansion slots
- DDR5 UDIMM up to 48GB per slot; 192 GB total
- Seven PCIe slots or Dual M.2 M Key for NVMe RAID
- Triple display DP/HDMI/VGA and dual GbE LAN
- M.2, SATA RAID 0, 1, 5, 10, USB 3.2 Gen 1
- Advantech iBMC remote out-of-band power management solution on DeviceOn

Note 1: Legacy platform is not supported.

Note 2: dTPM 2.0 module is required to enable TPM technologies.

Note 3: Intel® Platform Trust Technology (Intel® PTT) ready for Windows 11.

Quiet Specifications

CE FCC

| | | | | | | | | | | | | | | |
|----------------------------|-----------------------|---|------------|-------------|--------------|-------------|--------------|-------------|-------------|--------------|----------------|-----------------|----------------|-----------------|
| 14th Generation Processors | CPU | i9-14900 | i9-14900T | i7-14700 | i7-14700T | i5-14500 | i5-14500T | i5-14400 | i5-14400T | i5-14400F | i3-14100 | i3-14100T | 300 | 300T |
| | P-core Base Frequency | 2.0 GHz | 1.1 GHz | 2.1 GHz | 1.3GHz | 2.6 GHz | 1.7 GHz | 2.5 GHz | 1.5 GHz | 2.5 GHz | 3.5 GHz | 2.7 GHz | 3.9 GHz | 3.4 GHz |
| | L3 Cache | 36 MB | 36 MB | 33 MB | 33 MB | 24 MB | 24 MB | 20 MB | 20 MB | 20 MB | 12 MB | 12 MB | 6 MB | 6 MB |
| | Cores | 24 | 24 | 20 | 20 | 14 | 14 | 10 | 10 | 10 | 4 | 4 | 2 | 2 |
| Processor Base Power | 65 W | 35 W | 65 W | 35 W | 65 W | 35 W | 65 W | 35 W | 65 W | 35 W | 60 W | 35 W | 46 W | 35 W |
| 13th Generation Processors | CPU | i9-13900(E) | i9-13900TE | i7-13700(E) | i7-13700T(E) | i5-13500(E) | i5-13500T(E) | i5-13400(E) | i3-13100(E) | i3-13100T(E) | | | | |
| | P-core Base Frequency | 2.0 GHz | 1.1 GHz | 2.1 GHz | 1.4 GHz | 2.5 GHz | 1.6 GHz | 2.5 GHz | 3.4 GHz | 2.5 GHz | | | | |
| | L3 Cache | 36 MB | 36 MB | 30 MB | 30 MB | 24 MB | 24 MB | 20MB | 12 MB | 12 MB | | | | |
| | Cores | 24 | 24 | 16 | 16 | 14 | 14 | 10 | 4 | 4 | | | | |
| Processor Base Power | 65 W | 35 W | 65 W | 35 W | 65 W | 35 W | 65W | 60 W | 35 W | | | | | |
| 12th Generation Processors | CPU | i9-12900(E) | i9-12900TE | i7-12700(E) | i7-12700TE | i5-12500(E) | i5-12400 | i5-12500TE | i3-12100(E) | i3-12100TE | Pentium G7400E | Pentium G7400TE | Celeron G6900E | Celeron G6900TE |
| | P-core Base Frequency | 2.4 GHz | 1.1 GHz | 2.1 GHz | 1.4 GHz | 3.0 GHz | 2.5 GHz | 1.9 GHz | 3.3 GHz | 2.1 GHz | 3.6 GHz | 3.0 GHz | 3.0 GHz | 2.4 GHz |
| | L3 Cache | 30 MB | 30 MB | 25 MB | 25 MB | 18 MB | 18 MB | 18 MB | 12 MB | 12 MB | 6 MB | 6 MB | 4 MB | 4 MB |
| | Cores | 16 | 16 | 12 | 12 | 6 | 6 | 6 | 4 | 4 | 2 | 2 | 2 | 2 |
| Processor Base Power | 65 W | 35 W | 65 W | 35 W | 65 W | 65 W | 35 W | 60 W | 35 W | 46 W | 35 W | 46 W | 35 W | |
| Processor System | Socket | LGA 1700 | | | | | | | | | | | | |
| | Chipset | Q670E/R680E | | | | | | | | | | | | |
| | BIOS | AMI 256Mbit SPI Flash | | | | | | | | | | | | |
| Expansion Slot | PCIe x1 | 1 (Gen 4) | | | | | | | | | | | | |
| | PCIe x4 | 2 (1 x Gen 4 x4 link, 1 x Gen 3 x4 link); 1 (AIMB-788E-10 version, 1 x Gen 4 x4 link) | | | | | | | | | | | | |
| | PCIe x8 | 2 (1 x Gen 4 x4 link, 1 x Gen 3 x4 link) | | | | | | | | | | | | |
| | PCIe x16* | 2 (1 x Gen 5 x8 link, 1 x Gen 4 x8 link) | | | | | | | | | | | | |
| Memory | Technology | Dual Channel DDR5** Non-ECC UDIMM; Dual Channel DDR5 ECC UDIMM (AIMB-788E-0R version) | | | | | | | | | | | | |
| | Max Capacity | 48GB per slot; 192 GB total | | | | | | | | | | | | |
| | Sockets | 4 x 288-pin DIMM | | | | | | | | | | | | |
| Graphics | Controller | Chipset integrated Intel UHD Graphics | | | | | | | | | | | | |
| | VRAM | Shares system memory is subjected to OS | | | | | | | | | | | | |
| Ethernet | Interface | 10/100/1000 Mbps | | | | | | | | | | | | |
| | Controller | GbE LAN1: Intel I219-LM (PHY); GbE LAN2: Intel I210-AT | | | | | | | | | | | | |
| SATA | Connector | 2 x RJ-45 | | | | | | | | | | | | |
| | Channel | 4 | | | | | | | | | | | | |
| RAID | Channel | 4 | | | | | | | | | | | | |
| | RAID | 0, 1, 5, 10 | | | | | | | | | | | | |

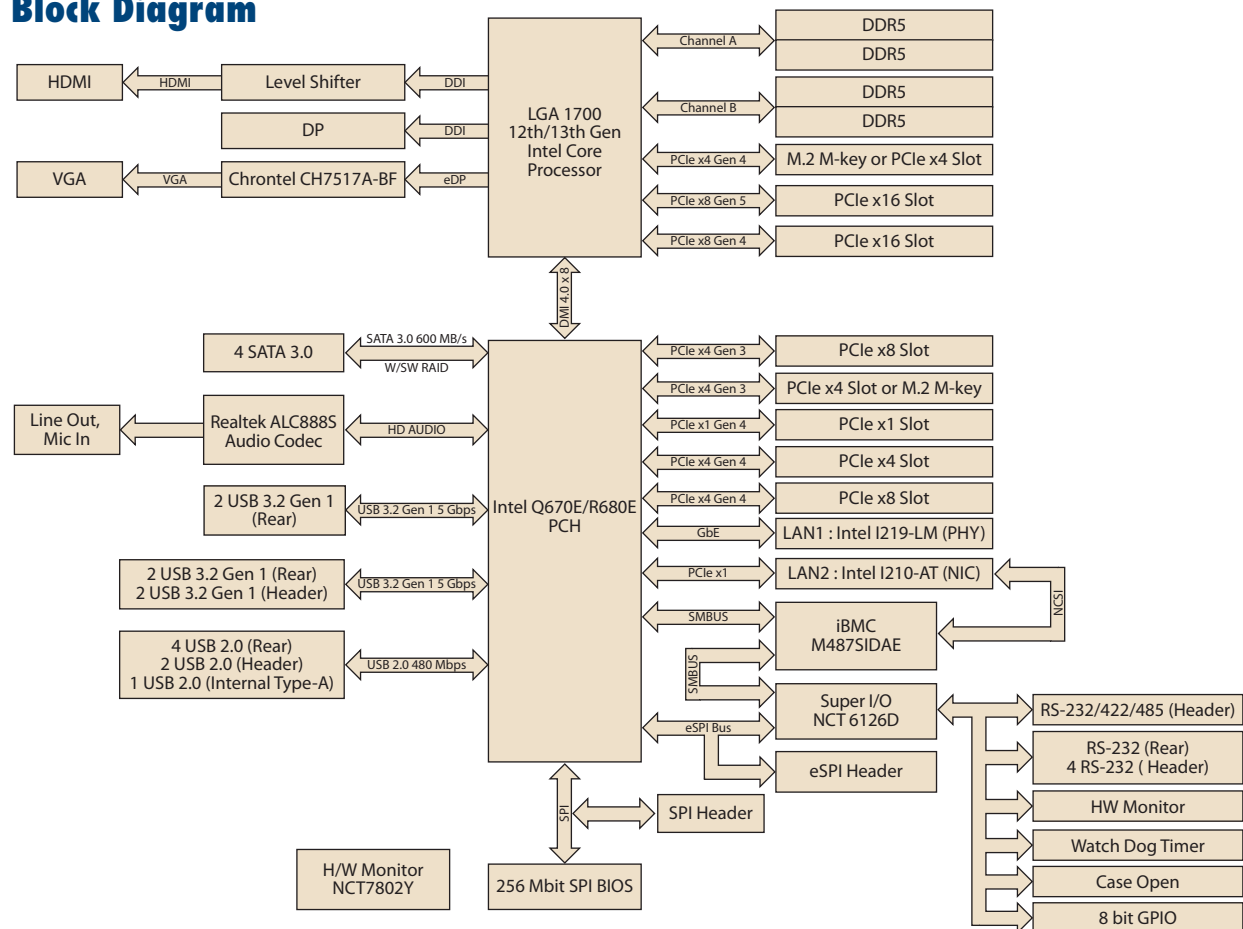
* The PCIe x16 slot, from CPU, can only support graphic cards and storage cards according to the specification recommended by Intel. Other types of add-on cards might not work properly. For the compatible device list validated on the PCIe x16 slot, please refer to the user manual.

** DDR5 runs at 4400 MT/s with one DIMM per channel, 4000 MT/s with two DIMMs in one channel, and 3600MT/s with two DIMMs per channel.

Specifications (Cont.)

| | | | | | | |
|--------------------------|-------------------|---|--------|--------|-----------------------------|--------------------|
| Rear I/O | VGA | 1 (Resolution up to 1920 x 1200 @ 60Hz) | | | | |
| | HDMI | 1 (Resolution up to 3840 x 2160 @ 60Hz) | | | | |
| | DisplayPort | 1 (Resolution up to 4096 x 2304 @ 60Hz) | | | | |
| | Ethernet | 2 | | | | |
| | USB | 8 (4 x USB 3.2 Gen 1, 4 x USB 2.0) | | | | |
| | Audio | 2 (Line-out, Mic-in) | | | | |
| | Serial | 1 (RS-232) | | | | |
| Watchdog Timer | Output | System reset | | | | |
| | Interval | Programmable 1 – 255 sec | | | | |
| Power Requirement | Power On | Intel Core i 65W , DDR5 32 GB x 4 | | | | |
| | Voltage | +3.3 V | +5 V | +12 V | +5 Vsb | -12 V -5 V |
| | Current | 1.54 A | 1.96 A | 0.07 A | 0.08 A | 0.04 A 0.01 A |
| Internal Connectors | USB | 5 (2 x USB 3.2 Gen 1 via pin header, 2 x USB 2.0 via pin header, 1 x USB 2.0 type A connector) | | | | |
| | Serial | 5 (4 x RS-232, 1 x RS-232/422/485) | | | | |
| | SATA | 4 | | | | |
| | M.2 | 1 (PCIe x4 Gen 4 M-key 2280 type); 2 (AIMB-788E-10 version, 1 x PCIe x4 Gen 4, 1 x PCIe x4 Gen 3 M-key 2280 type) | | | | |
| | SPI | 1 (Optional dTPM 2.0 module available) | | | | |
| GPIO | 8-bit | | | | | |
| | | | | | | |
| Environment | Temperature | Operating | | | Non-Operating | |
| | | 0 – 60 °C (32 – 140 °F), depends on CPU loading and system thermal solution | | | -40 – 85 °C | |
| | Humidity | 95% @ 40 °C, non-condensing | | | 95% @ 60 °C, non-condensing | |
| Physical Characteristics | Dimension (L x H) | 304.8 x 244 mm (12" x 9.6") | | | | |

Block Diagram



Ordering Information

| Part number | Chipset | Memory | Display | USB 3.2 Gen 1 | USB 2.0 | COM | GbE LAN | AMT | M.2 | SATA 3.0 | SW RAID | iBMC |
|-----------------|---------|---------------------------------|-----------------|---------------|---------|-----|---------|-----|-----|----------|---------|------|
| AIMB-788E-00A1 | Q670E | Non-ECC UDIMM DDR5 up to 192 GB | VGA + HDMI + DP | 6 | 7 | 6 | 2 | Yes | 1 | 4 | Yes | Yes |
| AIMB-788E-10A1 | Q670E | Non-ECC UDIMM DDR5 up to 192 GB | VGA + HDMI + DP | 6 | 7 | 6 | 2 | Yes | 2 | 4 | Yes | Yes |
| AIMB-788E-0RA1 | R680E | ECC UDIMM DDR5 up to 192GB | VGA + HDMI + DP | 6 | 7 | 6 | 2 | Yes | 1 | 4 | Yes | Yes |
| AIMB-788E-00A1U | Q670E | Non-ECC UDIMM DDR5 up to 192 GB | VGA + HDMI + DP | 6 | 7 | 6 | 2 | Yes | 1 | 4 | Yes | Yes |

Packing List

| Part Number | Description | Qty |
|----------------|---|-----|
| 1700003194 | SATA data cable | 2 |
| 1960104181T001 | I/O port bracket (for 2U chassis or higher) | 1 |
| 2041078800 | Startup manual | 1 |

Note: Driver CD is not provided. Please visit Advantech support website for driver download.

Embedded OS

| Part Number | Description |
|----------------|------------------------------------|
| 20706WX1HS0038 | img W10 21HL AIMB-788 64b 21H2 ENU |
| 20706WX1VS0038 | img W10 21VL AIMB-788 64b 21H2 ENU |
| 20706WX1ES0038 | img W10 21EL AIMB-788 64b 21H2 ENU |
| 20706WLH1S0035 | img W11 24HL AIMB-788 64b 24H2 ENU |
| 20706WLV1S0035 | img W11 24VL AIMB-788 64b 24H2 ENU |
| 20706WLE1S0035 | img W11 24EL AIMB-788 64b 24H2 ENU |

Optional Accessories

| Part number | Description |
|---|--|
| 1700002204 | 2-port USB 2.0 cable w/ BKT(27 cm) |
| 1700028292-01 | 2-port USB 3.0 cable w/ BKT(30 cm) |
| 1970005349T000 | CPU cooler for 2U, 4U, and wallmount chassis (for CPU Base Power=35-65W) |
| 1970005436T001 | CPU cooler for 2U, 4U, and wallmount chassis (for CPU Base Power=125W) |
| 1701090401 | Single COM port cable(40 cm) |
| 1701092300 | Dual COM port cable(28.5 cm) |
| 1700022749-11/ 1700022749-12/ 1700022749-13 | SATA power cable |
| PCA-TPMSPI-00A1 | dTPM 2.0 SPI module to enable TPM and vPro technologies |

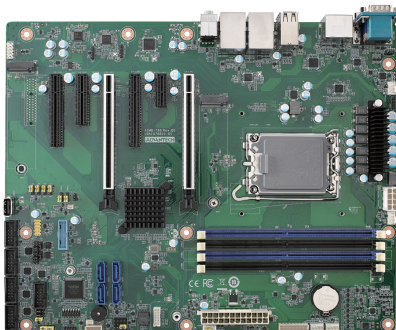
Note: Purchasing AIMB-788's proprietary CPU cooler from Advantech is highly recommended. Other brands' CPU coolers are NOT compatible with AIMB-788. Especially the cooler type with fan aside is not allowed to use on AIMB-788 due to heat dissipation on MOSFET.

I/O View



AIMB-788E-00A1
AIMB-788E-10A1
AIMB-788E-0RA1

Front View



AIMB-788E-10A1