

AIMB-788E LGA1700 Intel® Core™ i9/i7/i5/i3 ATX Motherboard with DP/HDMI/VGA, DDR5, USB 3.2, M.2 Startup Manual

Packing List

Before you begin installing your card, please make sure that the following items have been shipped:

- 1 x AIMB-788E motherboard
- 1 x AIMB-788E startup manual
- 2 x Serial ATA HDD data cables
- 1 x I/O port bracket

If any of these items are missing or damaged, please contact your distributor or sales representative immediately.

Specifications

Standard Functions

- **CPU:** LGA1700 socket supporting 12th/13th/14th Gen Intel® Core™ i9/i7/i5/i3/Pentium®/Celeron® processors.
- **BIOS:** AMI 256 Mbit SPI BIOS
- **Chipset:** Intel® Q670E PCH

Note: Legacy platforms are not supported.

- **System memory:** Up to 192 GB in four 288-pin DIMM sockets, supporting dual-channel DDR5 4400 SDRAM. AIMB-788E supports non-ECC unbuffered DIMMs and only AIMB-788E-XR version supports any memory configuration that mixes non-ECC with ECC unbuffered DIMMs.

For more information on this and other Advantech products, please visit our website at:

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For technical support and service, please visit our support website for AIMB-788E at:

<https://adv.t.ch/aimb788espt>



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This manual is for the AIMB-788 series Rev. B1, and all specifications are subject to the datasheet on the official website. The information in this manual is subject to change without notice.

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Specifications (Cont.)

- **M.2 socket:** M.2 socket supports up to PCIe x4 Gen 4 M-Key 2280 type storage devices.
- **SATA interface:** Four on-board Serial ATA 3.0 connectors support data transmission rates up to 600 MB/s. All four SATA 3.0 ports support Advanced Host Controller Interface (AHCI) technology.
- **PCIe slot:** 2 PCIe x16 Gen 4 expansion slot (1 x Gen5 x8 link, 1 x Gen4 x8 link), 2 PCIe x8 expansion slot (1 x Gen 4 x4 link, 1 x Gen3 x4 link), 2 PCIe x4 expansion slots (1 x Gen 4, 1 x Gen3, only 1 Gen4 on the AIMB-788E-1 version), 1 PCIe x1 Gen4 expansion slot.
- **USB 3.2/2.0:** 6 USB 3.2 Gen 1 ports (4 rear, 2 via header), 7 USB 2.0 ports (4 rear, 2 via header, 1 internal Type-A).
- **Serial port:** Six serial ports: COM1, COM2 and COM4 ~ 6 are RS-232; COM3 is RS-232/422/485 with jumper and BIOS menu options.
- **SPI interface:** Advantech-designed SPI connector supports optional dTPM 2.0 module.
- **Watchdog timer:** 255 timer level intervals.

Graphics Interface

- **Chipset:** CPU integrated graphics controller.
- **Display memory:** 1 GB maximum shared memory with 2 GB and above system memory installed.
- **DisplayPort:** Resolution up to 4096 x 2304 @ 60 Hz refresh rate.
- **HDMI:** Resolution up to 3840 x 2160 @ 30 Hz refresh rate.
- **VGA:** Resolution up to 1920 x 1200 @ 60 Hz refresh rate.

Ethernet Interface

- **Interface:** 10/100/1000 Mbps.
- **Controller:** LAN1: Intel® I219-LM; LAN2: Intel® I210-AT.

Mechanical and Environmental

- **Dimensions (L x W):** 304.8 x 244 mm (12" x 9.6")
- **Power consumption:** Intel® Core™ i 65W; DDR5 32 GB x 4
Maximum: +3.3 V at 1.54 A, +5 V at 1.96 A, +12 V at 0.07 A, +5 Vsb at 0.08 A, -12 V at 0.04 A, -5 V at 0.01 A
- **Operating temperature:** 0 ~ 60°C (depending on CPU loading and thermal solution)
- **Weight of board:** 0.7 kg (1.54 lb)

Jumpers and Connectors

The board has a number of jumpers that allow you to configure your system to suit your application. The table below lists the function of each jumper and connector.

Connector/Jumper List	
Label	Function
LAN1 ~ LAN2	GbE LAN
USB3C1	USB 3.2 Gen 1 port *2
USB3C2	USB 3.2 Gen 1 port *2
USB3H1	USB 3.2 Gen 1 port *2 (20-pin header)
USB2C1	USB 2.0 port *4
USB2A1	USB 2.0 port (internal Type-A)
USB2H1	USB 2.0 port *2 (10-pin header)
COM1+VGA1	Serial port: RS-232 (DB-9 connector)/VGA connector
DP1+HDMI1	DP connector/HDMI connector
COM2, COM4 ~ COM6	Serial port: RS-232 (9-pin header)
COM3	Serial port: RS-232/422/485 (9-pin header)
CPUFAN1	CPU fan connector (4-pin)
SYSFAN1 ~ SYSFAN3	System fan connector (4-pin)
JFP3	Power LED Suspend: fast flash (ATX/AT) System on: on (ATX/AT) System off: off (ATX/AT)
JFP2	External speaker/HDD LED connector/SMBus connector
JFP1	Power switch/reset connector
AUDIO1+AUDIO2	Audio connector (Line Out, Mic In)
VOLT1	Alarm board power connector
JCASE1	Case open connector
LANLED1	Front panel LAN indicator connector
NVME1	M.2 2280 M-Key socket
NVME2	M.2 2280 M-Key socket (Only on the AIMB-788E-1 version)
SATA4 ~ SATA7	Serial ATA 3.0 port
PCIE1	PCIe x16 slot (x8 Gen 5 link)
PCIE2	PCIe x1 slot (x1 Gen 4 link)
PCIE3	PCIe x8 slot (x4 Gen 4 link)
PCIE4	PCIe x16 slot (x8 Gen 4 link)
PCIE5	PCIe x4 slot (x4 Gen 4 link)
PCIE6	PCIe x8 slot (x4 Gen 3 link)
PCIE7	PCIe x4 slot (x4 Gen 3 link, only on the AIMB-788E-0 version)

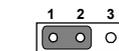
Jumpers and Connectors (Cont.)

DIMMA1	Channel A DIMM1
DIMMA2	Channel A DIMM2
DIMMB1	Channel B DIMM1
DIMMB2	Channel B DIMM2
ATX12V1+ ATX12V2	ATX 12 V auxiliary power connector (for CPU)
EATXPWR1	ATX 24-pin main power connector (for system)
SPDIF_OUT1	SPDIF audio out pin header
GPIO1	8-bit GPIO from super I/O
SMBUS1	SMBus connector from PCH
SPI_TPM1	SPI (Serial Peripheral Interface) connector for Advantech dTPM 2.0 module.

Note: The PCIe1&PCIe4 slots can only support graphics 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.

JCMOS1: CMOS clear data JME1: Intel® ME update

Closed Pins	Result
1-2	*Keep CMOS data *Enable ME update
2-3	Clear CMOS data Disable ME update
* Default	



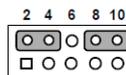
*Keep CMOS data
*Enable ME update



Clear CMOS data
Disable ME update

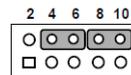
JWDT1+JOBS1: Watchdog timer output and OBS alarm

Closed Pins	Result
2-4, 8-10	Watchdog timer disable (2-4) OBS beep (8-10)
4-6, 8-10	*Watchdog timer reset (4-6) OBS beep (8-10)
* Default	



1

Watchdog timer disable (2-4)
OBS beep (8-10)



1

*Watchdog timer reset (4-6)
OBS beep (8-10)

Jumpers and Connectors (Cont.)

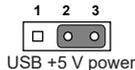
PSO1: ATX/AT mode selection

Closed Pins	Result
1-2	AT mode
2-3	*ATX mode
* Default	



JUSB_2 (onboard USB): USB power source switch between +5V and +5V_DUAL

Closed Pins	Result
1-2	*USB +5V_DUAL power
2-3	USB +5V power
* Default	



SMB1 (clock), SMB2 (data): PCIe SMBus connection setting for PCIe2-PCIe5 slots SMB3 (clock), SMB4 (data): PCIe SMBus connection setting for PCIe1 slot

Closed Pins	Result
1-2	*Enable PCIe SMBus connection
2-3	Disable PCIe SMBus connection
* Default	



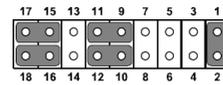
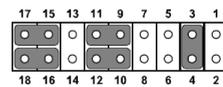
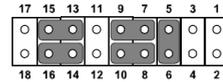
*Enable PCIe SMBus connection Disable PCIe SMBus connection

Note: SMB1+SMB2 or SMB3+SMB4 jumpers should be switched to the same setting, either 1-2 closed or 2-3 closed.

Jumpers and Connectors (Cont.)

JSETCOM3: COM3 RS-232/422/485 jumper settings

Closed Pins	Result
5-6, 7-9, 8-10, 13-15, 14-16	*RS-232
3-4, 9-11, 10-12, 15-17, 16-18	RS-422
1-2, 9-11, 10-12, 15-17, 16-18	RS-485
* Default	



Note: BIOS setting change is necessary if RS-422 or RS-485 is selected. Please refer to Chapter 3 of the user manual for further settings.

JT1 (TX signal), JR1 (RX signal): COM3 RS-422/485 termination resistor

Closed Pins	Result
1-2	Disable termination
2-3	*Enable termination
* Default	



JFV1: VGA dummy load setting

Closed Pins	Result
1-2	Enable VGA dummy load
2-3	*Disable VGA dummy load
* Default	



Enable VGA dummy load *Disable VGA dummy load

Note: It is recommended to leave this function disabled if you use DVI/DP as your main display.

Declaration of Conformity

Caution: The computer is supplied with a battery-powered realtime clock circuit. There is a danger of explosion if the battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.



This device complies with the requirements in Part 15 of the FCC rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

Board Layout

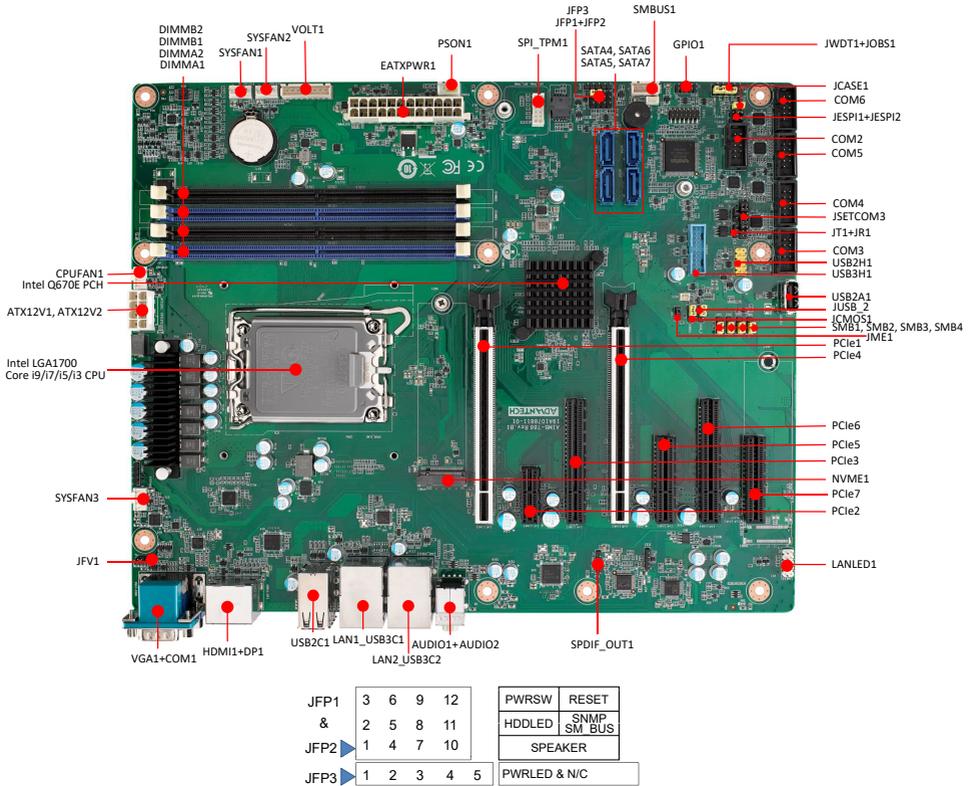


Figure 1: Board Layout: Jumper and Connector Locations