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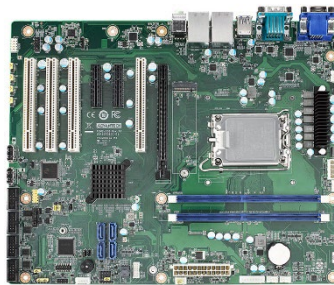


# Manual

## ADVANTECH

### AIMB-708

**Industrial ATX Motherboard for Intel® 12th Gen. Core™ i9/i7/i5/i3 & Pentium®/Celeron® processor  
with H610E chipset**



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## AIMB-708 LGA1700 12th Generation Intel® Core™ i9/i7/i5/i3 ATX Motherboard with HDMI/VGA, DDR4, 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-708 motherboard
- 1 x AIMB-708 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 generation Intel® Core™ i9/i7/i5/i3/Pentium/Celeron processor.
- **BIOS:** AMI 256 Mbit SPI BIOS.
- **Chipset:** Intel® H610E PCH.

**Note:** Legacy platforms are not supported.

- **System memory:** Up to 64 GB in two 288-pin DIMM sockets supporting dual-channel DDR4 3200 SDRAM. AIMB-708 supports non-ECC unbuffered DIMMs and does not support 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:

<http://www.advantech.com>



For technical support and service, please visit our support website for AIMB-708 at:

<http://adv.t.ch/aimb708spt>



Register your products on our website and get 2 months extra warranty for Free at:

<http://www.register.advantech.com>



This manual is for the AIMB-708 series Rev. A1, and all specifications are subject to the data-sheet on the official website. The information in this manual is subject to change without notice.

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### Specifications (Cont.)

- **M.2 socket:** One M.2 socket supports up to PCIe x2 Gen 3 M-key 2280 type storage devices (G2 sku only).
- **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 and PCI slot:** 1 PCIe x16 Gen 4 expansion slot, 2 PCIe x4 expansion slot (x2 Gen 3 link), 4 PCI slots 32-bit/33 MHz PCI 2.2 compliant.
- **USB 3.2/2.0:**
  - G2 sku: 4 USB 3.2 Gen 1 ports on rear with up to 5 Gb/s data rate, 6 USB 2.0 ports (2 rear, 2 via header, 2 internal Type-A)
  - VG sku: 2 USB 3.2 Gen 1 ports on rear with up to 5 Gb/s data rate, 5 USB 2.0 ports (2 rear, 2 via header, 1 internal Type-A)
- **Serial port:** Up to 6 serial ports: COMD1 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 TPM 2.0 module.
- **Watchdog timer:** 255 sec timer level intervals.

#### Graphic Interface

- **Chipset:** CPU integrated graphics controller.
- **Display memory:** 1 GB maximum shared memory with 2 GB and above system memory installed.
- **HDMI (G2 sku only):** Resolution up to 3840 x 2160 @ 30 Hz refresh rate.
- **VGA:** Resolution up to 1920 x 1200 @ 60 Hz refresh rate.

#### Ethernet Interface

- **Interface:**
  - LAN1: 10/100/1000 Mbps
  - LAN2: 10/100/1000/2500 Mbps (G2 sku only)
- **Controller:**
  - LAN1: Intel® I219-V
  - LAN2: Intel® I226-V (G2 sku only)

#### Mechanical and Environmental

- **Dimensions (L x W):** 304.8 x 244 mm (12" x 9.6")
- **Power consumption:**  
Intel Core i 65W; DDR4 32 GB x 2  
Maximum: +3.3V at 3.06A, +5V at 8.17A, +12V at 0.84A, +5V<sub>sb</sub> at 0.05A, -12V at 0.03A, -5V at 0.01A
- **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
ATX12V1+ATX12V2	ATX 12 V auxiliary power connector (for CPU)
AUDIO1+AUDIO2	Audio connector (Line Out, Mic In)
COM4 ~ COM6	Serial port: RS-232 (9-pin header, G2 sku only)
COM3	Serial port: RS-232/422/485 (9-pin header, G2 sku only)
COMD1	Serial port: RS-232 (DB-9 connector)
CPUFAN1	CPU fan connector (4-pin)
DIMMA1	Channel A DIMM1
DIMMB1	Channel B DIMM1
EATXPWR1	ATX 24-pin main power connector (for system)
FPAUD1	Front panel audio connector
GPIO1	8 bit GPIO from super I/O
HDMI1	HDMI connector (G2 sku only)
JCASE1	Case open connector
JCMOS1	CMOS clear data
JFP1	Power switch/reset connector
JFP2	External speaker/HDD LED connector/SMBus connector
JFP3	Power LED Suspend: fast flash (ATX/AT) System on: on (ATX/AT) System off: off (ATX/AT)
JFV1	VGA dummy load setting
JME1	Intel ME update
JPCICLK1	PCI clock selection
JR1+JT1	COM3 RS-232/422/485 termination resistor
JSETCOM3	COM3 RS-232/422/485 jumper setting
JUSB1	External USB power source switch
JUSB2	Internal USB power source switch
JWDT1+JOBS1	Watchdog timer output and OBS alarm
LAN1	GbE LAN
LAN2	GbE LAN (G2 sku only)

## Jumpers and Connectors (Cont.)

LANLED1	Front panel LAN indicator connector
NVME1	M.2 2280 M-key socket (G2 sku only)
PCI1 ~ PCI4	PCI slot
PCIE1	PCIe x16 slot (x16 Gen 4 link)
PCIE2 ~ PCIE3	PCIe x4 slot (x2 Gen 3 link)
PSON1	ATX/AT mode selection
SATA4 ~ SATA7	Serial ATA 3.0 port
SMB1 ~ SMB2	PCIe SMBus connection setting for PCIE2 ~ PCIE3 slot
SMB3 ~ SMB4	PCIe SMBus connection setting for PCIE1 slot
SMBUS1	SMBus connector from PCH
SPDIF_OUT1	SPDIF audio out pin header
SPI_TPM1	SPI (Serial Peripheral Interface) connector
SYSFAN1 ~ SYS-FAN3	System fan connector (4-pin)
USB2A1	USB 2.0 port (internal Type-A)
USB2A2	USB 2.0 port (internal Type-A, G2 sku only)
USB2C1	USB 2.0 port *2
USB2H1	2x USB 2.0 port (10-pin header)
USB3C1	USB 3.2 Gen 1 port *2 (G2 sku only)
USB3C2	USB 3.2 Gen 1 port *2
VGA1	VGA connector
VOLT1	Alarm board power connector

**Note** Due to the Intel design specification, the PCIe1 slot can only support graphic cards and storage cards (1x8 bifurcated PCIe 5.0, 1x4 PCIe 4.0). Other types of add-on cards installed in this slot may not function. Please refer to product user manual for compatibility list.

### 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

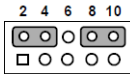


Clear CMOS data  
Disable ME update

## Jumpers and Connectors (Cont.)

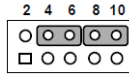
### JWDT1+JOBS1: Watchdog timer output and OBS alarm

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)

### PSOEN1: ATX/AT mode selection

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



AT mode



\*ATX mode

### JUSB\_1(rear USB), 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	



\*USB +5V\_DUAL power



USB +5V power

### JPCICLK1: PCI clock selection

Closed Pins	Result
1-2	66 MHz
2-3	*33 MHz
* Default	



66 MHz



33 MHz

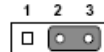
## Jumpers and Connectors (Cont.)

### SMB1 (clock), SMB2 (data): PCIe SMBus connection setting for PCIe2 ~ PCIe3 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

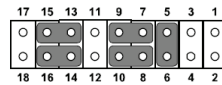


Disable PCIe SMBus connection

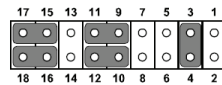
**Note** SMB1+SMB2 or SMB3+SMB4 jumpers should be switched to the same setting, either 1-2 closed or 2-3 closed.

### JSETCOM3: COM3 RS-232/422/485 jumper setting

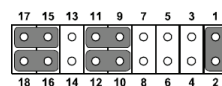
Closed Pins	Result
5-6, 7-9, 8-10, 13-15, 14-16	*RS-232
3-4, 9-11, 10-12, 15-17, 16-18	RS-422
1-2, 9-11, 10-12, 15-17, 16-18	RS-485
* Default	



\*RS-232



RS-422



RS-485

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

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

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



Disable termination



\*Enable termination

## Jumpers and Connectors (Cont.)

### 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 battery is incorrectly replaced. Replace only with same or equivalent type recommended by the manufacturer. Discard used batteries according to 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

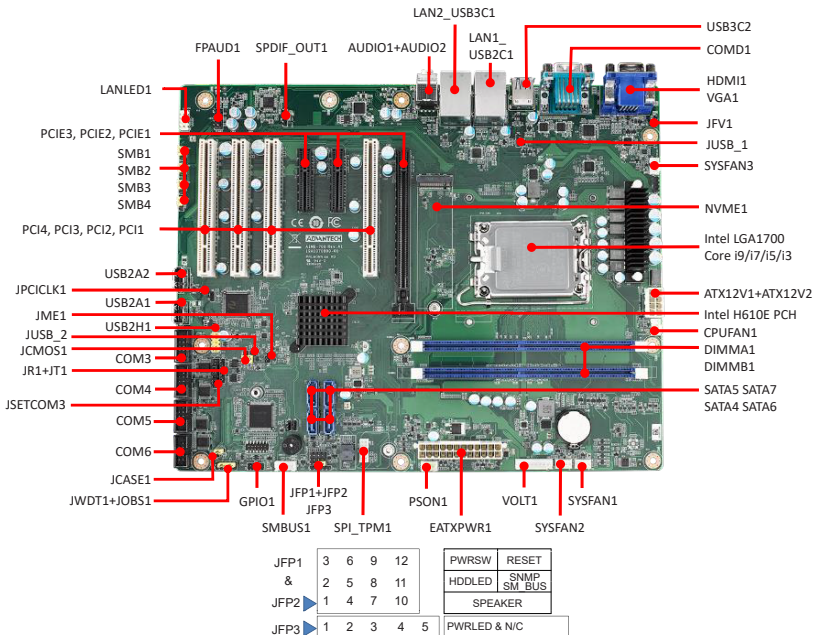


Figure 1: Board Layout: Jumper and Connector Locations

## Order Information

Part number	Chipset	Memory	Display	USB 3.2 Gen 1	USB 2.0	COM	Gbe LAN	M.2	SATA
AIMB-708G2-00A1	H610E	Non-ECC	HDMI + VGA	4	6	6	2	1	4
AIMB-708VG-00A1	H610E	Non-ECC	VGA	2	5	2	1	0	4

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