ADVANTECH AIMB-786 Intel Core i7/i5/i3 ATX with Triple Display Dual GbE LAN User Manual

AIMB-786 LGA1151 Intel® Core™ i7/i5/i3 ATX with Triple Display, Dual GbE LAN, SATA 3.0, USB 3.1, DDR4 Startup Manual

Contents [hide

Packing List

Before you begin installing your card, please make sure that the following items have been shipped:
• 1 AIMB-786 Startup Manual
• 2 Serial ATA HDD data cables
• 2 Serial ATA HDD power cables
• 1 I/O port bracket
If any of these items are missing or damaged, please contact your distributor or sales representative immediately.

Note: Acrobat Reader is required to view any PDF file. Acrobat Reader can be downloaded at: www.adobe.com/Products/acrobat/readstep2.html (Acrobat is a trademark of Adobe)

Specifications

Standard Functions
• CPU: LGA1151 socket supporting 8/9th generation Intel® Core™ i7/i5/i3/Pentium/Celeron processor.
Note: Intel 8/9th generation processors only support Windows 10 (64-bit).
• BIOS: AMI 256 Mbit SPI BIOS.
• Chipset: Intel® Q370 PCH.
• System memory: Up to 64 GB in four 288-pin DIMM sockets supporting dual-channel DDR4 2400/2666

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-786 at: http://advt.ch/aimb786spt

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-786 series Rev. A1.
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SDRAM. AIMB-786 supports non-ECC unbuffered DIMMs and does not support any memory configuration that mixes non-ECC with ECC unbuffered DIMMs.
Note: Due to the inherent limitations of PC architecture, the system may not fully detect 64 GB RAM when 64 GB RAM is installed.
• SATA interface: Five on-board Serial ATA 3.0 connectors support data transmission rates up to 600 MB/s. All five SATA 3.0 ports support Advanced Host Controller Interface (AHCI) technology.
• PCIe and PCI slot: 1 PCIe x16 expansion slot, 4 PCIe x4 expansion slots, 2 PCI slots 32-bit/33 MHz PCI 2.2 compliant.
• LPC interface: Advantech-designed LPC connector supports TPM module.
• 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.
• Parallel port: One parallel port, which supports SPP/EPP/ECP mode.
• Keyboard/mouse connector: An external keyboard and mouse connector on the motherboard is supported. No PS/2 keyboard/mouse connector is supported in the rear I/O.
• Watchdog timer: 255 sec timer level intervals.
• USB 3.1/2.0: 2 USB 3.1 (Gen 2) ports on rear with up to 10 Gb/s data rate, 4 USB 3.1 Gen 1 ports (2 rear, 2 via header), 7 USB 2.0 ports (4 rear, 2 via header, 1 internal Type-A).

Graphic 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.
• DVI-D: Resolution up to 1920 x 1200 @ 60 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® I211-AT.

Mechanical and Environmental

• Dimensions (L x W): 304.8 x 244 mm (12” x 9.6”)
• Power supply voltage: +3.3 V, +5 V, +12 V, +5 Vsb

• Power consumption:
Intel Core i7-8700 3.2 GHz; DDR4 16 GB x 4
Maximum: +3.3 V at 2.8 A, +5 V at 1.77 A, +12 V at 3.77 A,
+5 Vsb at 0.1 A, -5 V at 0.06 A, -12 V at 0.04 A
• Operating temperature: 0 ~ 60° C (depending on CPU)
• Weight of board: 0.7 kg (1.54 lb)

Jumpers and Connectors

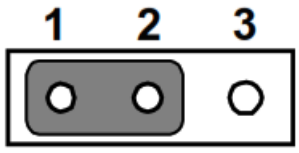
The board has a number of jumpers that allow you to configure your system to suit your application. The table below lists the function of each jumper and connector.
Connector / **Jumper List**

Connector / Jumper	List
Label	Function
LPT1	Parallel port. supporting SPP/EPP/ ECP mode
LANI. LAN2	LANI. LAN2
USB3C1	USB 3.1 Gen 2 port 1.2
USB3C2	USB 3.1 Gen 1 port 1.2
USB3H1	USB 3.1 Gen 1 port 1.2 (20-pin header)
USB2C1	USB 2.0 port 1. 2. 3. 4
USB2A1	USB 2.0 port (internal Type-A)
USB2H2	USB 2.0 port 1. 2 (10-pin header)
VGA1+DVI1	VGA connector / DVI-D connector
COM1+DP1	Serial port RS-232 (DB-9 connector) / DP connector
DP2	Connector for optional DP/DVI/ HDMI cable
COM2. COM4 – COM6	Serial port RS-232 (9-pin header)
COM3	Serial port RS-232/422/485 (9-pin header)
KBMSI	External keyboard and mouse connector (6-pin header)
CPUFANI	CPU fan connector (4-pin)
SYSFAN1 – SYSFAN3	System fan connector (4-pin)
JFP3	Keyboard lock and power LED Suspend: fast flash (ATX/AT) System on : on (ATX/AT) System off: off (AT/ATX)
	External speaker / HDD LED connector nector / SMBus connector
JFP1	Power switch/reset connector
AUDI01+AUD102	Audio connector (Line Out. Mic In)
VOLT1	Nam board power connector
JCASEI	Case open connector
LANLED1	Front panel LAN indicator connector
SATA1 – SATAS	Serial ATA 3.0 port
PCI1	PCI slot
PCl2	PCI slot
PCIE1	PCIe x16 slot
PCIE2	PCIe x4 slot

PCIE3	PCIe x4 slot
PCIE4	PCIe x4 slot
PCIE5	PCIe x4 slot
DIMMAI	Channel A DIMMI
DIMMA2	Channel A DIMM2
DIMMBI	Channel B DIMMI
DIMMB2	Channel B DIMM2
ATX12V1	ATX 12 V auxiliary power connector (for CPU)
EATXPWRI	ATX 24-pin main power connector (tor system)
SPI CN1	Update BIOS pin header
SPDIF_OUT1	SPDIF audio out pin header
GP101	8 bit GPIO from super 1.0
SMBUSI	SMBus connector from PCH
FPAUDI	Front panel audio connector
LPC1	Low pin count connector
JCMOSI	CMOS clear
JME1	Intel ME update
JWDT1	Watchdog timer reset
JOBS?	Hardware monitor alarm
PSON1	ATIATX mode selection
JUSB_1	USB power source switch between +5 V and +5 V_ DUAL for rear USB ports
JUSB_2	USB power source switch between +5 V and +5 V_ DUAL for onboard USB ports
JPCICLKI	PCI clock selection
JSETCOM3	COM3 R5-232/422/485 jumper setting
JT1 JRI .	COM3 RS-422/485 termination resistor
JFV1	VGA dummy load setting

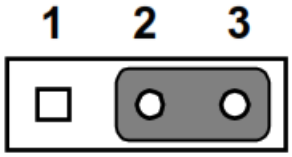
JCMOS1: CMOS clear JME1: ME clear

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

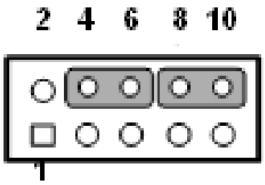


Clear CMOS data

Disable ME update

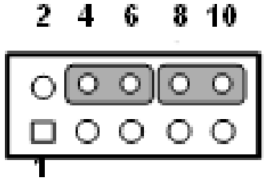
JWDT1+JOBS1: Watchdog timer output and OBS alarm

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	



Watchdog timer disable (2-4)

OBS beep (8-10)

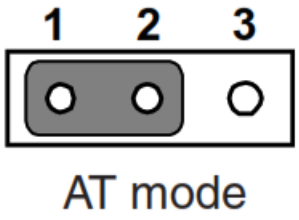


*Watchdog timer reset (4-6)

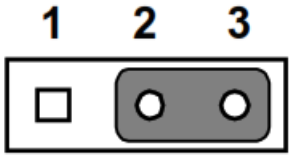
OBS beep (8-10)

PSON1: ATX/AT mode selection

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



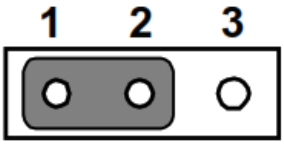
AT mode



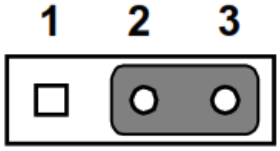
*ATX mode

JUSB1 (rear USB), JUSB2 (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	



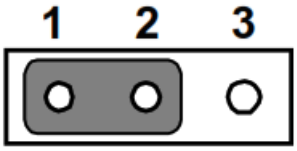
*USB +5 V_DUAL power



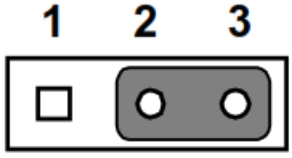
USB +5 V power

JPCICLK1: PCI clock selection

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



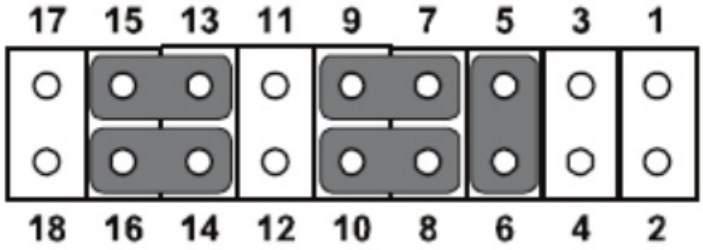
66 MHz



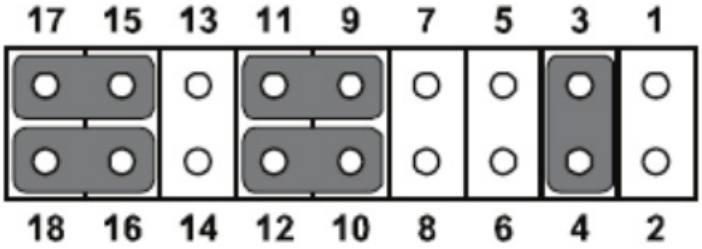
33 MHz

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

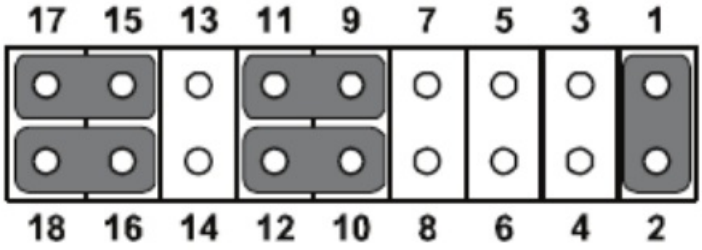
Closed Pins	Result
5-6, 7-9, 8-10, 13-15, 14-16	*RS-232
3-4, 9-11, 10-12, 15-17, 16-18	RS-422
1-2, 9-11, 10-12, 15-17, 16-18	RS-485
* Default	



*RS-232



RS-422

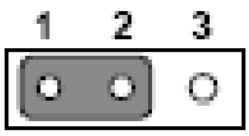


RS-485

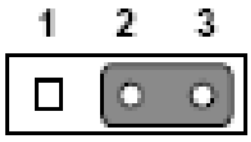
Note!
If RS-485 is selected, it is necessary to change device mode to RS-485 for further choice of auto flow control under BIOS menu. Please refer to Chapter 3.2.2.10 of user manual for further setting.

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

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



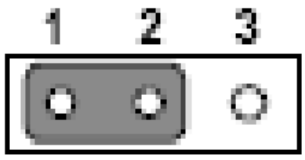
Disable termination

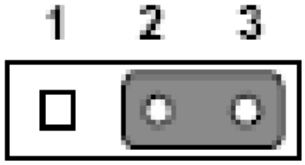


*Enable termination

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 real-time 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

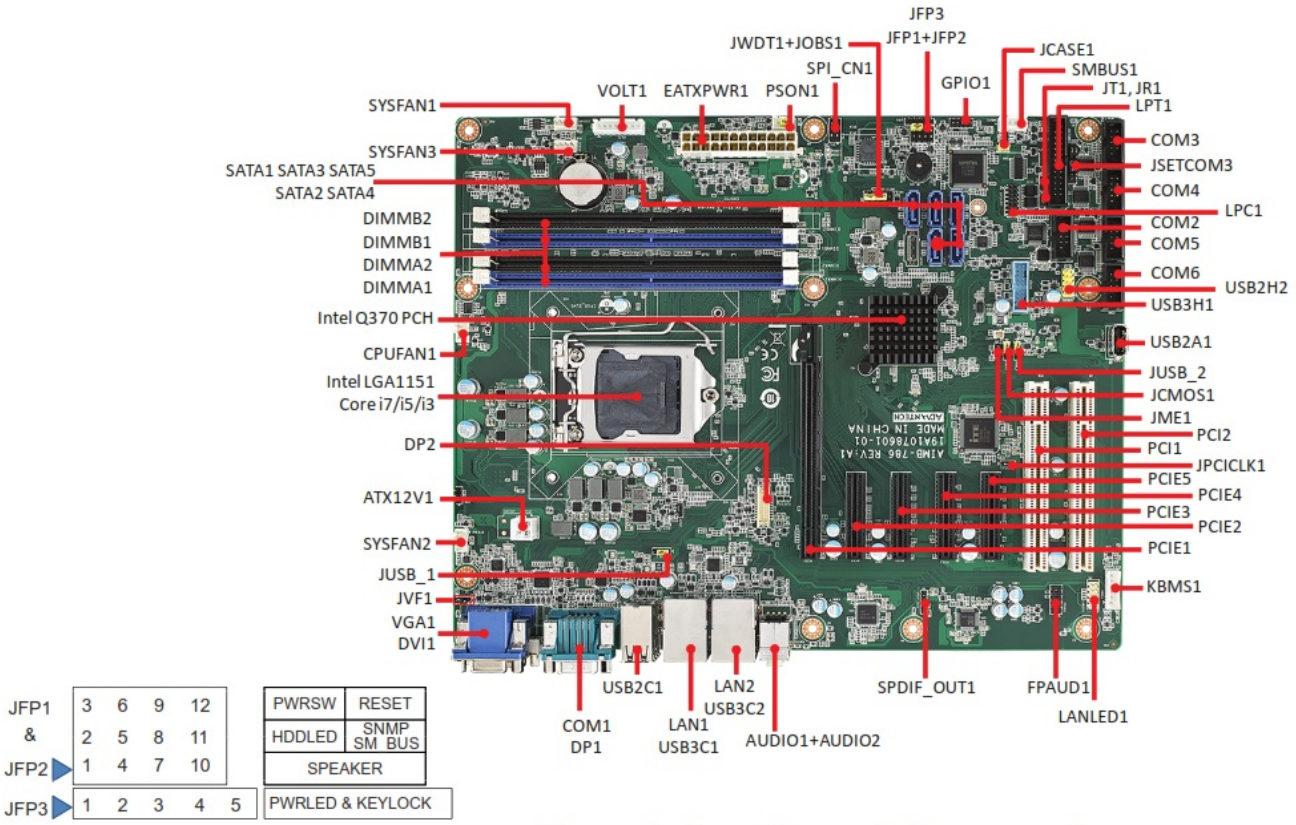


Figure 1: Board Layout: Jumper and Connector Locations

Documents / Resources

	ADVANTECH AIMB-786 Intel Core i7/i5/i3 ATX with Triple Display Dual GbE LAN [pdf] User Manual AIMB-786 Intel Core i7, AIMB-786 Intel Core i5, AIMB-786 Intel Core i3, ATX with Triple Display Dual GbE LAN, LGA1151

References

- Advantech - industrial computer , embedded computer, industrial automation, industrial motherboard, network security appliance, digital video surveillance, panel PC, industrial IO.
- Advantech Co-Creating the Future of the IoT World
- register.advantech.com