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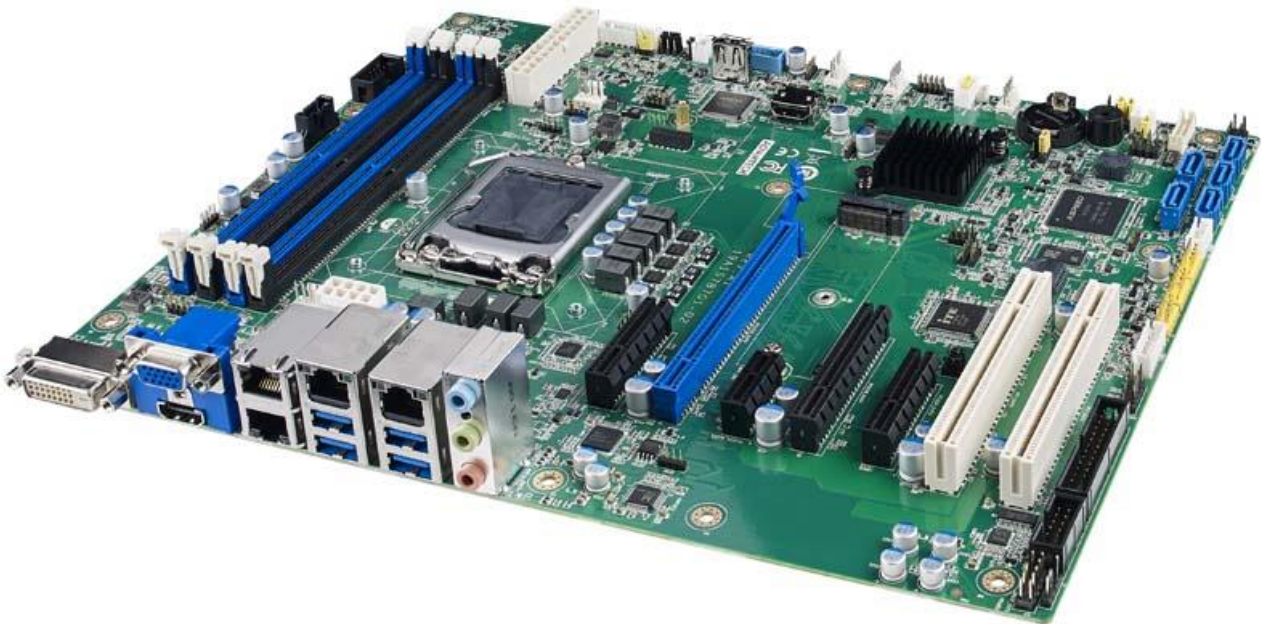
Manual

ADVANTECH

ASMB-787

Industrial ATX Server Motherboard for 10th Gen. Core™ & Xeon® Processors

with Intel® W480E Chipset



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ASMB-787 LGA 1200 Intel® Xeon® W & 10th Gen. Core™ ATX Server Board with 4 x DDR4, 5 x PCIe, 2 x PCI, 6 x USB 3.2, 5 x SATA 3, Quad/Dual LANs, and IPMI Startup Manual

Packing List

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

- 1 Startup manual
- 2 Serial ATA HDD data cables
- 2 Serial ATA HDD power cables
- 1 COM cable (for connection to real panel)
- 1 I/O port bracket
- 1 Warranty card
- 1 JFP1 cable

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: <http://www.adobe.com/downloads/> (Acrobat is a trademark of Adobe)

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 ASMB-787 at:

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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 ASMB-787 series Rev. A1.

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Specifications

Standard Functions

- **CPU:** LGA 1200 Intel® Xeon® W and 10th Gen. Core™ i9/i7/i5/i3 processor
- **BIOS:** AMI 256 Mb SPI BIOS
- **Chipset:** Intel W480E
- **System memory:** Dual Channel DDR4 ECC/Non-ECC 2933/2666/2400 MHz unbuffered DIMM, Max. 128 GB
- Note:** Due to the inherent limitations of PC architecture, the system may not fully detect 128 GB RAM when 128 GB RAM is installed.
- **SATA3 interface:** 5 x SATA3 6Gb/s ports to support Intel Rapid Storage Technology with software RAID 0, 1, 10 & 5 (for Windows only)
- **Serial ports:** Two serial ports onboard, only support RS-232 (one can be in rear IO via COM cable connection)
- **Keyboard/mouse connector:** Supports standard PS/2 keyboard and mouse via KMBS1 pin header
- **Watchdog timer:** 255 level timer intervals (sec/min)
- **USB 3.2:** Supports up to six USB 3.2 ports, four Gen2 ports in rear I/O and two Gen1 ports from on-board pin header
- **USB 2.0:** Supports up to seven USB 2.0 ports (1* Type-A)

Display Interface

- **Chipset:** CPU integrated Intel HD graphics controller
- **Display memory:** 1 GB maximum shared memory with 2 GB and above system memory installed (BIOS default is 256 MB)
- **Resolution:**
 - Supports VGA up to 1920 x 1200 resolution @ 60 Hz refresh rate
 - Supports DVI up to 1920 x 1200 resolution @ 60 Hz refresh rate
 - Supports HDMI 2.0 up to 2K/4K resolution @ 60Hz

Ethernet Interface

- **Interface:** 10/100/1000 Mbps
- **Controller:** LAN1: Intel® I219LM; LAN2 ~ LAN4: Intel® I210AT (LAN2 is BMC shared NIC; LAN3/4 is for G4 SKU only)

Mechanical and Environmental

- **Dimensions (L x W):** 244 x 304 mm (9.6" x 12")
- **Power supply voltage:** +3.3 V, +5 V, ±12 V, 5 Vsb
- **Power consumption:** Max. load: +3.3 V @ 1.69 A, +5 V @ 1.68 A, +12 V @ 0.31 A, +12 V (8P) @ 9.25 A, +5 Vsb @ 0.01 A
- **Operating temperature:** 0 ~ 60 °C (depends on CPU speed and cooler solution)
- **Weight:** 0.5 kg (weight of board)

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 list	
Label	Function
ATXPWR1	ATX 24-pin main power connector (for System)
ATX12V1	8-pin power connector (for CPU)
AUDIO1~2	Audio connector
BAT1	For RTC battery
BAT2	For optional battery kit
BIOS_SKT1	BIOS SPI ROM
BMC_DEBUG1	For RD debugging
BMC_UART1	BMC debug message
BMC_VGA1	BMC VGA connector
BMC_SPI1	BMC image ROM
COM1, COM2	Serial port: RS-232
CPUFAN0	CPU FAN connector
DIMMA0, DIMMA1, DIMMB0, DIMMB1	DDR4 288-pin slot
DVI1	DVI connector
EX_THR1	For external thermistor cable kit
FPAUD1	Front panel audio header
GPIO1	8-bit GPIO header
HDMI1_VGA1	HDMI + VGA connector
JFP1	Power Switch/ Power Reset/ LANLED1/LANLED2/ HDD LED/Power LED Power LED Behavior: • Suspend: Fast flash (ATX/AT) • System On: ON (ATX/AT) • System Off: OFF (ATX/AT)
KBMS1	External keyboard and mouse connector (6 pin)
LAN1_USB1_2, LAN2_USB3_4	LAN1/USB 3.2 Gen2 port 1, 2 stack connector LAN2/USB 3.2 Gen2 port 3, 4 stack connector
LAN3_LAN4	LAN3 & LAN4 connector
LPC1, LPC2	Low pin count connector for Advantech TPM and RS232/422/485 module
LPT1	Parallel port
M2_2280_1	M.2 2280/2242 (PCIe/SATA)

Jumpers and Connectors (Cont.)

Connector list	
PCI_SLOT1, PCI_SLOT2	PCI slot
PCIEX1_SLOT5	PCIe x1 slot (Gen3 x1 link)
PCIEX4_SLOT3, PCIEX4_SLOT7	PCIe x4 slot (Gen3 x4 link)
PCIEX8_SLOT4, PCIEX16_SLOT6	PCIe x8 & x16 slots (one Gen3 x16 link for slot 6 or two Gen3 x8 link for slot 4 and 6)
PMBUS1	PMBUS connector to communicate with power supply
SATA0~4	SATA III (6 Gb/s)
SMBUS1	SMBus from PCH
SYS_LED1	System information LED connector
SYSFAN0, SYSFAN1, SYSFAN2, SYSFAN3	System FAN connector
SPI_CN1	SPI flash card pin header
SPDIF_OUT1	SPDIF audio output pin header
USB5_6	USB 3.2 Gen1 port (Header)
USB7_8, USB9_10, USB11_12	USB 2.0 port (Header)
USB13	USB 2.0 port (USB Type A)

Jumper list	
Label	Function
HDMI_I2C1	For RD debugging
JCMOS1	CMOS clear
JME1	Intel ME Disable jumper for ME/BIOS update
JWDT1	Watchdog reset
JUSB_1	Rear window USB 3.2 Gen2 port power source switch between +5 V _{SB} and +5 V
JUSB_2	On board USB2.0/3.2 Gen1 port power source switch between +5 V _{SB} and +5 V
JCASE1	Case open
JPEG1, JPEG2	x16 or x8x8 or x8x4x4 for slot-6
JPEG3	Default (1-2)/reserve for RD debug (2-3)
JPRSNT1	PCIe card present pin support for PCIe8_SLOT4 Auto detect (1-2)/Manual detect (2-3)

Declaration of Conformity

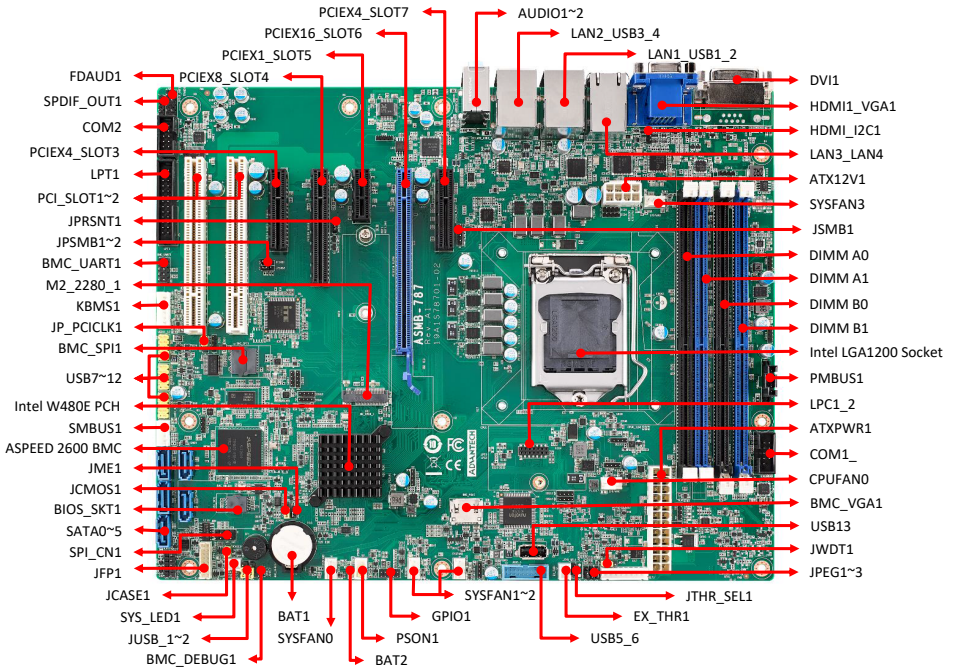
Caution! The computer is supplied with a battery-powered realtime clock circuit. There is a danger of explosion if battery is incorrectly replaced. Replace only with same or equivalent type recommended by the manufacturer. Discard used batteries according to manufacturer's instructions.



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



Board Layout: Jumper and Connector Locations

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