

ASMB-789 LGA 1851 Intel® Core™ Ultra 9/7/5 Processor ATX Server Board with 4 x DDR5, 6 x PCIe, 8 x USB 3.2, 4 x SATA3, 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 x Startup manual
- 2 x Serial ATA HDD data cables
- 2 x Serial ATA HDD power cables
- 1 x I/O port bracket
- 1 x Warranty card
- 1 x Screw for M.2 device

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)

Standard Functions

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-789 at:

<https://advt.ch/asmb789>



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-789 series Rev. A1.

Part No. 2042078900
Printed in China

1st Edition
October 2025

Specifications

- **CPU:** LGA 1851 Intel® Core™ Ultra 9/7/5 Processors
 - **BIOS:** AMI 256 Mb SPI BIOS
 - **Chipset:** Intel W880
 - **System memory:** Dual Channel DDR5 ECC/Non-ECC 5600/4800/4000 MHz unbuffered DIMM, Max. 192 GB
- Note:** Due to the inherent limitations of PC architecture, the system may not fully detect 192 GB RAM when 192 GB RAM is installed.
- **SATA3 interface:** 4 x SATA3 6Gb/s ports to support Intel Rapid Storage Technology with software RAID 0, 1, 10, & 5 (for Windows only)
 - **Serial ports:** Six serial ports onboard, only support RS-232 (1 x inserted in rear I/O)
 - **Watchdog timer:** 255 level timer intervals (sec/min)
 - **USB 3.2:** Supports up to 8 x USB 3.2 ports, 4 x Gen2 ports in rear I/O, 2 x Gen1 ports from on-board pin header, and 1 x Gen1 port from on-board Type-A connector and add 1 x Gen 2 x 2 link from on-board Type-E connector.
 - **USB 2.0:** Supports up to 5 x USB 2.0 ports (1 x 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 1920x1200 resolution @60 Hz refresh rate
 - Supports DP with DSC to 8K60 Hz 36bpp
 - Supports HDMI 2.1 TMDS up to 2K/4K resolution @60 Hz refresh rate

Ethernet Interface

- **Interface:** 10/100/1000/2500 Mbps
- **Controller:** GbE LAN1: Intel® I219; GbE LAN2: Intel® I210-AT; GbE LAN 3~4: Intel® I226; (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 in)
- **Power supply voltage:** +3.3 V, +5 V, ±12 V, 5 VSB
- **Power consumption:** Max. load: +3.3 V @ 2.05 A, +5 V @ 1.69 A, +12 V @ 0.36 A, +12 V (8P) @ 13 A, +5 VSB @ 0.10 A
- **Operating temperature:** 0 ~ 60°C; 32 ~ 140°F (depends on CPU speed and cooler solution)
- **Weight:** 0.5 kg; 1.1 lb (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
BH1	For RTC battery
BH2	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, COM3_4, COM5_6	Serial port: RS-232
CPUFAN0	CPU FAN connector
C0_DIMM_B1, C0_DIMM_B2, C0_DIMM_A1, C0_DIMM_A2	DDR5 288-pin slot
COM1_VGA1	COM + VGA connector
ESPI1	For RD debugging
EX_THR1	For external thermistor cable kit
FPAUD1	Front panel audio header
GPIO1	8-bit GPIO header
DP1_HDMI1	DP + HDMI connector
JCASE1	Case open
JFP2	Power Switch/Power Reset/Power LED/LAN1LED/LAN2LED/HDD LED Power LED Behavior: Suspend: Fast flash (ATX/AT) System On: ON (ATX/AT) System Off: OFF (ATX/AT)
JFP1	Power Switch/Power Reset/Power LED/HDD LED
LAN1_USB3C1, LAN2_USB3C2	LAN1/USB 3.2 Gen2 port 1, 2 stack connector LAN2/USB 3.2 Gen2 port 3, 4 stack connector
LAN3_4	LAN3 & LAN4 connector
M2_2280_2	M.2 2280 (PCIe x2 link)

Jumpers and Connectors (Cont.)

Connector list	
PCIEX4_SLOT2, PCIEX4_SLOT3, PCIEX4_SLOT5, PCIEX4_SLOT6	PCIe x4 slot (Gen4 x4 link)
PCIEX8_SLOT4	PCIe x8 slot (Gen5 x8 link)
PCIEX16_SLOT7	PCIe x16 slot (Gen5 x16 link)
PMBUS1	PMBUS connector to communicate with power supply
SATA0~3	SATA III (6 Gb/s)
SGPIO1	SATA SGPIO header
SKY_SB1	SMBus connector (support SKY BP)
SMBUS1	SMBus connector
SPDIF_OUT1	SPDIF audio output pin header
SPI_CN1	SPI flash card pin header
SPI_TPM1	SPI connector for Advantech TPM 2.0 module (P/N: PCA-TPMSPI-00A1)
SYS_LED1	System information LED connector
SYSFAN0, SYSFAN1, SYSFAN2, SYSFAN3	System FAN connector
USB2A1	USB 2.0 port (Type A)
USB2H1, USB2H2,	USB 2.0 port (Header)
USB3A1	USB 3.2 Gen1 port (Type A)
USB3H1	USB 3.2 Gen1 port (Header)
USB3E1	USB 3.2 Gen2x2 port (Type E)

Jumper list	
Label	Function
JCMOS1	CMOS clear
JFV1	VGA is forced on
JME1	Intel ME Disable jumper for ME/BIOS update
JME2	Clear CMOS data/Enable ME update
JWDT1	Watchdog reset
JUSB_1	Rear window USB 3.2 Gen2 port power source switch between +5 VSB and +5 V
JUSB_2	On board USB 2.0/3.2 Gen1 port power source switch between +5 V _{SB} and +5 V
JSMB1	For RD debugging

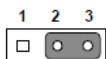
Jumpers and Connectors (Cont.)

Jumper list

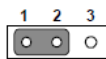
JTHR_SEL1	To select on board or external thermistor
PSON1	AT (1-2)/ATX (2-3)

PCIEX8_Slot4 Configuration (JPRSNT1)

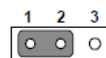
Closed pins	Result
1-2	Auto detect
2-3	Manual detect



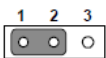
1-2 closed



2-3 closed



2-3 closed



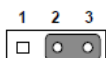
2-3 closed

JCMOS1/JME1/JME2**: CMOS clear/ME update function

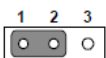
Closed pins	Result
1-2	Keep CMOS data/Disable ME update
2-3	Clear CMOS data/Enable ME update

*:Default

**.:JME2: Need to adjust JME1 jumper at the same time



Keep CMOS data/
Disable ME update

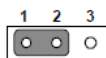


Clear CMOS data/
Enable ME update

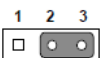
JWD1: Watchdog timer output option

Closed pins	Result
1-2	System reset*
2-3	Disable

*:Default



System Reset 1-2 Closed

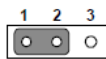


Disabled 2-3 Closed

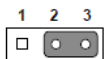
Jumpers and Connectors (Cont.)

PSON1:ATX, AT mode selector

Closed pins	Result
1-2	AT Mode
2-3	ATX Mode*
*:Default	



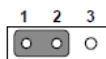
AT Mode 1-2 closed



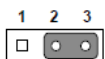
ATX Mode 2-3 closed

USB Power switch (JUSB_1, JUSB_2)

Function	Jumper Setting
1-2	+5 VSB*
2-3	+5 V main power
*:Default setting	



1-2 closed

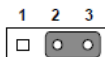


2-3 closed

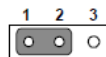
JPMB1 Jumper

Function	Jumper Setting
1-2	Enable PMBus
2-3	Disable PMBus

*Default setting



1-2 Enable

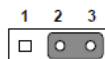


2-3 Disable

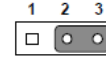
USB Power switch (JUsB 1,JUsB 2)

Function	Jumper Setting
1-2	Onboard thermistor*
2-3	External thermistor

*Default setting



Onboard 1-2 pin



External 2-3 pin

Installation Note

2.54 mm JFP1 connector on board				
Description	Pin Number		Description	
PWR BTN	2	▼1	HDD_LED+	
GND	4	3	HDD_LED-	
RST BTN	6	5	PWR_LED+	
GND	8	7	GND	
		9	GND	

Installation Note (Cont.)

2.0 mm JFP1 connector on board				
Description	Pin Number		Description	
RST BTN	2	▼1	PWR BTN	
RST GND	4	3	PWR GND	
LAN1_LED+	5	6	LAN2_LED+	
LAN1_LED-	8	7	LAN2_LED-	
CRPS Detect (Reserved)	10	9	SYS_LED+ (Reserved)	
GND	12	11	SYS_LED- (Reserved)	
PWR_LED+	14	13	HDD_LED+	
PWR_LED-	16	15	HDD_LED-	

Declaration of Conformity

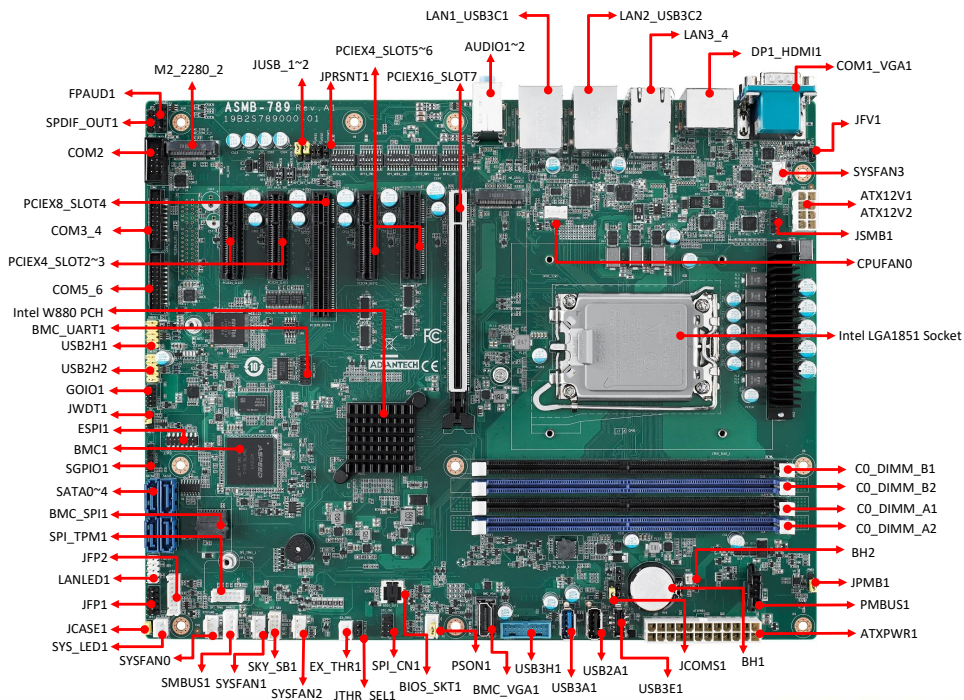
Caution! The computer is supplied with a battery-powered realtime clock circuit. There is a danger of explosion if battery is incorrectly replaced. Replace only with same or equivalent type recommended by the manufacturer. Discard used batteries according to manufacturer's instructions.



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