

LGA 1851 Intel® Core™ Ultra 9/7/5 Processor MicroATX Server Board with 4 x DDR5, 4 x PCIe, 8 x USB 3.2, 5 x SATA 3, Quad/Dual LAN, & 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 rear panel)
- 1 × I/O port bracket
- 1 × Warranty card
- 1 × Screw for M.2 devices

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:

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For technical support and service, please visit our support website for ASMB-589 at:

<https://advt.ch/asmb589>



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-589 series Rev. A1.

Part No. 2042058900
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1st Edition
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Specifications

Standard Functions

- **CPU:** LGA 1851 Intel® Core™ Ultra 9/7/5 Processor
- **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:** 5 x SATA 3 6Gb/s ports to support Intel Rapid Storage Technology with software RAID 0, 1, 10, & 5 (for Windows only)
- **Serial ports:** Four serial ports onboard, only support RS-232
- **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 and 2 x Gen1 ports from on-board pin header and 1 x Gen1 port from on-board Type-A connector and 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 1920 x 1200 resolution @60Hz refresh rate
 - Supports DP with DSC to 8K60 Hz 30bpp
 - Supports HDMI 2.1 TMDS up to 2K/4K resolution @60Hz 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 244 mm (9.6 x 9.6 in)
- **Power supply voltage:** +3.3V, +5V, ±12V, 5V_{SB}
- **Power consumption:** Max. load: +3.3V @ 1.6A, +5V @ 2.24A, +12V @ 0.36A, +12V (8P) @ 11.51A, +5V_{SB} @ 0.63A
- **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
BAT1	For RTC battery
BAT2	For optional battery kits
BIOS_SKT1	BIOS SPI ROM
BMC2	BMC connector to support Advantech IPMI module (P/N: IPMI-2000E-00A1)
COM1_2, COM3_4	Serial port: RS-232
CPUFAN0	CPU FAN connector
C0_DIMM_B1, C0_DIMM_B2 C0_DIMM_A1, C0_DIMM_A2	DDR5 UDIMM 288-pin slot
DP1_2	DP connector
ESPI1	For RD debugging
EX_THR1	For external thermistor cable kit
FPAUD1	Front panel audio header
GPIO1	8-bit GPIO header
HDMI1_VGA1	HDMI + VGA connector
JCASE1	Case open
JFP1	Front panel HDD LED
JFP2	To support 1U chassis (cable P/N: 1700031926-11) Power Switch/Power Reset/ Power LED/LAN1LED/LAN- 2LED/HDD 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_USB3C1, LAN2_USB3C2	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

Jumpers and Connectors (Cont.)

LANLED1	LAN LED extension connector
M2_2280_1	M.2 2280 (PCIe)
PCIEX4_SLOT4 PCIEX4_SLOT5	PCIe x4 slot (Gen4 x4 link)
PCIEX16_SLOT6	PCIe x16 slot (Gen5 x16 link)
PCIEX4_SLOT7	PCIe x4 slot (Gen5 x4 link)
PMBUS1	PMBUS connector to communicate with power supply
SATA0~4	SATA III (6 Gb/s)
SGPIO1	SATA SGPIO header
SKY_SB1	SMBus connector (support SKY BP)
SPDIF_OUT1	SPDIF audio output pin header
SPI_CN1	SPI flash card pin header
SPI_TPM1	SPI connector to support Advantech TPM 2.0 module (P/N: PCA-TPMSPI- 00A1)
SYSFAN0,SYSFAN1, SYSFAN2,SYSFAN3	System FAN connector
SYS_LED1	System information LED connector
USB2A1	USB 2.0 port (Type A)
USB2H1, USB2H2	USB 2.0 port (header)
USB3H1	USB 3.2 Gen1 port (header)
USB3A1	USB 3.2 Gen1 port (Type-A)
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
JPEG1 JPEG2	x16 or x8x8 or x8 x4 x4 for PCIEX16_Slot6
JPSMB1, JPSMB2	PCIE SLOT SMBUS connector: to PCH (1-2)/to BMC (2-3)
JSMB1	For RD debugging
JTHR_SEL1	Selects on board or external thermistor
JUSB_1	Rear window USB 3.2 Gen2 port power source switch between +5 V _{SB} and +5 V

Jumpers and Connectors (Cont.)

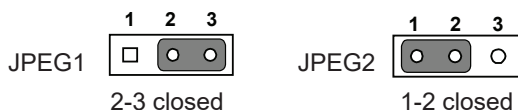
JUSB_2	On board USB 2.0/3.2 Gen1 port power source switch between +5 V _{SB} and +5 V
JWDT1	Watchdog reset
PSON1	AT(1-2)/ATX(2-3)

PCIEX16_Slot6 Configuration (JPEG1+JPEG2)

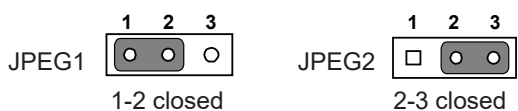
Jumper	Closed pins	Result
JPEG1	2-3	Slot6 PCIe x16*
JPEG2	2-3	
JPEG1	2-3	Slot6 PCIe x8/x8
JPEG2	1-2	
JPEG1	1-2	Slot6 PCIe x8/x4/x4
JPEG2	1-2	
	*: Default	



Slot6 PCIe x16*



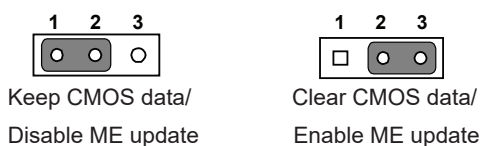
Slot6 PCIe x8/x8



Slot6 PCIe x8/x4/x4

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	



Jumpers and Connectors (Cont.)

JWDT1: Watchdog Timer Output Option

Closed Pins	Result
1-2	System reset*
2-3	Disabled
*: Default	



PSON1: ATX, AT Mode Selector

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



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:

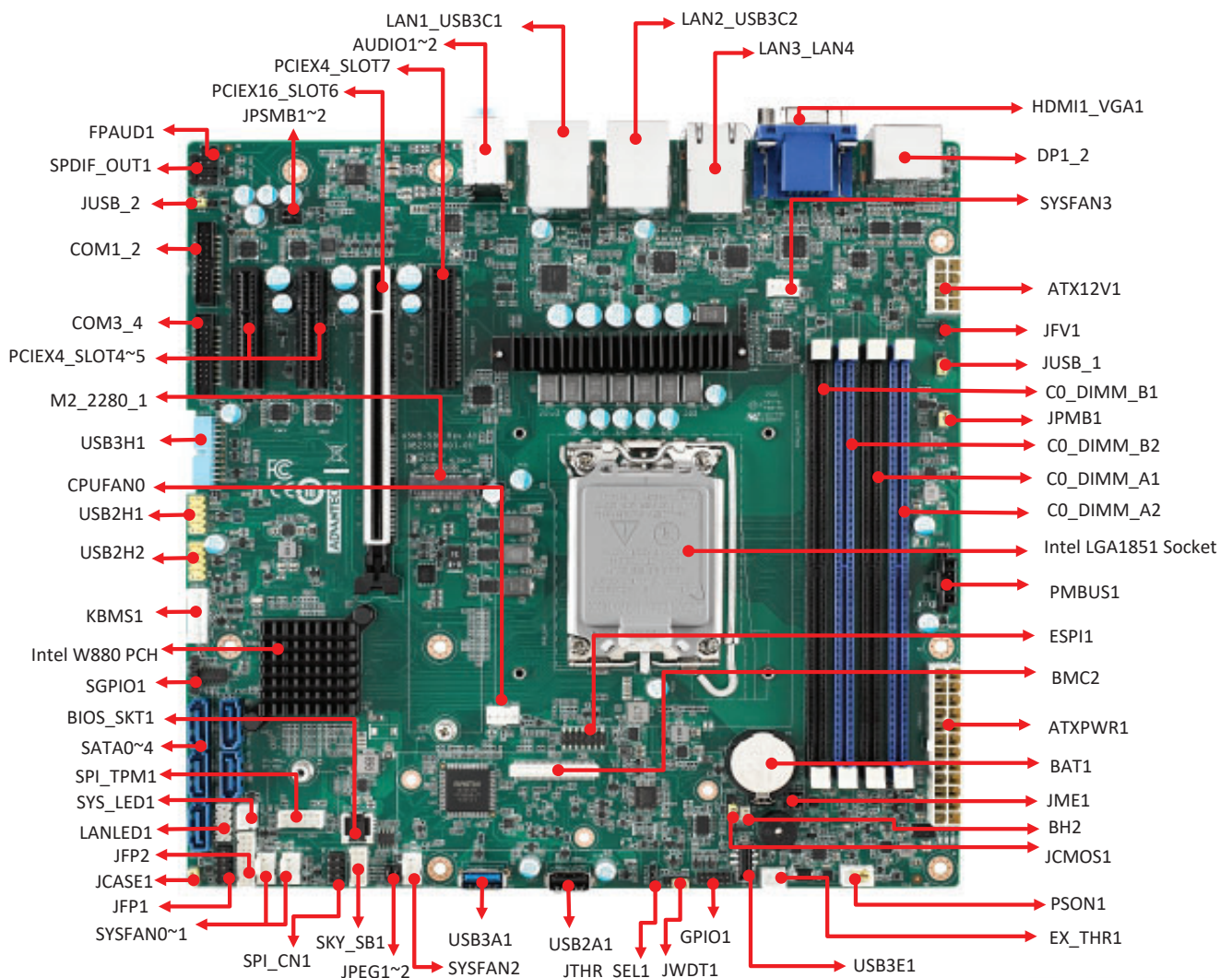
1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

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

2.0 mm JFP2 connector on board				
Description		Pin Number		Description
RST BTN	2	▼ 1		PWR BTN
RST GND	4	3		PWR GND
LAN1_LED+	6	5		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-

Board Layout



Board Layout: Jumper and Connector Locations