

ASMB-816 Series LGA 4189 Intel 3rd Generation Xeon® Scalable ATX Server Board with 8 DDR4, 3 PCIe x16, 8 SATA3, 6 USB3.0, Dual 10GbE, IPMI Startup Manual

Packing List

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

- 1 x ASMB-816 Startup Manual
- 2 x SATA data cables
- 2 x SATA power cables
- 2 x CPU power cables (8P)
- 1 x CPU carrier
- 1 x Front panel convert cable
- 1 x I/O port bracket
- 1 x M.2 screw

If any of these items are missing or damaged, please contact your distributor or sales representative immediately.

Note 1: Acrobat Reader is required to view any PDF file. Acrobat Reader can be downloaded at:
<https://www.adobe.com/downloads.html>
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This manual is for the ASMB-816 series Rev. A1

Part No. 2041081600
Printed in China

1st Edition
November 2020

Specifications

Standard M/B Functions

- **CPU:** LGA4189 Intel 3rd Generation Xeon® Scalable processors
- **BIOS:** AMI 256 Mbit SPI BIOS
- **Chipset:** Intel® C621A PCH
- **System Memory:** 8* DDR4-2666/2933/3200 Registered ECC DIMM, Max. Capacity 512 GB
- **Note 2:** Due to the inherent limitations of older PC architectures, the system may not fully detect 512 GB RAM when 512 GB RAM is installed.
- **SATA Interface:** 8 x SATA3 6Gb/s ports Intel Rapid Storage (for Windows only) (SATA0-SATA7 supports software RAID 0, 1, 10 & 5)
- **Serial Ports:** One onboard header, only supports RS-232
- **Keyboard/Mouse Header (KBMS2):** Supports the standard PS/2 keyboard and mouse via PS/2 cable.
- **Watchdog Timer:** 255 level timer intervals
- **USB Port:** Supports up to 6 x USB 3.0 ports (2 ports from onboard 20-pin header) and 7 x USB 2.0 ports (1*Type-A, 4 ports from onboard 10-pin header)

VGA Interface

- **Chipset:** ASPEED AST2500/2510
- **Display Memory:** 64 MB
- **Resolution:** Supports VGA up to resolution 1920 x 1200 @ 60 Hz refresh rate

Ethernet Interface

- **Interface:** 10/100/1000 Mbps & 10 GbE Base-T
- **Controller:** LAN1/2: Intel I210; LAN3/4: Intel X550

Mechanical and Environment

- **Dimensions (L x W):** 244 x 304 mm (9.6" x 12")
- **Power Supply Voltage:** +3.3 V, +5 V, ±12 V, +5 Vs
- **Power Consumption (mainboard only, excluding IO device):** Max. load: +3.3 V @ 13.9754 A, +5 V @ 4.565 A, +12 V @ 9.406 A, +5 Vsb @ 0.224 A, -12 V @ 0.082 A, 12V_8P @ 25.14 A
- **Operating Temperature:** 0 ~ 60 °C (depending on CPU)
- **Weight:** 1.05 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 of the jumpers and connectors.

Connectors	
Label	Function
ATXPWR1	ATX 24-pin main power connector
ATX12V1, ATX12V2	Processor power connector (for CPU0)
BH2	For optional battery kit
BIOS_SKT1	BIOS SPI ROM
BMC_CN1, BMC_CN2	IPMI module header (ASMB-816 I & T2 SKUs only)
COM2	Serial port: RS-232
CPUFAN0	CPU FAN connector
DIMMA1, DIMMB1, DIMMC1, DIMMD1, DIMME1, DIMMF1, DIMMG1, DIMMH1	DDR4 slot
EX_THR1	Connector for external thermistor
GPIO1	GPIO connector
HDAUD1	Audio header
JFP1	Front panel header
KBMS2	External keyboard and mouse connector (6-pin)
LAN1, LAN2, LAN3_4	RJ-45 LAN connector
LAN5	IPMI dedicated LAN connector (ASMB-816 I & T2 SKUs only)
LPC2	TPM connector
M2_22110	M.2 connector (SATA & PCIe x4)
PMBUS1	PMBUS connector to communicate with power supply
SATA0~SATA7	SATA connector 0~7
SGPIO1	SATA SGPIO header
PCIEX4_SLOT1	PCIe x4 slot (x4 link) (PCH)
PCIEX16_SLOT2	PCIe x16 slot (x16 link) (CPU)
PCIEX4_SLOT3	PCIe x8 slot (x4 link) (CPU)
PCIEX16_SLOT4	PCIe x16 slot (x16 link) (CPU)
PCIEX1_SLOT5	PCIe x1 slot (x1 link) (PCH)
PCIEX16_SLOT6	PCIe x16 slot (x16 link) (CPU)
PCIEX8_SLOT7	PCIe x8 slot (x8 link) (CPU)
PEHP1	NVMe RAID LED control

Jumpers and Connectors (Cont.)

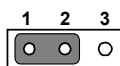
SLOT12V1	For PCIe slot 12V input only
SMBUS1	SMBus header
SPI_CN1	Connector for BIOS update tool
SPI_SKT1	EC EEPROM
SYSFAN0~SYSFAN4	System FAN connector
USB1_2, USB9_10, USB13_14	USB 2.0 port 1, 2; USB 2.0 port 9, 10, 13, 14 (9-pin header)
USB11	USB 2.0 port 11 (Type-A)
USB3_12, USB3_34, USB3_56	USB 3.0 port 1, 2, 3, 4; USB 3.0 port 5, 6 (20-pin header)
VGA1_COM1	VGA + COM connector
VOLT1	Voltage display
VROC1	Intel Virtual RAID (VROC) key

Jumper list

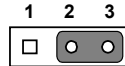
Label	Function
JCASE1	Chassis case open alarm
JCMOS1	CMOS clear
JME1	ME update
JTHR_SEL1	To select on board or external thermistor
JWDT1	Watch Dog Reset
PSON1	AT(1-2) / ATX(2-3)

JCMOS1/JME1: 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	



Keep CMOS data/Disable ME update



Clear CMOS data/Enable ME update

Declaration of Conformity

The 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

2.0 mm JFP connector on board

Description	Pin Number		Description
RST BTN	2	▼ 1	PWD BTN
PWD GND	4	3	PWD GND
LAN1_LED+	6	5	LAN2_LED+
LAN1_LED-	8	7	LAN2_LED-
X	10	9	SYS_LED+
GND	12	11	SYS_LED-
PWR LED+	14	13	HDD_LED+
PWR LED-	16	15	HDD_LED-

2.0 mm JFP connector to 2.54 mm Pitch Header

Description	Pin Number		Description
(Red) PWD BTN	▼ 1	2	RST BTN (White)
(Black) PWD GND	3	4	PWD GND (Black)
(Blue) LAN1_LED+	5	6	LAN2_LED+(Brown)
(Red) LAN1_LED-	7	8	LAN2_LED-(Black)
		Key	
(Orang) HDD_LED+	13	14	PWR LED+ (Red)
(Black) HDD_LED-	15		
	Key	16	PWR LED- (Black)

Board Layout

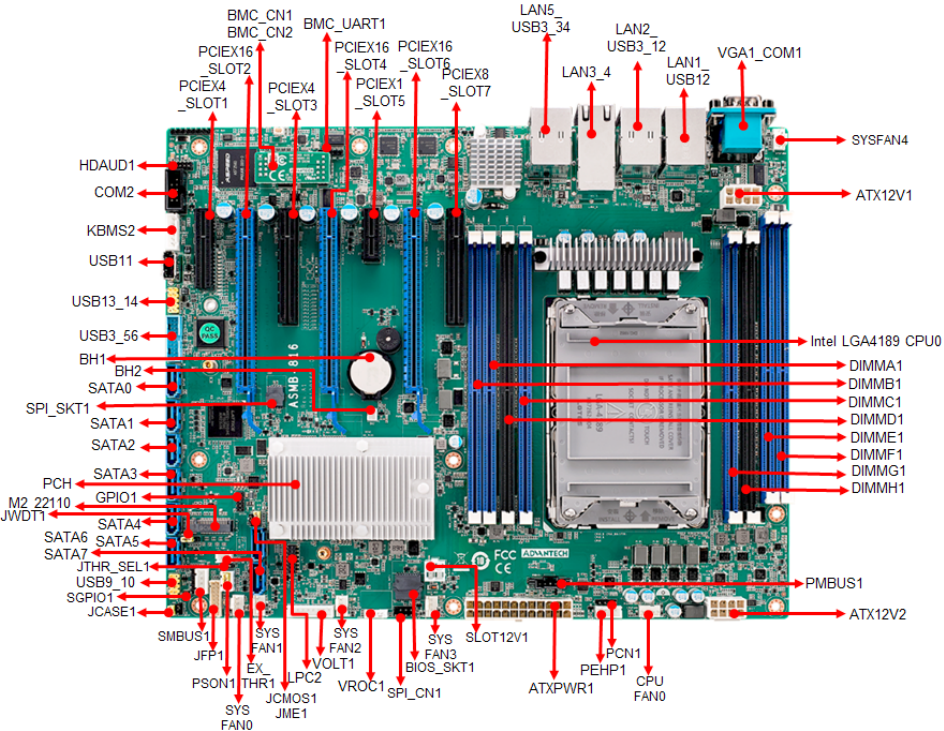


Figure 1: Board Layout: Jumper and Connector Locations