ASMB-816

LGA 4189 Intel® 3rd Gen Xeon® Scalable ATX Server Board with 8x DDR4, 3x PCIe x16, 8x SATA 3, 6x USB 3.2 (Gen1), Dual 10GbE, and IPMI

vmware READY

CE FCC

Features

- LGA4189 ATX server board with 3rd Gen. Xeon® Scalable processor
- DDR4 3200 MHz RDIMM up to 512 GB (8 DIMMs) supports Intel® Optane™ Persistent Memory
- Features 3x PCIe x16, 1x PCIe x8, 2x PCIe x4, and 1x PCIe x1
- Intel® X550 dual 10GbE ports
- Eight SATA 3 and one M.2 connectors (SATA/PCIe compatible)
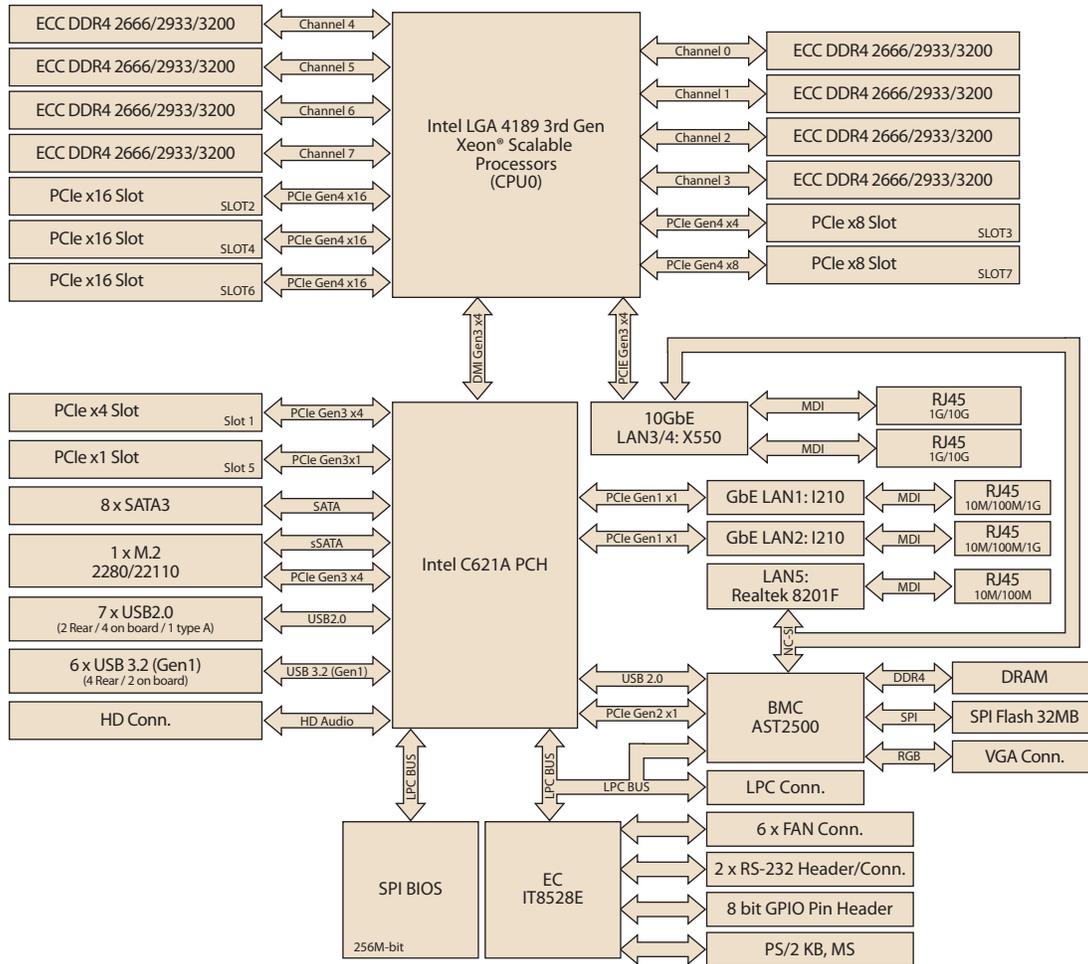- 0 ~ 60 °C/ 32 ~ 140 °F ambient operating temperature range

Specifications

Form Factor		ATX form factor
Processor System	Socket	Intel LGA4189 (Socket P+)
	CPU type	Intel 3rd Generation Xeon Scalable processors (Support Socket P4) (CPU cooler should be purchased separately*)
Core Logic	Chipset	Intel C621A chipset
Memory	Total slots	8x (1 DIMM per channel)
	Capacity	Maximum 512GB ECC RDIMM/ 1TB ECC LRDIMM
	Memory type	DDR4 ECC-REG 2666/2933/3200 MHz RDIMM/LRDIMM, supports Intel® Optane™ Persistent Memory**
	Memory size	8 GB, 16 GB, 32 GB, 64 GB (RDIMM). 128 GB (LRDIMM)
Expansion Slots	Total PCI/PCI-X/PCIe slots	7
	Slot location 1	PCIe x4 slot (x4 link), signal from PCH
	Slot location 2	PCIe x16 slot (x16 link), signal from CPU
	Slot location 3	PCIe x8 slot (x4 link), signal from CPU
	Slot location 4	PCIe x16 slot (x16 link), signal from CPU
	Slot location 5	PCIe x1 slot (x1 link), signal from PCH
	Slot location 6	PCIe x16 slot (x16 link), signal from CPU
	Slot location 7	PCIe x8 slot (x8 link), signal from CPU
Graphics	VGA	Aspeed AST 2500/2510
Storage	SATA controller	Intel® C621A: 8 x SATA3.0 (6 Gb/s) support software RAID 0,1,5,10
Networking	GbE/10GbE LAN	2 x Intel® I210AT / Intel® X550-AT2 (dual 10GbE ports)
Onboard I/O Connector	PSU connector	24-pin SSI power connector + 2 x 8-pin SSI 12 V power connector + 4-pin SSI 12 V power connector
	USB connector	4 x USB 2.0 ports (two onboard headers) + 2 x USB 3.2 Gen1 ports (one onboard header) + 1 x Type-A USB 2.0 port
	Fan header	6 x 4-pin (5 for system + 1 for CPU)
	M.2	1 x M.2 2280/22110 B+M key (SATA and PCIe)
	SMBus	1
	Chassis intrusion	1
	Front LAN LED	1
	Audio Header	1
	PS/2 KB/Mouse	1
	Serial port header	1
Rear I/O Connector	External serial port	1
	External USB port	4 USB 3.2 Gen1 + 2 USB 2.0
	VGA port	1
	RJ-45	5 (1 port dedicated for BMC)
Management Solution	Software	Advantech remote monitoring utility
	Out of band remote management	Yes
Monitoring	CPU temperature	Yes
	System Monitoring	Yes
Watchdog Timer	Output	System reset
	Interval	Programmable 1 ~ 255 sec/min

		3.3V	5V	12V	5Vsb	-12V	12V_8P
Power Requirement	Power On						
	(220W CPU@2.6GHz DDR4 2400 8G*8)	2.1A	2.7A	0.2A	0.2A	0.1A	25.1A

		Operating	Non-operating
Environment	Temperature	0 ~ 60 °C/32 ~ 140 °F, depends on CPU speed and cooling solution	-40 ~ 85 °C/-40 ~ 185 °F
	Humidity	10% ~ 95%	10% ~ 95% (Non condensing)
Physical Characteristics	Dimension (L x H)	304 x 244 mm (12 x 9.6 in)	

*CPU power design support up to 270W TDP. Please consider extended air thermal solution while using CPU > 205W TDP.
**Memory frequency depends on the memory speed supported by the CPU.

ADVANTECH | **Server Boards**

Block Diagram

ECC DDR4 2666/2933/3200 — Channel 4
ECC DDR4 2666/2933/3200 — Channel 5
ECC DDR4 2666/2933/3200 — Channel 6
ECC DDR4 2666/2933/3200 — Channel 7
PCIe x16 Slot — SLOT2 — PCIe Gen4 x16
PCIe x16 Slot — SLOT4 — PCIe Gen4 x16
PCIe x16 Slot — SLOT6 — PCIe Gen4 x16

Intel LGA 4189 3rd Gen Xeon® Scalable Processors (CPU0)

Channel 0 — ECC DDR4 2666/2933/3200
Channel 1 — ECC DDR4 2666/2933/3200
Channel 2 — ECC DDR4 2666/2933/3200
Channel 3 — ECC DDR4 2666/2933/3200
PCIe Gen4 x4 — PCIe x8 Slot — SLOT3
PCIe Gen4 x8 — PCIe x8 Slot — SLOT7

DMI Gen3 x4
PCIe Gen3 x4

PCIe x4 Slot — Slot 1 — PCIe Gen3 x4
PCIe x1 Slot — Slot 5 — PCIe Gen3x1
8 x SATA3 — SATA
1 x M.2 2280/22110 — sSATA / PCIe Gen3 x4
7 x USB2.0 (2 Rear / 4 on board / 1 type A) — USB2.0
6 x USB 3.2 (Gen1) (4 Rear / 2 on board) — USB 3.2 (Gen1)
HD Conn. — HD Audio

Intel C621A PCH

10GbE LAN3/4: X550 — MDI — RJ45 1G/10G
— MDI — RJ45 1G/10G
PCIe Gen1 x1 — GbE LAN1: I210 — MDI — RJ45 10M/100M/1G
PCIe Gen1 x1 — GbE LAN2: I210 — MDI — RJ45 10M/100M/1G
LAN5: Realtek 8201F — MDI — RJ45 10M/100M
NC-SI

USB 2.0
PCIe Gen2 x1 — BMC AST2500 — DDR4 — DRAM
— SPI — SPI Flash 32MB
— RGB — VGA Conn.

LPC BUS — LPC Conn.
6 x FAN Conn.
2 x RS-232 Header/Conn.
8 bit GPIO Pin Header
PS/2 KB, MS

SPI BIOS 256M-bit
EC IT8528E

Ordering Information

Part Number	Chipset	Memory	GbE/10GbE LAN	IPMI	Graphics
ASMB-816T2-00A1	C621A	DDR4 RDIMM	2/2	Yes	AST2500
ASMB-816T2-00A1U	C621A	DDR4 RDIMM	2/2	Yes	AST2500
ASMB-816I-00A1	C621A	DDR4 RDIMM	2/-	Yes	AST2500
ASMB-816-00A1	C621A	DDR4 RDIMM	2/-	-	AST2510

Packing List

Part Number	Description	Quantity
2041081600	Startup manual	x 1
1700003194	SATA data cables	x 2
1700022749-11	SATA power cables	x 2
1700019748	CPU power cable	x 2
1930008364	Screw for M.2 device	x 1
1960076488T001	I/O shield	x 1
1651003476-01	LGA4189 CPU carrier	x 1
1700031684-01	Front panel convert cable	x 1

Optional Accessories

Part Number	Description
PCA-AUDIO-HDB1E	HD Audio-card
PCA-TPM-00B1E	TPM 2.0 Module by LPC
1970004565N001	LGA-4189 narrow CPU heatsink for 1U chassis (105W)
1970004902T010	LGA-4189 narrow CPU cooler for 2U/4U chassis (205W)
1700002204	Dual port USB 2.0 cable (27 cm / 10.6 in) with bracket
1700008461	Four port USB 2.0 cable (30.5 cm / 12 in) with bracket
1700028292-01	Dual port USB 3.2 (Gen1) cable (30 cm/ 11.8 in) with bracket
1701090401	Single port RS-232 COM cable (40 cm / 15.7 in) with bracket
1700019268-11	Cable for onboard KBMS1 connector (35 cm / 13.7 in)
1960063434N000	Cable bracket for 1700019268-11
1960082347T001	1U chassis I/O shield

I/O View

ASMB-816T2-00A1   ASMB-816I-00A1   ASMB-816-00A1