

User Manual

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ASMB-925 Series

EATX Serverboard with Dual LGA3647-P0 Intel[®] Xeon[®] CPUs, 12 DDR4 Slots, 5 PCIe x16, 1 PCIe x8, 1 PCI, 8 SATA3.0, 6 USB 3.0, Dual 10GbE, and IPMI



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A Message to the Customer

Advantech Customer Services

Each and every Advantech product is built to the most exacting specifications to ensure reliable performance in the harsh and demanding conditions typical of industrial environments. Whether your new Advantech equipment is destined for the laboratory or the factory floor, you can be assured that your product will provide the reliability and ease of operation for which Advantech has come to be known. Your satisfaction is our primary concern. Below is a guide to Advantech's customer services. To ensure you get the full benefit of our services, follow the instructions carefully.

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We want you to get the maximum performance from your products. If you encounter technical difficulties, we are here to help. For the most frequently asked questions, you can find answers in the product documentation. These answers are normally more detailed than the ones we can provide over the phone. So please consult this manual first.

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FCC Class A

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference. In this event, users are required to correct the interference at their own expense.

Initial Inspection

Before installing the serverboard, check to make sure that the following items have been included in the shipment:

- 1 x ASMB-925 series EATX motherboard
- 1 x ASMB-925 series user manual
- 1 x Driver CD
- 2 x Serial ATA HDD data cables
- 1 x I/O port bracket
- 2 x CPU power cable (8P)
- 2 x SATA power cable
- 1 x Warranty card
- 2 x Heatsink clip for CPU

If any of the above items are missing or damaged, contact your distributor or sales representative immediately. We have carefully inspected the ASMB-925 series mechanically and electrically before shipment. It should be free of marks and scratches and in perfect working order upon receipt. When unpacking the ASMB-925 serverboard, check it for signs of shipping damage. (For example, damaged box, scratches, dents, etc.) If it is damaged or fails to meet the specifications, notify our service department or local sales representative immediately. Also notify the carrier. Retain the shipping carton and packing material for inspection by the carrier. After inspection, we will make arrangements to repair or replace the unit.

Part Number	Chipset	HDD	Expansion Slot	GbE/10GbE LAN	IPMI
ASMB-925T2-00A1	C622	8 x SATA3	5 x PCle x16, 1 x PCle x8 (Gen 3.0), 1 x PCl	2/2	Yes
ASMB-925I-00A1	C621	8 x SATA3	5 x PCle x16, 1 x PCle x8 (Gen 3.0), 1 x PCl	2/-	Yes
ASMB-925-00A1	C621	8 x SATA3	5 x PCle x16, 1 x PCle x8 (Gen 3.0), 1 x PCl	2/-	-

Ordering Information

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Overview

1.1 Introduction

Advantech's ASMB-925 series are advanced serverboards aimed at server-grade IPC applications that require high-performance computing and multiple expansion slots. These serverboards feature Intel[®] Xeon[®] Scalable processors, up to 1.5TB of DDR4 2133/2400/2666/2933 MHz memory, 5 x PCIe x16 (Gen 3), 1 x PCIe x8 (Gen 3), and 1 x PCI slot.

The ASMB-925 series serverboards are also equipped with dual Gigabit Ethernet LAN ports (via a dedicated PCIe x1 bus) that offer a bandwidth of up to 250 MB/s, eliminating network bottlenecks. LAN2 shares IPMI function, enabling remote control for ASMB-925I/ASMB-925T2 SKU.

With the inclusion of an $Intel^{\mbox{\scriptsize R}}$ C621/C622 chipset, the ASMB-925 series supports 8 x onboard SATA III interfaces, $Intel^{\mbox{\scriptsize R}}$ RSTe (Rapid Storage Technology Enterprise), and RAID 0, 1, 10, and 5 (Windows only).

The system I/O includes 5 x USB 2.0 and 6 x USB 3.0 for integrating additional peripherals and data storage modules.



1. An IPMI module is included with the ASMB-925I/ASMB-925T2 SKU.



2. Refer to the release note for the specific Linux OS for information regarding whether the Intel C621/C622 chipset supports SATA RAID function.

1.2 Features

General

- Intel[®] Xeon[®] scalable processor: Can support two Intel[®] Xeon[®] Platinum/ Gold/Silver/Bronze processors for up to 28-core processing
- High-performance I/O: Provides dual 10 Gigabit LAN (for ASMB-925T2 SKU only), dual Gigabit LAN, 5 x PCIe x16, 1 x PCIe x8, 8 x SATA connectors, 5 x USB 2.0, and 6 x USB 3.0
- Industrial-grade standard EATX form factor: Offers industrial-grade features, such as a long product lifecycle, wide operating temperature range, and a watchdog timer
- IPMI 2.0 support: The ASMB-925I/ASMB-925T2 SKU is equipped with an ASPEED 2500 BMC chip that supports IPMI 2.0 via LAN2
- KVM over IP: Enables BIOS-level remote control of the ASMB-925I/ASMB-925T2 SKU system from your computer

1.3 Specifications

Table 1.1: Specif	Ications
Processor	
	Dual Intel [®] LGA3647-P0 Xeon [®] processor sockets
CPU	Supports 1st/2nd gen. Intel [®] Xeon [®] Scalable family, up to 28 cores
	Supports up to 205 W processor TDP
System Memory	
	DDR4 memory bus
Memory Capacity	12 memory slotsUp to 1.5TB of memory
	 One DIMM per channel
Memory Type	Supports DDR4 2133/2400/2666/2933 MHz RDIMM/LRDIMM mod- ules
DIMM Sizes	Each memory slot supports 4GB, 8GB, 16GB, 32GB, 64GB and 128GB modules
Memory Voltage	1.2 V
Error Detection	 Corrects single-bit errors Detects double-bit errors (using ECC memory)
On-Board Devices	
Chipsets	Intel [®] C621/C622 PCH provides 20 x PCIe Gen3 lanes
	2 x Intel [®] I210-AT Gigabit Ethernet controllers connected to C621/C622 via a PCIe Gen1 lane
Network Controllers	Intel [®] X557-AT2 10 Gigabit Ethernet controller connected to C622 via a PCIe Gen3 lane
	 Above network supports 10GbE Base-T and 10/100/1000 Base- T, with RJ-45 output
VGA	ASPEED AST2500/2510 controller with 64MB VGA memory provides basic 2D VGA function
EC	ITE IT8528E chip provides motherboard, keyboard, mouse, RS-232, and hardware monitoring functions
BMC (925I/925T2 SKUs)	One of Intel I210 Gigabit Ethernet and one of Intel X557 10GbE con- nected to AST2500 for BMC remote management
Input/Output	·
Storage	 8 x SATA provides 6 Gb/s bandwidth RAID 0, 1, 5, 10 support (Windows only. For Linux support, refer to item 2 of the in Section 1.1).
LAN	4 x RJ-45 LAN ports (2 x 10GbE + 2 x GbE LAN)
USB	 4 x USB 3.0 ports at rear window 2 x USB 2.0 internal headers (4 ports) 1 x USB 3.0 internal header (2 ports) 1 x internal USB 2.0 (Type-A) port
VGA	1 x VGA port
Keyboard/Mouse	1 x PS/2 keyboard and mouse internal header (on board)
Serial Port/Header	 1 x internal header (2 x 5P, 2.54 mm, pitch) 1 x external RS-232 port at rear window

Table 1.1: Specif	ications		
Power Connector			
System Power	1 x 24-pin SSI EPS 12 V power connector (input 12V, 5V, 3.3V, 5V standby)		
CPU Power	2 x 8-pin SSI EPS 12V power connector for CPU and memory power (12V)		
PCIe Slot Power	1 x 8-pin 12V power connector for PCIe, 12 V input		
Expansion Slots			
PCI-Express	 5 x PCI-e x16 (Gen3 x16 link) PCIEX16_SLOT2 (from CPU 1) PCIEX16_SLOT3 (from CPU 1) PCIEX16_SLOT4 (from CPU 0) PCIEX16_SLOT5 (from CPU 1) PCIEX16_SLOT6 (from CPU0) 1 x PCI-e x8 (Gen3 x8 link) PCIEX8_SLOT7 (from CPU 0) 		
PCI	 1 x PCI PCI_SLOT1 (from IT8896 and PCH) 		
System BIOS			
BIOS Type	128 Mb SPI Flash EEPROM with AMI BIOS		
PC Health Monitorin	Ig		
Voltage	Monitors for CPU cores, +3.3 V, +5 V, +12 V, +5 V Standby, VBAT		
Fan	 2 x 4-pin heads for CPU cooler, 5 x 4-pin headers for system fan All fans feature tachometer status monitoring Thermal control for all fan connectors 		
Temperature	Monitoring for CPU (PECI)Monitoring for system external thermal sensor		
Other Features (Case Open)	Chassis intrusion detectionChassis intrusion header		
Operating Environm	nent/Compliance		
RoHS	RoHS-compliant 6/6 Pb free		
Environmental	 Operating temperature: 0 ~ 40° C/32 ~ 104° F Storage temperature: -40 to 85° C/-40 ~ 185 ° F Operating Relative Humidity: 10% to 90% (non-condensing) Storage Relative Humidity: 10% to 95% (non-condensing) 		

1.4 Board Layout, Jumpers, and Connectors

Connectors on the ASMB-925 Series are linked to external devices such as hard disk drives. ASMB-925 serverboards also feature a number of jumpers that are used to configure the system for specific applications. The functions of each jumper and connector are listed in the tables below.

Instructions for setting jumpers are provided in later sections of this chapter. Chapter 2 provides instructions for connecting external devices to ASMB-925 serverboards.

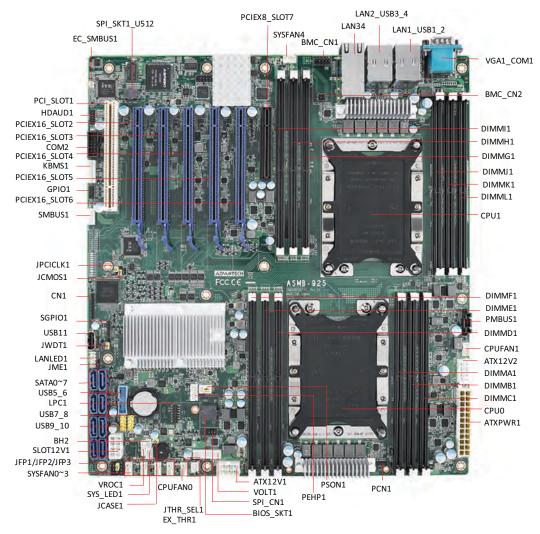


Figure 1.1 Board Layout

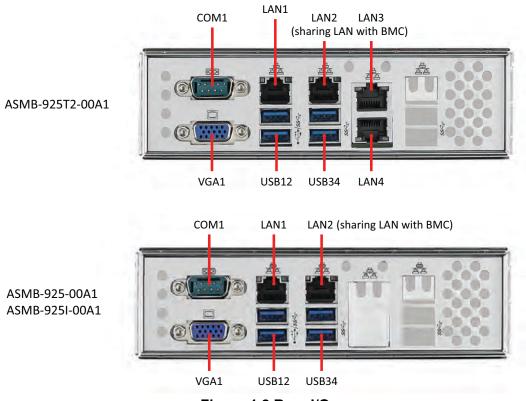
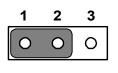


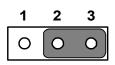
Figure 1.2 Rear I/O

Table 1.2: On	board LAN LED Co	olor Definition		
10/100/1000 Mbps	LAN Link/Activity LED S	Scheme		
	Left Right	LAN1 & LAN2 (1G)		
		Left LED	Right LED	
10 Mbps	Link Active	Off Off	Green Blinking green	
100 Mbps	Link Active	Amber Amber	Green Blinking green	
1000 Mbps	Link Active	Green Green	Green Blinking green	
No Link		Off	Off	
1/10 Gbps LAN Li	nk/Activity LED Scheme	LAN3 & LAN4 (10G)	
		Left LED	Right LED	
1G Mbps	Link Active	Amber Amber	Green Blinking green	
10G Mbps	Link Active	Green Green	Green Blinking green	

Table 1.3: Jumpers					
Label	Function	Default			
JCMOS1	CMOS clear	1-2			
JME1	ME update	1-2			
JWDT1	Watchdog function enable	1-2			
PSON1	AT (1-2)/ATX (2-3) mode	2-3			
JCASE1	Chassis case open alarm disable	1-2			
JTHR_SEL	On board (1-2)/external (2-3) thermistor	1-2			
JPCICLK1	PCI clock selection for 33 MHz (2-3)/66 MHz (1-2)	2-3			



Keep CMOS data/ Disable ME update/



Clear CMOS data/ Enable ME update/

Table 1.4: Connectors				
Label	Function			
ATXPWR1	ATX 24 pin main power connector			
ATX12V1	Processor power connector (for CPU0)			
ATX12V2	Processor power connector (for CPU1)			
SLOT12V1	For PCIe slot 12V input only			
SATA0~SATA7	Serial ATA0~7			
USB7_8, USB9_10	USB 2.0 header 7, 8, 9, 10			
USB11	USB 2.0 port 11 (Type-A)			
USB1_2, USB3_4, USB5_6	USB 3.0 port 1, 2, 3, 4; USB 3.0 port 5, 6 (20-pin header)			
PCI_SLOT1	PCI slot			
PCIEX16_SLOT2	PCIE x16 slot			
PCIEX16_SLOT3	PCIE x16 slot			
PCIEX16_SLOT4	PCIE x16 slot			
PCIEX16_SLOT5	PCIE x16 slot			
PCIEX16_SLOT6	PCIE x16 slot			
PCIEX8_SLOT7	PCIE x8 slot			
DIMMA1~DIMML1	DDR4 slot			
CPUFAN0, CPUFAN1	CPU FAN connector			
SYSFAN0~SYSFAN4	System FAN connector			
LAN1, LAN2	GbE LAN connector			
LAN34	10GbE LAN connector			
VGA1_COM1	VGA and COM connector			
COM2	Serial port: RS-232			
KBMS1	External keyboard and mouse connector (6 pin)			
BIOS_SKT1	BIOS ROM			
LANLED1	LAN LED extension connector			
SMBUS1	Front panel SMBus header			

Table 1.4: Connecto	Table 1.4: Connectors					
BMC_CN1, BMC_CN2	IPMI module header					
GPIO1	GPIO connector					
SGPIO1	SATA SGPIO header					
HDAUD1	Audio header					
JFP1, JFP2, JFP3	Front panel header					
PMBUS1	Power supply SMBbus I2C header					
EX_THR1	For external thermistor cable use					
SYS_LED1	For optional system LED indicator					
LPC1	Low pin count connector for Advantech designed LPC modules					
VOLT1	Alarm Board Power connector					
SPI_CN1	SPI flash card pin header					
PEHP1	NVMe RAID LED control					
BH2	Battery connector					
VROC1	VROC hardware key header					
CN1	CPLD code update header					
PCN1	CPU power code update header					
SPI_SKT1_U512	EC ROM					

Table 1.5: Onboard LED					
LED	Description	LED Definition			
5V_LED1	Power on LED	Off: Power off	On (Green): System is On		
5VSB_LED1	Standby LED	Off: No input AC Power	On (Green): System is ON, in sleep mode, or in soft-off mode		
LED3	BMC heartbeat LED (ASMB-925I/ASMB- 925T2 SKU Only)	Blinking (Green): Controller is working normally			

1.5 Block Diagram

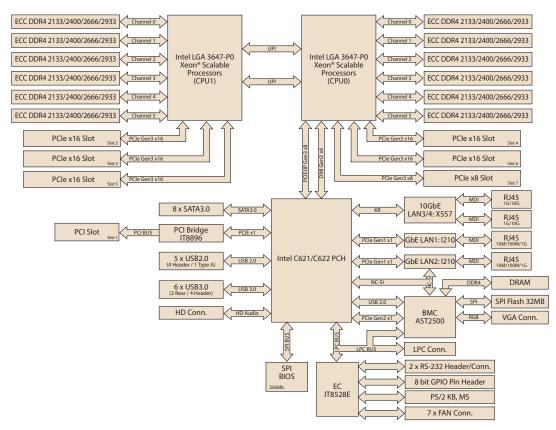


Figure 1.3 Block Diagram

1.6 System Memory

The ASMB-925 Series serverboards have twelve 288-pin memory slots for DDR4 2133/2400/2666/2933 MHz memory modules, with maximum capacity of 1.5TB (Maximum 128GB for each DIMM). ASMB-925 supports registered DIMM memory modules.

1.7 Memory Installation

Memory performance is affected by different DIMM configurations. To reach optimal memory interleaving, be sure to install identical DIMM types of the same size, speed, and number of ranks on the memory slots corresponding to the correct processor.

The following table lists recommended DIMM configurations with a single and dual processor. Based on the guideline, users can adjust the memory configuration according to the PCIe expansion card configuration.

Intel[®] Xeon[®] Scalable (82xx/62xx/52xx/4215) processors support Intel[®] Optane[™] DC persistent memory modules (DCPMM).

Table 1.6: DIMM Configuration with Single CPU								
	Quantity of Memory Installed							
CPU0	1	2	3	4	5	6		
DIMMA1	v	v	v	v		v		
DIMMB1		v	v	v		v		
DIMMC1			v			v		
DIMMD1				v		v		
DIMME1				v		v		
DIMMF1						v		
DIMMG1								
DIMMH1								
DIMMI1								
DIMMJ1								
DIMMK1								
DIMML1								

Note!

A DIMM population of 5 is not recommended.



Table 1.7: DIMM Configuration with Dual CPU												
	Qua	Quantity of Memory Installed										
CPU0 & CPU1	1	2	3	4	5	6	7	8	9	10	11	12
DIMMA1		v		v		v		v		v		v
DIMMB1				v		v		v		v		v
DIMMC1						v				v		v
DIMMD1								v		v		v
DIMME1								v		v		v
DIMMF1										v		v
DIMMG1		v		v		v		v		v		v
DIMMH1				v		v		v		v		v
DIMMI1						v						v
DIMMJ1								v		v		v
DIMMK1								v		v		v
DIMML1												v

Note!

DIMM populations of 1, 3, 5, 7, 9, and 11 are not recommended when dual CPUs are installed.

Table 1.8	B: DCPMM	Populatior	n Matrix						
	Symmetric	Symmetric Population within CPU0							
Modes	DIMMF1	DIMME1	DIMMD1	DIMMC1	DIMMB1	DIMMA1			
AD	DCPMM	DRAM1	DRAM1	DCPMM	DRAM1	DRAM1			
MM	DCPMM	DRAM1	DRAM1	DCPMM	DRAM1	DRAM1			
AD+MM	DCPMM	DRAM3	DRAM3	DCPMM	DRAM3	DRAM3			
	Symmetric	Symmetric Population within CPU1							
Modes	DIMML1	DIMMK1	DIMMJ1	DIMMI1	DIMMH1	DIMMG1			
AD	DCPMM	DRAM1	DRAM1	DCPMM	DRAM1	DRAM1			
MM	DCPMM	DRAM1	DRAM1	DCPMM	DRAM1	DRAM1			
AD+MM	DCPMM	DRAM3	DRAM3	DCPMM	DRAM3	DRAM3			

AD: App Direct Mode; MM: Memory Mode; AD+MM: Mixed Mode.

DRAM1: RDIMM, 3DS RDIMM, LRDIMM, 3DS LRDIMM

- DRAM2: RDIMM
- DRAM3: RDIMM; 3DS RDIMM; LRDIMM
- Andy capacity of DCPMM is allowed

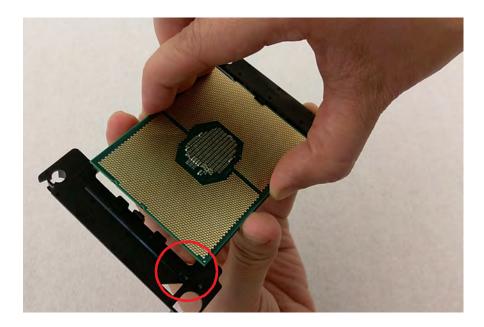
1.8 Processor Installation

ASMB-925 Series serverboards are designed for Intel[®] Xeon[®] Scalable processors.

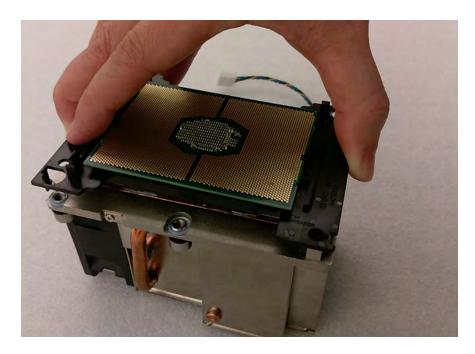
1. Remove dust cover.



2. Install CPU on CPU clip and align it with the pin-1 mark.



3. Install the assembled CPU clip on the heatsink to create a processor + heatsink module.



4. Attach the processor heatsink module to the motherboard bolster plate using a T-30 screw driver (follow the heatsink label directions 1-2-3-4).





Connections

2.1 Introduction

Most of the connectors can be accessed from the top of the board during installation in the chassis. If several cards have been installed, you may need to partially remove a card to make all the connections.

2.2 USB and LAN Ports (USB1~USB11, LAN1~LAN4)

The USB ports comply with USB 2.0 and 3.0 specifications. Transmission rates are up to 480 Mbps (USB 2.0) and 5 Gbps (USB 3.0) and fuse protection is supported. The USB interface can be disabled in the BIOS.

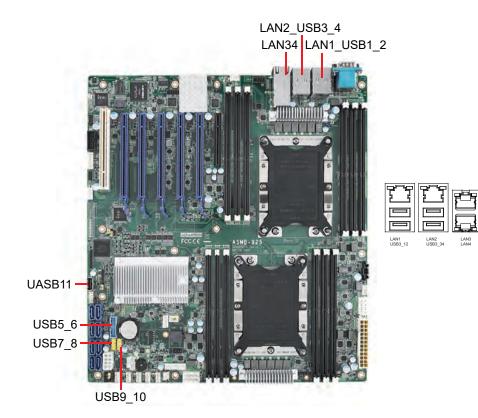
ASMB-925 is equipped with two 10GbE and two 1GbE LAN ports with RJ-45 jacks that are supported by all major network operating systems. One GbE LAN and one 10GbE LAN (LAN2 and LAN3) are shared with IPMI for system management.

00000 0000

> USB7_8 USB9_10

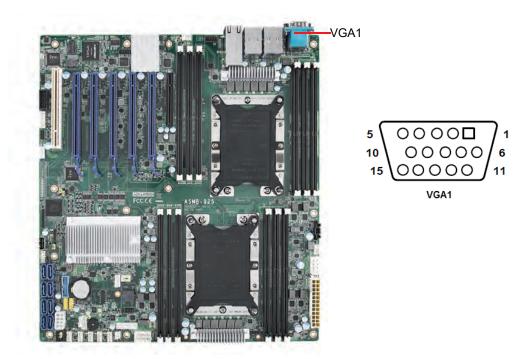
0000000000

USB5_6



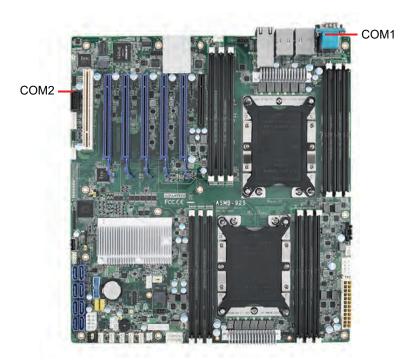
2.3 VGA Connector (VGA1)

ASMB-925 serverboards feature a VGA interface that supports conventional CRT and LCD displays.



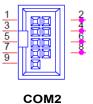
2.4 Serial Ports (COM1, COM2)

ASMB-925 serverboards feature 2 serial ports (one on the rear panel and one onboard).



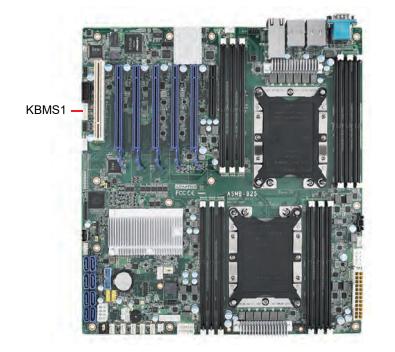


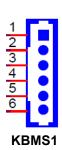
COM1



2.5 PS2 Keyboard and Mouse Connector (KBMS1)

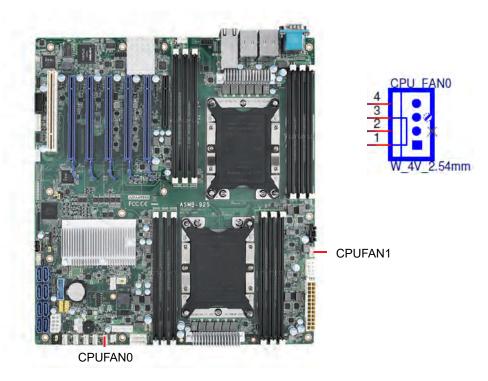
KBMS1 is an external keyboard and mouse connector on the motherboard.





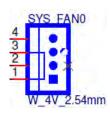
2.6 CPU Fan Connector (CPUFAN0, CPUFAN1)

If a fan is used, this connector supports cooling fans that draw up to 500 mA (6 W).



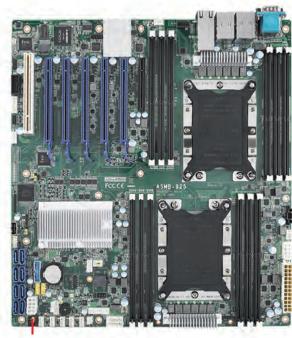
2.7 System Fan Connector (SYSFAN0~SYSFAN4)





2.8 Front Panel Connector (JFP1, JFP2, JFP3)

There are several external switches and LEDs for monitoring and controlling the ASMB-925 serverboards.



JEP1	3	6	9	12		PWRSW	RESET
8	2(+)	5(+)	8	11		HDDLED	SNMP SM BUS
JFP2	1(+)	4	7	10(-)		SPEA	KER
JFP3	1(+)	2	3(-)	4	5	PWRLED	KEYLOCK

JFP1/JFP2/JFP3

2.8.1 Power LED (JFP3)

JFP3 pin 1 and pin 3 are for the power LED. Refer to Appendix B for detailed information regarding pin assignments. The table below explains the power LED status if an ATX power supply is used.

Table 2.1: ATX Power Supply LED Status					
ACPI Power Mode	LED (ATX power)				
System On (S0)	On				
System Standby (S1)	Fast flashes				
System Hibernation(S4)	Slow flashes				
System Off (S5)	Off				



2.8.2 External Speaker (JFP2 Pins 1, 4, 7, 10)

JFP2 pins 1, 4, 7, and 10 connect to an external speaker. ASMB-925 serverboards provide an onboard buzzer as an alternative. To enable the buzzer, set pins $7 \sim 10$ to closed.



2.8.3 HDD LED Connector (JFP1 Pins 2 & 5)

An LED can be connected to the JFP1 connector to indicate when the HDD is active.



2.8.4 Reset Connector (JFP1 Pins 9 & 12)

Many computer cases offer the convenience of a reset button.



2.8.5 SNMP Connector (JFP1 Pins 8 & 11)

An SNMP connector is used for connecting to an Advantech SAB-2000 remote control board; however, SAB-2000 is not supported by all Intel[®] Xeon[®] Scalable serverboards.



2.9 Case Open (JCASE1)

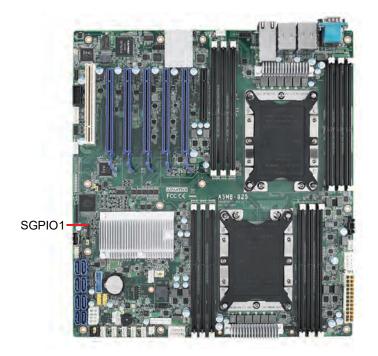
A chassis intrusion header is located at JCASE1 on the motherboard. Attach the appropriate cable from the chassis to be informed of a chassis intrusion when the chassis is opened. The default function is disabled and pins 1 and 2 are bridged by a jumper cap.





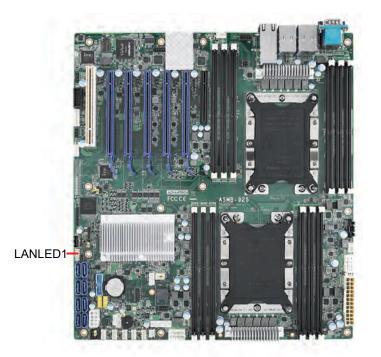
1 2

2.10 SATA SGPIO (SGPIO1)





2.11 Front Panel LAN Indicator Connector (LANLED1)

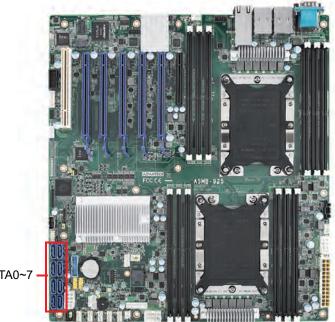




Chapter 2 Connections

2.12 Serial ATA Interface (SATA0~SATA7)

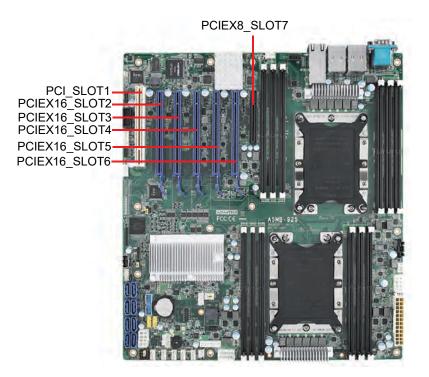
ASMB-925 Series features eight serial ATA III interfaces (up to 600 MB/s), which can be connected to hard drives.



SATA0~7

2.13 PCIe and PCI Expansion Slot

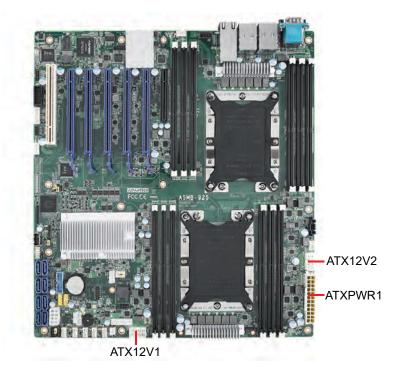
ASMB-925 Series serverboards feature several expansion slots.



	Slot Length	Link	PCI-E Generation	PCIe Link Provided From
PCI_SLOT1	PCI	PCI		PCH
PCIEX16_SLOT2	PCI-E x16	PCI-E x16	3	CPU1
PCIEX16_SLOT3	PCI-E x16	PCI-E x16	3	CPU1
PCIEX16_SLOT4	PCI-E x16	PCI-E x16	3	CPU0
PCIEX16_SLOT5	PCI-E x16	PCI-E x16	3	CPU1
PCIEX16_SLOT6	PCI-E x16	PCI-E x16	3	CPU0
PCIEX8_SLOT7	PCI-E x8	PCI-E x8	3	CPU0

	Part Number	Description	Remarks
	ASMB-RF388-21A1E	ASMR DE388 (211 risor cord)	2 x PCI-E x8 or 1 x PCI-E x8 + 2 x PCI-E x4
Riser Card		ASMB-RF348 (2U riser card)	2 x PCI-E x4 + 1 x PCI-E x8
Caru	ASMB-RF3X8-21A1E	ASMB-RF3X8 (2U riser card)	1 x PCI-E x4 + 2 x PCI-X
	AIMB-RF10F-01A1E	AIMB-RF10F (1U riser card)	1 x PCI-E x16

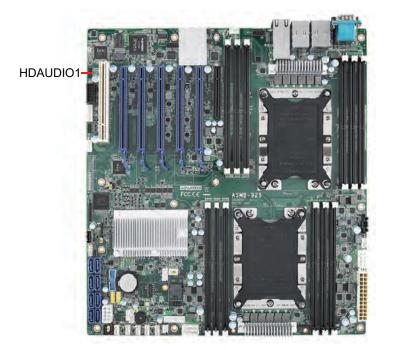
2.14 Auxiliary Power Connector (ATXPWR1, ATX12V1, ATX12V2)

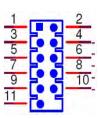


- Note! 1. Use a SSI-type power supply with a minimum output of 700W with 5Vsb @2.5A.
 2. ATXPWR1, ATX12V1, and ATX12V2 should be connected to the
 - 2. ATXPWR1, ATX12V1, and ATX12V2 should be connected to the power supply, otherwise the ASMB-925 serverboard will not bootup normally.

2.15 HD Audio Interface Connector (HDAUD1)

ASMB-925 features one audio connector for installing an audio board. (Advantech P/N: PCA-AUDIO-HDB1E)



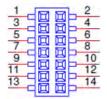


2.16 LPC Connector (LPC1) for Optional TPM

ASMB-925 features one LPC connector for installing a Trusted Platform module for hardware-based security.

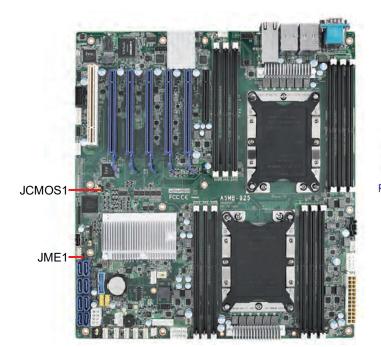
(Advantech P/N: PCA-TPM-00A1E, PCA-TPM-00B1E)

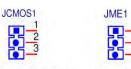




2.17 CMOS Clear and ME Update Connector (JCMOS1, JME1)

Sets the jumper from pin 1-2 to pin 2-3, then back to pin 1-2 to reset CMOS data and enable ME updates.

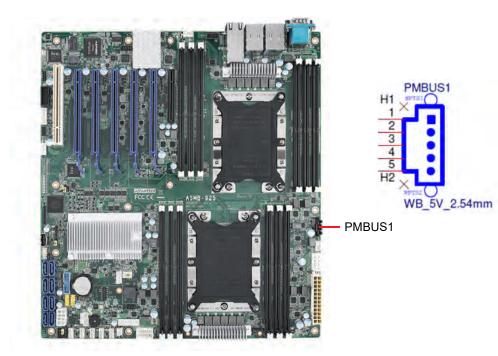




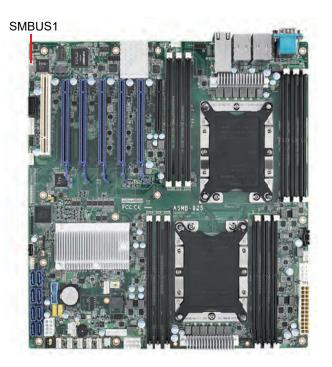


PH 3x1V 2.54mm PH_3x1V_2.00mm

2.18 PMBUS Connector (PMBUS1)



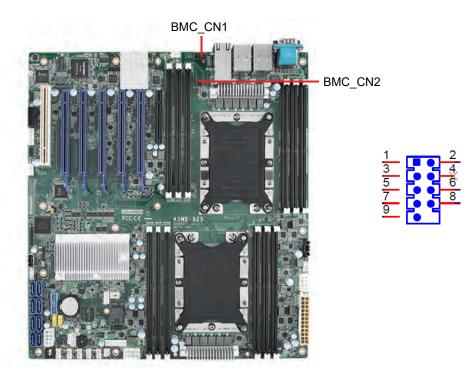
2.19 Front Panel SMBUS Connector (SMBUS1)





2.20 IPMI Module Connector (BMC_CN1, BMC_CN2)

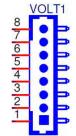
Enable the IPMI feature through BMC_CN1 and BMC_CN2. A BMC module is pre-installed on the ASMB-925I and ASMB-925T2 SKU.



2.21 VOLT1 Connector (VOLT1)

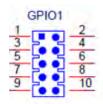
VOLT1 connects to the alarm board on the Advantech chassis. These alarm boards give warnings if a power supply or fan fails, if the chassis overheats, or if the backplane malfunctions.





2.22 GPIO Connector (GPIO1)

GPIO1-



2.23 Intel Virtual RAID (VROC1)

The Intel VROC license key of VMD allows NVMe SSDs to connect via PCIe and directly manages the CPU for superior RAID performance. Enable NVMe SSD RAID, hot-plugging and LED management features via the VROC connector.





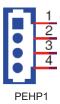
VROC1



2.24 NVMe RAID LED Control (PEHP1)

Connect to the storage chassis to enable NVMe RAID LED control feature.







AMI BIOS

3.1 Introduction

The AMI BIOS ROM features a built-in setup program that allows users to modify the basic system configuration. This type of information is stored in battery-backed CMOS to ensure the setup information is retained when the power is turned off. This chapter explains the basic navigation of the BIOS setup screens.

Aptio Setup Utility – Main Advanced Platform Configurat	Copyright (C) 2017 American ion Socket Configuration	
BIOS Information BIOS Vendor Core Version Compliancy Project Version Build Date and Time Access Level Main Board	American Megatrends 5.12 0.75 UEFI 2.5; PI 1.4 ASMB \$925X013 09/27/2017 08:12:33 Administrator ASMB-925T2	Set the Date. Use Tab to switch between Date elements. Default Ranges: Year: 2005–2099 Months: 1–12 Days: dependent on month
Memory Information Total Memory	8192 MB	
System Date System Time	[Fri 11/10/2017] [15:28:42]	<pre>++: Select Screen f↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Version 2.19.1268. Co	pyright (C) 2017 American M	egatrends, Inc.

Note!

The BIOS setup screens shown in this chapter are for reference only and may not exactly match what is displayed on your device.

3.2 BIOS Setup

3.2.1 Main Menu

Press during bootup to enter AMI BIOS CMOS Setup Utility; the Main Menu will appear on the screen. Use the arrow keys to select items and press <Enter> to accept or enter the sub-menu.

Aptio Setup Utility – Main Advanced Platform Configurat	Copyright (C) 2017 American ion Socket Configuration	
BIOS Information BIOS Vendor Core Version Compliancy Project Version Build Date and Time Access Level Main Board	American Megatrends 5.12 0.75 UEFI 2.5; PI 1.4 ASMB S925X013 09/27/2017 08:12:33 Administrator ASMB-925T2	Set the Date. Use Tab to switch between Date elements. Default Ranges: Year: 2005–2099 Months: 1–12 Days: dependent on month
Memory Information Total Memory	8192 MB	
System Date System Time	[Fri 11/10/2017] [15:28:42]	<pre>++: Select Screen f↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Version 2,19,1268, Co	pyright (C) 2017 American M	egatrends. Inc.

The Main BIOS setup screen has two main frames. The left frame displays all the options that can be configured. Grayed-out options cannot be configured; options in blue can be. The right frame displays the key legend. Above the key legend is an area reserved for a text message. When an option is selected in the left frame, it is highlighted in white. Often an accompanying text message will be displayed.

System Date/System Time

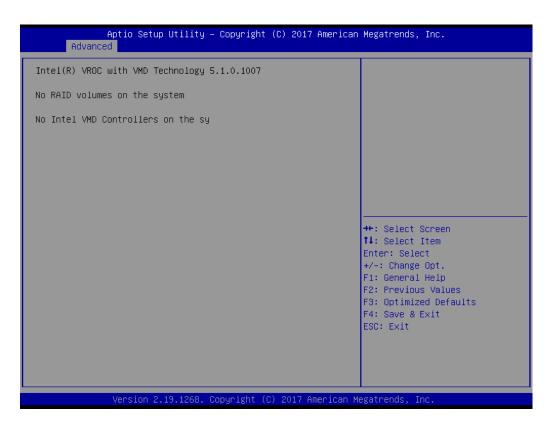
Use this option to change the system time and date. Highlight System Time or System Date using the <Arrow> keys. Enter new values through the keyboard. Press the <Tab> key or the <Arrow> keys to move between fields. The date must be entered in MM/DD/YY format. The time must be entered in HH:MM:SS format.

3.2.2 Advanced BIOS Features Setup

Select the Advanced tab from the BIOS menu to enter the Advanced BIOS setup screen. All Advanced BIOS Setup options are described in this section. The Advanced BIOS Setup screens are shown below. The sub menus are described on the following pages.

Aptio Setup Utility – Copyright (C) 2017 American Main Advanced Platform Configuration Socket Configuration S	
 Intel(R) Virtual RAID on CPU Driver Health Trusted Computing ACPI Settings IT8528 Super IO Configuration IT8528 HW Monitor Serial Port Console Redirection PCI Subsystem Settings UEFI Network Stack Configuration CSM Configuration NVMe Configuration USB Configuration 	This formset allows the user to manage Intel(R) Virtual RAID on CPU
	<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Version 2.19.1268. Copyright (C) 2017 American Me	egatrends, Inc.

3.2.2.1 Intel Virtual RAID on CPU



3.2.2.2 Driver Health



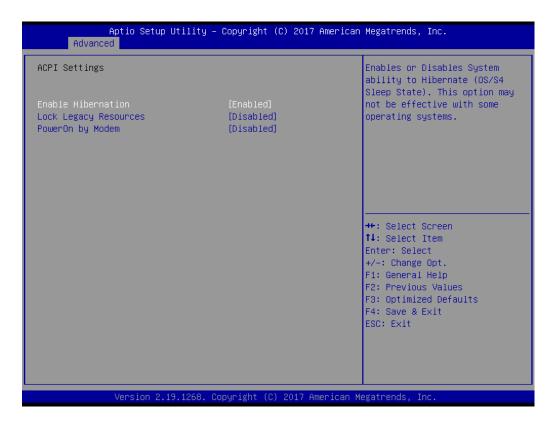
3.2.2.3 Trusted Computing

Aptio Setup Utili Advanced	ty – Copyright (C) 2017 f	American Megatrends, Inc.
Configuration Security Device Support NO Security Device Found	[Enable]	Enables or Disables BIOS support for security device. O.S. will not show Security Device. TCG EFI protocol and INT1A interface will not be available.
		++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.19.126	8. Copyright (C) 2017 Ame	erican Megatrends, Inc.

Security Device Support

This item enables/disables BIOS support for security devices.

3.2.2.4 ACPI Settings



Enable Hibernation

This item enables/disables the hibernation function.

Lock Legacy Resources This item enables/disables the lock legacy resources function.

PowerOn By Modem

This item enables/disables the power-on-by-modem function.

3.2.2.5 IT8528 EC Super IO Configuration

Aptio Setup Utility Advanced	– Copyright (C)	2017 American	Megatrends, Inc.
IT8528 Super IO Configuration Super IO Chip ▶ Serial Port 1 Configuration	IT8528		Set Parameters of Serial Port 1 (COMA)
 Serial Port 2 Configuration 			
			++: Select Screen ↑↓: Select Item
			Enter: Select +/−: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults
			F4: Save & Exit ESC: Exit
Version 2.19.1268.	Copyright (C) 2	017 American Me	egatrends, Inc.

Serial Port 1 Configuration

[Enabled]	Enable or Disable Serial Port (COM)
[Enabled]	
IO=3F8h; IRQ=4;	
[Auto]	
	<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit</pre>
	ESC: Exit
	[Auto] 3. Copyright (C) 2017 Americ

- Serial Port

This item enables/disables serial port 1.

Change Settings

This item is used to select the optimal settings for serial port 1.

Serial Port 2 Configuration



- Serial Port

This item enables/disables serial port 2.

- Change Settings

This item is used to select the optimal settings for serial port 2.

3.2.2.6 IT8528 HW Monitor

Aptio Setup Utility – Advanced	Copyright (C) 2017 American	Megatrends, Inc.
IT8528 HW Monitor	<u> </u>	Enabled/Disabled Watchdog
Firmware Version	I28B8X000E	Timer.
Watchdog Timer CPU ACPI Shutdown Temperature CPU Warning Temperatrue ▶ FAN Configuration	[Disabled] [Disabled] [Disabled]	
System Temperature(TR1) CPU 0 Temperature CPU 1 Temperature	: +38°C : +41°C : +45°C	
VBAT +12V +5V +3.3V	: +2.838 V : +12.170 V : +4.920 V : +3.296 V	<pre>++: Select Screen f↓: Select Item Enter: Select +/-: Change Opt.</pre>
CPU Fan O Speed CPU Fan 1 Speed System Fan O Speed System Fan 1 Speed System Fan 2 Speed	: 7139 RPM : 7260 RPM : N/A : N/A : N/A	F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
System Fan 3 Speed System Fan 4 Speed	: N/A : N/A	
Version 2.19.1268. C	opyright (C) 2017 American M	egatrends, Inc.

Watchdog Timer

This item enables/disables the watchdog timer function.

CPU ACPI Shutdown Temperature

This item enables/disables the ACPI shutdown temperature threshold. When the system reaches the shutdown temperature, it will automatically be shut down by the ACPI OS to protect the system from overheating.

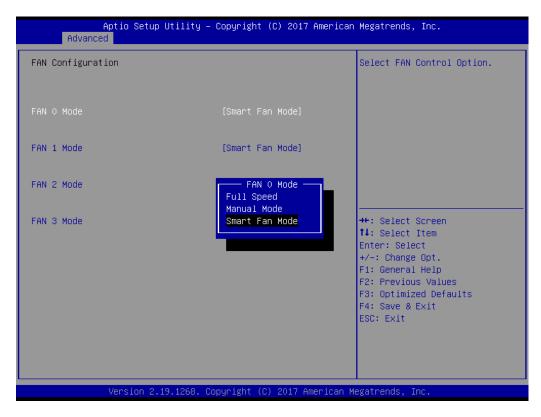
CPU Warning Temperature

This item enables/disables the CPU warning temperature threshold. When the system reaches the warning temperature, the speaker will emit an audible alert.

Fan Configuration

The default setting for the system fan is Smart Fan mode. The BIOS automatically controls the fan speed according to the CPU temperature.

When set to Manual mode, the fan duty setting can be changed. The range is from 30% to 100%; the default setting is 50%.



3.2.2.7 Serial Port Console Redirection

Aptio Setup Utility - C Advanced	opyright (C) 2017 American	Megatrends, Inc.
Serial Comunication via IPMI COM Console Redirection ▶ Console Redirection Settings	[Disabled]	Console Redirection Enable or Disable.
COM1 Console Redirection ▶ Console Redirection Settings	[Disabled]	
Legacy Console Redirection Legacy Console Redirection Settings 	• /	
Serial Port for Out-of-Band Managemen Windows Emergency Management Services Console Redirection Console Redirection Settings		<pre>++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Version 2.19.1268. Cop	yright (C) 2017 American Mu	egatrends, Inc.

COM1 Console Redirection Settings

Console Redirection Settings		Enables or disables extended terminal resolution
Terminal Type Bits per second Data Bits Parity Stop Bits Flow Control VT-UTF8 Combo Key Support Recorder Mode Resolution 100x31 Legacy OS Redirection Resolution Putty KeyPad Redirection After BIOS POST	[ANSI] [115200] [8] [None] [1] [None] [Enabled] [Disabled] [Disabled] [80x24] [VT100] [Always Enable]	<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>

Aptio Setup Utility - Advanced	- Copyright (C) 2017 Americar	Megatrends, Inc.
COMO Console Redirection Settings Terminal Type Bits per second Data Bits Parity Stop Bits Flow Control VT-UTF8 Combo Key Support Recorder Mode Resolution 100x31 Legacy OS Redirection Resolution Putty KeyPad Redirection After BIOS POST	[ANSI] [115200] [8] [None] [1] [None] [Enabled] [Disabled] [0isabled] [80x24] [VT100] [Always Enable]	Emulation: ANSI: Extended ASCII char set. VT100: ASCII char set. VT100+: Extends VT100 to support color, function keys, etc. VT-UTF8: Uses UTF8 encoding to map Unicode chars onto 1 or more bytes. ++: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.19.1268. 0	Copyright (C) 2017American ⊨	legatrends, Inc.

- Terminal Type

Select a terminal type to be used for console redirection. Available options: VT100/VT100+/ANSI/VT-UTF8.

- Bits Per Second

Select the baud rate for console redirection.

Available options: 9600/19200/57600/115200.

- Data Bits
- Parity

A parity bit can be sent with the data bits to detect transmission errors.

Even: Parity bit is 0 if the number of 1s in the data bits is even.

Odd: Parity bit is 0 if number of 1s in the data bits is odd.

Mark: Parity bit is always 1. Space: Parity bit is always 0.

Mark and space parity do not allow for error detection.

Available options: None/Even/Odd/Mark/Space

Stop Bits

Stop bits indicate the end of a serial data packet. (A start bit indicates the beginning). The standard setting is 1 stop bit. Communication with slow devices may require more than 1 stop bit.

Available options: 1/2

- Flow Control

Flow control can prevent data losses due to buffer overflow. When sending data, if the receiving buffers are full, a "stop" signal can be sent to stop the data flow. Once the buffers are empty, a "start" signal can be sent to re-start the flow. Hardware flow control uses two wires to send start/stop signals.

Available options: None/Hardware RTS/CTS

- VT-UTF8 Combo Key Support

This item enables/disables VT-UTF8 combination key support for ANSI/ VT100 terminals.

Recorder Mode

This item enables/disables Recorder mode. When enabled, only text will be sent. This is used for capturing terminal data.

Available options: Enable/disable

Resolution 100x31

This item enables/disables extended terminal resolution.

- Legacy OS Redirection Resolution

This item allows users to set the number of rows and columns that support redirection on legacy OS.

Available options: 80 x 24/80 x 25

Putty Keypad

This item allows users to select the function key and keypad on putty.

- Redirection After BIOS Post

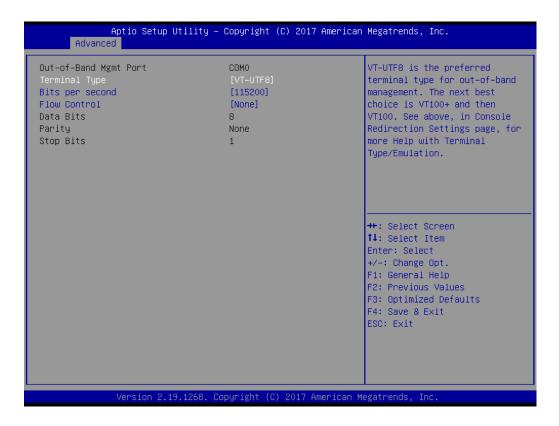
When Bootloader is selected, legacy console redirection is disabled before booting to legacy OS. When Always Enable is selected, legacy console redirection is enabled for legacy OS. The default setting for this item is Always Enable.

Legacy Console Redirection Settings

Select a COM port to display redirection of legacy OS and legacy OPROM messages.

	Aptio Setup Advanced	Utility – (Copyright	(C) 2017 American	Megatrends, Inc.
Legacy	Serial Redirection	Port	[СОМО]		Select a COM port to display redirection of Legacy OS and Legacy OPROM Messages
					<pre>**: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>

Console Redirection Settings



- Out-of-Band Mgmt Port

Select the COM port to allow console redirection.

- Terminal Type

Choose between VT100, VT100+, VT-UTF8, and ANSI. The default setting is VT-UTF8.

- Bits Per Second

To select serial port transmission, the speed must be matched on the other side. Choose between 9600, 19200, 57600, and 115200. The default setting is 115200.

- Flow Control

Flow control can prevent data losses due to buffer overflow. This item can be configured as None, Hardware RTS/CTS, or Software Xon/Xoff. The default setting is None.

- Data Bits
- Parity
- Stop Bits

3.2.2.8 PCI Subsystem Settings

Aptio Setup Utility Advanced	– Copyright (C) 2017	American Megatrends, Inc.
PCI Bus Driver Version	A5.01.12	Enables or Disables 64bit capable Devices to be Decoded
PCI Devices Common Settings: Above 4G Decoding	[Enabled]	in Above 4G Address Space (Only if System Supports 64 bit PCI Decoding).
		<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Version 2.19.1268.	Copyright (C) 2017 Am	merican Megatrends, Inc.

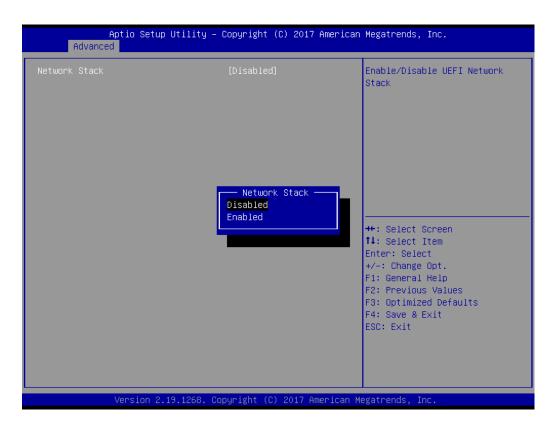
Above 4G Decoding

This item enables/disables 64-bit capability. Some devices can be decoded above 4G address space (only if the system supports 64-bit PCI decoding).

Note! For some graphics cards or GPUs, 4G decoding must be enabled.



3.2.2.9 UEFI Network Stack Configuration



Network Stack

This item enables/disables the UEFI network stack function.

3.2.2.10 CSM Configuration

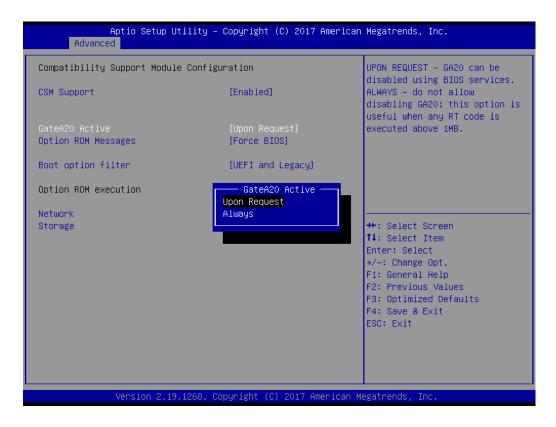
Compatibility Support Module		
	Configuration	Enable/Disable CSM Support.
CSM Support	[Enabled]	
GateA20 Active Option ROM Messages	[Upon Request] [Force BIOS]	
Boot option filter	[UEFI and Legacy]	
Option ROM execution		
Network Storage	[Legacy] [Legacy]	<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>

CSM Support

This item enables/disables the UEFI CSM (compatibility support module) from supporting a legacy PC boot process.

GateA20 Active

This item is useful when RT code is executed above 1MB. When set as Upon Request, GA20 can be disabled in the BIOS. When set as Always, disabling of GA20 is not allowed.



Option ROM Messages

This item allows users to set the display mode for Option ROM.

Boot Option Filter

This item allows users to change the UEFI/legacy ROM priority for boot option.

Aptio Setup Utility Advanced	y – Copyright (C) 2017 American	Megatrends, Inc.
Compatibility Support Module Con CSM Support	figuration [Enabled]	This option controls Legacy/UEFI ROMs priority
GateA20 Active Option ROM Messages Boot option filter	[Upon Request] [Force BIOS] [UEFI and Legacy]	
Option ROM execution Network Storage	Boot option filter UEFI and Legacy Legacy only UEFI only	<pre>++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Version 2.19.1268	. Copyright (C) 2017 American Me	egatrends, Inc.

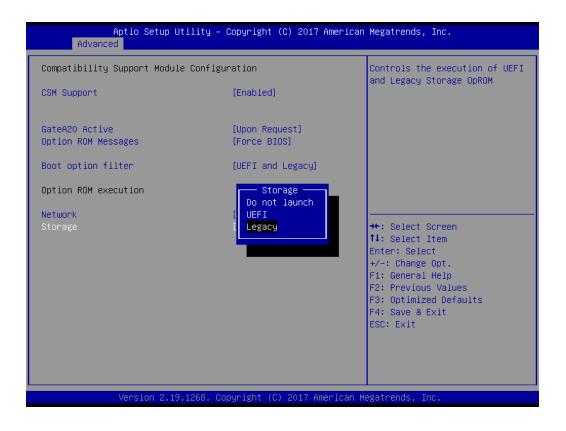
Network

This item is used to control the execution of UEFI and legacy PXE OpROM.



Storage

his item is used to control the execution of UEFI and legacy storage OpROM.



3.2.2.11 NVMe Configuration

Setup NVMe device options.



3.2.2.12 USB Configuration

Aptio Setup Utility - Advanced	Copyright (C) 2017 American	Megatrends, Inc.
USB Configuration		Enables Legacy USB support. AUTO option disables legacy
USB Module Version	17	support if no USB devices are
USB Controllers:		connected. DISABLE option will keep USB devices available
1 XHCI		only for EFI applications.
USB Devices: 1 Drive, 1 Keyboard		
Legacy USB Support XHCI Hand–off	[Enabled] [Enabled]	
USB Mass Storage Driver Support	[Enabled]	
USB hardware delays and time-outs:		++: Select Screen
USB transfer time-out	[20 sec]	11: Select Item
Device reset time-out	[20 sec]	Enter: Select
Device power-up delay	[Auto]	+/-: Change Opt.
Mass Storage Devices:		F1: General Help F2: Previous Values
JetFlashTranscend 16GB 1100	[Auto]	F3: Optimized Defaults
		F4: Save & Exit
		ESC: Exit
Version 2.19.1268. Co	opyright (C) 2017 American M	legatrends, Inc.

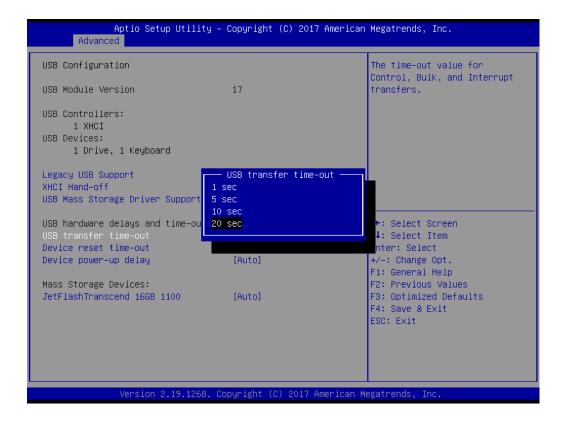
Legacy USB Support

This item is for supporting a USB device under a legacy OS such as DOS. If Auto is selected, the system will automatically detect if a USB device is plugged into the computer and enable it. Disable USB legacy mode when no USB device is attached.

XHCI Hand-Off

This is a workaround for OS without XHCI hand-off support. The XHCI ownership change should be conducted by the XHCI driver.

- USB Mass Storage Driver Support This item enables/disables USB mass storage driver support.
- USB Transfer Time-out
 Set the USB transfer time-out value [1,5,10,20 sec].



Device Reset Time-Out

Set the USB device reset time-out value [10,20,30,40 sec].

Aptio Setup Utilit Advanced	ty – Copyright (C) 2017 Ame	rican Megatrends, Inc.
USB Configuration		USB mass storage device Start Unit command time-out.
USB Module Version	17	
USB Controllers: 1 XHCI		
USB Devices: 1 Drive, 1 Keyboard		
Legacy USB Support	Device reset time-out ·	
XHCI Hand—off USB Mass Storage Driver Support		
USB hardware delays and time-ou	30 sec 40 sec	+: Select Screen
USB transfer time-out Device reset time-out		↓: Select Item nter: Select
Device power–up delay	[Auto]	+/-: Change Opt. F1: General Help
Mass Storage Devices: JetFlashTranscend 16GB 1100	[Auto]	F2: Previous Values F3: Optimized Defaults
		F4: Save & Exit ESC: Exit
Version 2.19.1268	B. Copyright (C) 2017 Ameri	can Megatrends, Inc.

Device Power-Up Delay

The delay time can only be configured if device power-up delay is set to Manual.

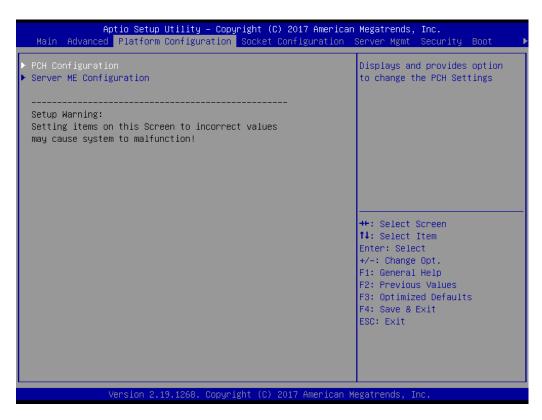
Aptio Setup Utili Advanced	ty – Copyright (C) 2017	American Megatrends, Inc.
USB Configuration		Maximum time the device will take before it properly
USB Module Version	17	reports itself to the Host Controller, 'Auto' uses
USB Controllers:		default value: for a Root port
1 XHCI USB Devices:		it is 100 ms, for a Hub port the delay is taken from Hub
1 Drive, 1 Keyboard		descriptor.
Legacy USB Support	[Enabled]	
XHCI Hand-off	Device power-up del	ay —
USB Mass Storage Driver Support	Auto Manual	
USB hardware delays and time-ou		←: Select Screen
USB transfer time–out		↓: Select Item
Device reset time-out	[20 sec]	Enter: Select
Device power–up delay	[Auto]	+/-: Change Opt.
Mass Storage Devices:		F1: General Help F2: Previous Values
JetFlashTranscend 16GB 1100	[Auto]	F3: Optimized Defaults
		F4: Save & Exit
		ESC: Exit
Version 2.19.126	8. Copyright (C) 2017 Am	erican Megatrends, Inc.

Mass Storage Devices

This item is for setting the configuration of mass storage devices. The default setting is Auto.

Aptio Setup Ut. Advanced	ility – Copyright (C) 2017 American	Megatrends, Inc.
USB Configuration		Mass storage device emulation
USB Module Version	17	type. 'AUTO' enumerates devices according to their media format. Optical drives
USB Controllers: 1 XHCI		are emulated as 'CDROM', drives with no media will be
USB Devices: 1 Drive, 1 Keyboard		emulated according to a drive type.
Legacy USB Support XHCI Hand-off USB Mass Storage Driver Supp USB hardware delays and time USB transfer time-out Device reset time-out Device power-up delay Mass Storage Devices: JetFlashTranscend 166B 1100	JetFlashTranscend 166B 1100 — Auto Floppy Forced FDD Hard Disk CD-ROM [Auto]	Select Screen Select Item r: Select Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.19.:	1268. Copyright (C) 2017 American M	legatrends, Inc.

3.2.3 Platform Configuration



3.2.3.1 PCH Configuration

Aptio Setup Utility – Copyright (C) 2017 Ame Main Advanced Platform Configuration Socket Configurat	
 ▶ PCH Configuration ▶ Server ME Configuration 	Displays and provides option to change the PCH Settings
Setup Warning: Setting items on this Screen to incorrect values may cause system to malfunction!	
	++: Select Screen †1: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.19.1268. Copyright (C) 2017 Ameri	ican Megatrends, Inc.

PCH Configuration	Enable/Disable Intel(R) IO Controller Hub devices
PCH Devices PCIe M.2 Slot Configuration	
PCH SATA Configuration	
PCH sSATA/M.2 Configuration	
Networking	
	++: Select Screen
	↑↓: Select Item
	Enter: Select +/-: Change Opt.
	F1: General Help
	F2: Previous Values
	F3: Optimized Defaults F4: Save & Exit
	ESC: Exit

PCH Devices

This item is for configuring I/O controller hub devices.

- SMBus Controller

This item enables/disables the SMBus controller.

Aptio Setup Utility – Platform Configura	Copyright (C) 2017 American <mark>tion</mark>	Megatrends, Inc.
SMBUS Device Restore AC Power Loss PCH CRID Case Open Warning Azalia VGA Priority RTC Wake system from S4/S5	[Enable] [Power Off] [Disable] [Disable] [Auto] [Auto] [Disable]	Enable∕Disable SMBUS Device.
	SMBUS Device Disable Enable	<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Version 2.19.1268. C	opyright (C) 2017 American M	egatrends, Inc.

- Restore AC Power Loss

This item allows users to specify the system state when power is restored following a power failure (G3 state).

Aptio Setup Util Platform Conf	ity – Copyright (C) 2017 Ame iguration	erican Megatrends, Inc.
SMBUS Device Restore AC Power Loss PCH CRID Case Open Warning Azalia VGA Priority RTC Wake system from S4/S5	[Enable] [Power Off] [Disable] [Disable] [Auto] [Auto] [Disable] Restore AC Power Loss Power On Power Off	Specify what state to go to when power is re-applied after a power failure (G3 state).
	Last State	+: Select Screen ↓: Select Item nter: Select +/-: Change Opt. F1: General Help
		F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.19.12	268. Copyright (C) 2017 Ameri	ican Megatrends, Inc.

- PCH CRID

This item enables/disables the PCH compatibility revision ID (CRID) function.

Aptio Setup Utility – Platform Configurat	Copyright (C) 2017 American <mark>ion</mark>	Megatrends, Inc.
SMBUS Device Restore AC Power Loss PCH CRID Case Open Warning Azalia VGA Priority RTC Wake system from S4/S5	[Enable] [Power Off] [Disable] [Auto] [Auto] [Disable] Disable] Enable	Enable/Disable PCH's CRID ++: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.19.1268. Co	pyright (C) 2017 American M	egatrends, Inc.

Chapter 3 AMI BIOS

- Case Open Warning

This item enables/disables the chassis intrusion monitoring function. When Enabled and the case is opened, a warning message will be displayed on the POST screen.

Aptio Setup Utili Platform Confi		American Megatrends, Inc.
SMBUS Device Restore AC Power Loss PCH CRID Case Open Warning Azalia VGA Priority RTC Wake system from S4/S5	[Enable] [Power Off] [Disable] [Auto] [Auto] [Disable] Case Open Warning Disable	Enabled/Disabled Case Open Warning Message.
	Enable	++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

– Azalia

This item enables/disables Azalia devices.

	Utility – Copyright (C) 2017 Am Configuration	merican Megatrends, Inc.
SMBUS Device Restore AC Power Loss PCH CRID Case Open Warning Azalia VGA Priority RTC Wake system from S4/S	[Enable] [Power Off] [Disable] [Disable] [Auto] [Auto]	Control Detection of the Azalia device. Auto = Azalia will be enabled if present, disabled otherwise. Disabled = Azalia will be unconditionally disabled, regardless of presence. ++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.	19.1268. Copyright (C) 2017 Amer	rican Megatrends, Inc.

- VGA Priority

This item sets the priority between onboard and first off-board video device found.

Aptio Setup Utility – Platform Configura	· Copyright (C) 2017 American <mark>tion _</mark>	Megatrends, Inc.
SMBUS Device Restore AC Power Loss PCH CRID Case Open Warning Azalia VGA Priority RTC Wake system from S4/S5	[Enable] [Power Off] [Disable] [Auto] [Auto] [Disable] VGA Priority Auto Onboard Device PCIE Device	Select active Video type ++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.19.1268. C	opyright (C) 2017 American M	legatrends, Inc.

- RTC Wake system from S4/S5

This item enables/disables system wake-on-alarm-event.

Platform Config	uration	can Megatrends, Inc.
SMBUS Device Restore AC Power Loss PCH CRID Case Open Warning Azalia VGA Priority RTC Wake system from S4/S5	[Enable] [Power Off] [Disable] [Disable] [Auto] [Auto] [Disable] — RTC Wake system from S4/S5	Enable or disable System wake on alarm event. When enabled, System will wake on the day::hr::min::sec specified
	able sable . Copyright (C) 2017 America	Select Screen Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

Chapter 3 AMI BIOS

PCI Slot 1 Configuration

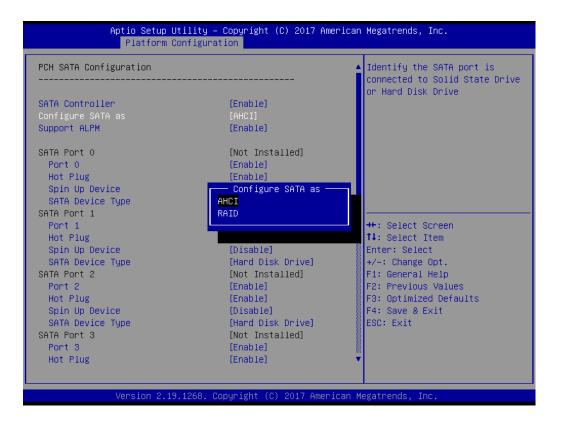
- PCI Slot 1

This item enables/disables the PCI Express root port.

PCI Slot 1 [Enabled] Current speed for this RP is: Gen1 Current width for this RP is: 4 ports x1 ++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values) Utility – Copyrigh N Configuration	t (C) 2017 American	Megatrends,	Inc.
↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help	Current speed for this R	°is∶ Gen1			PCI Express Root
F3: Optimized Defaults F4: Save & Exit ESC: Exit				↑↓: Select 1 Enter: Select +/-: Change F1: General F2: Previous F3: Optimize F4: Save & E	Item ot Opt. Help s Values ed Defaults

PCH SATA Configuration

CH SATA Configuration		▲ Enable or Disable SATA Controller
SATA Controller	[Enable]	
Configure SATA as	[AHCI]	
Support ALPM	[Enable]	
SATA Port O	[Not Installed]	
Port 0	[Enable]	
Hot Plug	[Enable]	
Spin Up Device	[Disable]	
SATA Device Type	[Hard Disk Drive]	
SATA Port 1	[Not Installed]	
Port 1	[Enable]	++: Select Screen
Hot Plug	[Enable]	↑↓: Select Item
Spin Up Device	[Disable]	Enter: Select
SATA Device Type	[Hard Disk Drive]	+/-: Change Opt.
SATA Port 2	[Not Installed]	F1: General Help
Port 2	[Enable]	F2: Previous Values
Hot Plug	[Enable]	F3: Optimized Defaults
Spin Up Device	[Disable]	F4: Save & Exit
SATA Device Type	[Hard Disk Drive]	ESC: Exit
SATA Port 3	[Not Installed]	
Port 3	[Enable]	
Hot Plug	[Enable]	•



- SATA Controller

This item enables/disables SATA devices.

- Configure SATA As

Set as AHCI or RAID when SATA controllers are enabled.

- Support ALPM

This item enables/disables the ALPM protocol for Advanced Host Controller Interface-compliant SATA devices.

– SATA Port 0~7

This item enables/disables SATA ports $0 \sim 7$.

Hot Plug Port 0~7

This item designates SATA ports $0 \sim 7$ as supporting hot plugging.

- SATA Port 0~7 Spin Up Device

On an edge detection from 0 to 1, the PCH starts a COMRESET initialization sequence to the device.

- SATA Port 0~7 Device Type

This item is used to identify if the SATA is connected to an SSD or HDD.

Networking

	up Utility – Copyright (C) 2017 A rm Configuration	American Megatrends, Inc.
LAN1 Controller LAN1 PXE OpROM LAN2 Controller LAN2 PXE OpROM LAN3/LAN4 Controller LAN3 PXE OpROM LAN4 PXE OpROM	[Enable] [Disable] [Enable] [Disable] [Enable] [Disable] [Disable]	Enabled/Disabled onboard LAN1.
		<pre>++: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Version	2.19.1268. Copyright (C) 2017 Ame	rican Megatrends, Inc.

- LAN1 Controller

This item enables/disables Intel[®] I210 controller support.

- LAN1 PXE OpROM

This item enables/disables boot option for Intel[®] I210 controller.

- LAN2 Controller

This item enables/disables Intel[®] I210 controller support.

– LAN2 PXE OpROM

This item enables/disables boot option for Intel[®] I210 controller.

- LAN3/LAN4 Controller

This item enables/disables Intel® X557 controller support.

- LAN3 PXE OpROM

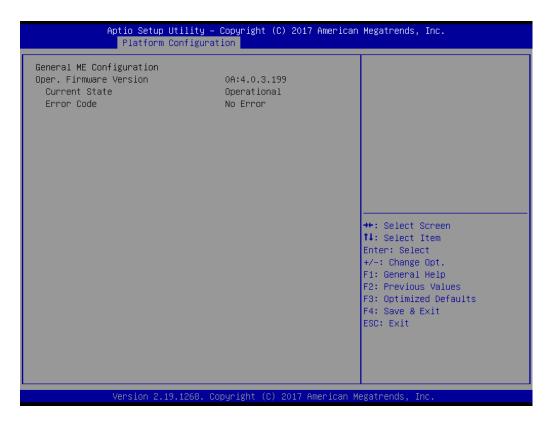
This item enables/disables boot option for Intel[®] X557 controller.

- LAN4 PXE OpROM

This item enables/disables boot option for Intel[®] X557 controller.

3.2.3.2 Server ME Configuration

This page shows the Server ME configuration information.



3.2.4 Socket Configuration



Chapter 3 AMI BIOS

3.2.4.1 Processor Configuration

Aptio Setup Util	ity – Copyright (C) 2017 Americ: Socket Configuration	an Megatrends, Inc.
	SOCKET CONTIGUIATION	
Processor Configuration		Change Per-Socket Settings
▶ Per–Socket Configuration		
Processor BSP Revision	50654 - SKX HO	
Processor Socket	Socket 0 Socket 1	
Processor ID	00050654* 00050654	
Processon Frequency	2.600GHz 2.600GHz	
Processor Max Ratio	1AH 1AH	
Processor Min Ratio	оан оан	
Microcode Revision	0200001A	
L1 Cache RAM	64KB 64KB	
L2 Cache RAM	1024KB 1024KB	
L3 Cache RAM	22528KB 22528KB	
Processor O Version	Intel(R) Xeon(R) Gold 6	++: Select Screen
	142M CPU @ 2.60GHz	↑↓: Select Item
Processor 1 Version	Intel(R) Xeon(R) Gold 6	Enter: Select
	142M CPU @ 2.60GHz	+/-: Change Opt.
		F1: General Help
Hyper-Threading [ALL]	[Enable]	F2: Previous Values
Execute Disable Bit	[Enable]	F3: Optimized Defaults
VMX	[Enable]	F4: Save & Exit
Enable SMX	[Disable]	ESC: Exit
Hardware Prefetcher	[Enable]	
Adjacent Cache Prefetch	[Enable]	
DCU Streamer Prefetcher	[Enable]	*
Version 2.19.12	68. Copyright (C) 2017 American	Megatrends, Inc.
Aptio Setup Util	ity – Copyright (C) 2017 Americ: Socket Configuration	
	SUCKET CONTIGURATION	
Processor BSP Revision	50654 – SKX HO	MSR 31h Bit[0] – A write of 1
Processor Socket	Socket 0 Socket 1	selects the DCU mode as 16KB
Processor ID	00050654* 00050654	4–way with ECC.
Processor Frequency	2.600GHz 2.600GHz	
Processor Max Ratio	1AH 1AH	
Processor Min Ratio	ОАН ОАН	
Microcode Revision	0200001A	
L1 Cache RAM	64KB 64KB	
L2 Cache RAM	1024KB 1024KB	
L3 Cache RAM	22528KB 22528KB	
Processor O Version	DCU Mode6	
	32KB 8Way Without ECC	
Processor 1 Version	16KB 4Way With ECC	
		++: Select Screen
Universe Three address For the	[Enable]	↑↓: Select Item
Hyper-Threading [ALL]	[Enable]	Enter: Select
Execute Disable Bit	[Enable]	+/-: Change Opt.
VMX	[Enable]	F1: General Help
Enable SMX Hardware Prefetcher	[Disable]	F2: Previous Values
	[Enable]	F3: Optimized Defaults F4: Save & Exit
Adjacent Cache Prefetch DCU Streamer Prefetcher	[Enable]	
bub streamer rretetuner	[Enable]	ESC: Exit

Version 2.19.1268. Copyright (C) 2017 American Megatrends, Inc

[Enable]

[Enable] [32KB 8Way Without ECC]

Per-Socket Configuration

DCU IP Prefetcher DCU Mode

AES-NI

This item is used to select the number of processor cores to activate when using a dual or quad-core processor.

Hyper-Threading [All]

This item enables/disables Intel[®] Hyper-Threading technology.

Execute Disable Bit

This item enables/disables the Execute Disable Bit function. The Optimal and Fail-Safe default setting is Enabled. If disabled, the BIOS forces the XD feature flag to always return to 0.

VMX

This item enables/disables Intel[®] Virtual Machine Extensions (VMX) for IA-32 processors that support Intel[®] Vanderpool Technology.

Enable SMX

This item enables/disables safer mode extensions (SMX). SMX provides a means for system software to launch an MLE and establish a measured environment within the platform to support trust decisions by end users.

Hardware Prefetcher

Hardware Prefetcher is a technique that retrieves instructions and/or data from memory and uploads it to the CPU cache memory before the CPU needs it for improved load-to-use latency.

Adjacent Cache Prefetch

The Adjacent Cache-Line Prefetch mechanism, like automatic Hardware Prefetching, operates without programmer intervention. When enabled, two 64-byte cache lines are fetched into a 128-byte sector, regardless of whether the additional cache line has been requested or not.

DCU Streamer Prefetcher

This item enables/disables prefetching of the next L1 data line based on multiple loads in same cache line.

DCU IP Prefetcher

This item enables/disables prefetching of the next L1 line based on sequential load history.

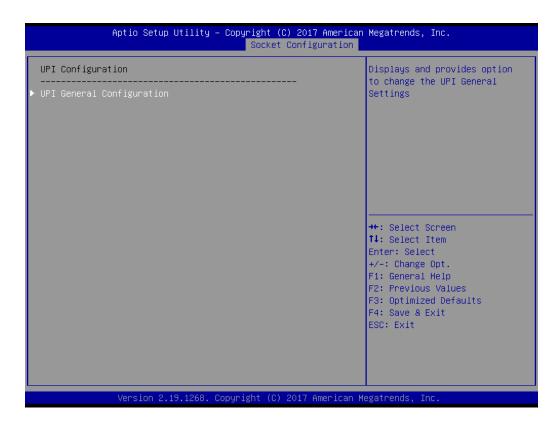
DCU Mode

This item is used to change the data cache unit mode.

AES-NI

This item enables/disables CPU advanced encryption standard instructions.

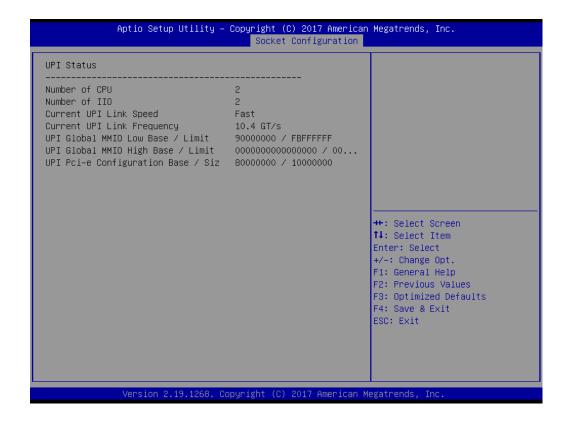
3.2.4.2 UPI Configuration



UPI Status

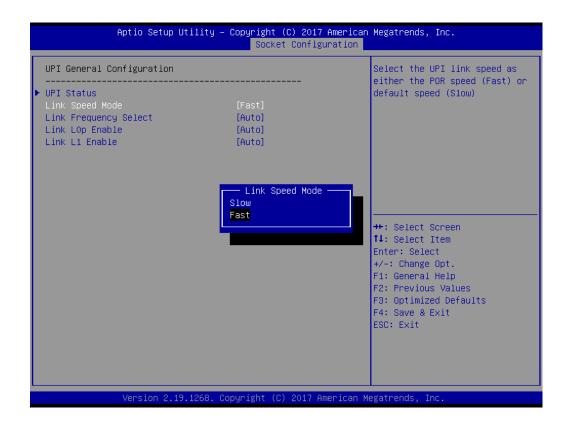
This item is used to display Intel[®] UltraPath Interconnect (UPI) information.

Aptio Setup Utility —	Copyright (C) 2017 American Socket Configuration	Megatrends, Inc.
UPI General Configuration		UPI Status Help
▶ UPI Status Link Speed Mode Link Frequency Select Link LOp Enable Link L1 Enable	[Fast] [Auto] [Auto] [Auto]	<pre>++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Version 2.19.1268. Co	pyright (C) 2017 American M	egatrends, Inc.



Link Speed Mode

This item is used to set the QPI link speed mode as either Fast or Slow.



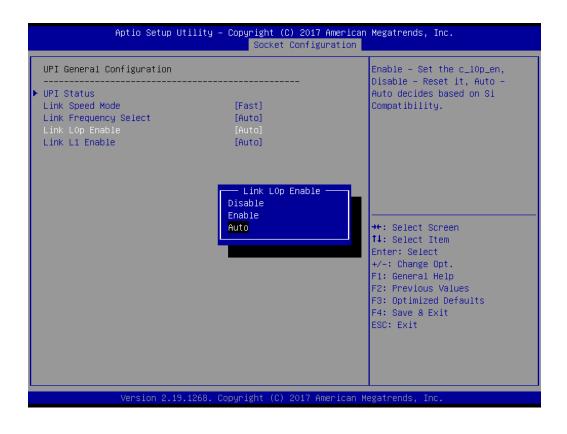
Link Frequency Select

This item is used to select the QPI link frequency.

UPI General Configuration		Allows for selecting the UPI Link Frequency
• UPI Status Link Speed Mode Link Frequency Select Link LOp Enable Link L1 Enable	[Fast] [Auto] [Auto] [Auto] — Link Frequency Select 9.66T/s 10.46T/s Auto Use Per Link Setting	<pre>+: Select Screen 1: Select Item nter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit</pre>

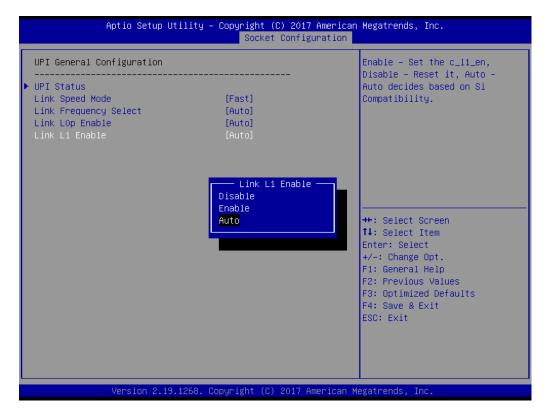
Link L0p Enable

This item enables/disables QPI Link0p.



Link L1 Enable

This item enables/disables QPI Link1.



3.2.4.3 Memory Configuration

Aptio Setup Utility –		(C) 2017 American Configuration	Megatrends, Inc.
 Integrated Memory Controller (iMC)			Enable or Disable Non uniform Memory Access (NUMA).
Numa ▶ Memory Topology	[Enable]		
			<pre> ++: Select Screen 1↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Version 2.19.1268. Co	opyright (C)	2017 American M	egatrends, Inc.

Numa

This item enables/disables non uniform memory access (NUMA).

Memory Technology

This item is used to display memory topology with DIMM population information.

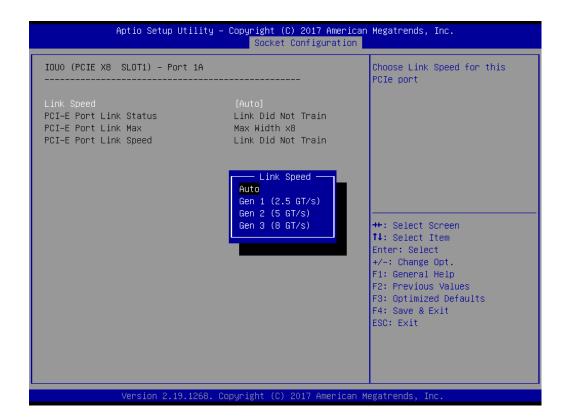
3.2.4.4 IIO Configuration

Aptio Setup Utility -	Copyright (C) 2017 American Socket Configuration	Megatrends, Inc.
IIO Configuration		
 Socket0 Configuration Socket1 Configuration Intel® VT for Directed I/0 (VT-d) Intel® VMD technology PCIE Hot Plug PCI-E ASPM Support (Global) 	[Disable] [Disable]	
		++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.19.1268. C	opyright (C) 2017 American M	egatrends, Inc.

Socket0 PCIe Configuration

This item is used for PCIe port bifurcation control and to set the target link speed as Gen1, Gen2, or Gen3.

Aptio Setup Utilit	y – Copyright (C) 2017 American Socket Configuration	Megatrends, Inc.
IOUO (PCIE X8 SLOT1) IOU1 (PCIE X16 SLOT4) IOU2 (PCIE X16 SLOT6) > IOU0 (PCIE X8 SLOT1) - Port 1A > IOU1 (PCIE X16 SLOT4) - Port 2A > IOU2 (PCIE X16 SLOT6) - Port 3A	[Auto] [Auto] [Auto]	Selects PCIe port Bifurcation for selected slot(s)
	IOU2 (PCIE X16 SLOT6) x4x4x4x44 x4x4x8 x8x4x4 x8x8 x16 Auto	<pre> +: Select Screen 1: Select Item nter: Select /-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Version 2.19.1268). Copyright (C) 2017 American M	egatrends, Inc.



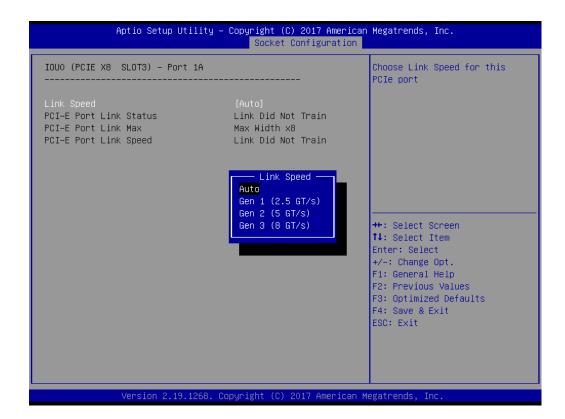
Aptio Setup Utility -	Copyright (C) 2017 American Socket Configuration	Megatrends, Inc.
IOU1 (PCIE X16 SLOT4) – Port 2A		Choose Link Speed for this PCIe port
Link Speed PCI-E Port Link Status PCI-E Port Link Max PCI-E Port Link Speed	[Auto] Link Did Not Train Max Width x16 Link Did Not Train Link Speed Auto Gen 1 (2.5 GT/s) Gen 2 (5 GT/s) Gen 3 (8 GT/s)	★: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.19.1268. C	opyright (C) 2017 American M	egatrends, Inc.

IOU2 (PCIE X16 SLOT6) – Port 3A		Choose Link Speed for this PCIe port
Link Speed PCI-E Port Link Status PCI-E Port Link Max PCI-E Port Link Speed	Max Width x16	<pre>++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>

Socket1 PCIe Configuration

This item is used for PCIe port bifurcation control and to set the target link speed as Gen1, Gen2, or Gen3.

Aptio Setup Utilit	y – Copyright (C) 201 Socket Config	7 American Megatrends, Inc. guration
IOUO (PCIE X8 SLOT3) IOU1 (PCIE X16 SLOT5) IOU2 (PCIE X16 SLOT2) IOU0 (PCIE X8 SLOT3) - Port 1A IOU1 (PCIE X16 SLOT5) - Port 2A IOU2 (PCIE X16 SLOT2) - Port 3A	[Auto] [Auto] [Auto]	Settings related to PCI Express Port
		<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Version 2.19.1268). Copyright (C) 2017 (American Megatrends, Inc.

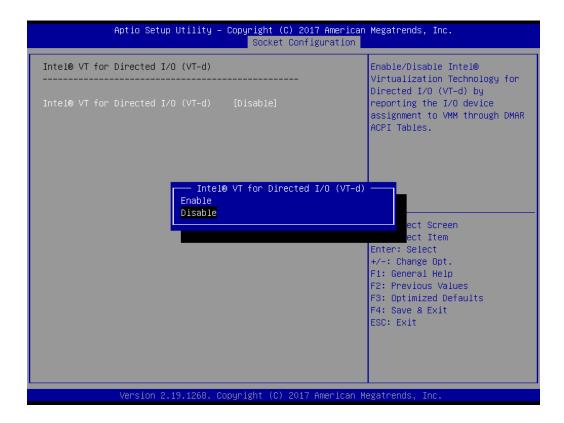


Aptio Setup <u>Utility –</u>	Copyright (C) 2017 American	Megatrends, Inc.
	Socket Configuration	
IOU1 (PCIE X16 SLOT5) - Port 2A		Choose Link Speed for this PCIe port
Link Speed PCI-E Port Link Status PCI-E Port Link Max PCI-E Port Link Speed	[Auto] Link Did Not Train Max Width x16 Link Did Not Train Link Speed Auto Gen 1 (2.5 GT/s) Gen 2 (5 GT/s) Gen 3 (8 GT/s)	<pre>++: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Version 2.19.1268. Co	opyright (C) 2017 American M	egatrends, Inc.

IOU2 (PCIE X16 SLOT2) – Port 3A		Choose Link Speed for this PCIe port
Link Speed PCI-E Port Link Status PCI-E Port Link Max PCI-E Port Link Speed	Link Speed	
	Gen 2 (5 GT/s) Gen 3 (8 GT/s)	<pre>++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>

Intel VT for Directed I/O (VT-d)

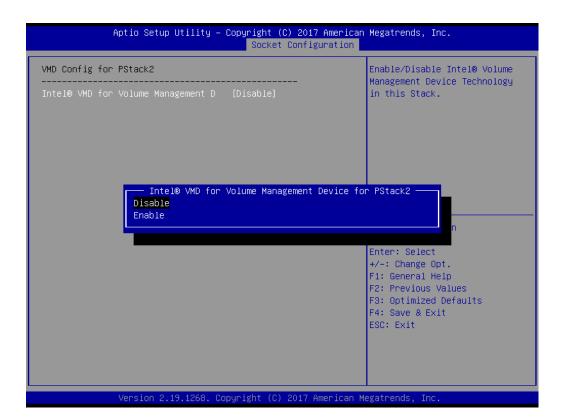
This item enables/disables Intel[®] Virtualization Technology for directed I/O.



Intel VMD technology

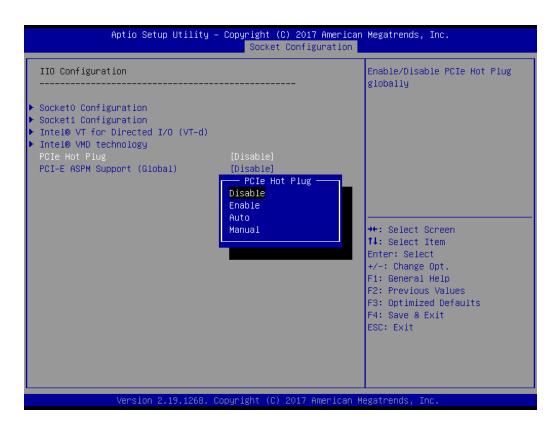
This item enables/disables Intel[®] Volume Management Device Technology.

Aptio Setup Utility – Copyright (C) 2017 American H Socket Configuration	Megatrends, Inc.
Intel® VMD technology	
	++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.19.1268. Copyright (C) 2017 American Me	datrends Inc



PCIe Hot Plug

This item enables/disables PCIe hot plugging globally.

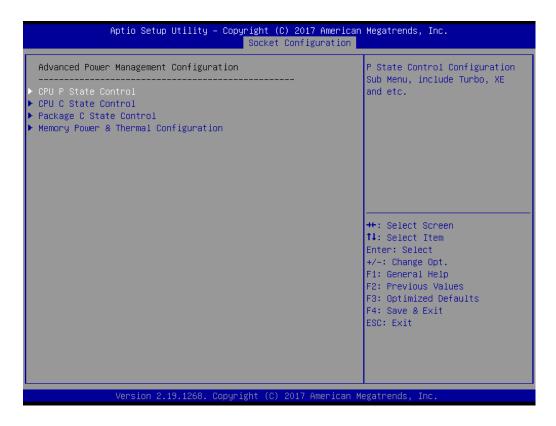


PCI-E ASPM Support (Global)

This item is used to set the ASPM support level as disables, per port, or L1 state only.

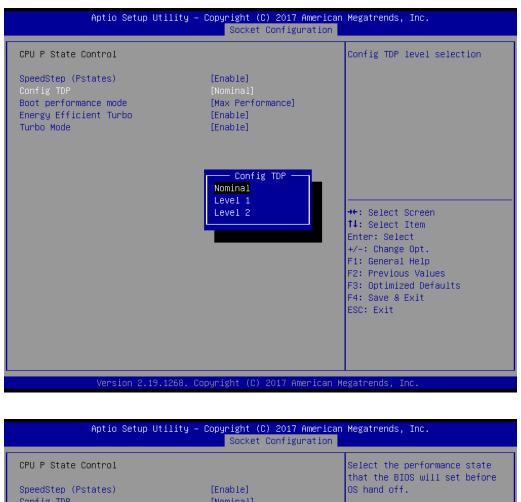
Aptio Setup Ut	ility – Copyright (C) 2017 Americar Socket Configuration	n Megatrends, Inc.
IIO Configuration		This option enables / disables the ASPM support for all
 Socket0 Configuration Socket1 Configuration Intel® VT for Directed I/O (Intel® VMD technology 		downstream devices.
PCIe Hot Plug PCI-E ASPM Support (Global)	[Disable] [Disable]	
	PCI-E ASPM Support (Global) — Disable Per-Port L1 Only	Select Screen Select Item r: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.19.	1268. Copyright (C) 2017American ⊧	Wegatrends, Inc.

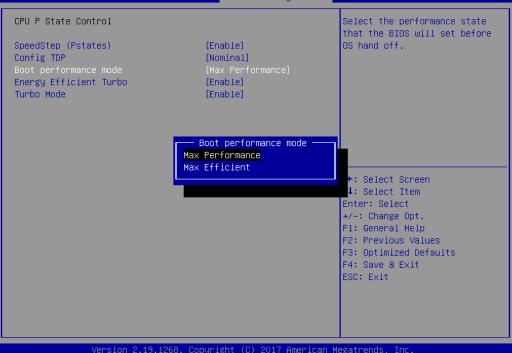
3.2.4.5 Advanced Power Management Configuration

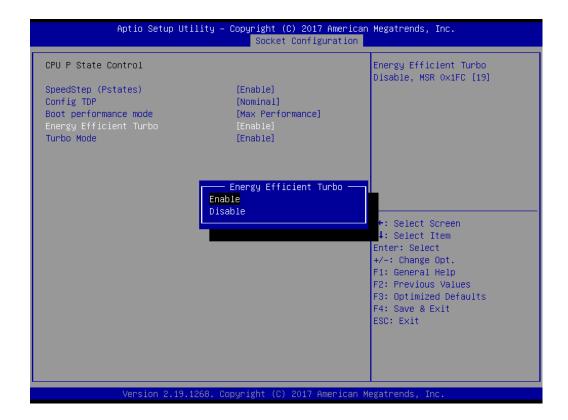


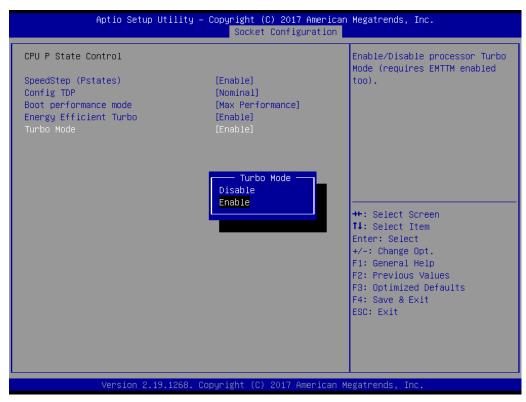
CPU P State Control

Aptio Setup Uti	lity – Copyright (C) 2017 Amer Socket Configurati	
CPU P State Control		Enable/Disable EIST (P-States)
SpeedStep (Pstates) Config TDP Boot performance mode Energy Efficient Turbo Turbo Mode	[Enable] [Nominal] [Max Performance] [Enable] [Enable]	
	SpeedStep (Pstates) — Disable Enable	<pre>#*: Select Screen fl: Select Item Enter: Select +/-: Change Opt. Fl: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Version 2.19.1	268. Copyright (C) 2017 Americ	an Megatrends, Inc.

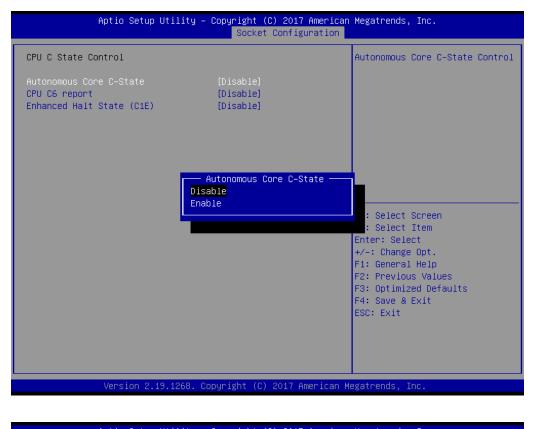




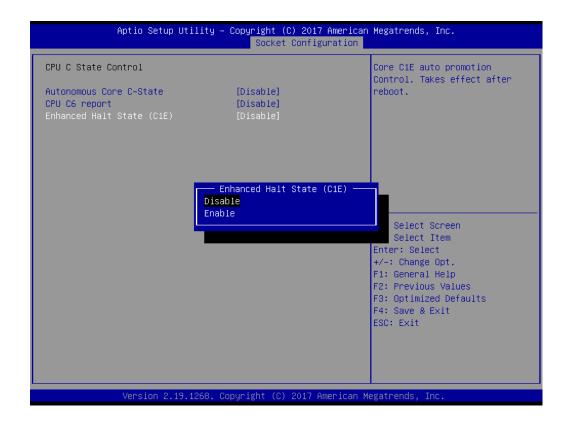




CPU C State Control



Aptio Setup Utility –	Copyright (C) 2017 American Socket Configuration	Megatrends, Inc.
CPU C State Control Autonomous Core C-State CPU C6 report Enhanced Halt State (C1E)	[Disable] [Disable] [Disable]	Enable/Disable CPU C6(ACPI C3) report to OS
	CPU C6 report Disable Enable Auto	<pre>++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Version 2.19.1268. C	opyright (C) 2017 American M	egatrends, Inc.



Package C State Control

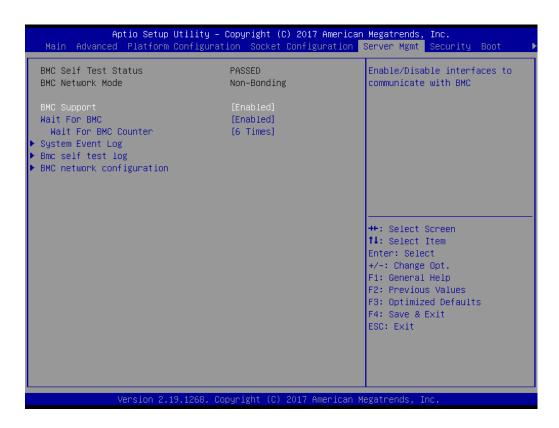


Chapter 3 AMI BIOS

Memory Power & Thermal Configuration

Memory Power & Thermal Configuration		Configure MEMHOT Input and Output Mode: Mem Hot Sense
MEMHOT Throttling Mode	[Disable]	Therm Throt or Mem Hot Output Therm Throt.
	MEMHOT Throttling Mode Disable Output-only Input-only Input and Output Enabled	+: Select Screen 4: Select Item nter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

3.2.5 Server Management



BMC Support

This item enables/disables interface communication with BMC.

Wait for BMC

This item enables/disables the Wait for BMC function. If enabled, the motherboard will wait $30 \sim 60$ seconds until the BMC module boots up. Then the normal BIOS post screen will be displayed. If disabled, the motherboard will not wait for a response from the BMC module.

Wait for BMC counter

This item is used to initialize the host for BMC interfaces. The MB beeps per 5 seconds to check it.

3.2.5.1 System Event Log

Aptio Setup Utility -	Copyright (C) 2017 American	Megatrends, Inc. Server Mgmt
Enabling/Disabling Options SEL Components	[Enabled]	Change this to enable or disable all features of System Event Logging during boot.
Erasing Settings Erase SEL When SEL is Full	[No] [Do Nothing]	Lyent Logging du ing boot.
Custom EFI Logging Options Log EFI Status Codes	[Error code]	
NOTE: All values changed here do not until computer is restarted.	take effect	
		↔: Select Screen ↑↓: Select Item Enter: Select
		+/−: Change Opt. F1: General Help F2: Previous Values
		F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.19.1268. Co	pyright (C) 2017 American M	egatrends, Inc.

SEL Components

This item enables/disables all features of system event logging during boot.

Erase SEL

This item is used to configure the Erase SEL function.

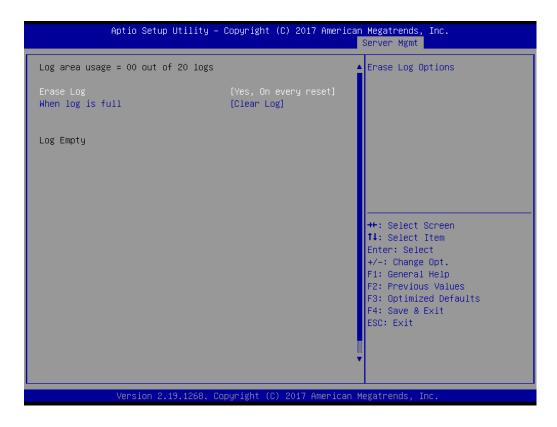
When SEL is Full

This item is used to choose options for reactions to a full SEL.

Log EFI Status Codes

This item enables/disables the logging of EFI status codes to log only error codes or only progress codes or both.

3.2.5.2 BMC Self Test Log



Erase Log

This item is used to configure the erase log options.

When Log is Full

This item is used to configure the action to be taken when the log is full.

3.2.5.3 BMC Network Configuration

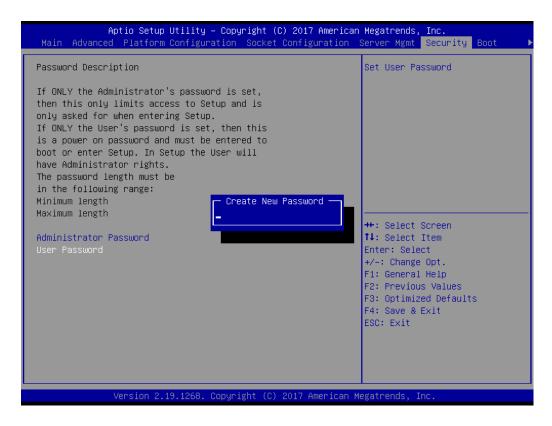
Aptio Setup Utility -	Copyright (C) 2017 America	n Megatrends, Inc. Server Mgmt
BMC network configuration Lan channel 1 Configuration Address source Current Configuration Address sour Station IP address Subnet mask Station MAC address Router IP address	[Unspecified] StaticAddress 192.168.0.10 255.255.255.0 00-c0-a8-12-34-56 0.0.0.0	Select to configure LAN channel parameters statically or dynamically(by BIOS or BMC). Unspecified option will not modify any BMC network parameters during BIOS phase
Lan channel 2 Configuration Address source Current Configuration Address sour Station IP address Subnet mask Station MAC address Router IP address	[Unspecified] StaticAddress 192.168.0.11 255.255.255.0 00-c0-a8-12-34-57 0.0.0.0	<pre>++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>

Configuration Address Source

This item is used to configure LAN channel parameters statically or dynamically (by BMC). If unspecified, BMC network parameters will not be modified.

3.2.6 Security

	ility – Copyright (C) 2017 Afiguration Socket Configu	American Megatrends, Inc. ⊔ration Server Mgmt Security Boot →
Password Description		Set Administrator Password
If ONLY the Administrator's p then this only limits access only asked for when entering If ONLY the User's password and mu boot or enter Setup. In Setup have Administrator rights. The password length must be in the following range: Minimum length Maximum length	to Setup and is Setup. is set, then this ust be entered to	
Administrator Password User Password		<pre>++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Version 2.19.:	1268. Copyright (C) 2017 An	merican Megatrends, Inc.



Note!

自

With AC power and CMOS battery. Short CMOS1 jumper. Date/Time and Password: keep Settings: reset to default Without AC power and CMOS battery. Short CMOS1 jumper. Date/Time: reset to default Password: keep Settings: reset to default

Chapter 3 AMI BIOS

3.2.7 Boot

	<mark>lity – Copyright (C) 2017 America</mark> figuration Socket Configuration	
Boot Configuration Setup Prompt Timeout Bootup NumLock State Quiet Boot	<mark>1</mark> [On] [Disabled]	Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting.
Boot Option Priorities Boot Option #1 Boot Option #2 Boot Option #3	[UEFI: JetFlashTrans] [JetFlashTranscend 1] [UEFI: Built-in EFI]	
Hard Drive BBS Priorities		<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Version 2.19.1	268. Copyright (C) 2017 American	Megatrends, Inc.

Setup Prompt Timeout

This item is used to set the number of seconds to wait for setup activation key.

Bootup NumLock State This item is used to set the keyboard NumLock state as On or Off.

Quiet Boot

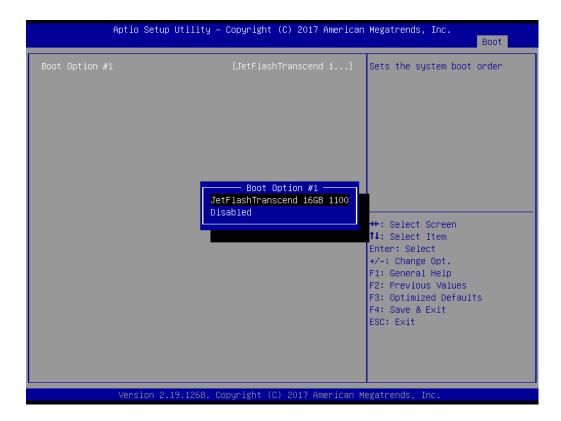
This item enables/disables quiet boot function.

Boot Option Priorities

This item is used to set the system boot priorities.

Hard Drive BBS Priorities

This item is used to set boot priorities. This item is only displayed when external legacy devices are plugged in.



3.2.8 Save & Exit

Save Options Save Changes and Exit Discard Changes and Exit	Exit system setup after saving the changes.
Save Changes and Reset Discard Changes and Reset	
Save Changes Discard Changes	
Default Options Restore Defaults Save as User Defaults	
Restore User Defaults	++: Select Screen ↑↓: Select Item
Boot Override UEFI: Built-in EFI Shell	Enter: Select
UEFI: BUILT-IN EFI SNEIL UEFI: JetFlashTranscend 16GB 1100, Partition 1 JetFlashTranscend 16GB 1100	+/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

Save Changes and Exit

This item is used to exit system setup after saving changes.

Discard Changes and Exit This item is used to exit system setup without saving changes.

Save Changes and Reset This item is used to reset the system after saving changes.

Discard Changes and Reset
 This item is used to reset the system without saving changes.

Save Changes

This item is used to save changes to any setup options.

Discard Changes This item is used to discard changes to any setup options.

Restore Defaults

This item is used to restore/load default values for the setup options.

Save as User Defaults

This item is used to save changes as user defaults.

Restore User Defaults

This item is used to restore the setup options to the user default settings.



Chipset Software Installation Utility

4.1 Before Beginning

To facilitate the installation of the enhanced display drivers and utility software, read the instructions in this chapter carefully. The drivers for the ASMB-925 serverboards are provided on the software installation CD.

Before beginning, it is important to note that the relevant software application must be installed on the system prior to installing the enhanced display drivers. Additionally, many of the installation procedures assume users are familiar with both the relevant software applications and operating system commands. Review the relevant operating system commands and the pertinent sections of the application software's user manual before performing the installation.

4.2 Introduction

4.2.1 Main Menu

The Intel[®] Chipset Software Installation (CSI) utility installs the Windows INF files that outline to the operating system how the chipset components will be configured. This is needed for the proper functioning of the following features:

- Core PCI PnP services
- Serial ATA interface support
- USB 1.1/2.0/3.0 support
- Identification of Intel[®] chipset components in the Device Manager

Note!

The files on the software installation CD are compressed. Do not attempt to install the drivers by copying the files manually. You must use the supplied SETUP program to install the drivers.



The chipset driver is used for the following versions of Windows and must be installed before installing drivers:

Windows Server 2016 Standard	x64
Windows Server 2012 R2 Standard	x64
Windows 10 Ultimate	x64



All Microsoft hot fix files must be up to date when using this OS.

4.3 Windows Series Driver Setup

Insert the driver CD into the system's CD-ROM drive. Then access the Chipset folder. Find the executable in the folder and click on it to install the driver.





VGA Setup

5.1 Introduction

Install the ASPEED VGA driver to enable this function, which includes the following features:

- 32-bit 2D graphics engine on board for normal operation
- 64 MB RAM for this chip, the highest resolution is 1920 x 1200

5.2 Windows Series Driver Setup

Insert the driver CD into the system's CD-ROM drive. When the folder is displayed, navigate to the BMC folder. Click the executable file to complete the installation of the drivers for the OS required.





- If the ASMB-925 serverboard carries an additional graphics card for VGA output, set this additional graphic card as "major output" in the Display Properties settings of the OS.
- The WDDM driver can support the following OS versions:
 Windows 8 x86/x64 version
 - Windows 8.1 x86/x64 version
 - Windows Server 2012 version (WHQL)
 - Windows Server 2012R2 version (WHQL)
 - Windows 10 x86/x64 version
 - Windows Server 2016 version (WHQL)
- 3. ASPEED Graphics WDDM driver limitation on Microsoft Windows OS
 - Because ASPEED VGA is a 2D VGA, it is a non WHQL-certified driver. The WHQL requires WDDM drivers to have 3D VGA function.
 - Because it is non WHQL-certified driver, there may be some compatibility issues with certain applications



LAN & USB 3.0 Configuration

6.1 LAN Configuration

6.1.1 Introduction

ASMB-925 serverboard features two Gigabit Ethernet LAN connections via dedicated PCI Express x1 lanes: GbE LAN1 (Intel[®] I210) and GbE LAN2 (Intel[®] I210), and two 10G BASE-T LAN connectors: LAN3 and LAN4 (Intel[®] X557 PHY). These connections eliminate bottlenecks of network data and incorporate Gigabit Ethernet at 10 Gbps.

6.1.2 Features

- 10/100/1000 and 10G BASE-T Ethernet controller
- 10/100/1000 and 10G BASE-T triple-speed MAC
- Full duplex at 10/100/1000 Mbps or 10 Gbps and half duplex at 10/100/1000 Mbps
- Wake-on-LAN (WOL) support
- PCIe x1 host and PHY interface

6.1.3 Installation

The integrated Intel[®] Gigabit Ethernet controller supports all major network OS. However, the installation procedure varies with different OS. Follow the driver setup procedure for the OS you are using.

6.1.4 Windows Series Driver Setup

Insert the driver CD into the system's CD-ROM drive. Open the LAN folder and click on the LAN driver for your OS.



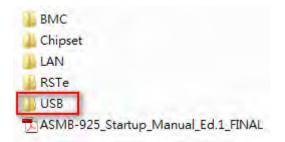
6.2 USB 3.0

6.2.1 Introduction

ASMB-925 serverboards feature six USB 3.0 ports, four at the rear and two via the onboard header. USB 3.0 offers a bandwidth of up to 500MB/s to reduce the time required for data transmissions.

6.2.2 Windows Series Driver Setup

Insert the driver CD into the system's CD-ROM. Access the USB folder and click the .exe driver file for your OS.



6.3 SATA & PCIe SSD RAID

The Intel[®] C621/C622 PCH chip offers SATA and PCIe SSD RAID support for Windows OS.



1. Visit the Intel website to download the Intel Rapid Storage Technology Enterprise for Microsoft Windows Operating System Software User Guide.

2. Visit the Microsoft website to download the hotfix file.





Programming the Watchdog Timer

The ASMB-925 serverboards' watchdog timer can be used to monitor system software operation and take corrective action if the software fails to function within the programmed period. This section describes the operation of the watchdog timer and how to program it.

A.1 Watchdog Timer Overview

The watchdog timer is built into the EC controller IT8528E. It provides the following functions for user programming:

- Can be enabled and disabled
- Timer can be set from 1 to 255 seconds
- Generates an interrupt or reset signal if the software fails to reset the timer before timeout

A.2 Programming the Watchdog Timer

The I/O port address of the watchdog timer is listed below.

Address	Description	
0x57	Event - Warm Reset: 0x04	
0x5E	Warm Reset Timer (High BYTE)	Based 100ms
0x5F	Warm Reset Timer (Low BYTE)	Daseu TUUIIIS

Below is a step-by-step example for programming the watchdog timer.

Step	Action	Description
00	Read 0x299 port	Clear I/O port
	Wait IBF clear	0x29A, BIT1, = 0
01	Write 0x89 to 0x29A	
	Wait IBF clear	0x29A, BIT1, = 0
02	Write 0x5E to 0x299 port	
	Wait IBF clear	0x29A, BIT1, = 0
03	Write 0x00 to 0x299 port	Set 10 sec (high byte)
	Wait IBF clear	0x29A, BIT1, = 0
04	Write 0x89 to 0x29A	
	Wait IBF clear	0x29A, BIT1, = 0
05	Write 0x5F to 0x299 port	
	Wait IBF clear	0x29A, BIT1, = 0
06	Write 0x64 to 0x299 port	Set 10 sec (low byte)
	Wait IBF clear	0x29A, BIT1, = 0
07	Write 0x89 to 0x29A	
	Wait IBF clear	0x29A, BIT1, = 0

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08	Write 0x57 to 0x299 port	Watchdog Event
	Wait IBF clear	0x29A, BIT1, = 0
09	Write 0x04 to 0x299 port	(Warm) Reset event
	Wait IBF clear	0x29A, BIT1, = 0
10	Write 0x28 to 0x29A	Start watchdog
	Wait 1 ~ 9 sec	
	Wait IBF clear	0x29A, BIT1, = 0
11	Write 0x29 to 0x29A	Stop watchdog
	Wait IBF clear	0x29A, BIT1, = 0
12	Go to Step 07	



I/O Pin Assignments

B.1 USB Header (USB7_8, USB9_10)



Table B.1: USB Header				
Pin	Signal	Pin	Signal	
1	USB_VCC5	2	USB_VCC5	
3	USB_D-	4	USB_D-	
5	USB_D+	6	USB_D+	
7	GND	8	GND	
9	Кеу	10	N/C	

B.2 USB3.0 Header (USB5_6)

11	19
0000	00000 000000
10	2 1

Table B.2: USB Header			
Pin	Signal	Pin	Signal
1	+5 V	2	STDA_SSRX-
3	STDA_SSRX+	4	GND
5	STDA_SSRX-	6	STDA_SSRX+
7	GND	8	D-
9	D+	10	N/C (OC pin reserved)
11	D+	12	D-
13	GND	14	STDA_SSRX+
15	STDA_SSRX-	16	GND
17	STDA_SSRX+	18	STDA_SSRX-
19	+5 V	20	

B.3 VGA Connector (VGA1)

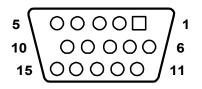


Table B.3: VGA Connector				
Pin	Signal	Pin	Signal	
1	RED	9	VCC	
2	GREEN	10	GND	
3	BLUE	11	N/C	
4	N/C	12	SDT	
5	GND	13	H-SYNC	
6	GND	14	V-SYNC	
7	GND	15	SCK	
8	GND			

B.4 RS-232 Interface (COM2)



Table B.4: RS-232 Interface	
Pin	Signal
1	DCD
2	RXD
3	TXD
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI

B.5 External Keyboard Connector (KBMS1)



Table B.5: External Keyboard Connector		
Pin	Signal	
1	KB CLK	
2	KB DATA	
3	MS DATA	
4	GND	
5	VCC	
6	MS CLK	

B.6 CPU and System Fan Power Connector (CPUFAN0~1, SYSFAN0~SYSFAN4)

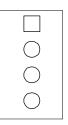


Table B.6: Fan Power Connector		
Pin	Signal	
1	GND	
2	+12 V	
3	Detect	
4	PWM	

B.7 Power LED (JFP3)



Table B.7: Power LED	
Pin	Function
1	LED power (3.3 V)
2	N/C
3	Ground

B.8 External Speaker Connector (JFP2)

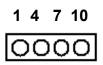


Table B.8: External Speaker Connector		
Pin	Function	
1	SPK+	
4	N/C	
7	BZ-	
10	SPK-	

B.9 Reset Connector (JFP1)



Table B.9: Reset Connector		
Pin	Signal	
9	RESET	
12	GND	

B.10 HDD LED Connector (JFP1)



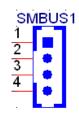
Table B.10: HDD LED Connector		
Pin	Signal	
2	HDD_LED+	
5	HDD_LED-	

B.11 ATX Soft Power Switch (JFP1)

3	6
0	0

Table B.11: ATX Soft Power Switch		
Pin	Signal	
3	PWR-BTN	
6	GND	

B.12 Front Panel SMBus Connector (SMBUS1)



1	+V5	
2	SMB_SCL_FRU	
3	SMB_SDA_FRU	
4	GND	

B.13 USB/LAN Ports (LAN1_USB1_2, LAN2_USB3_4)

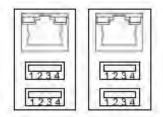


Table B.12: USB Port				
Pin	Signal	Pin	Signal	
1	VCC_DUAL	3	Data0+	
2	Data0-	4	GND	

Table B. [•]	Table B.13: Giga LAN 10/100/1000 BASE-T RJ-45 Port			
Pin	Signal	Pin	Signal	
1	MID0+	4	MID2+	
2	MID0-	5	MID2-	
3	MID1+	7	MID3+	
6	MID1-	8	MID3-	

B.14 Front Panel Audio Connector (HDAUD1)

2	4				
	0	0	0	0	
	0	0	0	0	0
1	3				11

Table B	Table B.14: Front Panel Audio Connector			
Pin	Signal	Pin	Signal	
1	ACZ_VCC	2	GND	
3	ACZ_SYNC	4	ACZ_BITCLK	
5	ACZ_SDOUT	6	ACZ_SDIN0	
7	ACZ_SDIN1	8	ACZ_RST	
9	ACZ_12V	10	GND	
11	GND	12	N/C	

B.15 Alarm Board Connector (VOLT1)

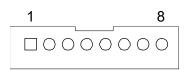


Table B.15: Alarm Board Connector				
Pin	Signal	Pin	Signal	
1	5VSB	5	+5V	
2	GND	6	+3.3V	
3	GND	7	-12V	
4	-5V	8	+12V	

B.16 Case Open Connector (JCASE1)



Table B.16: Case Open Connector		
Pin	Signal	
1	CASEOP	
2	GND	

B.17 Front Panel LAN LED Connector (LANLED1)

_	_	4	-	-	
	0	0	0	0	
Þ		0	0	0	0
		3		7	

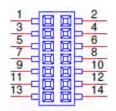
Table B.17: Front Panel LAN LED Connector				
Pin	Signal	Pin	Signal	
1	LAN1/3_LED0_ACT	2	LAN2/4_LED1_ACT	
3	+V3.3_AUX	4	+V3.3_AUX	
5	LAN1/3_LED1_1000M	6	LAN2/4_LED2_1000	
7	+V3.3_AUX	8	+V3.3_AUX	
9	VCC3	10	N/C	

B.18 SATA SGPIO (SGPIO1)



1	SGPIO_SATA_CLOCK	
2	N/C	
3	SGPIO_SATA_LOAD	
4	SGPIO_SATA_DATA0	
5	SGPIO_SATA_DATA1	

B.19 LPC Connector (LPC1)



1	CLK_24M_LPCCN	2	LPC_AD1	
3	PLTRST_LPC	4	LPC_AD0	
5	LPC_FRAME	6	+3.3 V	
7	LPC_AD3	8	GND	
9	LPC_AD2	10	SMB_SCL_LPC	
11	SERIRQ_PCH	12	SMB_SDA_LPC	
13	+5V_AUX	14	+5V	

B.20 Clear CMOS and Update ME Connector (JCMOS1, JME1)

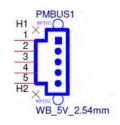


PH 3x1V 2.54mm PH_3x1V_2.00mm

JME1

	JCMOS1	JME1	
1	N/C	N/C	
2	RTC_RST_PCH	PCH_HDA_SDO	
3	GND	V3.3_AUX	

B.21 PMBUS Connector (PMBUS1)



1	SMB_SCL_PM
2	SMB_SDA_PM
3	SMB_ALT_PM
4	GND
5	+V3.3_AUX

B.22 GPIO Connector (GPIO1)



1	EC_GPIO0	2	EC_GPIO4	
3	EC_GPIO1	4	EC_GPIO5	
5	EC_GPIO2	6	EC_GPIO6	
7	EC_GPIO3	8	EC_GPIO7	
9	+VCC_GPIO	10	GND	



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