

User Manual

ASMB-825 Series

Dual LGA 3647-P0 Intel Xeon[®] Server Board with 6 DDR4, 4 PCIe x16, 8 SATA3.0, 6 USB3.0, Dual 10GbE, IPMI



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Initial Inspection

Before installing motherboard, please make sure that the following materials have been shipped:

- 1 x ASMB-825 ATX motherboard
- 1 x ASMB-825 Startup 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

If any of these items are missing or damaged, contact distributor or sales representative immediately. We have carefully inspected the ASMB-825 mechanically and electrically before shipment. It should be free of marks and scratches and in perfect working order upon receipt. When unpacking the ASMB-825, check it for signs of shipping damage. (For example, damaged box, scratches, dents, etc.) If it is damaged or it 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	IPMI	10GbE LAN
ASMB-825-00A1E	C621	8*SATA3+ 1*M.2	4 PCIe x16 + 2 PCIe x8 (Gen 3.0)	No	No
ASMB-825I-00A1E	C621	8*SATA3+ 1*M.2	4 PCIe x16 + 2 PCIe x8 (Gen 3.0)	Yes	No
ASMB-825T2-00A1E	C622	8*SATA3+ 1*M.2	4 PCIe x16 + 2 PCIe x8 (Gen 3.0)	Yes	Yes

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Overview

1.1 Introduction

The ASMB-825 serverboard is the most advanced Intel Xeon Processor Scalable Family series board for server-grade IPC applications that require high-performance computing power & multi-expansion slots. This serverboard supports Intel Xeon Scalable series processor and DDR4 ECC-REG 2133/2400/2666/2933 MHz memory up to 768GB. ASMB-825 provides four PCIe x16 slots and two PCIe x8 slots in Gen3.0 high speed. In addition, the ASMB-825 full SKU has dual Gigabit and dual 10GbE Ethernet LAN ports that eliminate network bottlenecks.

Two RJ-45 LAN jacks (one is GbE and the other one is 10GbE) can be shared with IPMI function that allows remote control management. High reliability and outstanding performance makes ASMB-825 the ideal platform for industrial server/networking applications.

By using the Intel C621/C622 chipset, the ASMB-825 offers a variety of features such as 6 x USB3.0 and 5 x USB 2.0 connectivity, 8 x onboard SATA III and 1 x M.2 (SATA and PCIe) interface. It supports software RAID 0, 1, 10 and 5 (Windows only*), and with the latest Intel RSTe (Rapid Storage Technology Enterprise) it provides compelling RAID solution for NVMe SSDs via Intel VROC (Virtual RAID on CPU) HW key.

These powerful I/O capabilities ensure even more reliable data storage capabilities and high-speed I/O peripheral connectivity.



- 1. IPMI module will be included in ASMB-825I and ASMB-825T2 SKUs. Only ASMB-825T2 SKU can support 10GbE LAN ports.
- 2. Please refer to Order Information at the front for chipset, IPMI, and LAN support on individual product SKUs.
 - 3. Please refer to the release note of each Linux OS for Intel's C621/ C622 chipset SATA RAID function support.

1.2 Features

General

- Intel Xeon Processor Scalable Family support: ASMB-825 is equipped with two CPU sockets to support Intel Xeon Platinum/Gold/Silver/Bronze series up to 28-core processors.
- High performance I/O capability: 2 x 10GbE + 2 x GbE LAN, 4 x PCIe x16 slot (x16 link) + 2 x PCIe x8 slot (x8 link), 8 x SATA and 1 x M.2 connector, 6 x USB 3.0 and 5 x USB 2.0 (incl. 1 x Type-A) ports.
- Standard ATX form factor with industrial features: ASMB-825 provides industrial features like long product lifecycle, reliable operation under wide temperature range, watchdog timer, etc.
- IPMI 2.0 support: ASMB-825 (T2 and I SKUs) equipped with ASPEED 2500 BMC chip supports IPMI 2.0 (Intelligent Platform Management Interface 2.0) via sharing LAN port.
- KVM over IP: KVM over IP function allows BIOS level remote control of ASMB-825 (T2 and I SKUs) through your own computer.

1.3 Specifications

Table 1.1: Specifica	tions			
Processor				
CPU	 Dual Intel LGA3647 Xeon processor sockets Supports Intel 1st and 2nd Gen Xeon Scalable family, up to 26 cores Supports the TDP of processor up to 150 W 			
System Memory				
Memory Capacity	 DDR4 memory bus 6 memory slots Up to 768GB of memory One DIMM per channel 			
Memory Type	Supports DDR4 2133/2400/2666/2933 MHz RDIMM/LRDIMM modules			
DIMM Sizes	Each memory slot supports 4GB, 8GB, 16GB, 32GB, 64GB, and 128GB memory 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			
Network Controllers	 2 x Intel X557 10GbE and 2 x Intel I210 Gigabit Ethernet Con troller connected to PCH Above network supports 10GbE Base-T and 10/100/1000 Base-T, with RJ-45 output 			
VGA	ASPEED AST2500/2510 controller with 64 MB VGA memory provides basic 2D VGA function.			
EC	ITE IT8528E chip provide motherboard keyboard mouse, RS-232, and hardware monitor functions			
BMC 8251/825T2 SKUs	One of Intel I210 Gigabit Ethernet and one of Intel X557 10GbE connected to AST2500 for BMC remote management			
Input/Output				
Storage	 Total 8 x SATA ports and 1 x M.2 (SATA/PCIe x4 compatible) provide 6 Gb/s and 8 Gb/s bandwidth RAID 0, 1, 5, 10 support (Windows only) 			
LAN	■ 4 x RJ-45 LAN ports (2 x 10GbE + 2 x GbE LAN)			
USB	 2 x USB 3.0 ports at rear window 2 x USB 3.0 internal headers (4 ports) 2 x USB 2.0 internal headers (4ports) 1 x internal Type-A USB 2.0 port. 			
Graphics	■ 1 x VGA port.			
Keyboard/Mouse	PS/2 keyboard and mouse internal header (onboard).			
Serial Port/Header	 1 x RS232 port at rear window, 1 x internal header (2 x 5P pitch: 2.50 mm) 			

Table 1.1: Specifica	ations					
Power Connector						
System Power	1 x 24-pin SSI EPS 12V power connector (Input 12V, 5V, 3.3V, 5Vsb)					
CPU Power	2 x 8-pin SSI EPS 12V power connector for CPU & Memory power (12V)					
PCIe slot power	1 x 4-pin 12V power connector for PCIe slot 12V input					
Expansion Slots						
PCI-express	 4 x PCle x16 slot (Gen3 x16 link) PCIEX16_SLOT2 (from CPU 1) PCIEX16_SLOT4 (from CPU 0) PCIEX16_SLOT5 (from CPU 1) PCIEX16_SLOT6 (from CPU 0) 2 x PCle x8 slot (Gen3 x8 link) PCIEX8_SLOT1 (from CPU 0) PCIEX8_SLOT3 (from CPU 1) 					
System BIOS						
BIOS Type	128 Mb SPI Flash EEPROM with AMI BIOS					
PC Health Monitoring						
Voltage	Monitors for CPU Cores, +3.3V, +5V, +12V, +5V Standby, VBAT					
FAN	 Two 4-pin headers for CPU cooler and five 4-pin headers for system fans (front*4 + rear*1) All fans with tachometer status monitoring Thermal control for all fan connectors 					
Temperature	 Monitoring for CPU (PECI) Monitoring for System (EC) 					
Other Features (Case Open)	Chassis intrusion detectionChassis intrusion header					
Operating Environmen	t/Compliance					
RoHS	RoHS 6/6 Pb Free Compliant					
Environmental Spec.	 Operating Temperature: 0 to 40° C Non-operating Temperature: -40 to 85° C Operating Relative Humidity: 10% to 90% (non-condensing) Non-operating Relative Humidity: 10% to 95% (non-condensing) 					

1.4 Board Layout, Jumpers and Connectors

Connectors on the ASMB-825 are linked to external devices such as hard disk drives. In addition, ASMB-825 has a number of jumpers that are used to configure the system for specific applications.

The tables below list the functions of each jumper and connector. Later sections in this chapter give instructions for setting jumpers. Chapter 2 gives instructions for connecting external devices to ASMB-825.

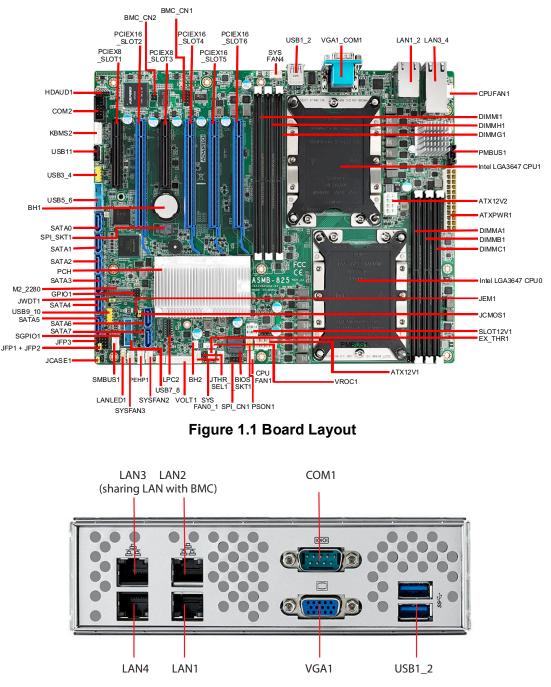
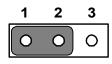


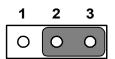
Figure 1.2 Rear I/O of Full SKU (ASMB-825T2-00A1E)

Table 1.2: Onb	oard LAN LED Co	olor Definition					
10/100/1000 Mbps	10/100/1000 Mbps LAN Link/Activity LED Scheme						
L	eft 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				
-	ink/Activity LED Sch	eme LAN3 & LAN4	(10G)				
	eft Right	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	Watch Dog Reset	1-2			
PSON1	AT(1-2)/ATX(2-3)	2-3			
JCASE1	Chassis case open alarm	1-2			
JTHR_SEL	On board(1-2)/external thermistor(2-3)	1-2			



Keep CMOS data/ Disable ME update/



Clear CMOS data/ Enable ME update/

Table 1.4: Connectors				
Label	Function			
ATX12V1	SSI EPS 12V auxiliary power connector (for CPU0) and memory			
ATX12V2	SSI EPS 12V auxiliary power connector (for CPU1) and memory			
ATXPWR1	SSI EPS 24-pin main power connector (for system)			
BH2	For optional battery kit			
BIOS SKT1	BIOS SPI ROM			
BMC CN1, BMC CN2	IPMI connector			
COM2	Serial port: RS-232			
CPU0	Intel LGA3647 CPU0 socket			
CPU1	Intel LGA3647 CPU1 socket			
CPUFAN0	CPU0 fan connector (4-pin)			
CPUFAN1	CPU1 fan connector (4-pin)			
DIMMA1	Channel A DIMM1 of CPU0			
DIMMB1	Channel B DIMM1 of CPU0			
DIMMC1	Channel C DIMM1 of CPU0			
DIMMG1	Channel G DIMM1 of CPU1			
DIMMH1	Channel H DIMM1 of CPU1			
DIMMI1	Channel I DIMM1 of CPU1			
EX THR1	Connector for external thermistor			
GPIO1	GPIO function for customize usage			
HDAUD1	Audio header			
JFP1/JFP2/JFP3	Front panel pin header			
KBMS2	For additional keyboard/mouse			
LAN1 2, LAN3 4	RJ-45 LAN connector			
LANLED1	LAN LED extension connector			
LPC2	LPC port for debug & TPM module			
M2 2280	M.2 connector (SATA & PCIe x4)			
PEHP1	NVMe RAID LED control			
PMBUS1	PMBUS connector to communicate with power supply			
SATA0~SATA7	Serial ATA0~7			
SGPI01	Supports Serial_Link interface for onboard SATA connections			
SLOT1	PCIE x8 slot of CPU0			
SLOT2	PCIE x16 slot of CPU1			
SLOT3	PCIE x8 slot of CPU1			
SLOT4	PCIE x16 slot of CPU0			
SLOT5	PCIE x16 slot of CPU1			
SLOT6	PCIE x16 slot of CPU0			
SLOT12V1	For PCIe slot 12V input only			
SMBUS1	SMBus header (SMBus from either BMC or PCH)			
SPI CN1	Connector for BIOS update tool			
SPI SKT1	EC EEPROM			
SYSFAN0~SYSFAN4	System FAN connector (4-pin)			
SYS LED1	System LED connector (T2/I SKUs)			
 USB1_2, USB5_6,	USB 3.0 port 1, 2; USB 3.0 port 5, 6, 7, 8 (20-pin)			
USB7_8 USB3_4, USB9_10	USB 2.0 header 3, 4, 9, 10 (10-pin)			
0303_4, 0309_10	000 2.0 Header 3, 4, 8, 10 (10-pill)			

Table 1.4: Connectors					
USB11	USB 2.0 port 11 (Type-A)				
VGA1_COM1	VGA+COM connector				
VOLT1	Voltage display				
VROC1	Intel Virtual RAID (VROC) key				

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-825 T2 and I SKUs)	Blinking (Green): Controller is working normally				

1.5 Block Diagram

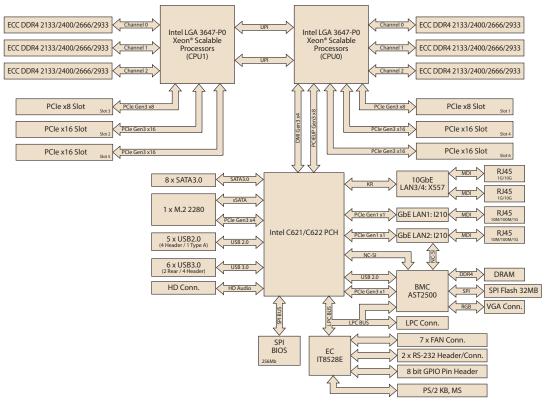


Figure 1.3 Block Diagram

1.6 System Memory

ASMB-825 has six 288-pin memory slots for DDR4 2133/2400/2666/2933 MHz memory modules with maximum capacity of 768GB (Maximum 128GB for each DIMM). ASMB-825 supports registered DIMMs memory module.

1.7 **Memory Installation**

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

The following table indicates recommended DIMM configurations with a single and dual processor. Base on the guideline, you may adjust your memory configuration according to your PCIe expansion card configuration.

2nd Gen Xeon Scalable (82xx/62xx/52xx/4215) processors support Optane DC persistent memory module (DCPMM).

Table 1.6: DIMM Configurations with Single CPU					
	Quantity of memory installed				
CPU0	1	2	3		
DIMMA1	V	v	v		
DIMMB1		v	v		
DIMMC1			v		
DIMMG1					
DIMMH1					
DIMMI1					

Table 1.7: DIMM Configurations with Dual CPU						
	Quantity of	Quantity of memory installed				
CPU0 & CPU1	1	2	3	4	5	6
DIMMA1		v		v		v
DIMMB1				v		v
DIMMC1						v
DIMMG1		v		v		v
DIMMH1				v		v
DIMMI1						v

Note!

1, 3, 5 DIMMs are not recommended DIMM memory when dual CPU were installed.



Table 1.8	Table 1.8: DCPMM Population Matrix							
	Symmetric Population within CPU0 and CPU1							
Modes	DIMMI2	DIMMH1	DIMMG1	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		

- 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

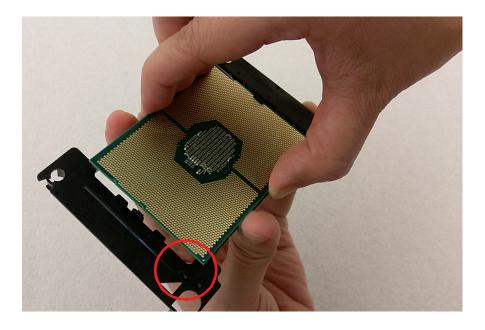
1.8 Processor Installation

The ASMB-825 is designed for Intel Xeon processor scalable family.

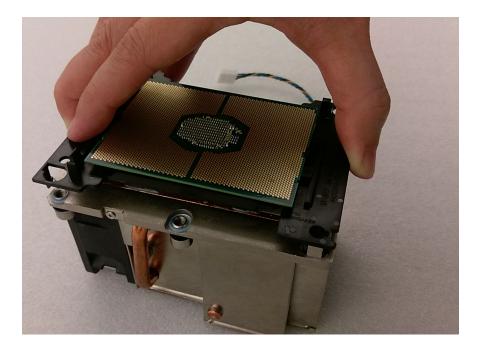


1. Remove dust cover.

2. Install CPU on CPU clip and align pin 1 mark.



3. Install the CPU clip assembly on the heatsink as a processor + heatsink module.



4. Put the processor heatsink module into the motherboard bolster plate by using a T-30 screw driver (follow heatsink label direction 1-2-3-4).





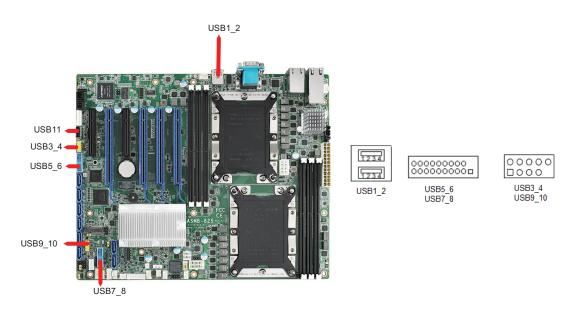
Connections

2.1 Introduction

You can access most of the connectors from the top of the board as it is being installed in the chassis. If you have a number of cards installed, you may need to partially remove a card to make all the connections.

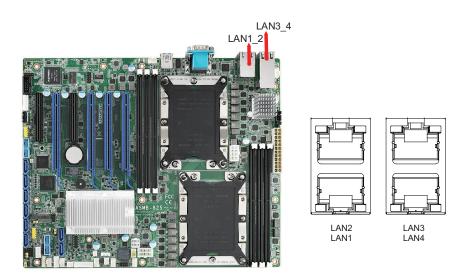
2.2 USB Ports (USB1~11)

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



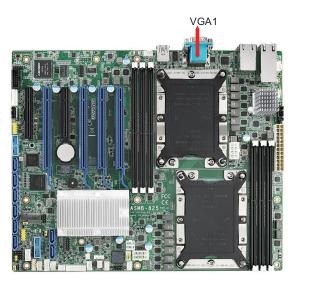
2.3 LAN Ports (LAN1_2, LAN3_4)

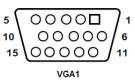
The ASMB-825 is equipped with two 10GbE and two GbE LAN ports. They are all with RJ-45 jacks and supported by all major network operating systems. One GbE LAN and one 10GbE LAN (LAN2 and LAN3) are shared with IPMI for system management.



2.4 VGA Connector (VGA1)

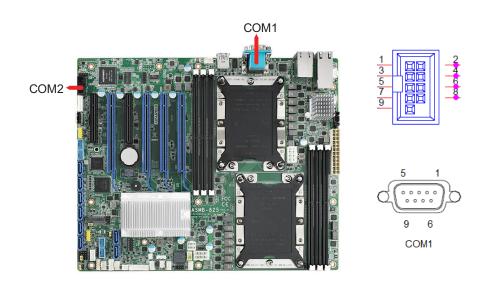
The ASMB-825 includes a VGA interface that can drive conventional CRT and LCD displays.





2.5 Serial Ports (COM1~2)

The ASMB-825 offers one serial port on the rear plate and one 2.50mm onboard with 2 x 5-pin pitch.



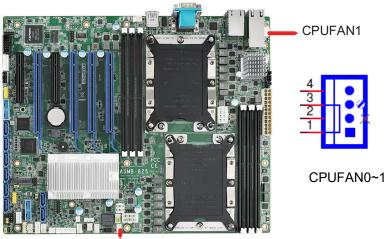
2.6 PS2 Keyboard and Mouse Connectors (KBMS2)

The 6-pin KBMS2 connector is for additional keyboard & mouse device usage.



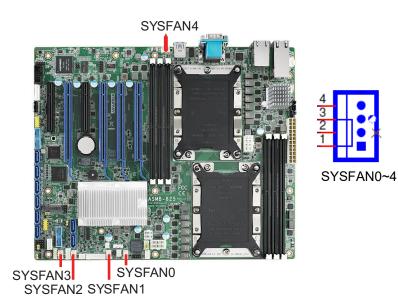
2.7 CPU Fan Connector (CPUFAN0~1)

If a fan is used, this connector supports cooling fans that draw up to 1.5A (18W).



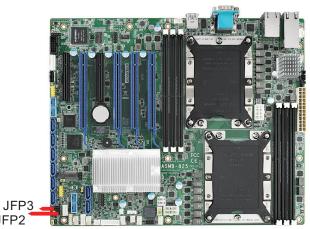
CPU FAN1

2.8 System Fan Connector (SYSFAN0~4)



2.9 Front Panel Connector (JFP1)

There are several external switches and LEDs to monitor and control the ASMB-825.



JFP1	3	6	9	12		PWRSW	F	RESET	
&	2(+)	5(-)	8	11		HDDLED			
JFP2	1(+)	4	7	10(-)		SPE4	K	ER	
JFP3	1(+)	2	3(-)	4	5	PWRLE	5	KEYLO	ск

JFP1 + JFP2

2.9.1 Power LED (JFP3)

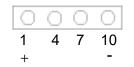
JFP3 pin 1 and pin 3 are for the power LED. Refer to Appendix B for detailed information on the pin assignments. If an ATX power supply is used, the system's power LED status will be as indicated.

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



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

JFP2 pins 1, 4, 7, 10 connects to an external speaker. ASMB-825 provides an onboard buzzer as an alternative. To enable the buzzer, set pins 7-10 closed.



2.9.3 HDD LED Connector (JFP1 Pins 2 & 5)

You can connect an LED to JFP1 to indicate when the HDD is active.



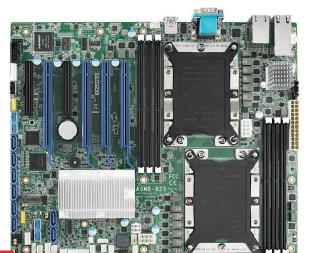
2.9.4 Reset Connector (JFP1 Pins 9 & 12)

Many computer cases offer the convenience of a reset button.



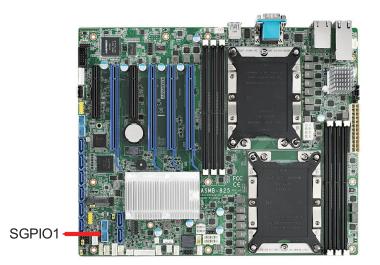
2.9.5 Case Open (JCASE1)

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 has been opened. The default function is disabled and Pin 1-2 is bridged by a jumper cap.



JCASE1

2.10 SATA SGPIO (SGPIO1)



SGPIO1

0 1 0 2

2.11 Front Panel LAN Indicator Connector (LANLED1)

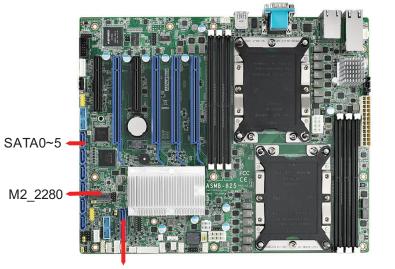


LANLED1

2.12 SATA and M.2 Connector (SATA0~7, M2_2280)

ASMB-825 features eight serial ATA III interfaces (up to 600 MB/s) which eases cabling to hard drives with thin and long cables. The M.2 2280 connector can support both SATA and PCIe SSD devices.

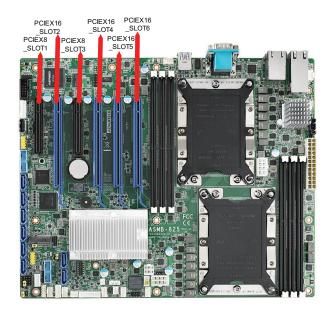
SATA0~7



SATA6~7

2.13 PCIe Expansion Slots

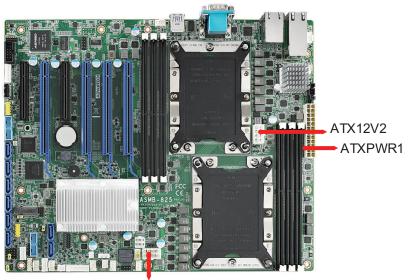
The ASMB-825 provides six expansion slots that can support three double-deck cards. The riser card for 1U or 2U chassis can be used in slot-6 only.



	Slot Length	Link	PCI-E Generation	PCIe link from
SLOT1	PCI-E x8	PCI-E x8	3	CPU0
SLOT2	PCI-E x16	PCI-E x16	3	CPU1
SLOT3	PCI-E x8	PCI-E x8	3	CPU1
SLOT4	PCI-E x16	PCI-E x16	3	CPU0
SLOT5	PCI-E x16	PCI-E x16	3	CPU1
SLOT6	PCI-E x16	PCI-E x16	3	CPU0

	Part Number	Description	Remarks
	ASMB-RF388-21A1E	ASMB-RF388 (2U riser card)	2*PCI-E x8 or 1*PCI-E x8 + 2*PCI-E x4
Riser Card	ASMB-RF348-21A1E	ASMB-RF348 (2U riser card)	2*PCI-E x4 + 1*PCI-E x8
	ASMB-RF3X8-21A1E	ASMB-RF3X8 (2U riser card)	1*PCI-Ex4 + 2*PCI-X
	AIMB-RF10F-01A1E	AIMB-RF10F (1U riser card)	1*PCI-E x16

2.14 Auxiliary Power Connector (ATXPWR1/ ATX12V1/ATX12V2)



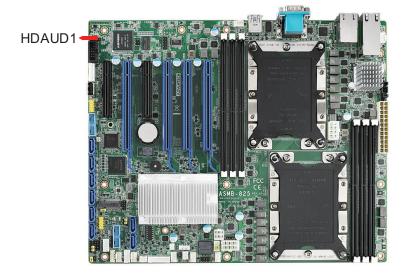
ATX12V1

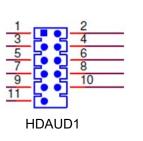
- Note! 1. Please use a power supply of SSI type; minimum output should be at least 700W with 5Vsb @2.5A.
 2. ATXPWR1 & ATX12V1 & ATX12V2 should be all connected with
 - 2. ATXPWR1 & ATX12V1 & ATX12V2 should be all connected with power supply, otherwise ASMB-825 will not boot up normally.

Chapter 2 Connections

2.15 HD Audio Interface Connector (HDAUD1)

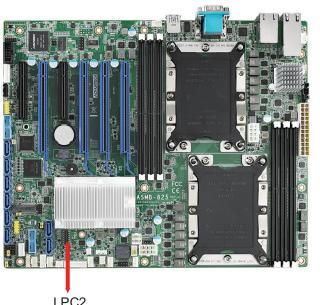
ASMB-825 has one audio connector for Advantech's audio board (P/N: PCA-AUDIO-HDB1E) installation.





2.16 LPC Connector (LPC2)

ASMB-825 has one LPC connector that can be used to install Advantech's TPM Module (P/N: PCA-TPM-00A1E, PCA-TPM-00B1E) for security management.



	2 4 6 8 10 12 14
--	------------------------------------

LPC2

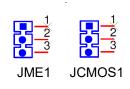
LPC2

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

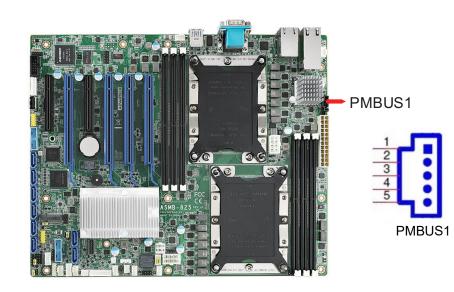
Setting jumper from pin 1-2 to pin 2-3, then back to pin 1-2 resets CMOS data.



JCMOS1 JME1



2.18 PMBUS Connector (PMBUS1)



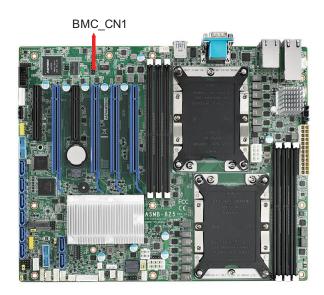
2.19 Front Panel SMBUS Connector (SMBUS1)



SMBUS1

2.20 IPMI Module Connector (BMC_CN1)

Enabling IPMI feature through BMC_CN1 and BMC_CN2. The BMC Module has already been pre-installed on ASMB-825I and ASMB-825T2 sku.





1 2

SMBUS1

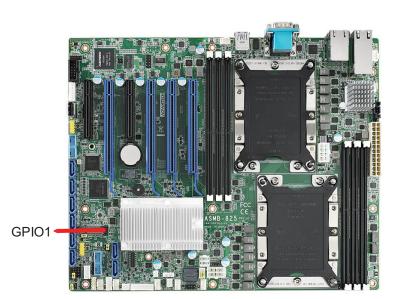
BMC_CN1

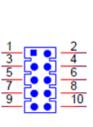
2.21 VOLT1 Connector (VOLT1)

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.









4

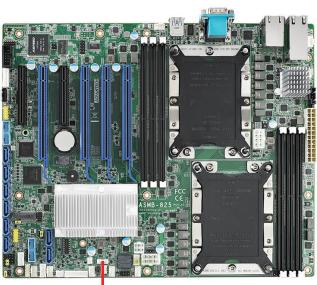
3

VOLT1

GPIO1

2.23 Intel Virtual RAID (VROC1)

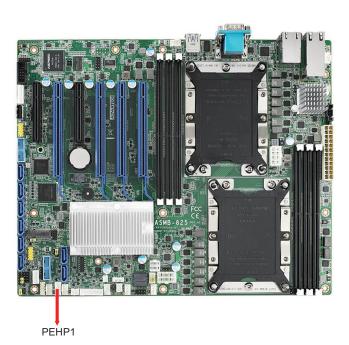
Intel VROC license key of VMD allows NVMe SSDs to connect via PCIe and directly manages the CPU for better RAID performance. Enable NVMe SSD RAID, hot-plug and LED management features via VROC connector.



VROC1

2.24 NVMe RAID LED Control (PEHP1)

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





AMI BIOS

3.1 Introduction

With the AMI BIOS Setup program, you can modify BIOS settings and control the special features of your computer. The Setup program uses a number of menus for making changes and turning the special features on or off. This chapter describes the basic navigation of the ASMB-825 setup screens.

BIOS Information BIOS Vendor Core Version Compliancy	American Megatrends 5.12 0.75 UEFI 2.5; PI 1.4	Set the Date. Use Tab to switch between Date elements. Default Ranges: Year: 2005–2099
Project Version Build Date and Time Access Level	ASMB \$825X020 06/30/2017 08:14:56 Administrator	Months: 1–12 Days: dependent on month
Main Board	ASMB-825T2	
Memory Information Total Memory	8192 MB	
System Date System Time	[Fri 07/28/2017] [11:05:49]	<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>

AMI's BIOS ROM has a built-in Setup program that allows users to modify the basic system configuration. This type of information is stored in battery-backed up CMOS so it retains the Setup information when the power is turned off.

Note!

The BIOS setup screens shown in this chapter are for reference only, they may not exactly match what you see on your display devices.

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 arrow keys to select among the items and press <Enter> to accept or enter the sub-menu.



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 a text message will accompany it.

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.

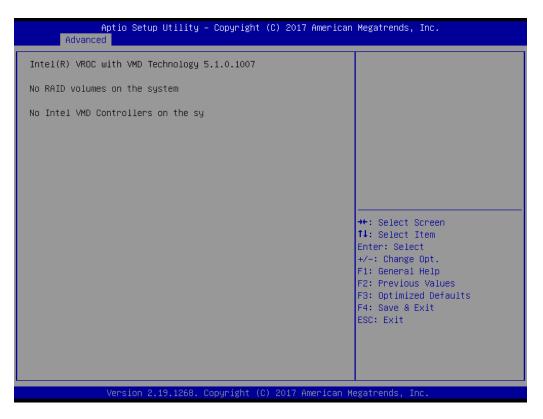
3.2.2 Advanced BIOS Features Setup

Select the Advanced tab from the ASMB-825 setup screen to enter the Advanced BIOS setup screen. You can select any of the items in the left frame of the screen, such as CPU configuration, to go to the sub menu for that item. You can display an Advanced BIOS Setup option by highlighting it using the <Arrow> keys. 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) 201 Main Advanced Platform Configuration Socket Config	
 Intel(R) Virtual RAID on CPU Driver Health Trusted Computing ACPI Settings IT8528 Super IO Configuration IT8528 HM Monitor Serial Port Console Redirection PCI Subsystem Settings UEFI Network Stack Configuration CSM Configuration NVMe Configuration USB Configuration 	<pre>torion cerver ngmt occurity boot This formset allows the user to manage Intel(R) Virtual RAID on CPU ++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values</pre>
	F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.19.1268. Copyright (C) 2017	American Megatrends, Inc.

Chapter 3 AMI BIOS

3.2.2.1 Intel Virtual RAID on CPU



3.2.2.2 Driver Health

Aptio Setup Ut Advanced	ility – Copyright (C) 2017 Am	erican Megatrends, Inc.
▶ Apache Pass 1.0.0.1011 Drive	r Healthy	Provides Health Status for the Drivers/Controllers
		<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 Amer	ican Megatrends, Inc.

3.2.2.3 Trusted Computing



Security Device Support

Enables or Disables BIOS support for security devices.



Purchase Advantech LPC TPM module to enable TPM function. P/N: PCA-TPM-00A1E_B1E.

3.2.2.4 ACPI Settings

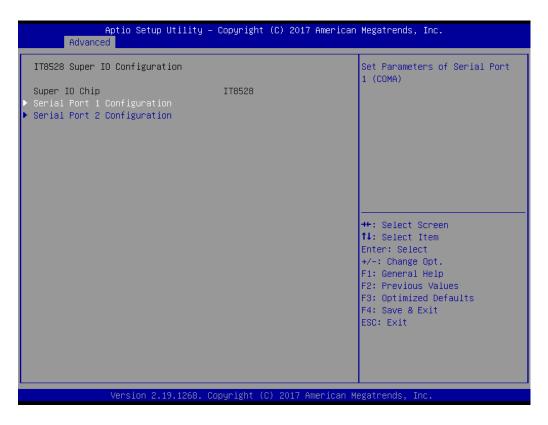
Aptio Setup Utility Advanced	y – Copyright (C) 2017 Am	erican Megatrends, Inc.
ACPI Settings		Enables or Disables System ability to Hibernate (DS/S4 Sleep State). This option may
Enable Hibernation Lock Legacy Resources PowerOn by Modem	[Enabled] [Disabled] [Disabled]	not be effective with some operating systems.
		++: 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	. Copyright (C) 2017 Amer	ican Megatrends, Inc.

Enable Hibernation

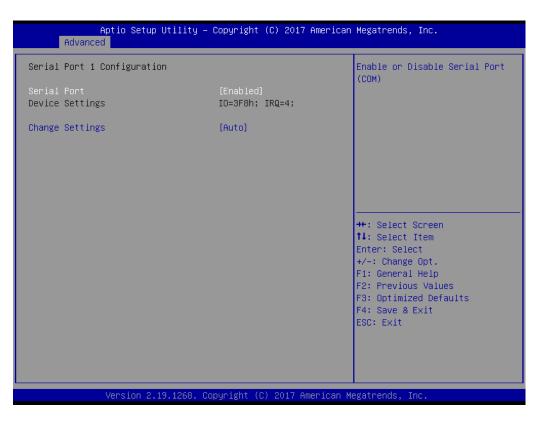
Enable or Disable hibernation feature.

- Lock Legacy Resources
 Enable or Disable lock legacy resources feature.
- PowerOn By Modem
 Enable or Disable power on by modem feature.

3.2.2.5 IT8528 EC Super IO Configuration



Serial Port 1 Configuration



Serial Port

Enable or Disable serial port 1.

Change Settings

To select an optimal setting for serial port 1.

Serial Port 2 Configuration



- Serial Port

Enable or Disable serial Port 2.

Change Settings

To select an optimal setting for serial port 2.

3.2.2.6 IT8528 HW Monitor

Aptio Setup Utility – Advanced	Copyright (C) 2017 American	Megatrends, Inc.
IT8528 HW Monitor		Enabled/Disabled Watchdog Timer.
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 1↓: Select Item Enter: Select +/-: Change Opt. F1: General Help</pre>
CPU Fan O Speed CPU Fan 1 Speed System Fan O Speed System Fan 1 Speed System Fan 2 Speed System Fan 3 Speed	: 7139 RPM : 7260 RPM : N/A : N/A : N/A : N/A	F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
System Fan 4 Speed	: N∕A ▼	
Version 2.19.1268. Co	opyright (C) 2017 American M	egatrends, Inc.

Watchdog Timer

Enable or Disable the watchdog timer function.

CPU ACPI Shutdown Temperature

Enable or Disable the ACPI shutdown temperature threshold. When the system reaches the shutdown temperature, it will be automatically shut down by ACPI OS to protect the system from overheat damage.

CPU Warning Temperature

Enable or Disable the CPU warning temperature threshold. When the system reaches the warning temperature, the speaker will beep.

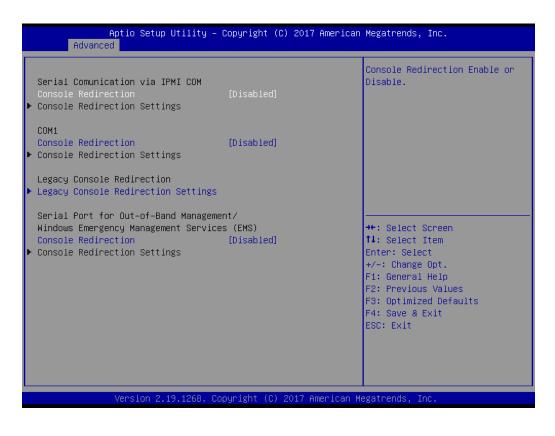
Fan Configuration

The default of CPU/System FAN is Smart FAN mode and the BIOS will automatically control the FAN speed by CPU temperature.

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



3.2.2.7 Serial Port Console Redirection



COM1 Console Redirection Settings

Aptio Setup Utility - Advanced	- Copyright (C) 2017 Americar	n Megatrends, Inc.
Serial Comunication via IPMI COM 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	[ANSI] [115200] [8] [None] [1] [None] [Enabled] [Disabled] [0isabled] [80x24]	
Putty KeyPad Redirection After BIOS POST	[VT100] [Always Enable]	<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. C	Copyright (C) 2017American ⊧	Megatrends, Inc.

Aptio Setup Utility - Advanced	– Copyright (C) 2017 America	n 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] [Disabled] [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 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 American	Megatrends, Inc.

- Terminal Type

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

Bits Per Second

Select the baud rate for console redirection. Options available: 9600/19200/57600/115200.

Data Bits

- Parity

A parity bit can be sent with the data bits to detect some transmission errors. Even: parity bit is 0 if the number of 1's in the data bits is even.

Odd: parity bit is 0 if number of 1's 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.

Options available: 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.

Options available: 1/2.

- Flow Control

Flow control can prevent data loss from 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.

Options available: None/Hardware RTS/CTS.

VT-UTF8 Combo Key Support

Enable VT-UTF8 combination key support for ANSI/VT100 terminals

Recorder Mode

When this mode enabled, only text will be send. This is to capture Terminal data.

Options available: Enabled/Disabled.

Resolution 100x31

Enables or disables extended terminal resolution.

- Legacy OS Redirection Resolution

On Legacy OS, the number of Rows and Columns supported redirection. Options available: 80x24/80X25.

Putty Keypad

Select function key and keypad on putty.

Redirection After BIOS Post

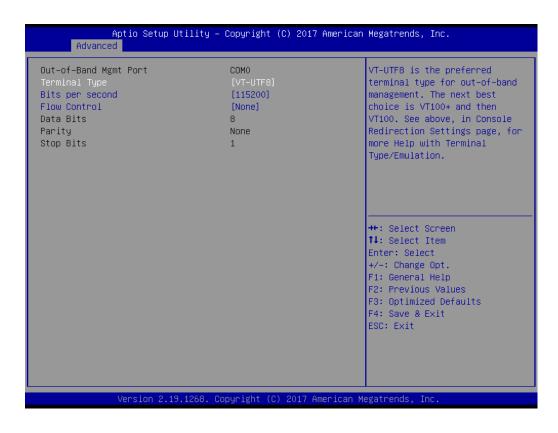
When Bootloader is selected, then Legacy Console Redirection is disabled before booting to legacy OS. When Always Enable is selected, then Legacy Console Redirection is enabled for legacy OS. Default setting for this option is set to Always Enable.

Legacy Console Redirection Settings

Select a COM port to display redirection of Legacy OS and Legacy OPROM Messages.

Advance		Utility –	Copyright	(C) 201	7 American	Megatrends, Inc.
Legacy Serial	Redirection	Port	[COMO]			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>
	Version 2.	19.1268. C	opyright ((C) 2017 (American M	egatrends, Inc.

Console Redirection Settings



- Out-of-Band Mgmt Port

To select the com port user would like to set for having console redirection feature.

Terminal Type

Set as "VT100", "VT100+", "VT-UTF8", or "ANSI". "VT-UTF8" is the default setting.

- Bits Per Second

To select serial port transmission. Speed must be matched on the other side. It can be set as "9600", "19200", "57600", or "115200". "115200" is the default setting.

- Flow Control

Flow control can prevent data loss from buffer overflow. It can be set as "None",

"Hardware RTS/CTS", or "Software Xon/Xoff". "None" is the default setting.

- Data Bits
- Parity
- Stop Bits

3.2.2.8 PCI Subsystem Settings

Aptio Setup Utilit Advanced	y – 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 f4: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Vancian 2 19 1200	3. Copyright (C) 2017 Am	enican Marathende The

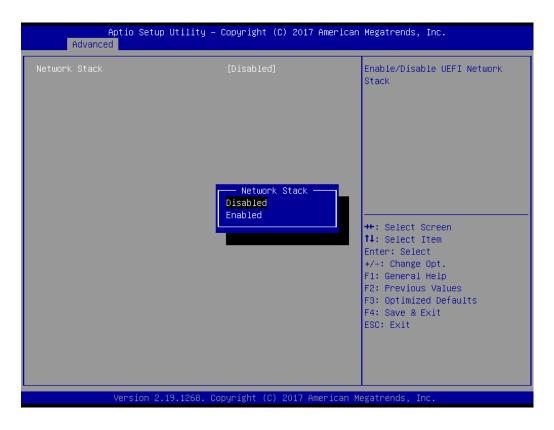
Above 4G Decoding

Enable or Disable 64-bit capable devices to be decoded in above 4G address space (Only if system supports 64-bit PCI decoding).

Note! Some graphics or GPU cards need to enable 4G decoding.



3.2.2.9 UEFI Network Stack Configuration



Enable or Disable UEFI network stack function.

3.2.2.10 CSM Configuration

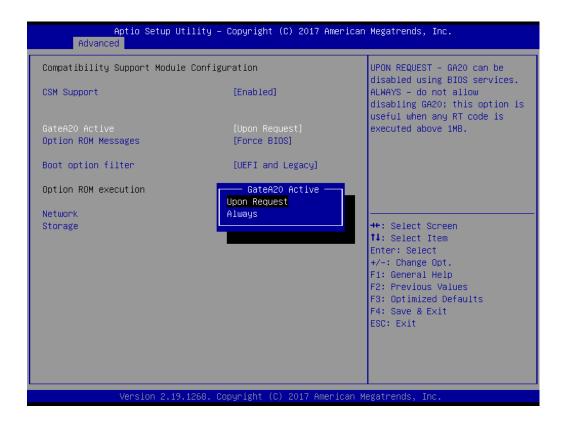
Aptio Setup Uti Advanced	lity – Copyright (C) 2017 Amer	rican Megatrends, Inc.
Compatibility Support Module	Configuration	Enable/Disable CSM Support.
CSM Support	[Enabled]	
GateA20 Active Option ROM Messages	[Upon Request] [Force BIOS]	
Boot option filter	[UEFI and Legacy]	
Option ROM execution		
Network Storage	[Legacy] [Legacy]	<pre> ++: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Version 2.19.1	268. Copyright (C) 2017 Americ	can Megatrends, Inc.

CSM Support

Enable or Disable UEFI CSM (Compatibility Support Module) to support a legacy PC boot process.

GateA20 Active

This items is useful when RT code is executed above 1MB. When it's set as "Upon Request", GA20 can be disabled using BIOS services. When it's set as "Always", it does not allow disabling GA20.



Option ROM Messages

To "Force BIOS or keep current" to set the display mode for Option ROM.

Boot option filter

Change UEFI/legacy ROM priority for boot option.

Aptio Setup Utilit Advanced	y – Copyright (C) 2017 American	Megatrends, Inc.
Compatibility Support Module Con	This option controls Legacy/UEFI ROMs priority	
CSM Support	[Enabled]	
GateA2O Active Option ROM Messages Boot option filter	[Upon Request] [Force BIDS] [UEFI and Legacy]	
Option ROM execution	Boot option filter	
Storage	UEFI only	++: 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 M	egatrends, Inc.

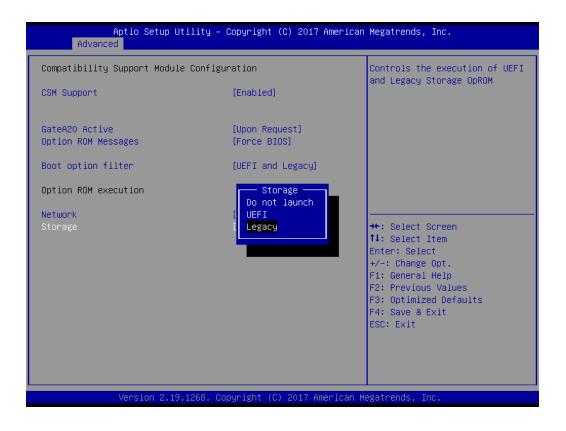
Network

Control the execution of UEFI and legacy PXE OpROM.



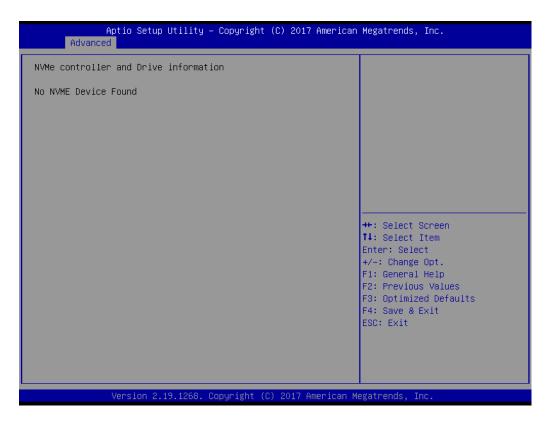
Storage

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 connected. DISABLE option will
USB Controllers: 1 XHCI		keep USB devices available only for EFI applications.
USB Devices: 1 Drive, 1 Keyboard		
Legacy USB Support XHCI Hand-off	[Enabled]	
USB Mass Storage Driver Support	[Enabled] [Enabled]	
USB hardware delays and time-outs: USB transfer time-out	[20 sec]	↔: Select Screen t↓: Select Item
Device reset time-out	[20 sec]	Enter: Select
Device power–up delay	[Auto]	+/−: Change Opt. F1: General Help
Mass Storage Devices: JetElashTranscend 1668 1100	[Auto]	F2: Previous Values F3: Optimized Defaults
Jetriashmanscenu ibub iloo	[Huto]	F4: Save & Exit
		ESC: Exit
Version 2.19.1268. Cc	pyright (C) 2017 American M	egatrends, Inc.

Legacy USB Support

This is for supporting USB device under a legacy OS such as DOS. When choosing "Auto", the system will automatically detect if any USB device is plugged into the computer and enable USB legacy mode when a USB device is plugged, or 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 claimed by XHCI driver.

 USB Mass Storage Driver Support Enable or Disable USB mass storage driver support.

USB Transfer Time-out

Selects the USB transfer time-out value. [1,5,10,20sec]

Aptio Setup Utili Advanced	ty – Copyright (C) 2017 American.	Megatrends, Inc.
USB Configuration		The time-out value for Control, Bulk, and Interrupt
USB Module Version	17	transfers.
USB Controllers: 1 XHCI		
USB Devices: 1 Drive, 1 Keyboard		
Legacy USB Support XHCI Hand-off	USB transfer time-out —— 1 sec	
USB Mass Storage Driver Support		
USB hardware delays and time-ou USB transfer time-out	20 sec	←: Select Screen ↓: Select Item
Device reset time-out Device power-up delay	[Auto]	nter: Select +/-: Change Opt.
Mass Storage Devices:	(a.).)	F1: General Help F2: Previous Values
JetFlashTranscend 16GB 1100	[Auto]	F3: Optimized Defaults F4: Save & Exit ESC: Exit
		LUG. EAIL

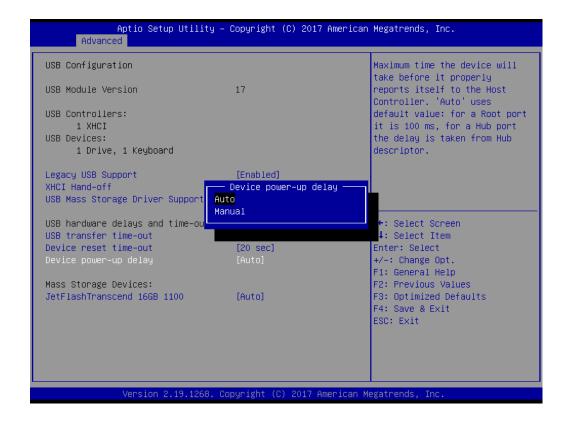
Device Reset Time-out

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

Aptio Setup Utilit Advanced	ty – Copyright (C) 2017 Americ	can Megatrends, Inc.
USB Configuration		USB mass storage device Start Unit command time-out.
USB Module Version	17	onit command time-out.
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	10 sec	
USB hardware delays and time-ou	30 sec	
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: JetElashTranscend 166B 1100	[Auto]	F2: Previous Values F3: Optimized Defaults
	[inco]	F4: Save & Exit ESC: Exit
Version 2.19.1268	3. Copyright (C) 2017 Americar	Megatrends, Inc.

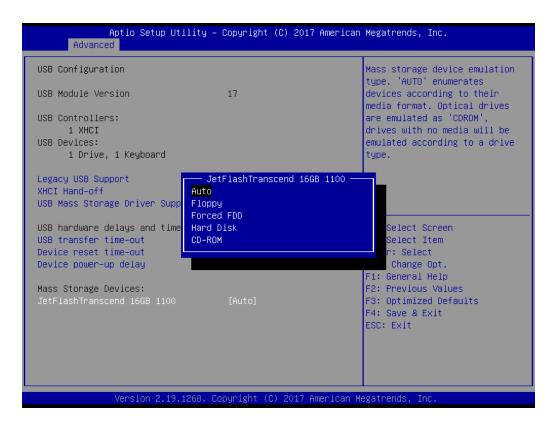
Device Power-up Delay

This item appears only when Device power-up delay item is set to [manual].



Mass Storage Devices

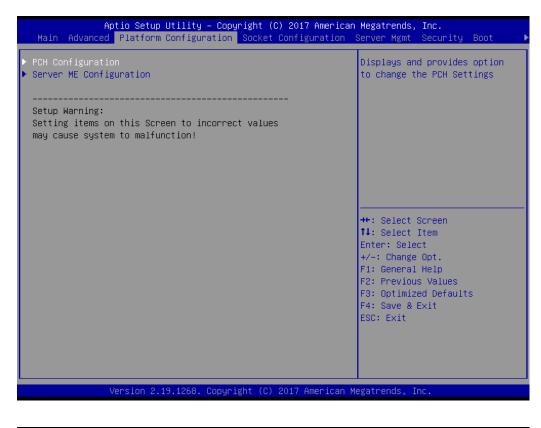
Default is "Auto" to enumerate mass storage devices according to media format.



3.2.3 Platform Configuration

Aptio Setup Utility – Copyright (C) 2017 An Main Advanced Platform Configuration Socket Configura	
 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 ++: 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. Copyright (C) 2017 Amer	rican Megatrends, Inc.

3.2.3.1 PCH Configuration



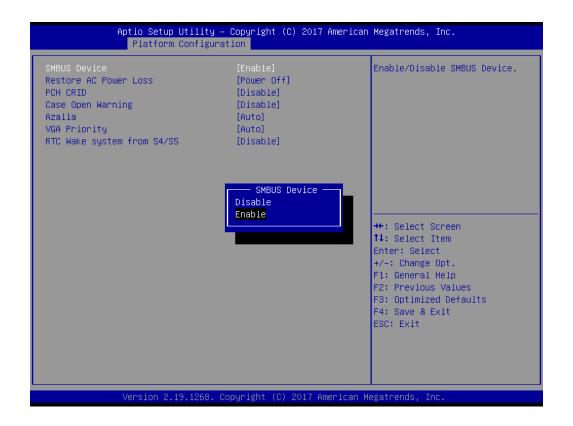
Aptio Setup Utility – Copyright (C) 2017 American Megatrends, Inc. Platform Configuration			
PCH Configuration	Enable/Disable Intel(R) IO Controller Hub devices		
 PCH Devices PCIe M.2 Slot Configuration PCH SATA Configuration PCH sSATA/M.2 Configuration Networking 			
	<pre>++: Select Screen 14: Select 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 M	egatrends, Inc.		

PCH Devices

This item is to set up IO Controller Hub devices.

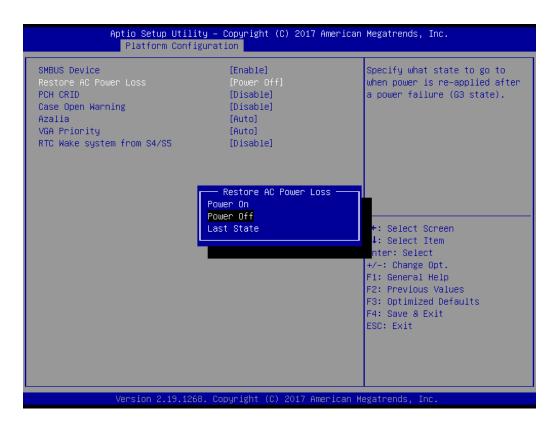
- SMBus Controller

Enable or Disable SMBus controller.



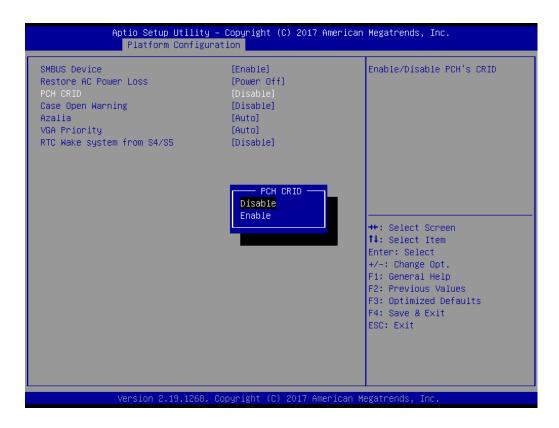
Restore AC Power Loss

Specify what state to go to when power is re-applied after a power failure (G3 state).



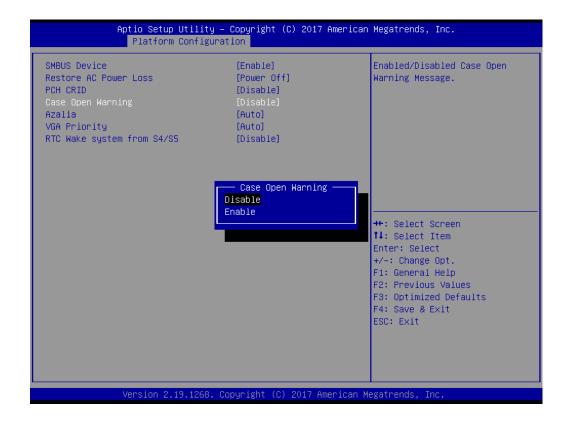
– PCH CRID

Enable or Disable PCH compatibility revision ID (CRID) functionality.



- Case Open Warning

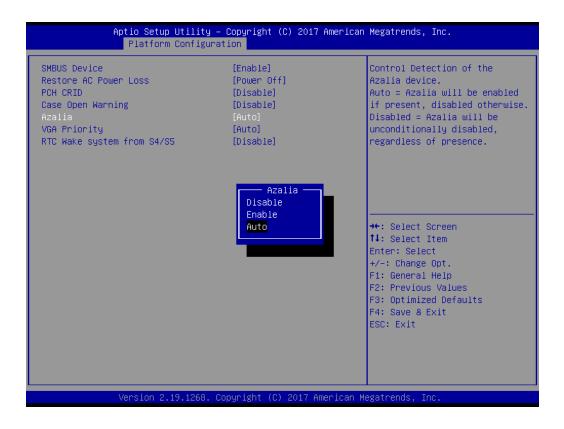
Enable or Disable the chassis intrusion monitoring function. When enabled and the case is opened, the warning message will show in POST screen.



Chapter 3 AMI BIOS

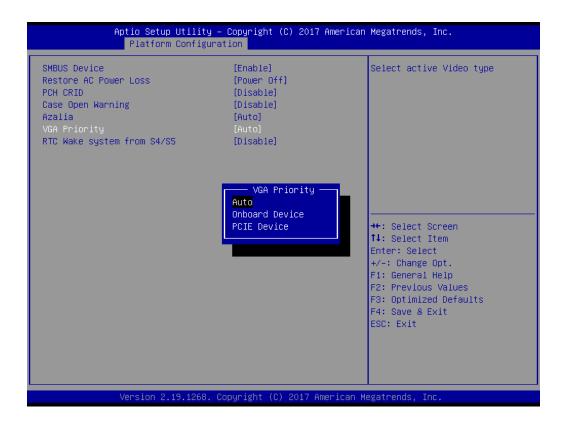
– Azalia

Enable or Disable Azalia device.



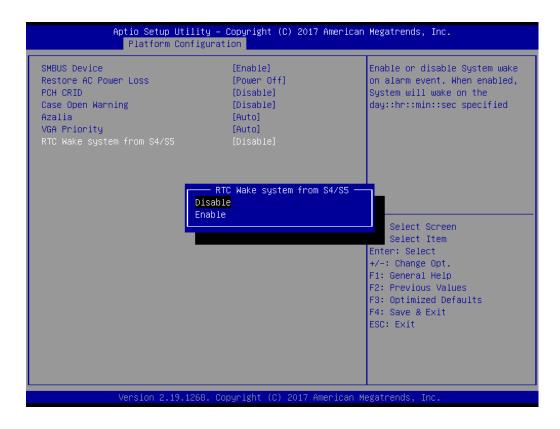
- VGA Priority

Determines priority between onboard and 1st off-board video device found.



- RTC Wake system from S4/S5

Enable or Disable system wake on alarm event.



PCIe M.2 Slot Configuration

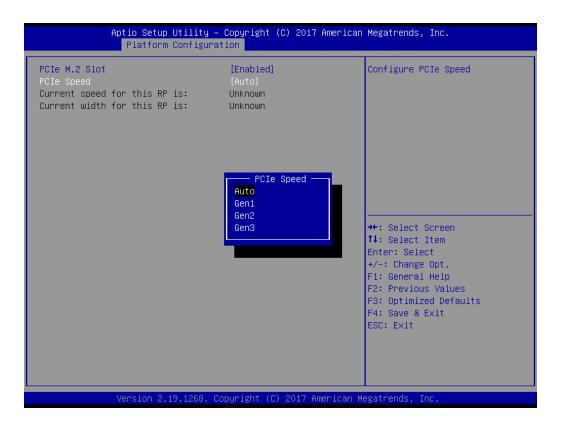
- PCIe M.2 Slot

Enable or Disable the PCI Express root port.

	t <mark>io Setup Utility –</mark> Platform Configurat	Copyright (C) 2017 American <mark>ion</mark>	Megatrends, Inc.
PCIe M.2 Slot PCIe Speed Current speed for Current width for		[Enabled] [Auto] Unknown Unknown	Control the PCI Express Root 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>
Ve	ersion 2.19.1268. Co	pyright (C) 2017 American Me	egatrends, Inc.

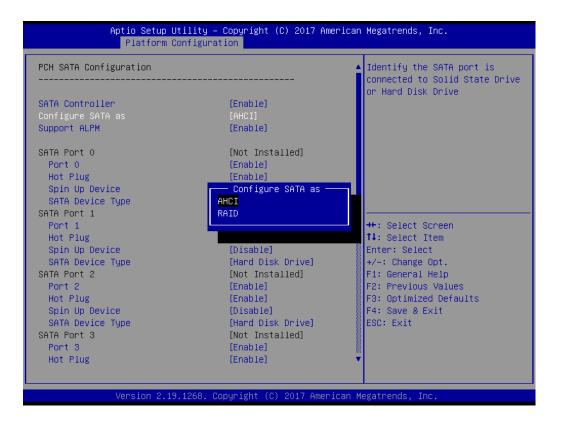
– PCIe Speed

Configure PCI Express speed.



PCH SATA Configuration

PCH SATA Configuration		▲ Enable or Disable SATA Controller
SATA Controller Configure SATA as Support ALPM SATA Port 0 Port 0 Hot Plug Spin Up Device SATA Device Type	[Enable] [AHCI] [Enable] [Not Installed] [Enable] [Enable] [Disable] [Hard Disk Drive]	
SATA Port 1 Port 1 Hot Plug Spin Up Device SATA Device Type SATA Port 2 Port 2 Hot Plug Spin Up Device SATA Device Type SATA Port 3 Port 3 Hot Plug	[Not Installed] [Enable] [Enable] [Disable] [Hard Disk Drive] [Not Installed] [Enable] [Disable] [Hard Disk Drive] [Not Installed] [Enable] [Enable]	<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>



- SATA Controller

Enable or Disable SATA devices.

- Configure SATA as

Set as AHCI or RAID when SATA Controllers are enabled.

Support ALPM

Enable or Disable Aggressive Link Power Management (ALPM) protocol for Advanced Host Controller Interface-compliant (AHCI) Serial ATA (SATA) devices.

– SATA Port 0~7

To Enable or Disable SATA port 0~7.

Hot Plug Port 0~7

Designates SATA port 0~7 as hot pluggable.

- SATA Port 0~7 Spin Up Device

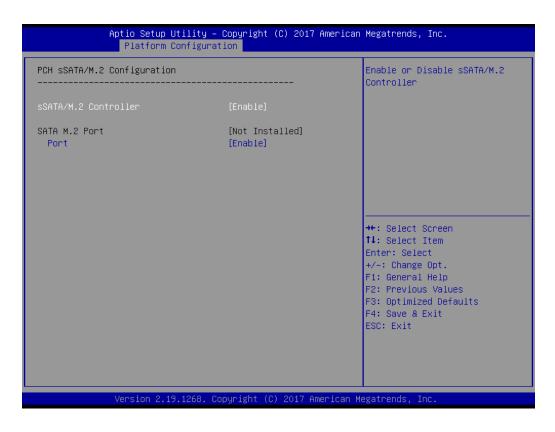
On an edge detect from 0 to 1, the PCH starts a COMRESET initialization sequence to the device.

- SATA Port 0~7 Device Type

To identify the SATA is connected to Solid State Drive or Hard Disk Drive.

Chapter 3 AMI BIOS

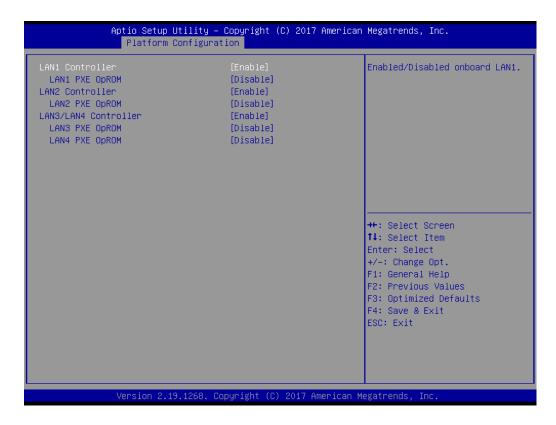
PCH sSATA/M.2 Configuration



 - sSATA/M.2 Controller Enable or Disable sSATA/M.2 Controller.

 SATA M.2 Port Enable or Disable SATA port.

Networking



- LAN1 Controller

Enable or Disable Intel I210 Controller support.

– LAN1 PXE OpROM

Enable or Disable Boot option for Intel I210 controller.

LAN2 Controller

Enable or Disable Intel I210 Controller support.

– LAN2 PXE OpROM

Enable or Disable Boot option for Intel I210 controller.

LAN3/LAN4 Controller
 Enable or Disable Intel X557 controller support.

- LAN3 PXE OpROM

Enable or Disable boot option for Intel X557 controller.

- LAN4 PXE OpROM

Enable or Disable boot option for Intel X557 controller.

3.2.3.2 Server ME Configuration

This page shows the Server ME configuration information.

	Utility – Copyright (C) : Configuration	2017 American Megatrends	s, Inc.
General ME Configuration Oper. Firmware Version Current State Error Code	OA:4.0.3.199 Operational No Error	++: Select 14: Select Enter: Sel +/-: Chang F1: Genera F2: Previo F3: Optimi F4: Save & ESC: Exit	: Item Lect 30 Opt. al Help bus Values Lzed Defaults
Version 2.:	19.1268. Copyright (C) 20:	17 American Megatrends,	Inc.

3.2.4 Socket Configuration

	Utility – Copyright (C) 2017 American Configuration Socket Configuration	
 Processor Configuration UPI Configuration Memory Configuration IIO Configuration Advanced Power Management 	Configuration	Displays and provides option to change the Processor 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. Copyright (C) 2017American M	egatrends, Inc.

3.2.4.1 Processor Configuration

Aptio Setup Utility	– Copyright (C) 2017 America Socket Configuration	
Processor Configuration		▲ Change Per-Socket Settings
 Per-Socket Configuration Processor BSP Revision Processor Socket Processor ID Processor Frequency Processor Max Ratio Processor Min Ratio Microcode Revision L1 Cache RAM L2 Cache RAM L3 Cache RAM L3 Cache RAM Processor 0 Version Processor 1 Version Hyper-Threading [ALL] Execute Disable Bit VMX Enable SMX Hardware Prefetcher Adjacent Cache Prefetcher 	50654 - SKX H0 Socket 0 Socket 1 00050654* 00050654 2.600GHz 2.600GHz 1AH 1AH 0AH 0AH 0200001A 64KB 64KB 1024KB 1024KB 22528KB 22528KB Intel(R) Xeon(R) Gold 6 142M CPU @ 2.60GHz Intel(R) Xeon(R) Gold 6 142M CPU @ 2.60GHz [Enable] [Enable] [Enable] [Enable] [Enable] [Enable] [Enable] [Enable] [Enable] [Enable] [Enable] [Enable] [Enable] [Enable]	<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	Megatrends, Inc.

Aptio Setup Utility – Copyright (C) 2017 American Megatrends, Inc. <mark>Socket Configuration</mark>			
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	OAH OAH		
Microcode Revision	0200001A		
L1 Cache RAM	64KB 64KB		
L2 Cache RAM	1024KB 1024KB		
L3 Cache RAM	22528KB 22528KB		
Processor O Version	DCU Mode 6		
	32KB 8Way Without ECC		
Processor 1 Version	16KB 4Way With ECC		
		++: Select Screen	
		†↓: Select Item	
Hyper-Threading [ALL]	[Enable]	Enter: Select	
Execute Disable Bit	[Enable]	+/-: Change Opt.	
VMX	[Enable]	F1: General Help	
Enable SMX	[Disable]	F2: Previous Values	
Hardware Prefetcher	[Enable]	F3: Optimized Defaults	
Adjacent Cache Prefetch	[Enable]	F4: Save & Exit	
DCU Streamer Prefetcher	[Enable]	ESC: Exit	
DCU IP Prefetcher	[Enable]		
DCU Mode	[32KB 8Way Without ECC]		
AES-NI	[Enable]	•	
Version 2.19.1268.	Copyright (C) 2017 American	Megatrends, Inc.	

Per-Socket Configuration

Use this to select how many processor cores you want to activate when you are using a dual or quad core processor.

Hyper-threading [All]

Enable or Disable Intel Hyper Threading technology.

Execute Disable Bit

Enable or Disable the Execute Disable Bit feature. The Optimal and Fail-Safe default setting is Enabled. If Disabled is selected, the BIOS forces the XD feature flag to always return to 0.

VMX

Enable or Disable Intel Virtual Machine Extensions (VMX) for IA-32 processors that support Intel[®] Vanderpool Technology

Enable SMX

Enable or Disable Safer Mode Extensions. Safer Mode Extensions (SMX) provide 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 fetches instructions and/or data from memory into the CPU cache memory well before the CPU needs it, so that it can improve the load-to-use latency.

Adjacent Cache Prefetch

The Adjacent Cache-Line Prefetch mechanism, like automatic hardware prefetch, operates without programmer intervention. When enabled through the BIOS, 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

Enable prefetch of next L1 data line based upon multiple loads in same cache line.

DCU IP Prefetcher

Enable prefetch of next L1 line based upon sequential load history.

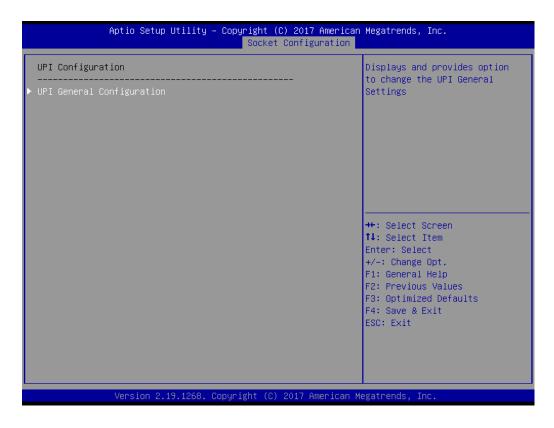
DCU Mode

Change the data cache unit mode.

AES-NI

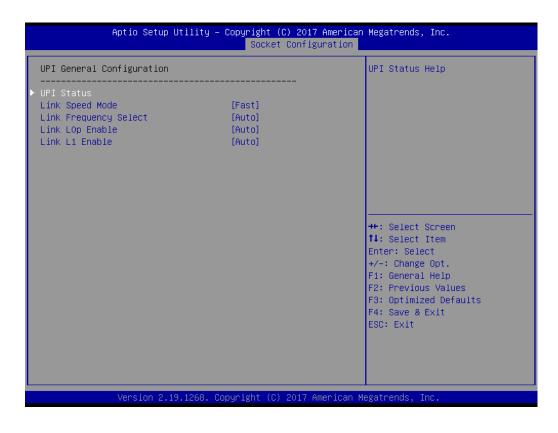
This item is to Enable or Disable CPU advanced encryption standard instructions.

3.2.4.2 UPI Configuration



UPI Status

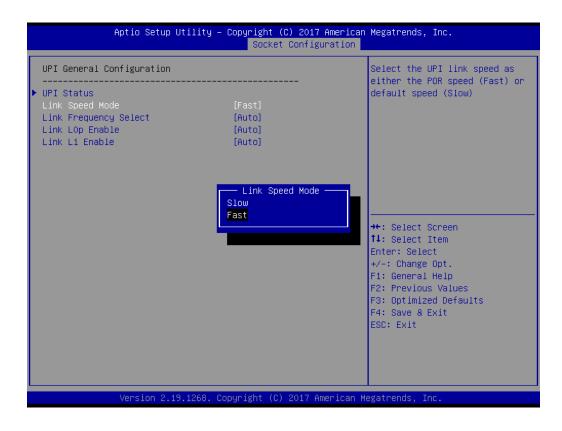
Display information of Intel UltraPath Interconnect (UPI).



UPI Status		
Number of CPU Number of IIO Current UPI Link Speed Current UPI Link Frequency UPI Global MMIO Low Base / Limit UPI Global MMIO High Base / Limit UPI Pci-e Configuration Base / Siz	90000000 / FBFFFFFF 0000000000000000 / 00	++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

Link Speed Mode

Select the QPI link speed as either the Fast mode or Slow mode.



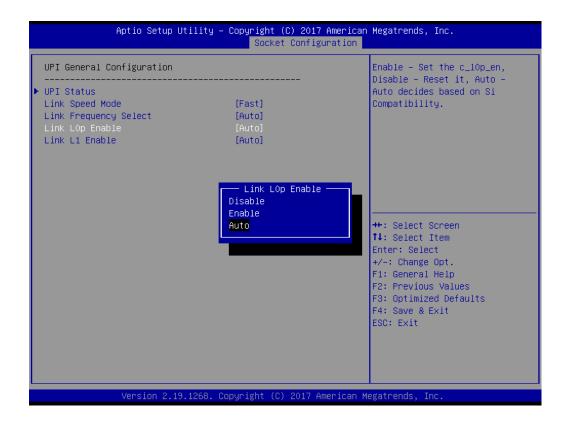
Link Frequency Select

Allows for selecting the QPI Link frequency.

UPI Status Link Speed Mode [Fast] Link Frequency Select [Auto] Link L0p Enable [Auto] Link L1 Enable [Auto] Link Frequency Select 9.66T/s 10.46T/s Auto Use Per Link Setting +: Select 9 1: Select 1 Inter: Select 9 1: Select 1 Inter: Select 9	Inc.
UPI Status Link Speed Mode [Fast] Link Frequency Select [Auto] Link L0p Enable [Auto] Link L1 Enable [Auto] Unk Frequency Select 9.6GT/s 10.4GT/s Auto Use Per Link Setting +: Select 1 +: Select 2 +: Select 2	electing the UPI
F1: General F2: Previous F3: Optimize F4: Save & f ESC: Exit	Screen (tem ct Opt. Help s Values ed Defaults

Link L0p Enable

Enable or Disable QPI Link0p.



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Link L1 Enable

Enable or Disable QPI Link1.

Aptio Setup Ut	ility – Copyright (C) 2017 Socket Config	
UPI General Configuration UPI Status Link Speed Mode Link Frequency Select Link LOp Enable Link L1 Enable	[Fast] [Auto] [Auto] [Auto]	Enable - Set the c_l1_en, Disable - Reset it, Auto - Auto decides based on Si Compatibility.
	Link L1 Enable Disable Enable Auto	++: 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 A	merican Megatrends, Inc.

3.2.4.3 Memory Configuration

Aptio Setup Utility -	Copyright (C) 2017 American Socket Configuration	Megatrends, Inc.
 Integrated Memory Controller (iMC)		Enable or Disable Non uniform Memory Access (NUMA).
Numa ▶ Memory Topology	[Enable]	
		<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.

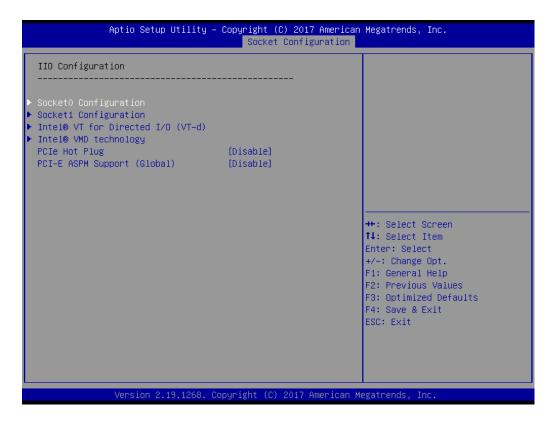
Numa

Enable or Disable non uniform memory access (NUMA).

Memory Technology

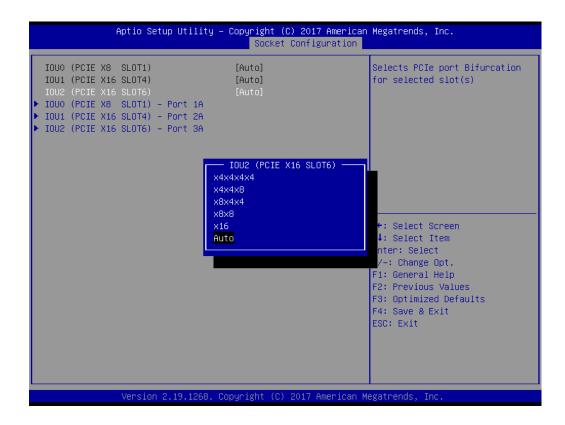
Display memory topology with DIMM population information.

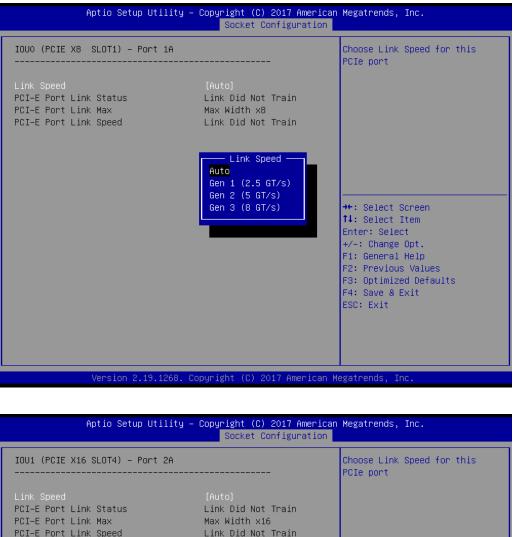
3.2.4.4 IIO Configuration

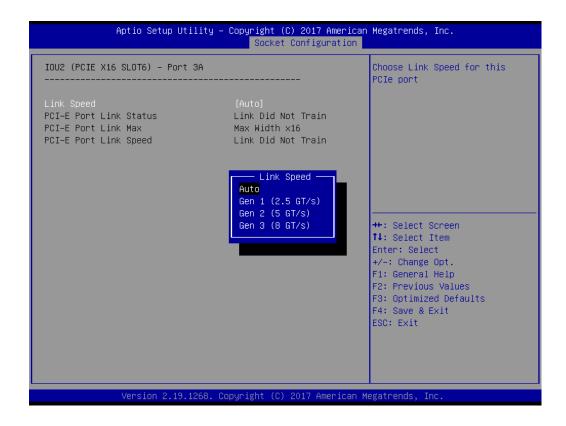


Socket0 PCIe Configuration

PCIe port bifurcation control and select target link speed as Gen1, Gen2, Gen3.



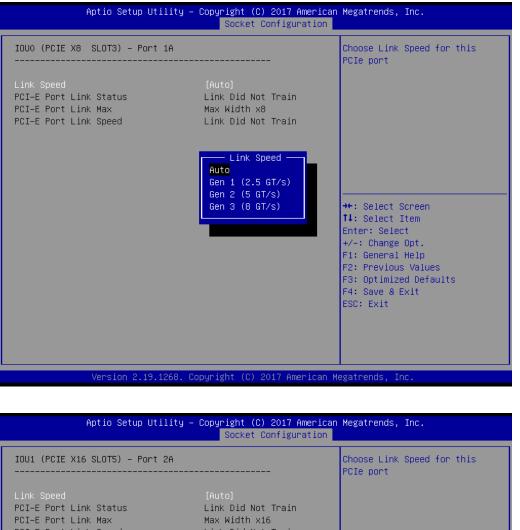




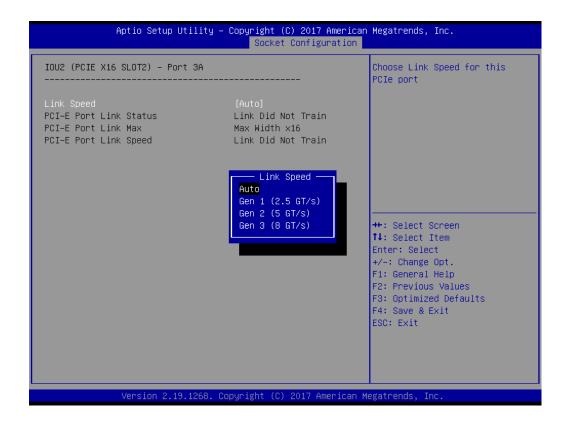
Socket1 PCIe Configuration

PCIe port bifurcation control and select target link speed as Gen1, Gen2, Gen3.

Aptio Setup Utilit	y – Copyright (C) 2017 Am Socket Configura	
IOUO (PCIE X8 SLOT3) IOU1 (PCIE X16 SLOT5) IOU2 (PCIE X16 SLOT2) ► IOUO (PCIE X8 SLOT3) - Port 1A ► IOU1 (PCIE X16 SLOT5) - Port 2A ► IOU2 (PCIE X16 SLOT2) - Port 3A	[Auto] [Auto]	Settings related to PCI Express Port
		++: 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 Amer	ican Megatrends, Inc.



Aptio Setup Utility –	Copyright (C) 2017 American Socket Configuration	Megatrends, Inc.
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 Hidth 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 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.



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

Enable or Disable Intel Virtualization Technology for Directed I/O.



Intel VMD technology

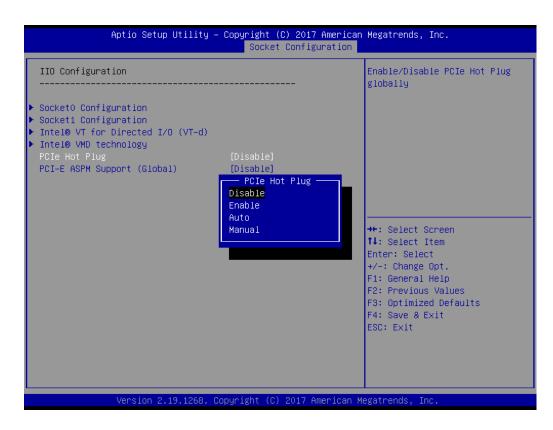
Enable or Disable Intel Volume Management Device Tehnology.



Aptio Setup Utility – Copyright (C) 2017 American Socket Configuration	Megatrends, Inc.
	Enable/Disable Intel® Volume Management Device Technology in this Stack.
	PStack2 n 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	gatrends, Inc.

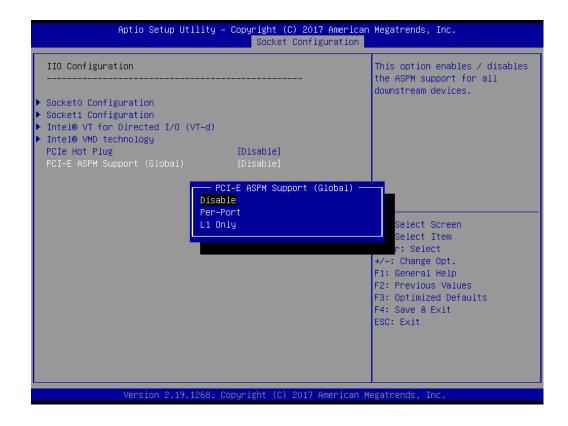
PCIe Hot Plug

Enable or Disable PCIe hot plug globally.



PCI-E ASPM Support (Global)

Set the ASPM level to Disable, Per-Port or L1 state only.



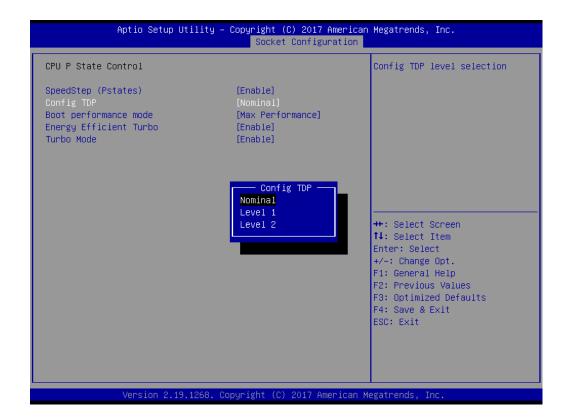
Chapter 3 AMI BIOS

3.2.4.5 Advanced Power Management Configuration

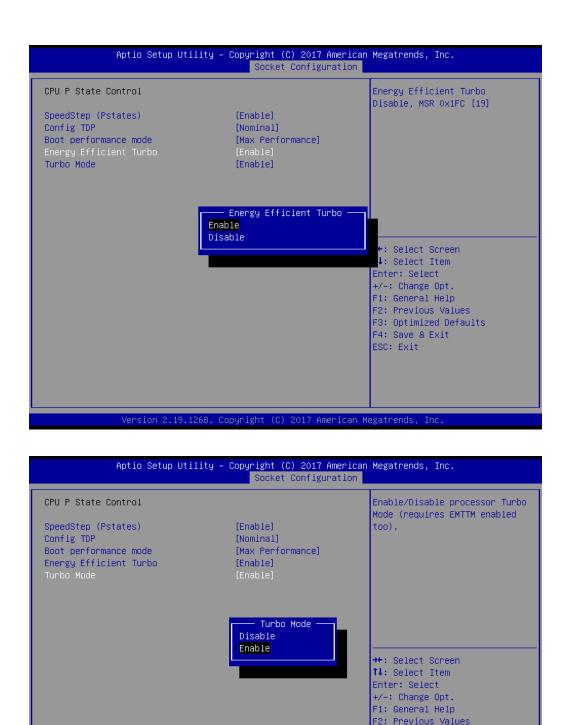
Aptio Setup Utility – Copyright (C) 2017 American Socket Configuration	Megatrends, Inc.
Advanced Power Management Configuration > CPU P State Control > CPU C State Control > Package C State Control > Memory Power & Thermal Configuration	P State Control Configuration Sub Menu, include Turbo, XE and etc.
	<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.

CPU P State Control

Aptio Setup Uti.	lity – Copyright (C) 2017 Amer Socket Configurat.	
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	++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.19.12	268. Copyright (C) 2017 Americ	can Megatrends, Inc.

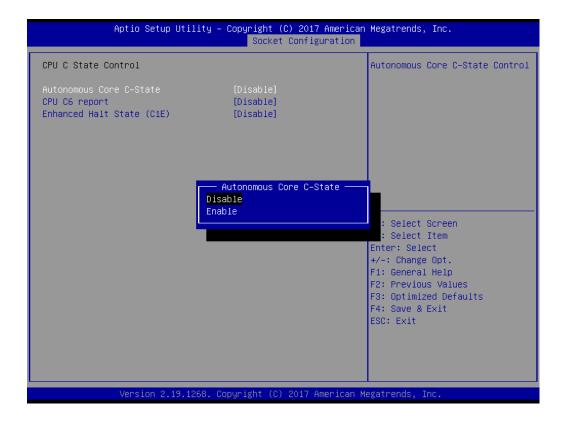


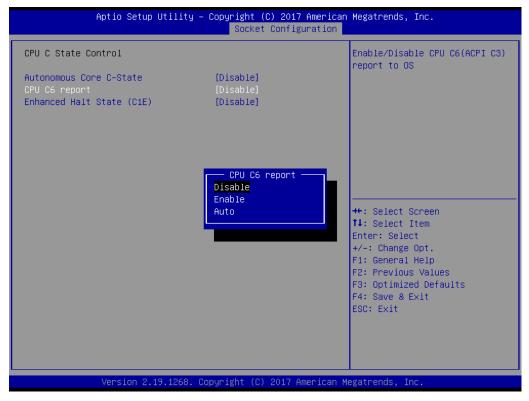
Aptio Setup Utility – Copyright (C) 2017 American Megatrends, Inc. Socket Configuration		
CPU P State Control SpeedStep (Pstates) Config TDP Boot performance mode Energy Efficient Turbo Turbo Mode	[Enable] [Nominal] [Max Performance] [Enable] [Enable]	Select the performance state that the BIOS will set before OS hand off.
	Boot performance mode — Max Performance Max Efficient	<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 2.19.12	268. Copyright (C) 2017 America	an Megatrends, Inc.

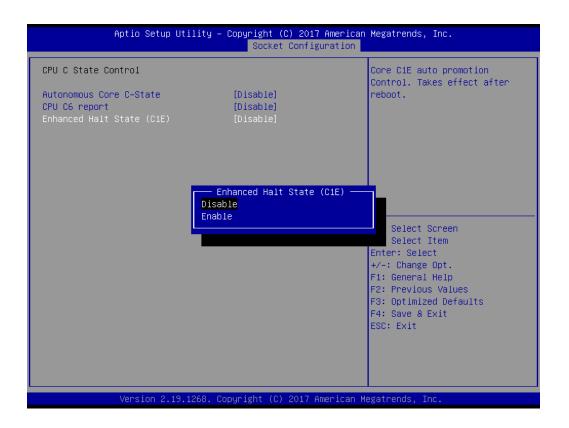


F3: Optimized Defaults F4: Save & Exit ESC: Exit

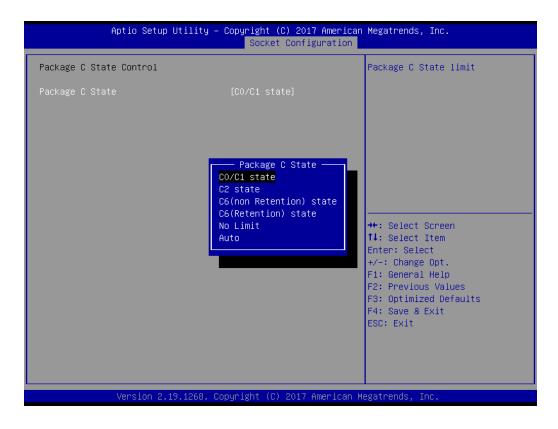
CPU C State Control

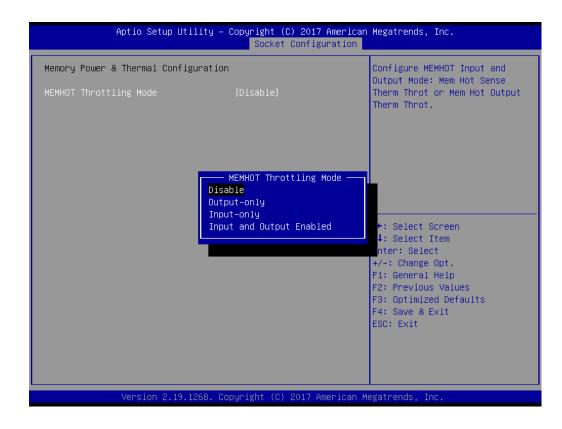






Package C State Control





Memory Power & Thermal Configuration

Chapter 3 AMI BIOS

3.2.5 Server Management

BMC Self Test Status BMC Network Mode	PASSED Non-Bonding	Enable/Disable interfaces to communicate with BMC
BMC Support Wait For BMC Wait For BMC Counter System Event Log Bmc self test log BMC network configuration	[Enabled] [Enabled] [6 Times]	
		<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>

BMC Support

Enable or Disable interfaces to communicate with BMC.

Wait for BMC

If enabled, motherboard will wait 30 ~ 60 seconds until BMC module boots up completely. After that, the normal BIOS post screen will be displayed. If disabled, motherboard will not wait for BMC module's response.

Wait for BMC counter

Initialize host to BMC interfaces.

The MB beeps per 5 seconds to check it.

3.2.5.1 System Event Log



SEL Components

Enable/Disable all features of system event logging during boot.

Erase SEL

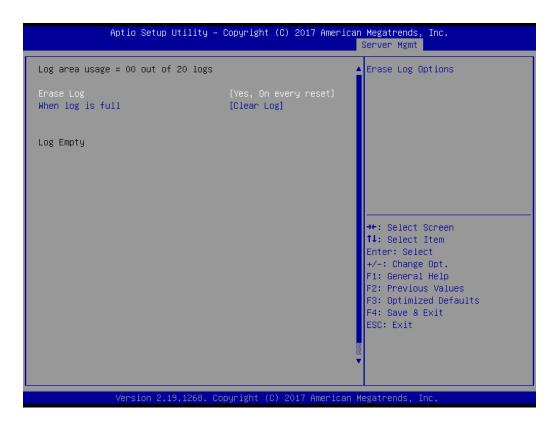
Choose options for erasing SEL.

 When SEL is Full Choose options for reactions to a full SEL.

Log EFI Status Codes

Disable the logging of EFI status codes or log only error code or only progress code or both.

3.2.5.2 BMC Self Test Log



Erase Log

Erase log options.

When Log is Full

Select the action to be taken when log is full.

3.2.5.3 BMC Network Configuration

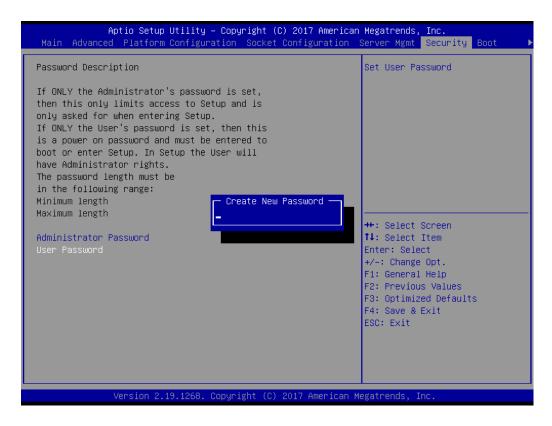
Aptio Setup Utility –	Copyright (C) 2017 Americar	n <mark>Megatrends, Inc.</mark> Server Mgmt
BMC network configuration Lan channel 1 Configuration Address source Current Configuration Address sour Station IP address Subnet mask Station MAC address Router IP address	[Unspecified] StaticAddress 192.168.0.10 255.255.255.0 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 fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
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Configuration Address Source

Select to configure LAN channel parameters statically or dynamically (by BMC). Unspecified option will not modify any BMC network parameters during BIOS phase.

3.2.6 Security

Aptio Setup Utili [.] Main Advanced Platform Confi	t y – Copyright (C) 2017 Ame guration Socket Configurat	
Main Advanced Platform Config Password Description If ONLY the Administrator's pass then this only limits access to only asked for when entering Set If ONLY the User's password is s is a power on password and must boot or enter Setup. In Setup th have Administrator rights. The password length must be in the following range: Minimum length Maximum length Administrator Password User Password	sword is set, Setup and is tup. set, then this be entered to	<pre>ion Server Mgmt Security Boot ▶ Set Administrator Password ++: Select Screen 14: Select Item Enter: Select</pre>
	Э. Copyright (C) 2017 Ameri	+/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit



Note!

With AC power & Battery. Short CMOS1 Jumper: Date/Time & Password: Keep Setting: reset to default AC power and CMOS battery are removed. Short CMOS1 Jumper: Date/Time: reset to default Password: Keep Setting: reset to default

Chapter 3 AMI BIOS

3.2.7 Boot

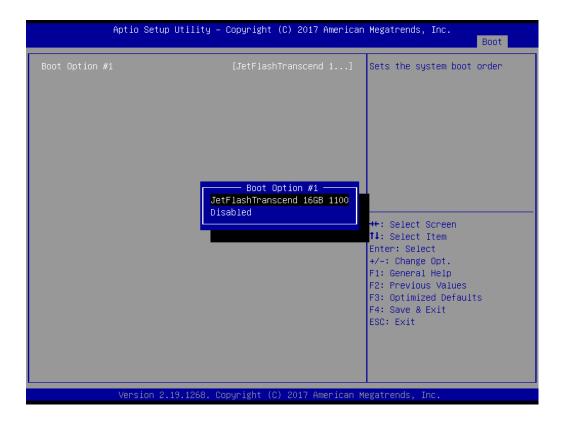
	t <mark>ility – Copyright (C) 2017 Americ</mark> onfiguration Socket Configuration	
Boot Configuration Setup Prompt Timeout Bootup NumLock State Quiet Boot	<mark>1</mark> [On] [Disabled]	Number of seconds to wait for setup activation key. 65535(OxFFFF) means indefinite waiting.
Boot Option Priorities Boot Option #1 Boot Option #2 Boot Option #3	[UEFI: JetFlashTrans] [JetFlashTranscend 1] [UEFI: Built-in EFI]	
Hand 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	.1268. Copyright (C) 2017 American	Megatrends, Inc.

Setup Prompt Timeout

Number of seconds to wait for setup activation key.

- Bootup NumLock State Select the keyboard NumLock state as "On" or "Off".
- Quiet Boot
 Enable or Disable quiet boot option.
- Boot Option Priorities
 Sets the system boot priorities.
- Hard Drive BBS Priorities

Display this item when external legacy devices are plugged in to set boot priorities.



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	Enter: Select
UEFI: Built-in EFI Shell UEFI: JetFlashTranscend 16GB 1100, Partition 1	+/-: Change Opt. F1: General Help
JetFlashTranscend 166B 1100	F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

Save Changes and Exit

Exit system setup after saving the changes.

- Discard Changes and Exit Exit system setup without saving any changes.
- Save Changes and Reset
 Reset the system after saving changes.
- Discard Changes and Reset Reset system setup without saving any changes.
- Save Changes
 Save changes done so far to any of the setup options.
- Discard Changes
 Discard changes done so far to any of the setup options.
- Restore Defaults Restore/Load default values for all the setup options.
- Save as User Defaults
 Save the changes done so far as user defaults.
- Restore User Defaults
 Restore the user defaults to all the setup options.



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-825 are located on the software installation CD.

Before beginning, it is important to note that most display drivers need to have the relevant software application already installed on the system prior to installing the enhanced display drivers. In addition, many of the installation procedures assume that you are familiar with both the relevant software applications and operating system commands. Review the relevant operating system commands and the pertinent sections of your application software's user manual before performing the installation.

4.2 Introduction

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

this OS.

Identification of Intel chipset components in the Device Manager



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.

Note!



The chipset driver is used for the following versions of Windows, and it
has to be installed before installing all the other drivers:

It is necessary to update all the latest Microsoft hot fix files when using

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

Note!

4.3 Windows Series Driver Setup

Insert the driver CD into your system's CD-ROM drive. When the folder is displayed, move the mouse cursor over the folder "01_Chipset". Find the executable in this folder, click to install the driver.

퉬 00_Manual	
퉬 01_Chipset	
퉬 02_Graphic	
鷆 03_LAN	
퉬 04_USB	
퉬 05_RSTe	



Graphic Setup

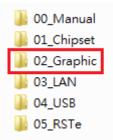
5.1 Introduction

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

- 32-bit 2D graphics engine on board for normal use.
- 64 MB RAM for this chip, the highest resolution is 1920x1200.

5.2 Windows Series Driver Setup

Insert the driver CD into your system's CD-ROM drive. When the folder is displayed, navigate to the "02_Graphic" folder and click the executable file to complete the installation of the drivers for OS that you need.





- 1. If ASMB-825 carries an additional graphics card for VGA output, please set this additional graphic card as "major output" under the "Display properties" of OS.
- 2. The WDDM driver can support for 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.
 - It is a non-WHQL certified driver because ASPEED VGA is a 2D VGA, it cannot meet the WHQL requirement of WDDM drivers which require 3D VGA functions.
 - Because it is a non-WHQL certified driver, it may have some compatibility issues with some specific applications



LAN, USB 3.0 and RSTe RAID

6.1 LAN Configuration

6.1.1 Introduction

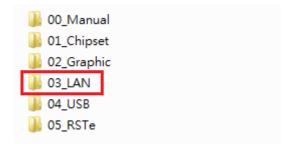
ASMB-825 serverboard features two Gigabit Ethernet LAN connections via dedicated PCI Express x1 lanes: GbE LAN1 (Intel[®] I210) and GbE LAN2 (Intel[®] I210), and two 10GbE LAN3 and LAN4 (Intel[®] X557 PHY). These connections eliminate bottlenecks of network data and incorporate Gigabit Ethernet at 10Gbps.

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

The integrated Intel gigabit Ethernet controller supports all major network operating systems. However, the installation procedure varies with different operating systems.

6.1.2 Windows Series Driver Setup

Insert the driver CD into your system's CD-ROM drive. Select folder "03_LAN" then click the proper LAN driver for the OS.



6.2 USB 3.0

6.2.1 Introduction

ASMB-825 offers six USB 3.0 ports, two in rear side and four via onboard header. The USB 3.0 could provide the bandwidth up to 500MB/s to shorter the time for data transmission.

6.2.2 Windows Series Driver Setup

Insert the driver CD into your system's CD-ROM drive. Select folder "04_USB" then click the Setup.exe file for the installation.

🐌 00_Manual
퉬 01_Chipset
퉬 02_Graphic
퉬 03_LAN
04_USB
\mu 05_RSTe

6.3 SATA & PCIe SSD RAID

6.3.1 Introduction

Intel C621/C622 PCH chip offers SATA & PCIe SSD RAID under Windows operating system.



1.Please visit the Intel download center for "Intel Rapid Storage Technology enterprise for Microsoft Windows Operating System Software User's Guide" file download,

2.For the hotfix file download, please visit Microsoft website.

6.3.2 Windows Series Driver Setup

Insert the driver CD into your system's CD-ROM drive. Select folder "05_RSTe" then click to install the proper driver for the OS.

퉬 00_Manua	I
퉬 01_Chipset	:
퉬 02_Graphic	c
퉬 03_LAN	
퉬 04_USB	
퉬 05_RSTe	
]



Programming the Watchdog Timer

The ASMB-825's 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 in to the EC controller IT8528E. It provides the following functions for user programming:

- Can be enabled and disabled by user's program
- Timer can be set from 1 to 255 seconds
- Generates an interrupt or reset signal if the software fails to reset the timer before time-out

A.2 Programming the Watchdog Timer

The I/O port address of the watchdog timer is as below:

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

Here is an example to step by step program 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

·				
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 USB2.0 Header (USB3_4, USB9_10)



Table B.1: USB Header (USB3_4, USB9_10)				
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	GND	

B.2 USB3.0 Header (USB5_6, USB7_8)



Table B.	Table B.2: USB Header (USB5_6, USB7_8)					
Pin	Signal	Pin	Signal			
1	+5 V	2	STDA_SSRX-			
3	STDA_SSRX+	4	GND			
5	STDA_SSRX-TX-	6	STDA_SSRX+TX+			
7	GND	8	D-			
9	D+	10	OC#			
11	D+	12	D-			
13	GND	14	STDA_SSRX+TX+			
15	STDA_SSRX-TX-	16	GND			
17	STDA_SSRX+	18	STDA_SSRX-			
19	+5 V	20				

B.3 VGA Connector (VGA1)

5	00000	71
10	00000	6
15	00000	11

Table B.3: VGA Connector (VGA1)				
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)

2468	
0000	
13579	

Table B.4: RS-232 Connector (COM2)			
Pin	Signal		
1	DCD		
2	DSR		
3	RXD		
4	RTS		
5	TXD		
6	CTS		
7	DTR		
8	RI		
9	GND		

B.5 External Keyboard Connector (KBMS2)



Table B.5: External Keyboard Connector (KBMS2)			
Pin	Signal		
1	KB CLK		
2	KB DATA		
3	MS DATA		
4	GND		
5	VCC		
6	MS CLK		

B.6 System & CPU Fan Power Connector (SYSFAN0~4, CPUFAN0~1)



Table B.6: CPU FAN Connector (CPUFAN0~1)				
	CPUFAN0	CPUFAN1		
1	GND	GND		
2	+12V	+12V		
3	CPU_TACH	CPU_TACH		
4	CPU0_PWM	CPU1_PWM		

Table B.7: SYS FAN Connector (SYSFAN0~4)							
	SYS FAN0 SYS FAN1 SYS FAN2 SYSFAN3 SYSFAN4						
1	GND	GND	GND	GND	GND		
2	+12V	+12V	+12V	+12V	+12V		
3	FAN0_TACH	FAN1_TACH	FAN2_TACH	FAN3_TACH	FAN4_TACH		
4	FAN0_PWM	FAN1_PWM	FAN2_PWM	FAN3_PWM	FAN4_PWM		

B.7 Power LED (JFP3)

1	2	3
Q	Ō	0

Table B.8: Power LED Connector (JFP1)		
Pin	Function	
1	LED power (3.3 V)	
2	NC	
3	Ground	

B.8 External Speaker Connector (JFP2)

1	4	7	10
C	C)C	0

Table B.9: External Speaker Connector (JFP2)		
Pin	Function	
1	SPK+	
4	NC	
7	BZ-	
10	SPK-	

B.9 Reset Connector (JFP1)



Table B.10: Reset Connector (JFP1)		
Pin	Signal	
9	RESET	
12	GND	

B.10 HDD LED Connector (JFP1)



Table B.11: HDD LED Connector (JFP1)		
Pin Signal		
2	HDD_LED+	
5	HDD_LED-	

B.11 ATX Soft Power Switch (JFP1)



Table B.12: ATX Soft Power Switch (JFP1)		
Pin	Signal	
3	PWR-BTN	
6	GND	

B.12 SMBus Connector (SMBUS1)

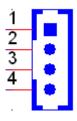


Table B.13: Front panel SMBus Connector (SMBUS1)		
Pin	Signal	
1	+3.3V_AUX	
2	SMB_SCL_FRU	
3	SMB_SDA_FRU	
4	GND	

B.13 USB & LAN Ports (USB1_2 and LAN1_2, LAN3_4)



Table B.14: USB Port (USB1_2)		
Pin	Signal	
1	VBUS	
2	D-	
3	D+	
4	GND	
5	StdA_SSRX-	
6	StdA_SSRX+	
7	GND_DRAIN	
8	StdA_SSTX-	
9	StdA_SSTX-	

Table B.15: Giga LAN 10/100/1000 Base-T RJ-45 Port (LAN1_2, LAN3_4)				
Pin	Signal	Pin	Signal	
1	MID0+	4	MID2+	
2	MID0-	5	MID2-	
3	MID1+	7	MID3+	
6	MID1-	8	MID3-	

B.14 Audio Connector (HDAUD1)



Table E	Table B.16: Front Panel Audio Connector (HDAUD1)				
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)

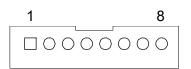


Table B.17: Alarm Board Connector (VOLT1)				
Pin	Signal	Pin	Signal	
1	5VSB	5	+5V	
2	GND	6	+3.3V	
3	GND	7	-12V	
4	-5V	8	+12V	

B.16 Case Open Connector (JCASE1)

Ο	1
0	2

Table B.18: Case Open Connector (JFP1)		
Pin	Signal	
1	CASEOP	
2	GND	

B.17 Front Panel LAN LED Connector (LANLED1)

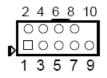


Table B.19: LAN LED Connector (LANLED1)			
Pin	Signal	Pin	Signal
1	LAN1_ACT#	2	LAN2_ACT#
3	+3V3_LAN1LED	4	+3V3_LEN2LED
5	LAN3_ACT#	6	LAN4_ACT#
7	+3V3_LAN3LED	8	+3V3_LEN4LED
9	NC	10	NC

B.18 SATA SGPIO Connector (SGPIO1)



Table B.20: SATA SGPIO Connector (SGPIO1)		
Pin	Signal	
1	SCLOCK_PCH	
2	NC	
3	SLOAD_PCH	
4	SDATAOUT0_PCH	
5	SDATAOUT1_PCH	

B.19 LPC Connector (LPC2)

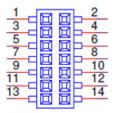


Table B.21: LPC Connector (LPC2)			
Pin	Signal	Pin	Signal
1	CLK_33M_TPM	2	LPC_AD1
3	PLTRST_LPC	4	LPC_AD0
5	LPC_FRAME	6	+3.3V
7	LPC_AD3	8	GND
9	LPC_AD2	10	SMB_SCL_LPC
11	SERIRQ_PCH	12	SMB_SDA_LPC
13	+5V_AUX	14	+5V

B.20 Clear CMOS Connector (JCMOS1, JME1)



Table B.22: Clear CMOS Connector (JCMOS1, JME1)		
Pin Signal Signal		Signal
	JCMOS1	JME1
1	NC	NC
2	RTC_RST_PCH	HDA_SDOUT_PCH
3	GND	3.3V

B.21 PMBUS Connector (PMBUS1)

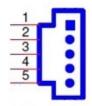


Table B.23: PMBUS Connector (PMBUS1)		
Pin	Signal	
1	SMB_SCL_PM	
2	SMB_SDA_PM	
3	SMB_ALT_PM	
4	GND	
5	+3.3V	

B.22 GPIO Connector (GPIO1)

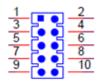


Table B.24: GPIO Connector (GPIO1)			
Pin	Signal	Pin	Signal
1	SIO_GPIO0	2	SIO_GPIO4
3	SIO_GPIO1	4	SIO_GPIO5
5	SIO_GPIO2	6	SIO_GPIO6
7	SIO_GPIO3	8	SIO_GPIO7
9	VCC_GPIO0	10	GND



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