

User Manual

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ASMB-815 Series

LGA 3647-P0 Intel Xeon® Server Board with 6 DDR4, 5 PCIe x8 or 2 PCIe x16 and 1 PCIe x8, 8 SATA3, 6 USB3.0, Dual 10GbE, IPMI



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- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Initial Inspection

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

- 1 x ASMB-815 ATX motherboard
- 1 x ASMB-815 Startup Manual
- 1 x Driver CD
- 2 x Serial ATA HDD data cables
- 1 x I/O port bracket
- 1 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-815 mechanically and electrically before shipment. It should be free of marks and scratches and in perfect working order upon receipt. When unpacking the ASMB-815, 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-815-00A1E	C621	8*SATA3+ 1*M.2	5 PCIe x8 or 2 PCIe x16 and 1 PCIe x8+ 1 PCIe x4 + 1 PCIe x1 (Gen 3.0)	No	No
ASMB-815I-00A1E	C621	8*SATA3+ 1*M.2	5 PCIe x8 or 2 PCIe x16 and 1 PCIe x8+ 1 PCIe x4 + 1 PCIe x1 (Gen 3.0)	Yes	No
ASMB-815T2-00A1E	C622	8*SATA3+ 1*M.2	5 PCIe x8 or 2 PCIe x16 and 1 PCIe x8+ 1 PCIe x4 + 1 PCIe x1 (Gen 3.0)	Yes	Yes

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Overview

1.1 Introduction

The ASMB-815 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 MHz memory up to 192 GB.

ASMB-815 provides five PCIe x8 or two PCIe x16 and 1 PCIe x8, one PCIe x4 and one PCIe x1 in Gen3.0 high speed. In addition, the full ASMB-815 SKU has dual Gigabit and dual 10GbE Ethernet LAN ports that eliminate network bottlenecks. (ASMB-815 I & T2 SKUs only)

A fifth RJ-45 LAN connector (LAN5) is dedicated for IPMI function that allows remote control management. One RJ-45 LAN jack (LAN 4) from 10GbE port can also be used as IPMI LAN. High reliability and outstanding performance makes ASMB-815 the ideal platform for industrial server/networking applications.

By using the Intel C621/C622 chipset, the ASMB-815 offers a variety of features such as 6 x USB3.0 and 7 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 a 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.

 Note!
 1.
 IPMI module will be included in ASMB-815I and ASMB-815T2

 SKUs. Only ASMB-815T2 SKU can support 10GbE LAN ports.

 Please refer to Order Information at the front for chipset. IPML

- 2. Please refer to Order Information at the front for chipset, IPMI, and LAN support on individual product SKU.
- 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-815 is equipped with single CPU socket 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, 2 PCIe x16 slot (x8 or x16 link) +3 PCIe x8 slot (x8 link) +1 PCIe x4 (x4 link) + 1 PCIe x1 (x1 link), 8 x SATA and 1 x M.2 connector, 6 x USB 3.0 and 7 x USB 2.0 (incl. 1 x Type-A) ports.
- Standard ATX form factor with industrial features: ASMB-815 provides industrial features like long product life cycle, reliable operation under wide temperature range, watchdog timer, etc.
- IPMI 2.0 support: ASMB-815 (T2 and I SKUs) equipped with ASPEED 2500 BMC chip supports IPMI 2.0 (Intelligent Platform Management Interface 2.0) via dedicated LAN port.
- KVM over IP: KVM over IP function allows BIOS level remote control of ASMB-815 (T2 and I SKUs) through your own computer.

1.3 Specifications

Table 1.1: Specifications

Processor					
		Dual Intel LGA3647 Xeon processor sockets			
CPU		Supports Intel Xeon processor scalable family, up to 28 cores			
		Supports the TDP of processor up to 205 W			
System Memory					
		Supports DDR4 memory bus			
Memory Capacity		Total 6 memory slots provided			
momory cupacity		Supports up to 192 GB memory			
<u> </u>		One DIMM per channel			
Memory Type	-	ports DDR4 2133/2400/2666 MHz ECC-REG DIMM modules			
DIMM Sizes		h memory slot supports 4GB, 8GB, 16GB and 32GB memory lules			
Memory Voltage	1.2	V			
Error Detection		Corrects single-bit errors			
		Detects double-bit errors (using ECC memory)			
On-Board Devices					
Chipsets	Inte	I C621/C622 PCH			
		2 x Intel X557 10GbE and 2 x Intel I210 Gigabit Ethernet Con-			
Network Controllers		troller connected to PCH (ASMB-815 I & T2 SKUs)			
Network Controllers		Above network supports 10 GbE Base-T and 10/100/1000 Base-T, with RJ-45 output			
VGA	ASPEED AST2500/2510 controller with 64 MB VGA memory pro-				
		s basic 2D VGA function.			
EC		IT8528E chip provide motherboard keyboard mouse, 232, and hardware monitor functions			
BMC 815I/815T2 SKUs	One Realtek 8201EL Gigabit PHY 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			
Ū		RAID 0, 1, 5, 10 support (Windows only)			
		4 x RJ-45 LAN ports (2 x 10GbE + 2 x 10/100/1000 Base-T LAN)			
LAN		1 x RJ-45 Dedicated IPMI LAN port(10/100/1000 Base-T) for			
		IPMI only, there is no regular LAN function (ASMB-815 I & T2 SKUs).			
		4 x USB 3.0 ports + 2 x USB 2.0 ports at rear window			
		1 x USB 3.0 internal header (2 ports)			
USB		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)			
Power Connector					
System Power	1 x 2 5Vs	24-pin SSI EPS 12V power connector (Input 12V, 5V, 3.3V, b)			
	575	~/			

Table 1.1: Specifica	ations					
CPU Power	1 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	 2 x PCle x16 slot (Gen3 x8 or x16 link) PCIEX16_SLOT4 (from CPU) PCIEX16_SLOT6 (from CPU) 3 x PCle x8 slot (Gen3 x8 link or NF*) PCIEX8_SLOT3 (from CPU) PCIEX8_SLOT5 (from CPU) PCIEX8_SLOT7 (from CPU) 1 x PCle x4 slot (Gen3 x4 link) PCIEX4_SLOT2 (from PCH) 1 x PCle x1 slot (Gen3 x1 link) 					
	 1 x PCle x1 slot (Gen3 x1 link) PCIEX1_SLOT1 (from PCH) 					
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	 One 4-pin header 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	Chassis intrusion detection					
(Case Open)	Chassis intrusion header					
Operating Environmen	t / Compliance					
RoHS	RoHS 6/6 Pb Free Compliant					
Environmental Spec.	 Operating Temperature: 0 to 60° 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) 					

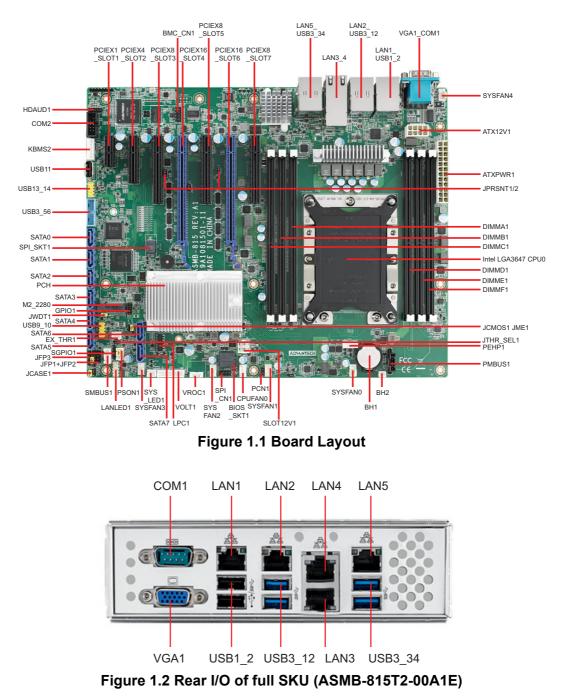
Note!

The PCIe slot 3/5 has no function when slot 4/6 is card occupied with x16 link.

1.4 Board Layout, Jumpers and Connectors

Connectors on the ASMB-815 are linked to external devices such as hard disk drives. In addition, ASMB-815 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-815.





ASMB-815-00A1E with no IPMI/10GbE LAN support provides two LAN ports (LAN1~2).

ASMB-815I-00A1E with IPMI LAN support provides three LAN ports (LAN1~2 & LAN5).

ASMB-815T2-00A1E with IPMI/10GbE LAN support provides five LAN ports (LAN1~5).

Table 1.2: Onboard LAN LED Color Definition

10/100/1000 & 10G Mbps LAN Link/Activity LED Scheme



LAN3 & LAN4 (10G)

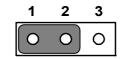
		Left LED	Right LED
100 Mbps	Link	Off	Green
100 Mbps	Active	Off	Blinking green
1C Mbpa	Link	Amber	Green
1G Mbps	Active	Amber	Blinking green
10C Mbpa	Link	Green	Green
10G Mbps	Active	Green	Blinking green



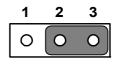
LAN1 & LAN2 (1G)

		Left LED	Right LED
10 Mbpa	Link	Off	Green
10 Mbps	Active	Off	Blinking green
100 Mbpa	Link	Amber	Green
100 Mbps	Active	Amber	Blinking green
1000 Mbpa	Link	Green	Green
1000 Mbps	Active	Green	Blinking green
No Link		Off	Off

Table 1.3: Jum	pers	
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
JPRSNT1/2	PCIE slot switch: Auto (1-2) / Manual (2-3)	1-2



Keep CMOS data/Disable ME update



Clear CMOS data/Enable ME update

Table 1.4: Connect	ors
Label	Function
ATX12V1	SSI EPS 12V auxiliary power connector (for CPU) and memory
ATXPWR1	SSI EPS 24-pin main power connector (for system)
BH2	For optional battery kit
BIOS_SKT1	BIOS SPI ROM
BMC_CN1	IPMI connector (ASMB-815 I & T2 SKUs only)
COM2	Serial port: RS-232
CPU0	Intel LGA3647 CPU0 socket
CPUFAN0	CPU0 fan connector (4-pin)
DIMMA1	Channel A DIMM1
DIMMB1	Channel B DIMM1
DIMMC1	Channel C DIMM1
DIMMD1	Channel D DIMM1
DIMME1	Channel E DIMM1
DIMMF1	Channel F DIMM1
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~LAN5	RJ-45 LAN connector
LANLED1	LAN LED extension connector
LPC1	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 x1 slot (x1 link) (PCH)
SLOT2	PCIE x4 slot (x4 link) (PCH)
SLOT3	PCIE x8 slot (0 or x8 link) (CPU)
SLOT4	PCIE x16 slot (x16 or x8 link) (CPU)
SLOT5	PCIE x8 slot (0 or x8 link) (CPU)
SLOT6	PCIE x16 slot (x16 or x8 link) (CPU)
SLOT7	PCIE x8 slot (x8 link) (CPU)
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)
USB3_12, USB3_34, USB3_56	USB 3.0 port 1, 2, 3, 4; USB 3.0 port 5, 6 (20-pin header)
 USB1_2, USB9_10, USB13_14	USB 2.0 port 1, 2; USB 2.0 port 9, 10, 13, 14 (9-pin header)
USB11	USB 2.0 port 11 (Type-A)

Table 1.4: Connectors			
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-815 T2 and I SKUs)	Blinking (Green): Controller is working	normally	

1.5 Block Diagram

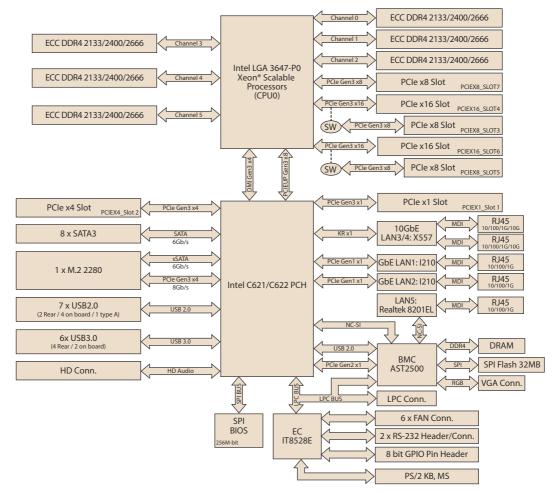


Figure 1.3 Block Diagram

1.6 System Memory

ASMB-815 has six 288-pin memory slots for DDR4 2133/2400/2666 MHz memory modules with maximum capacity of 192 GB (Maximum 32 GB for each DIMM). ASMB-815 supports registered DIMMs memory module.

1.7 Memory Installation

		Quantity of memory installed				
	1	2	3	4	5	6
DIMM A1	V	V	V	V	V	V
DIMM B1			V	V	V	V
DIMM C1					V	V
DIMM D1		V	V	V	V	V
DIMM E1				V	V	V
DIMM F1						V

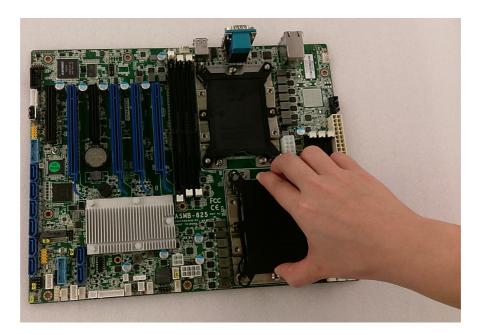
1.8 Processor Installation

The ASMB-815 is designed for Intel Xeon processor scalable family.

Step 1

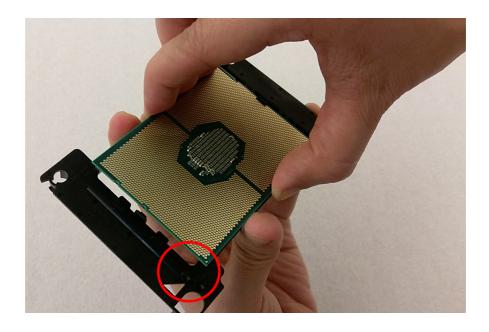
Remove dust cover.

(The following pictures are referred from same platform ASMB-825 with dual processors but ASMB-815 is with single processor)



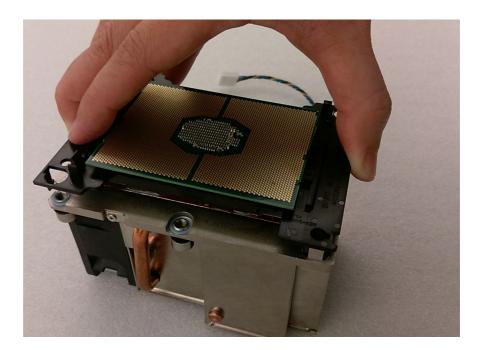
Step 2

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



Step 3

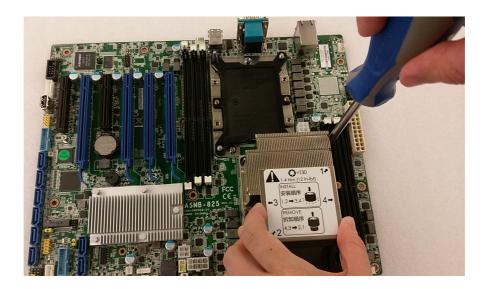
Install the CPU clip assembly on the heatsink as a processor + heatsink module.



Chapter 1 Overview

Step 4

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





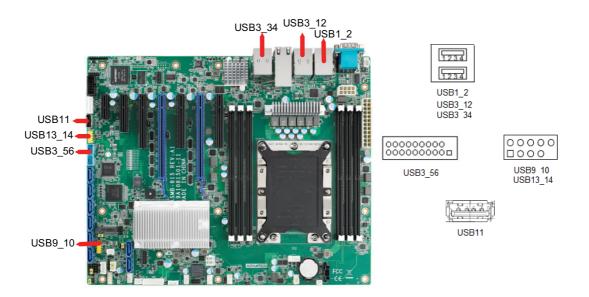
Connections

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.

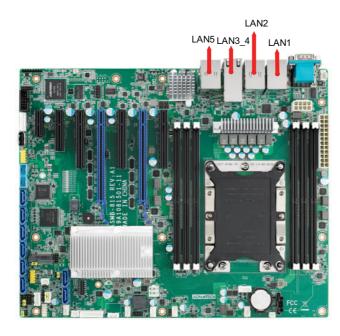
2.2 USB Ports (USB1_2, USB3_12, USB3_34, USB3_56, USB9_10, USB11, USB13_14)

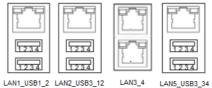
The four USB 3.0 ports on the rear plate and two USB3.0 on-board ports could reach transmission rates up to 5Gbps, besides the two USB2.0 ports on the rear and four on-board ports and one Type-A ports are with 480 Mbps speed. Fuse protection is supported and the USB interface can be disabled in the system BIOS setup.



2.3 LAN Ports (LAN1~LAN5)

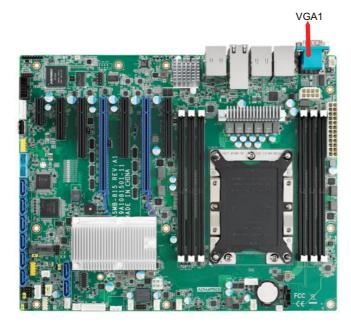
The ASMB-815 is equipped with two 10GbE (LAN3,4), two GbE LAN (LAN1,2) ports and one dedicated IPMI LAN (LAN5) port. One of 10 GbE LAN (LAN4) can be used as IPMI LAN as well for system management. They are all with RJ-45 jacks and supported by all major network operating systems.

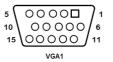




2.4 VGA Connector (VGA1)

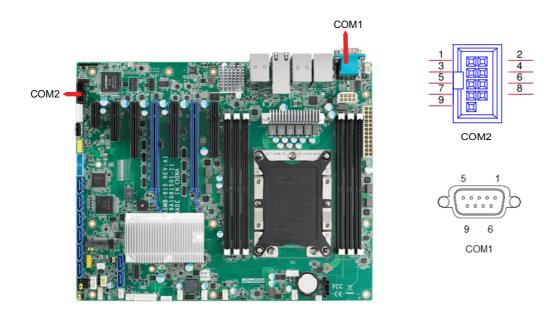
The ASMB-815 includes a VGA interface that can drive conventional CRT and LCD displays.





2.5 Serial Ports (COM1~2)

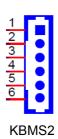
The ASMB-815 offers one serial port on the rear plate and one 2.50mm onboard with 2 x 5-pin pitch.



2.6 PS2 Keyboard and Mouse Connectors (KBMS2)

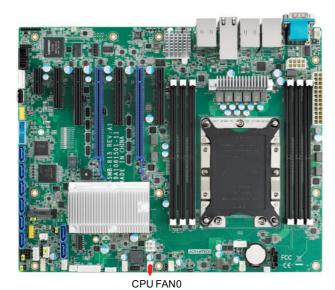
The 6-pin KBMS2 connector is for additional keyboard & mouse device usage.





2.7 CPU Fan Connector (CPUFAN0)

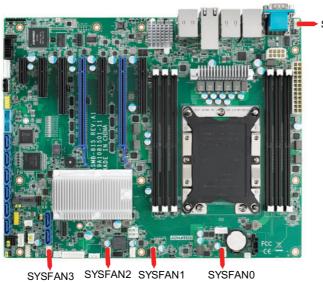
If a fan is used, this connector supports cooling fans that draw up to 1.5A (18W).





CPUFAN0

2.8 System Fan Connector (SYSFAN0~4)



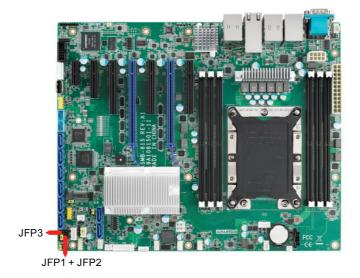
SYSFAN4

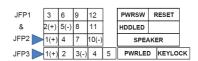


SYSFAN0~4

2.9 Front Panel Connector (JFP1~3)

There are several external switches and LEDs to monitor and control the ASMB-815.





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 as follows.

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		



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

JFP2 pins 1, 4, 7, 10 connect to an external speaker. The ASMB-815 provides an onboard buzzer as an alternative. To enable the buzzer, set pins 7-10 closed.



2.9.3 HDD LED Connector (JFP2 Pins 2 & 5)

You can connect an LED to connector JFP2 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.

9	12
0	0

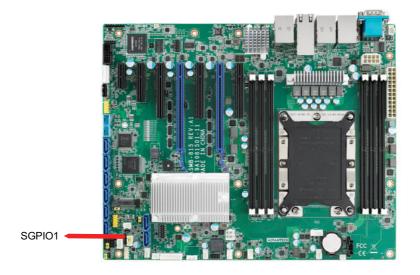
2.9.5 Case Open (JCASE1)

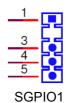
A chassis intrusion header is located at JCASE1 on the motherboard. Attach the appropriate cable from the chassis to be informed of a chassis intrusion when the chassis is opened. The default function is disabled and Pin 1-2 is bridged by a jumper cap.



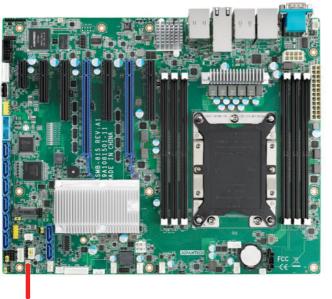
2

2.10 SATA SGPIO (SGPIO1)





2.11 Front Panel LAN Indicator Connector (LANLED1)



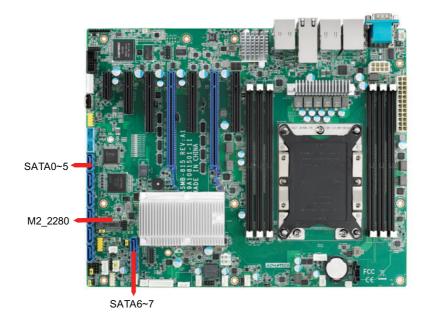


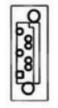
LANLED1

LANLED1

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

ASMB-815 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 for higher read/write speed.





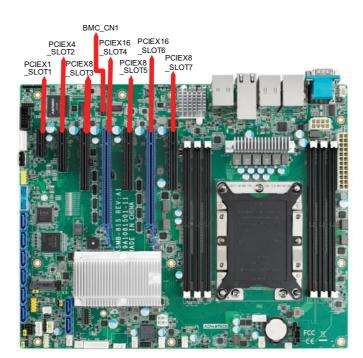
SATA0~7

Note!

Please pay attention to one MB screw hole H4 allocated in the M.2 area should be unfixed when you prepare to disassemble the system.

2.13 PCIe Expansion Slots & PCIe switch (JPRSNT1/ 2)

The ASMB-815 provides seven expansion slots. Riser card for 1U or 2U chassis can be used in slot-6 only.



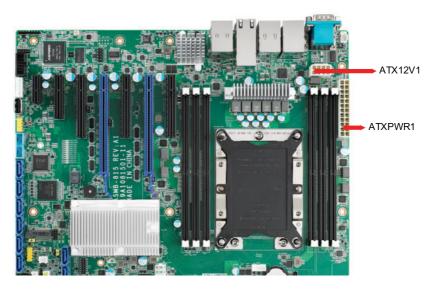
	Slot Length	Link	PCI-E Generation	PCIe link from
SLOT1	PCI-E x1	PCI-E x1	3	PCH
SLOT2	PCI-E x4	PCI-E x4	3	PCH
SLOT3	PCI-E x8	PCI-E x8	3	CPU
SLOT4	PCI-E x16	PCI-E x16	3	CPU
SLOT5	PCI-E x8	PCI-E x8	3	CPU
SLOT6	PCI-E x16	PCI-E x16	3	CPU
SLOT7	PCI-E x8	PCI-E x8	3	CPU

	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

Slot 7 has dedicated PCIe x8 link. Slot 3/4 is sharing one x16 link from CPU0, and slot 5/6 is sharing another x16 link from CPU0.

There are JPRSNT1 or JPRSNT2 jumper to switch PCIe slot 3/4 or slot 5/6 to two x8 links manually. Normally this jumper is 1-2 closed as default for auto detect. Some cards on slot 3 or slot 5 can't be recognized until JPRSNT jumper is forced to 2-3 closed.

2.14 Auxiliary Power Connector (ATXPWR1/ ATX12V1)



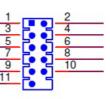
Ν	ote!	

- 1. Please use a power supply which is of SSI type; minimum output should be at least 500 W.
- 2. ATXPWR1 & ATX12V1 sockets should be all connected with power supply, otherwise ASMB-815 will not boot up normally.

2.15 HD Audio Interface Connector (HDAUD1)

ASMB-815 has one audio connector for Advantech's audio board (P/N: PCA-AUDIO-HDB1E) installation.

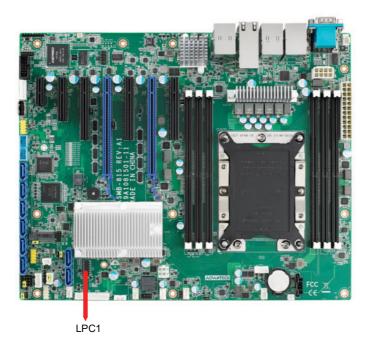


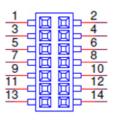




2.16 LPC Connector (LPC1)

ASMB-815 has one LPC connector that can be used for Advantech's TPM Module (P/N: PCA-TPM-00A1E, PCA-TPM-00B1E) for security management.

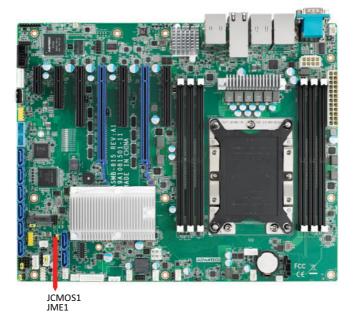


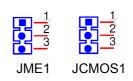


LPC1

2.17 Clear CMOS Connector (JCMOS1, JME1)

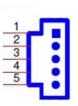
Setting jumper from pin 1-2 to pin 2-3, then back to pin 1-2 to reset CMOS data.





2.18 PMBUS Connector (PMBUS1)





PMBUS1

PMBUS1

Chapter 2 Connections

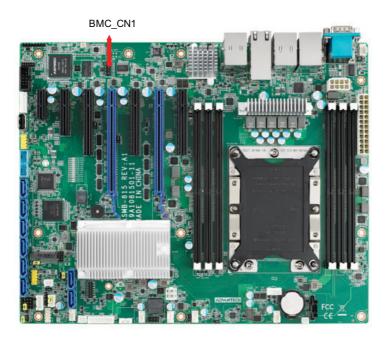
2.19 Front Panel SMBUS Connector (SMBUS1)

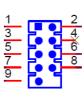


SMBUS1

2.20 IPMI Module Connector (BMC_CN1)

This connector only fits to Advantech's BMC Module that will exist in ASMB-815 I & T2 SKUs for enabling IPMI function.

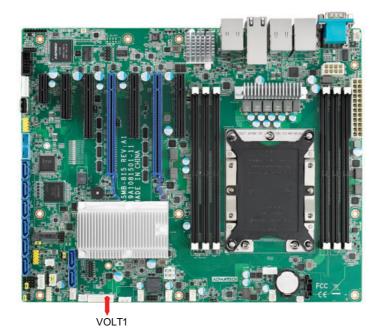


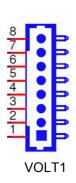




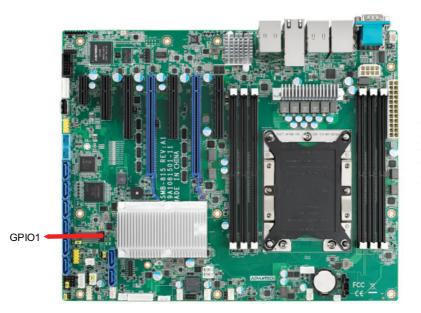
2.21 VOLT1 Connector (VOLT1)

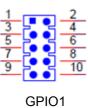
VOLT1 connects to the alarm board on the Advantech chassis. These alarm boards give warnings if a power supply or fan fails, if the chassis overheats, or if the back-plane malfunctions.





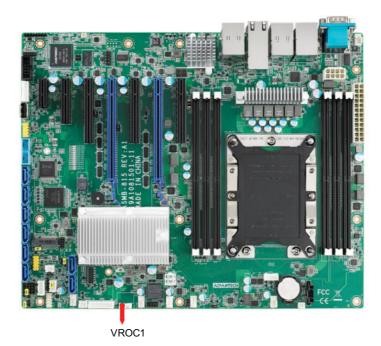
2.22 GPIO Connector (GPIO1)





2.23 Intel Virtual RAID (VROC1)

Intel VROC license key of VMD allows NVMe SSDs to connect via PCIe and directly manage on the CPU for better RAID performance. ASMB-815 has a VROC connector to enable NVMe SSD RAID, hot-plug and LED management features on Advantech's storage system.



2.24 NVMe RAID LED Control (PEHP1)

ASMB-815 has a PEHP1 connector for 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-815 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 5.0.1.2 0.75 x64 UEFI 2.5; PI 1.4 S8150000060X022 09/29/2017 13:14:19 Administrator ASMB-815	Set the Time. Use Tab to switch between Time elements.
Memory Information Total Memory	8192 MB	
System Date System Time	[Tue 10/31/2017] [16:43:33]	<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	pyright (C) 2017 American M	egatrends Inc

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.

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 5.0.1.2 0.75 x64 UEFI 2.5; PI 1.4 S815000060X022 09/29/2017 13:14:19 Administrator ASMB-815	Set the Time. Use Tab to switch between Time elements.
Memory Information Total Memory	8192 MB	
<mark>System Date</mark> System Time	[Tue 10/31/2017] [16:43:33]	<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. 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 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.

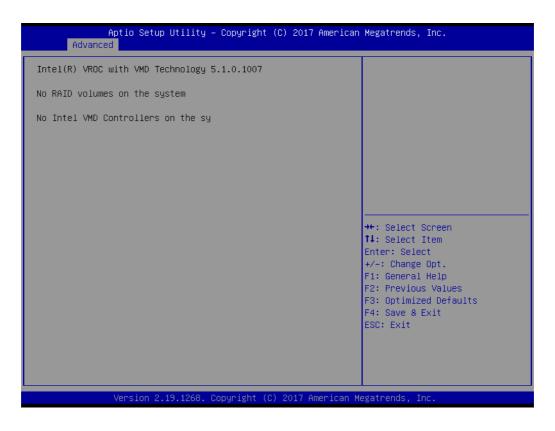
3.2.2 Advanced BIOS Features Setup

Select the Advanced tab from the ASMB-815 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.

 ▶ Intel(R) Virtual RAID on CPU ▶ Driver Health ▶ Trusted Computing 	This formset allows the user
 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 	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>

Chapter 3 AMI BIOS

3.2.2.1 Intel Virtual RAID on CPU



3.2.2.2 Driver Health

Aptio Setup Utility Advanced	y – Copyright (C) 2017 American	Megatrends, Inc.
▶ Apache Pass 1.0.0.1011 Driver	Healthy	Provides Health Status for the Drivers/Controllers
		<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.

3.2.2.3 Trusted Computing



Security Device Support

Enables or disables BIOS support for security device. Purchase Advantech LPC TPM module to use TPM function. P/N: PCA-TPM-00A1E_B1E.

3.2.2.4 ACPI Settings

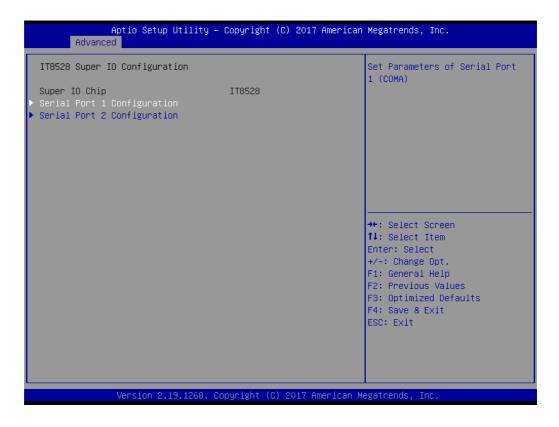
Aptio Setup Uti: Advanced	lity – Copyright (C) 2017 Ar	merican Megatrends, Inc.
ACPI Settings		Enables or Disables System ability to Hibernate (OS/S4 Sleep State). This option may
Enable Hibernation Lock Legacy Resources PowerOn by Modem	[Enabled] [Disabled] [Disabled]	not be effective with some operating systems.
		<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 2.19.12	268. Copyright (C) 2017 Amer	rican Megatrends, Inc.

Enable Hibernation

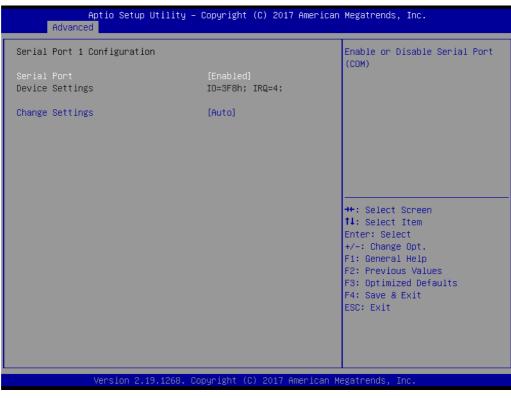
To "Enable or disable" hibernation feature.

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

3.2.2.5 IT8528 EC Super IO Configuration



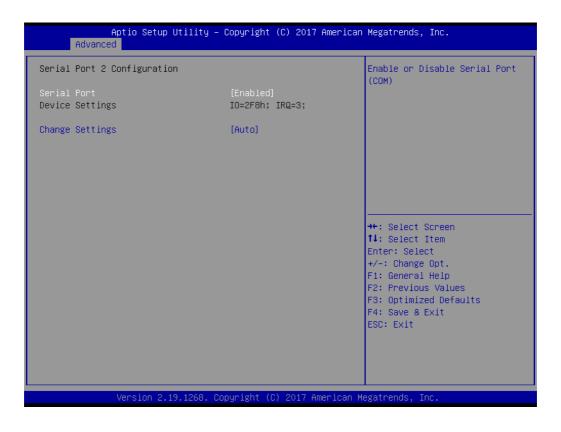
Serial Port 1 Configuration



- Serial Port To "Enable or disable" serial port 1.
- Change Settings

To select an optimal setting for serial port 1.

Serial Port 2 Configuration



- Serial Port

To "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	I28B8V0200	T LINCI .
Watchdog Timer CPU ACPI Shutdown Temperature CPU Warning Temperatrue ▶ FAN Configuration	[Disabled] [Disabled] [Disabled]	
System Temperature(TR1) CPU O Temperature	: +35°C : +42°C	
VBAT +12V +5V +3.3V CPU Fan O Speed	: +2.890 V : +12.140 V : +5.078 V : +3.354 V : 7211 RPM	<pre>++: Select Screen 1↓: Select Item Enter: Select +/-: Change Opt. F1: General Help</pre>
System Fan O Speed System Fan 1 Speed System Fan 2 Speed System Fan 3 Speed System Fan 4 Speed	: N/A : N/A : N/A : N/A : N/A	F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.19.1268. Co	opyright (C) 2017 American M	egatrends, Inc.

Watchdog Timer

To "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.

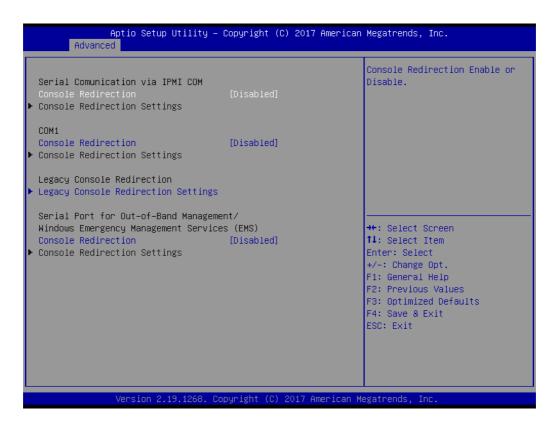
Fan Configuration

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) 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 Putty KeyPad Redirection After BIOS POST	[ANSI] [115200] [8] [None] [1] [None] [Enabled] [Disabled] [0isabled] [80x24] [VT100] [Always Enable]	++: 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 ⊧	legatrends, 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 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 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 support redirection. Options available: 80x24/80X25.

Putty Keypad

Select function key and keypad on putty.

Redirection After BIOS Post

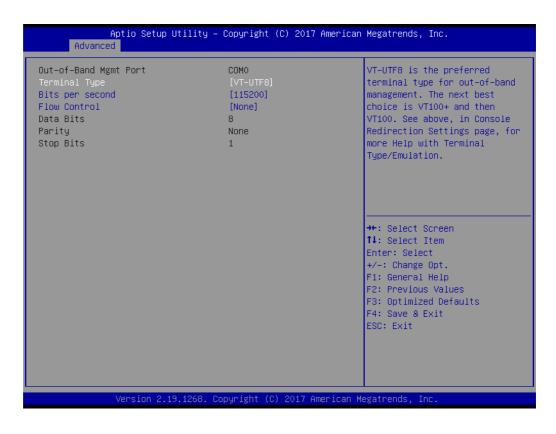
When Bootloader is selected, then Legacy Console Redirection is disabled before booting to legacy OS. When Always Enable is selected, then Legacy Console Redirection is enabled for legacy OS. Default setting for this option is set to Always Enable.

Legacy Console Redirection Settings

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

Advanced		Utility –	Copyright	(C) 201	7 American	Megatrends, Inc.
Legacy Serial R	edirection	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>
	Version 2.1	19.1268. Co	pyright (C	C) 2017 (American Me	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 Utili Advanced	ty – Copyright (C) 2017 f	merican 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 2.19.126	8. Copyright (C) 2017 Ame	rican Megatrends, Inc.

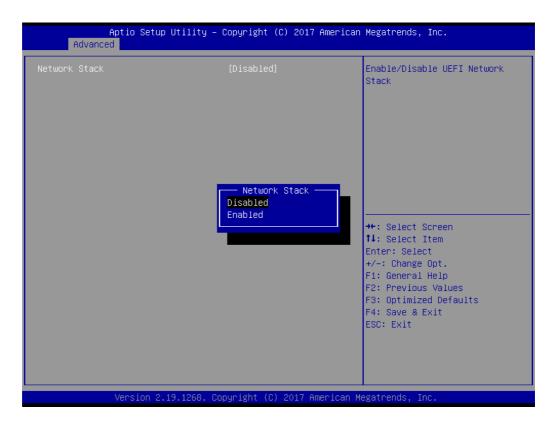
Above 4G Decoding

"Enable or disable" 64-bit capability. Devices to be decoded in above 4G address space (only if the system supports 64-bit PCI decoding).

Note! Some graphic or GPU cards need to enable 4G Decoding.



3.2.2.9 UEFI Network Stack Configuration



To "Enable or disable" UEFI network stack function.

3.2.2.10 CSM Configuration

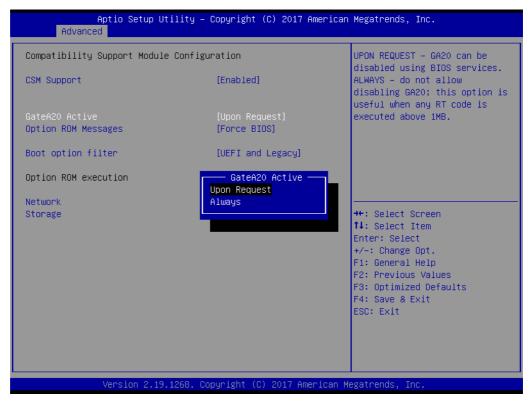
Aptio Setup Ut: Advanced	llity – Copyright (C) 2017 Amer	rican Megatrends, Inc.
Compatibility Support Module	Enable/Disable CSM Support.	
CSM Support	[Enabled]	
GateA20 Active Option ROM Messages	[Upon Request] [Force BIOS]	
Boot option filter	[UEFI and Legacy]	
Option ROM execution		
Network Storage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

CSM Support

To "Enables or disables" UEFI CSM (Compatibility Support Module) to support a legacy PC boot process.

GateA20 Active

This item 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 of GA20.



Option ROM Messages

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

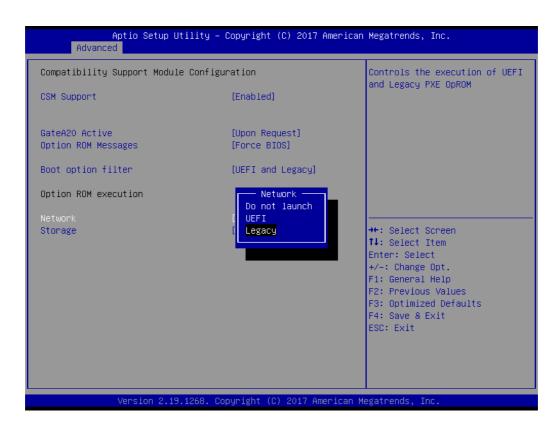
Boot option filter

Change UEFI/legacy ROM priority for boot option.

Aptio Setup Utilit Advanced	y – Copyright (C) 2017 American	Megatrends, Inc.
Compatibility Support Module Con CSM Support	figuration [Enabled]	This option controls Legacy/UEFI ROMs priority
GateA2O 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 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	. Copyright (C) 2017 American M	egatrends, Inc.

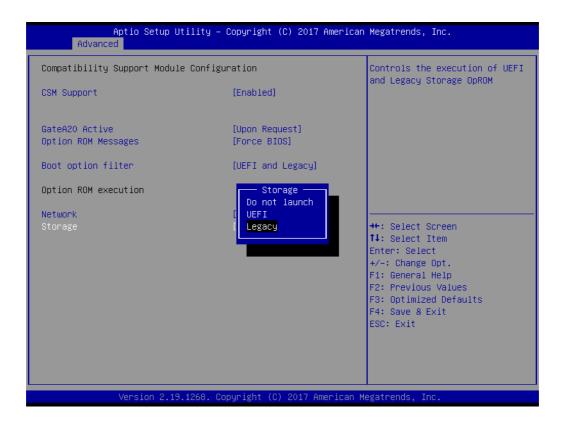
Network

Control the execution of UEFI and legacy PXE OpROM.



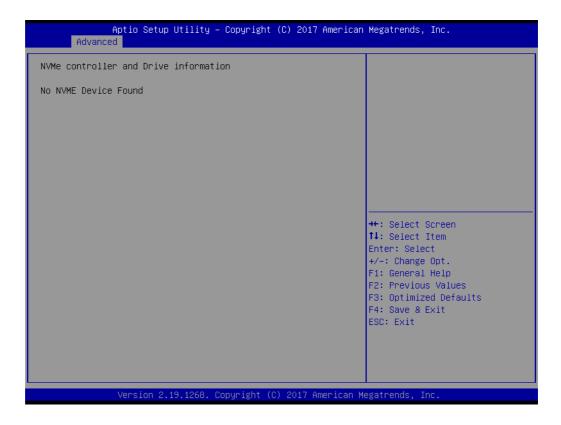
Storage

Control the execution of UEFI and legacy storage OpROM.



3.2.2.11 NVMe Configuration

Set NVMe device options.



3.2.2.12 USB Configuration

USB Configuration		Enables Legacy USB support.
JSB Module Version	17	AUTO option disables legacy support if no USB devices an
USB Controllers:		connected. DISABLE option wi keep USB devices available
1 XHCI		only for EFI applications.
USB Devices: 1 Drive, 1 Keyboard		
_egacy USB Support	[Enabled]	
KHCI Hand-off	[Enabled]	
USB Mass Storage Driver Support	[Enabled]	
USB hardware delays and time–outs:		↔: Select Screen
JSB transfer time–out	[20 sec]	↑↓: Select Item
Device reset time-out	[20 sec]	Enter: Select
Device power-up delay	[Auto]	+/-: Change Opt.
		F1: General Help
Mass Storage Devices:		F2: Previous Values
JetFlashTranscend 16GB 1100	[Auto]	F3: Optimized Defaults
		F4: Save & Exit ESC: Exit
		ESC: EXIC

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
 To "Disable or enable" 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	┌── USB transfer time-out ────	
XHCI Hand-off	1 sec	
USB Mass Storage Driver Support		
USB hardware delays and time–ou	10 sec 20 sec	+: Select Screen
USB transfer time-out		↓: Select Item
Device reset time-out		nter: 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

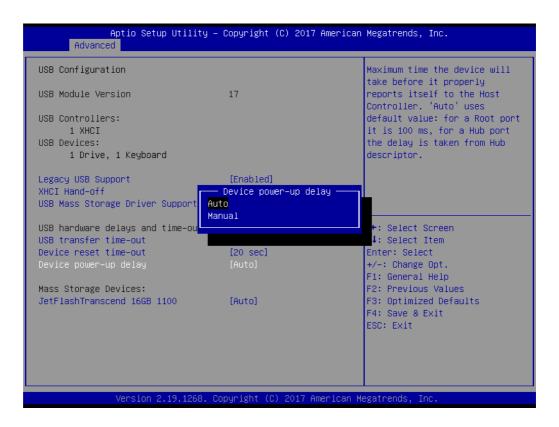
Device Reset Time-out

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

Aptio Setup Utili Advanced	ty – Copyright (C) 2017 America	n 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 XHCI Hand–off	Device reset time-out —— 10 sec	
USB Mass Storage Driver Support		
	30 sec	
USB hardware delays and time-ou USB transfer time-out	40 sec	+: Select Screen ↓: Select Item
Device reset time-out		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
	[hato]	F4: Save & Exit
		ESC: Exit
Version 2.19.126	8. Copyright (C) 2017 American	Megatrends, Inc.

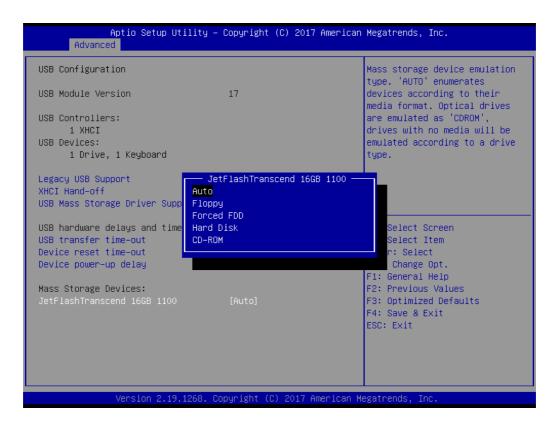
Device Power-up Delay

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



Mass Storage Devices

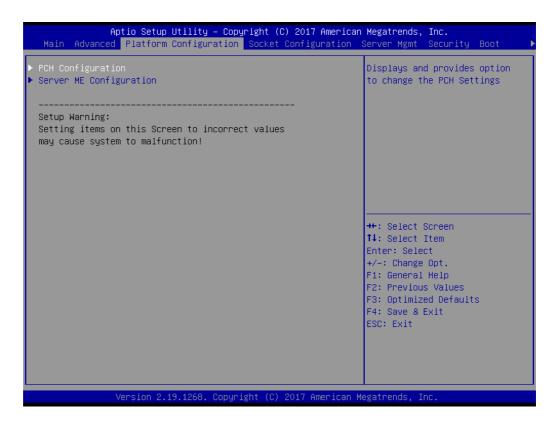
Default is "Auto" to enumerate mass storage devices according to media format.



3.2.3 Platform Configuration

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 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 Ame	erican Megatrends, Toc.

3.2.3.1 PCH Configuration



Aptio Setup Utility – Copyright (C) Platform Configuration	2017 American Megatrends, Inc.
<pre>PCH Configuration PCH Devices PCIE M.2 Slot Configuration PCH SATA Configuration PCH sSATA/M.2 Configuration Networking</pre>	Enable/Disable Intel(R) IO Controller Hub devices
	++: 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) 2	017 American Megatrends, Inc.

PCH Devices

This item is to set up IO Controller Hub devices.

- SMBus Controller

To "Enable or disable" SMBus controller.

SMBUS Device [Enable] Enable/Disable SMBUS Device. PCH state after G3 [S5] [Disable] Case Open Warning [Disable] [Auto] Azalia [Auto] [Auto] VGA Priority [Disable] [Disable] RTC Wake system from S4/S5 [Disable] +*: Select Screen 11: Select Item Enter: Select Screen 1: Select Item Enter: Select Screen +/-: Change Opt. Fi: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit SC: Exit Sc: Exit Sc: Exit

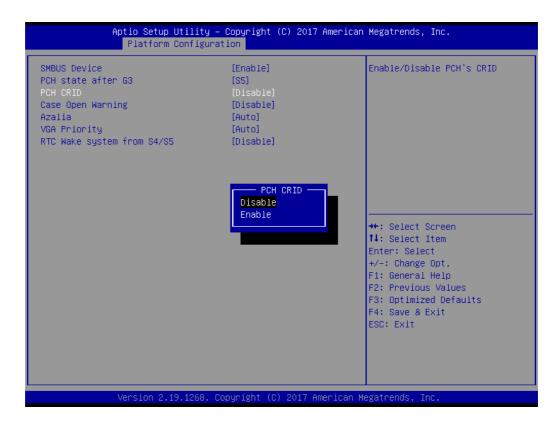
- PCH state after G3

Select S0/S5 for ACPI state after G3.

Aptio Setup Util Platform Conf	ity – Copyright (C) 2017 America iguration	an Megatrends, Inc.
SMBUS Device PCH state after G3 PCH CRID Case Open Warning Azalia VGA Priority RTC Wake system from S4/S5	[Enable] [S5] [Disable] [Disable] [Auto] [Auto] [Disable] PCH state after G3	Select SO/S5 for ACPI state after a G3
	S5 Leave power state unchanged	<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 2.19.12	268. Copyright (C) 2017 American	Megatrends, Inc.

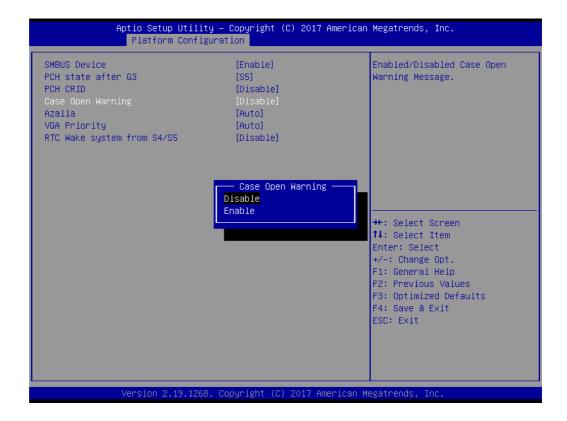
- PCH CRID

To "Enable or disable" PCH compatibility revision ID (CRID) functionality.



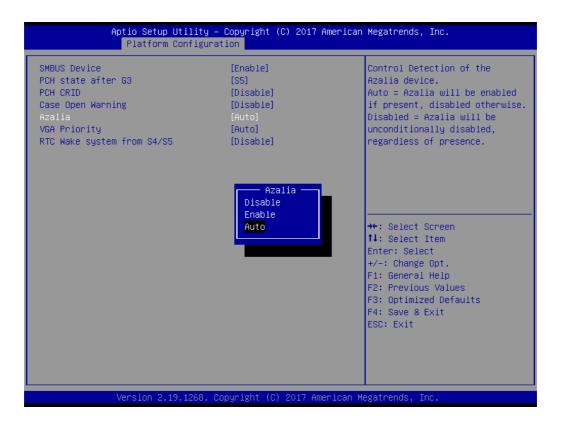
- Case Open Warning

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



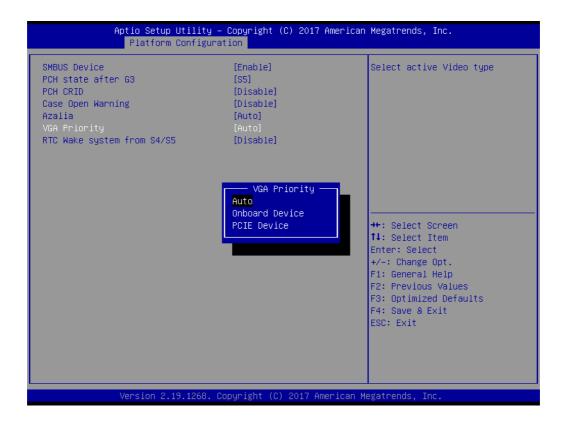
Azalia

To "Enable or disable" Azalia device.



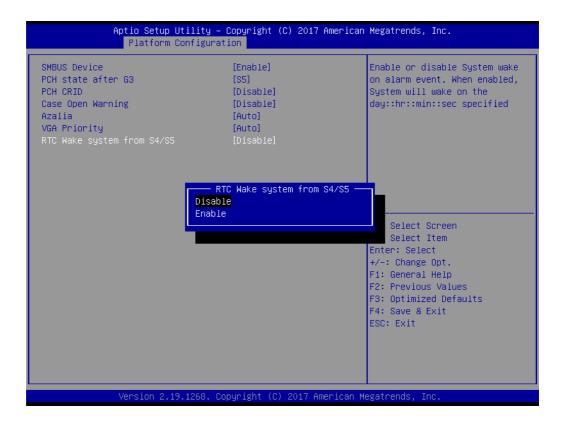
- VGA Priority

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



- RTC Wake system from S4/S5

To "Enable or disable" system wake on alarm event.



PCIe M.2 Slot Configuration

- PCIe M.2 Slot

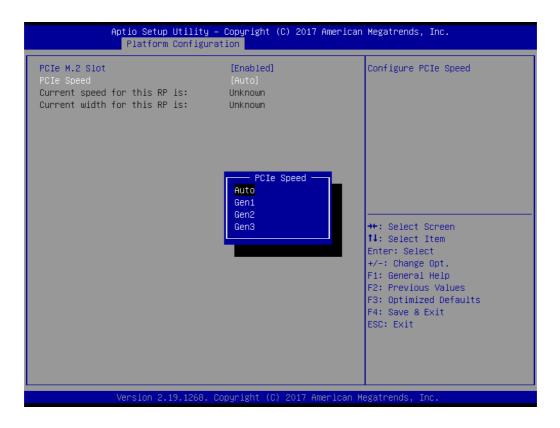
To "Enable or disable" the PCI Express root port.

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

Chapter 3 AMI BIOS

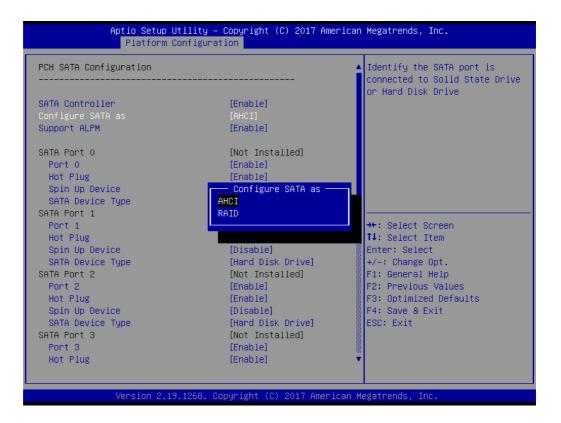
– PCle Speed

Configure PCI Express speed.



PCH SATA Configuration

PCH SATA Configuration		▲ Enable or Disable SATA Controller
SATA Controller Configure SATA as Support ALPM	[Enable] [AHCI] [Enable]	
SATA Port 0 Port 0 Hot Plug Spin Up Device SATA Device Type SATA Port 1	[Not Installed] [Enable] [Enable] [Disable] [Hard Disk Drive] [Not Installed]	
Port 1 Hot Plug Spin Up Device SATA Device Type SATA Port 2 Port 2	[Enable] [Enable] [Disable] [Hard Disk Drive] [Not Installed] [Enable]	++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values
Hot Plug Spin Up Device SATA Device Type SATA Port 3 Port 3 Hot Plug	[Enable] [Disable] [Hard Disk Drive] [Not Installed] [Enable] [Enable]	F3: Optimized Defaults F4: Save & Exit ESC: Exit



- SATA Controller

To "Enable or disable" SATA devices.

- Configure SATA as

Set as AHCI or RAID when SATA controllers are enabled.

- Support ALPM

To "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.

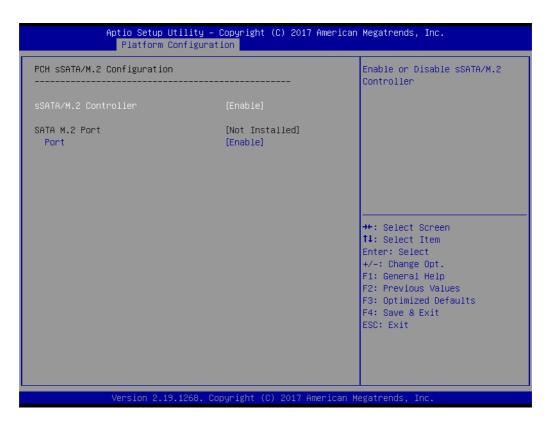
- SATA Port 0~7 Spin Up Device

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.

PCH sSATA/M.2 Configuration



- sSATA/M.2 Controller

To "Enable or disable" sSATA/M.2 Controller.

SATA M.2 Port
 To "Enable or disable" SATA port.

Networking

	tility – Copyright (C) 2017 Am onfiguration	merican 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 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. Copyright (C) 2017 Amer	rican Megatrends, Inc.

- LAN1 Controller

To "Enable or disable" Intel I210 Controller support.

- LAN1 PXE OpROM

To "Enable or disable" Boot option for Intel I210 controller.

- LAN2 Controller

To "Enable or disable" Intel I210 Controller support.

- LAN2 PXE OpROM

To "Enable or disable" Boot option for Intel I210 controller.

- LAN3/LAN4 Controller

To "Enable or disable" Intel X557 controller support.

- LAN3 PXE OpROM

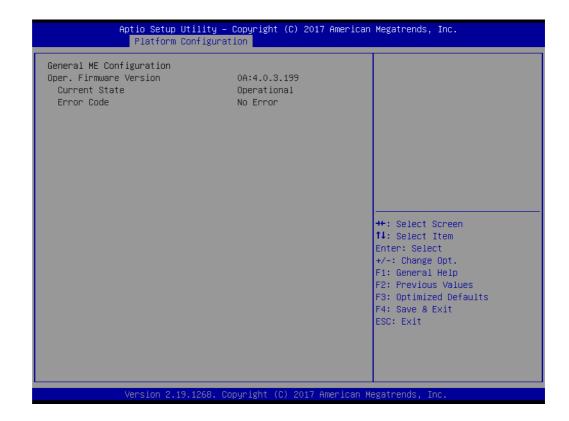
To "Enable or disable" boot option for Intel X557 controller.

- LAN4 PXE OpROM

To "Enable or disable" boot option for Intel X557 controller.

3.2.3.2 Server ME Configuration

This page shows the Server ME configuration information.



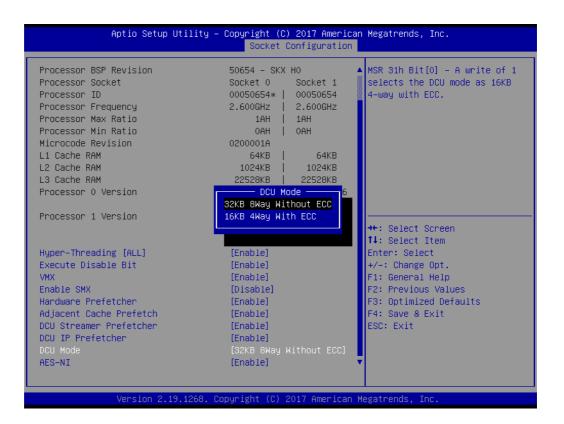
Chapter 3 AMI BIOS

3.2.4 Socket Configuration



3.2.4.1 Processor Configuration

Aptio Setup Utility	– Copyright (C) 2017 Americar Socket Configuration	Megatrends, Inc.
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 020001A 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] [Enable]	++: 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 M	legatrends, 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]

To "Enable or disable" Intel Hyper Threading technology.

Execute Disable Bit

To "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

To "Enable or disable" the 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

Aptio Setup Utility – Copyright (C) 2017 American Socket Configuration	Megatrends, Inc.
UPI Configuration	Displays and provides option to change the UPI General
▶ UPI General Configuration	Settings
	↔+: 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) 2017 American Me	egatrends, Inc.

UPI Status

Display information of Intel UltraPath Interconnect (UPI).

Aptio Setup Util	ity – Copyright (C) 201 Socket Confi	17 American Megatrends, Inc. iguration
UPI General Configuration UPI Status Link Frequency Select Link LOp Enable Link L1 Enable	[Auto] [Auto] [Auto]	UPI Status Help
		++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.19.12	68. Copyright (C) 2017	American Megatrends, Inc.

Aptio Setup Utility – Copyright (C) 2017 American Megatrends, Inc. Socket Configuration			
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	1 1 Slow or 1S Configurat Unknown or 1S configu 90000000 / FBFFFFF 00000000000000 / 00 80000000 / 10000000	<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.			

Chapter 3 AMI BIOS

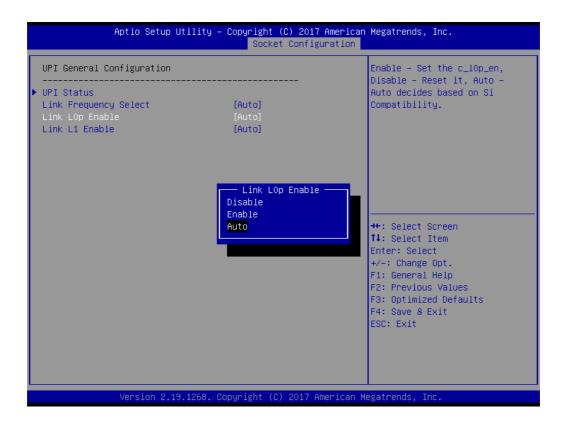
Link Frequency Select

Allows for selecting the QPI Link frequency.

UPI General Configuration		Allows for selecting the UPI Link Frequency
UPI Status Link Frequency Select Link LOp Enable Link L1 Enable	[Auto] [Auto] [Auto]	
	Link Frequency Select 9.6GB/s 10.4GB/s Auto Use Per Link Setting	+: Select Screen 4: Select Item nter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

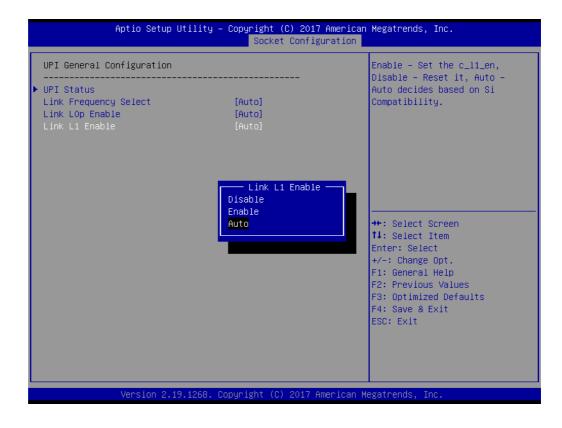
Link L0p Enable

To "Enable or disable" QPI Link0p.



Link L1 Enable

To "Enable or disable" QPI Link1.



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 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. Co	oyright (C) 2017 American M	egatrends, Inc.

Numa

To "Enable or disable" non uniform memory access (NUMA).

Memory Technology

Display memory topology with DIMM population information.

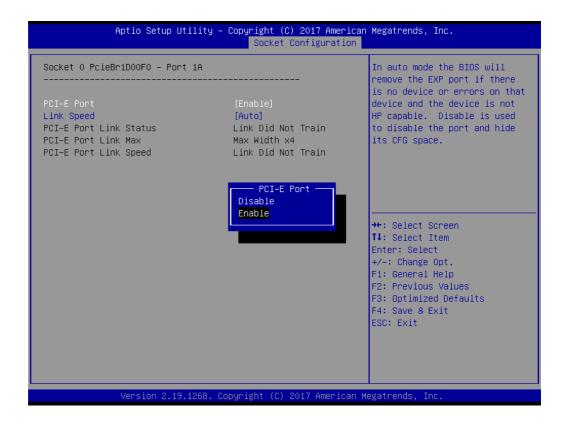
3.2.4.4 IIO Configuration

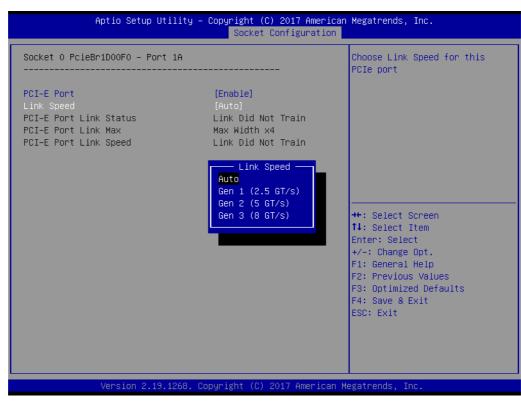
Aptio Setup Utility –	Copyright (C) 2017 American Socket Configuration	Megatrends, Inc.
IIO Configuration		
 Socket0 Configuration Intel® VT for Directed I/O (VT-d) Intel® VMD technology PCI-E ASPM Support (Global) 	[Disable]	
		<pre>++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Version 2.19.1268. C	opyright (C) 2017American Me	egatrends, Inc.

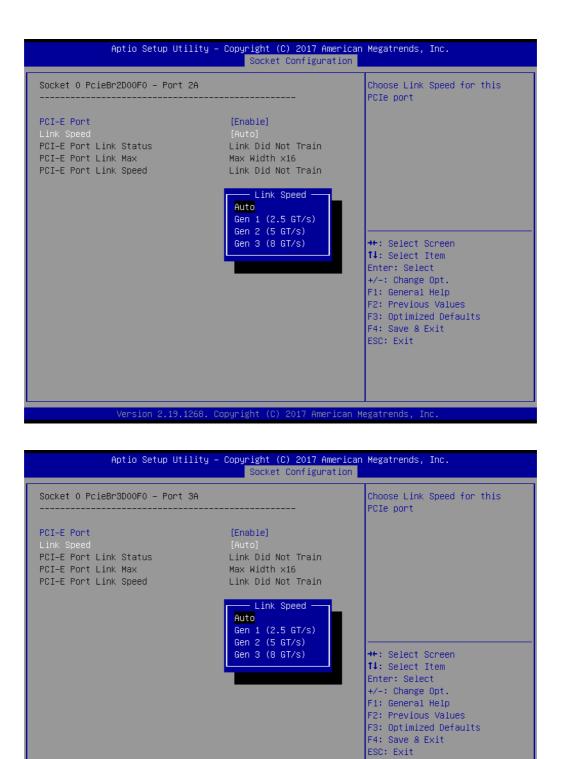
Socket0 PCIe Configuration

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

IOUO (IIO PCIE Br1) IOU1 (IIO PCIE Br2) IOU2 (IIO PCIE Br3) ▶ Socket 0 PcieBr1D00F0 - Port 1A ▶ Socket 0 PcieBr2D00F0 - Port 2A ▶ Socket 0 PcieBr3D00F0 - Port 3A	[Auto] [Auto] [Auto]	Selects PCIe port Bifurcation for selected slot(s)
	- IOUO (IIO PCIe Br: x4x4x4x4 x4x4x8 x8x4x4 x8x8 x8x8 x16 Auto	1) ++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit







ASMB-815 User Manual

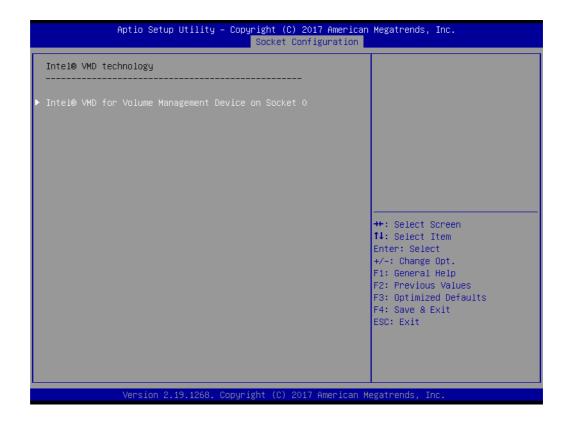
Intel VT for Directed I/O (VT-d)

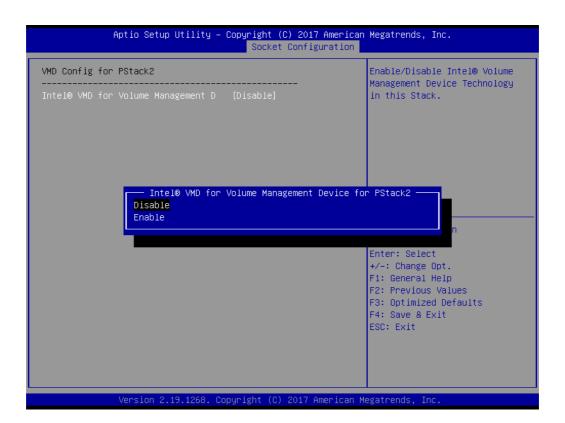
To "Enable or disable" Intel Virtualization Technology for Directed I/O.

Aptio Setup Utility – Copyright (C) 2017 Ameria Socket Configuration	
Intel® VT for Directed I/O (VT–d) Intel® VT for Directed I/O (VT–d) [Disable]	Enable/Disable Intel® Virtualization Technology for Directed I/O (VT–d) by reporting the I/O device assignment to VMM through DMAR ACPI Tables.
Intel® VT for Directed I/O (VT- Enable Disable	ect Screen ect 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 America	n Megatrends, Inc.

Intel VMD technology

To "Enable or disable" Intel Volume Management Device Technology.





PCIe Hot Plug

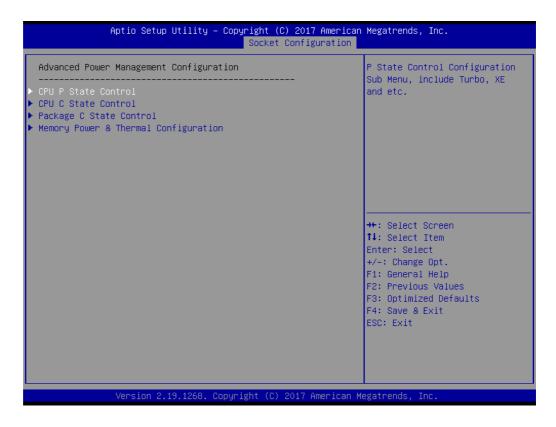
To "Enable or disable" PCIe hot plug globally. This item is hidden.

PCI-E ASPM Support (Global)

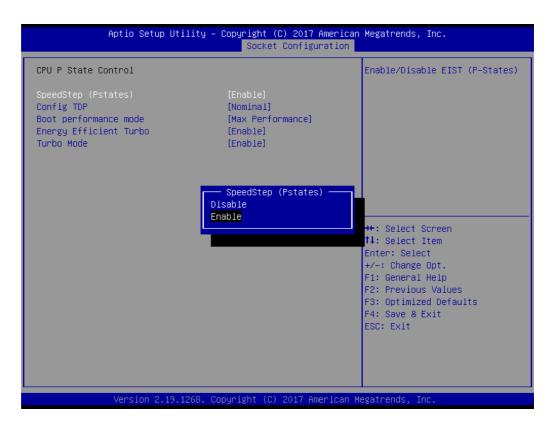
Set the ASPM level to Disable, Per-Port or L1 state only.

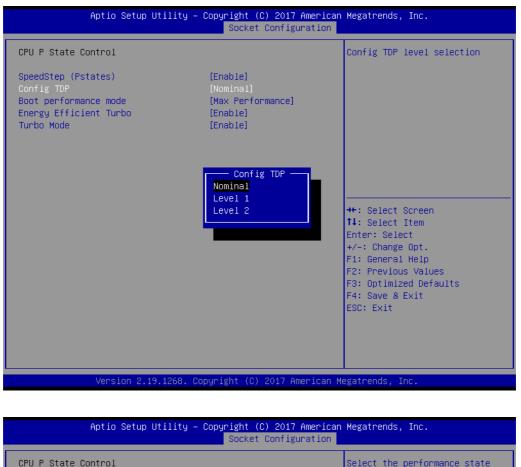
Aptio Setup Ut	ility – Copyright (C) 2017 American Socket Configuration	Megatrends, Inc.
IIO Configuration → SocketO Configuration → Intel® VT for Directed I/O (→ Intel® VMD technology PCI-E ASPM Support (Global)	[Disable]	This option enables / disables the ASPM support for all downstream devices.
	PCI-E ASPM Support (Global) — Disable Per-Port Li 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) 2017 American M	egatrends, Inc.

3.2.4.5 Advanced Power Management Configuration

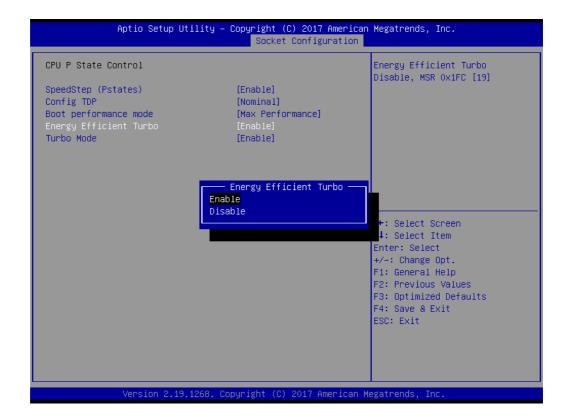


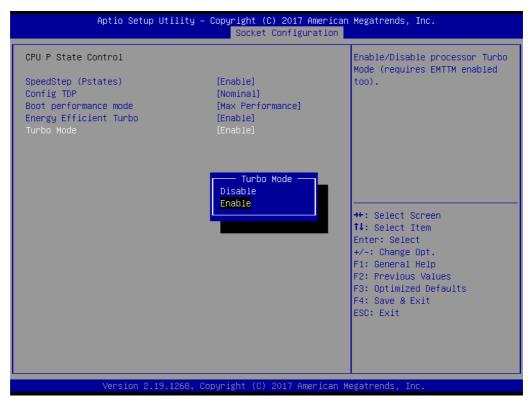
CPU P State Control



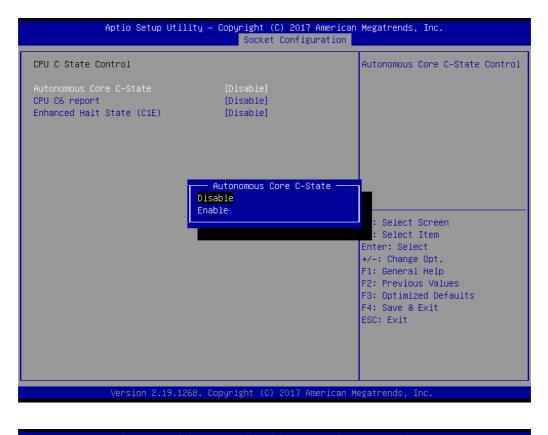


	Socket Configurati	
CPU P State Control SpeedStep (Pstates) Config TDP Boot performance mode Energy Efficient Turbo Turbo Mode	[Enable] [Nominal] [Max Performance] [Enable] [Enable]	Select the performance state that the BIOS will set before OS hand off.
	Boot performance mode – Max Performance Max Efficient	<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 2.19.1	268. Copyright (C) 2017 Americ	an Megatrends, Inc.

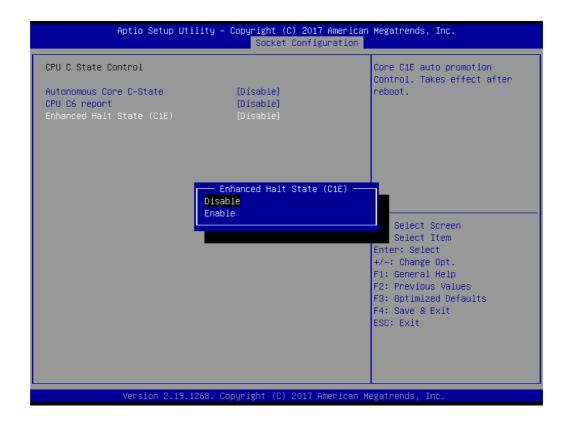




CPU C State Control



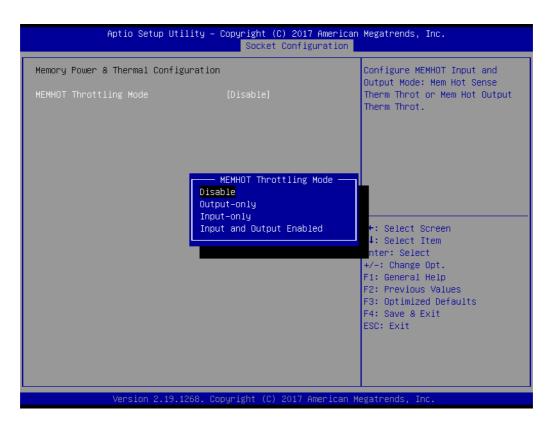
Aptio Setup Utility –	Copyright (C) 2017 American Socket Configuration	Megatrends, Inc.
CPU C State Control Autonomous Core C-State CPU C6 report Enhanced Halt State (C1E)	[Disable] [Disable] [Disable]	Enable∕Disable CPU C6(ACPI C3) report to OS
	CPU C6 report Disable Enable Auto	<pre>++: Select Screen 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



Memory Power & Thermal Configuration



3.2.5 Server Management

	U <mark>tility – Copyright (C) 2017 Ame</mark> Configuration Socket Configurat	rican Megatrends, Inc. ion Server Mgmt Security Boot →
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 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Version 2.1	9.1268. Copyright (C) 2017 Ameri	can Megatrends, Inc.

BMC Support

To "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

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]	
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 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. Co	oyright (C) 2017 American M	egatrends, Inc.

SEL Components

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

Erase SEL

Choose options for erasing SEL.

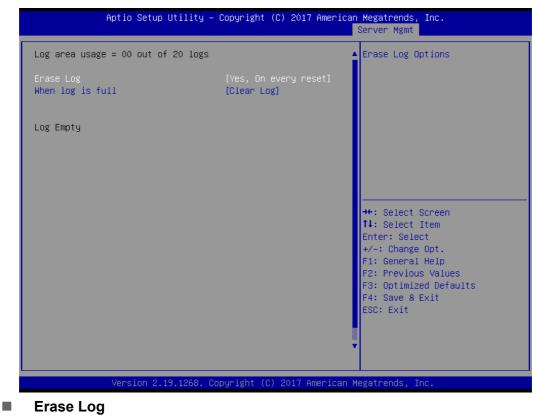
When SEL is Full

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 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 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	[Unspecified] StaticAddress 192.168.0.10 255.255.255.0 00-c0-a8-12-34-56	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
Router IP address Lan channel 2 Configuration Address source Current Configuration Address sour Station IP address Subnet mask Station MAC address Router IP address	0.0.0.0 [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>
Version 2.19.1268. Co	opyright (C) 2017 American	Megatrends, Inc.

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

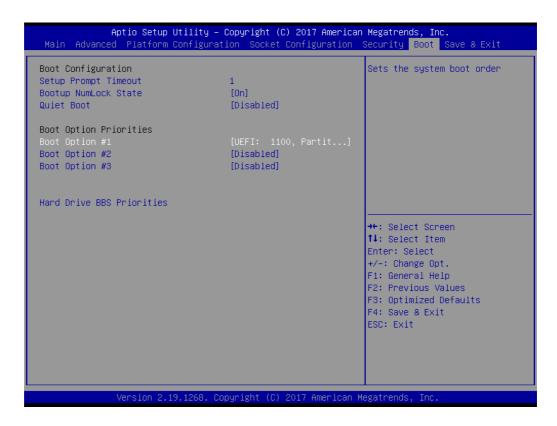
	t <mark>y – Copyright (C) 2017 Americar</mark> guration Socket Configuration	
Password Description		Set Administrator Password
If ONLY the Administrator's pas then this only limits access to		
only asked for when entering Se If ONLY the User's password is :	•	
is a power on password and must boot or enter Setup. In Setup t	be entered to	
have Administrator rights.	ie oser will	
The password length must be in the following range:		
Minimum length Maximum length	3 20	
Ŭ	20	++: Select Screen
Administrator Password User Password		î∔: Select Item Enter: Select
		+/-: Change Opt.
		F1: General Help F2: Previous Values
		F3: Optimized Defaults F4: Save & Exit
		ESC: Exit
Version 2.19.126	3. Copyright (C) 2017 American M	legatrends, Inc.



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

3.2.7 Boot



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
 To "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 Overnide	Enter: Select
UEFI: Built-in EFI Shell	+/-: Change Opt. F1: General Help
UEFI: JetFlashTranscend 16GB 1100, Partition 1 JetFlashTranscend 16GB 1100	F1: General Help 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-815 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
- 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.

Ν	ote!

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

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

Note!

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

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	
퉬 03_LAN	
퉬 04_USB	
퉬 05_RSTe	



Graphic Setup

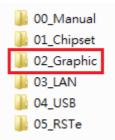
5.1 Introduction

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 the OS that you need.



Note!

- 1. If ASMB-815 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
 - Does not support modes with different display frequencies.



LAN, USB 3.0 and RSTe RAID

6.1 LAN Configuration

6.1.1 Introduction

The ASMB-815 has two Gigabit Ethernet LAN connections via dedicated PCI Express x1 lanes: GbE LAN1 - Intel I210 and GbE LAN2 - I210; two 10G Base-T LAN connectors LAN3 and LAN4 - Intel X557 PHY. They eliminate bottlenecks in network data flow when incorporating 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 10 Gbps 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-815 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.



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.





Programming the Watchdog Timer

The ASMB-815'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)	Daseu IUUIIIS

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 (USB9_10, USB13_14)



Table B.1: USB Header (USB9_10, USB13_14)			4)	
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	
		10	NC	

B.2 USB3.0 Header (USB3_56)

11	19
0000	00000 000000
10	21

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	NC (reserved for OC pin)
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)

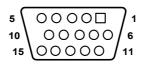


Table B.3: VGA Connector (VGA1)				
Pin	Signal	Pin	Signal	
1	RED	9	VCC	
2	GREEN	10	GND	
3	BLUE	11	NC	
4	NC	12	SDT	
5	GND	13	H-SYNC	
6	GND	14	V-SYNC	
7	GND	15	SCK	
8	GND			

B.4 RS-232 Interface (COM2)

2	4	6	8		
0	0	0	0		
	0	0	0	0	
1	3	5	7	9	

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)

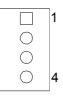


Table B.6:	Table B.6: CPU FAN Connector (CPUFAN0)	
	CPUFAN0	
1	GND	
2	+12V	
3	CPU_TACH	
4	CPU0_PWM	

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
	C	0

Table B.8: I	Table B.8: Power LED Connector (JFP3)	
Pin	Function	
1	LED power (3.3 V)	
2	NC	
3	LED power	
4	Keylock	
5	Ground	

B.8 External Speaker Connector (JFP2)

1	4	7	10
C	C)C	0

Table B.9: Exter	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 (JFP2)

2	5
C	0

Table B.11: HDD LED Connector (JFP2)		
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)

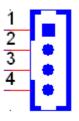


Table B.13: Front panel SMBus Connector (SMBUS1)		
Pin	Signal	
1	+5V	
2	SMB_SCL_FRU	
3	SMB_SDA_FRU	
4	GND	

B.13 LAN Ports (LAN1~5)

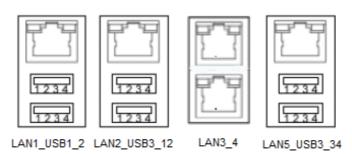


Table B.14: LAN RJ-45 Port (LAN1~2, LAN3_4, LAN5)			
Pin	Signal	Pin	Signal
1	MID0+	4	MID2+
2	MID0-	5	MID2-
3	MID1+	7	MID3+
6	MID1-	8	MID3-

B.14 Audio Connector (HDAUD1)



Table B.15: 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	Х

B.15 Alarm Board Connector (VOLT1)

1 8	
0000000	

Table B.16: 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)

0 1 0 2

Table B.17: Case Open Connector (JFP1)		
Pin	Signal	
1	CASEOP	
2	GND	

B.17 Front Panel LAN LED Connector (LANLED1)

_	2	4	<u> </u>	8	10
	0	0	0	0	
Þ		0	0	0	$^{\circ}$
	1	3	5	7	9

Table B.	Table B.18: LAN LED Connector (LANLED1)			
Pin	Signal	Pin	Signal	
1	LAN1_ACT#	2	LAN2_ACT#	
3	+V3.3_AUX	4	+V3.3_AUX	
5	LAN3_ACT#	6	LAN4_ACT#	
7	+V3.3_AUX	8	+V3.3_AUX	
9	NC	10	x	

B.18 SATA SGPIO Connector (SGPIO1)



Table B.19: SATA SGPIO Connector (SGPIO1)		
Pin	Signal	
1	SCLOCK_PCH	
2	X	
3	SLOAD_PCH	
4	SDATAOUT0_PCH	
5	SDATAOUT1_PCH	

B.19 LPC Connector (LPC1)

1			2
3	၂씛	豊臣	4
5	거號	調に	6
7	거평	部に	8
9	귀號	部に	10
11	正正	調用	12
13	김띖	副日	14

Table B.20: LPC Connector (LPC1)			
Pin	Signal	Pin	Signal
1	CLK_24M_LPCCN	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)

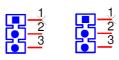


Table B.21: Clear CMOS Connector (JCMOS1, JME1)			
	JCMOS1	JME1	
Pin	Signal	Signal	
1	NC	NC	
2	RTC_RST_PCH	HDA_SDOUT_PCH	
3	GND	+3.3V_AUX	

B.21 PMBUS Connector (PMBUS1)



Table B.22: 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.23: GPIO Connector (GPIO1)					
Pin	Signal	Pin	Signal		
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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