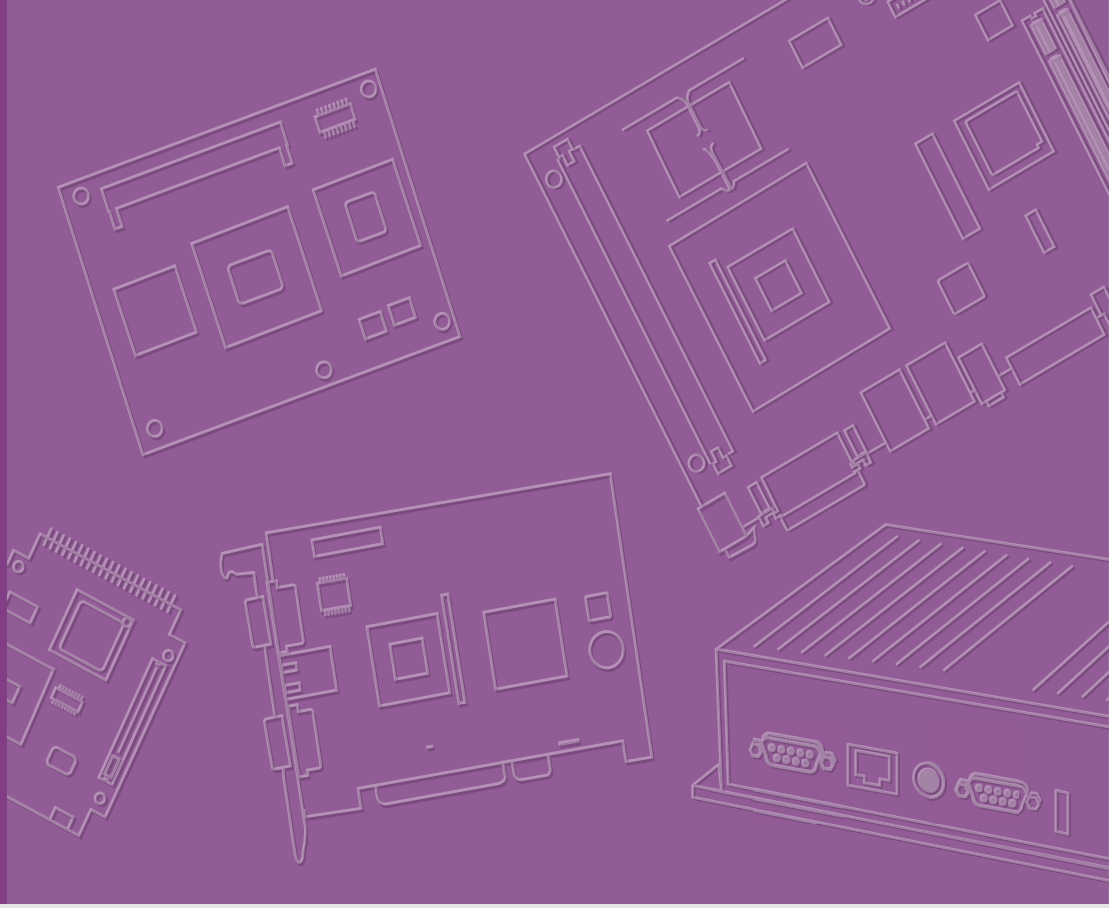

User Manual

ASMB-805 Series

ASMB-805 LGA 2066 Intel xeon® W Workstation with 8 DDR4, 3 PCIe x16, 6 SATA3, 8 USB3.0, IPMI

ADVANTECH

Enabling an Intelligent Planet

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Product Warranty (2 years)

Advantech warrants to you, the original purchaser, that each of its products will be free from defects in materials and workmanship for two years from the date of purchase.

This warranty does not apply to any products which have been repaired or altered by persons other than repair personnel authorized by Advantech, or which have been subject to misuse, abuse, accident or improper installation. Advantech assumes no liability under the terms of this warranty as a consequence of such events.

Because of Advantech's high quality-control standards and rigorous testing, most of our customers never need to use our repair service. If an Advantech product is defective, it will be repaired or replaced at no charge during the warranty period. For out-of-warranty repairs, you will be billed according to the cost of replacement materials, service time and freight. Please consult your dealer for more details.

If you think you have a defective product, follow these steps:

1. Collect all the information about the problem encountered. (For example, CPU speed, Advantech products used, other hardware and software used, etc.) Note anything abnormal and list any onscreen messages you get when the problem occurs.
2. Call your dealer and describe the problem. Please have your manual, product, and any helpful information readily available.
3. If your product is diagnosed as defective, obtain an RMA (return merchandise authorization) number from your dealer. This allows us to process your return more quickly.
4. Carefully pack the defective product, a fully-completed Repair and Replacement Order Card and a photocopy proof of purchase date (such as your sales receipt) in a shippable container. A product returned without proof of the purchase date is not eligible for warranty service.
5. Write the RMA number visibly on the outside of the package and ship it prepaid to your dealer.

Part No.2001080501 Edition 2

June 2020

Declaration of Conformity

FCC Class A

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

Caution! *There is a danger of a new battery exploding if it is incorrectly installed. Do not attempt to recharge, force open, or heat the battery. Replace the battery only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.*

Initial Inspection

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

- 1 x ASMB-805 Startup Manual
- 2 x Serial ATA HDD data cables
- 2 x Serial ATA HDD power cables
- 1 x CPU power cables (8P)
- 1 x 2U I/O shield
- 1 x Warranty card
- 1 x M.2 screw

If any of these items are missing or damaged, contact distributor or sales representative immediately. We have carefully inspected the ASMB-805 mechanically and electrically before shipment. It should be free of marks and scratches and in perfect working order upon receipt. When unpacking the ASMB-805, 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.

Ordering Information

Part Number	Chipset	Expansion Slot	GbE	IPMI	VGA
ASMB-805-00A1	C422	1 PCIe x16 2 PCIe x16 switchable 2 PCIe x4	2	No	No
ASMB-805I-00A1			2	Yes	Yes

Contents

Chapter 1

Overview

1.1 Introduction

ASMB-805 is a workstation motherboard that supports Intel xeon W-2100 and W-2200 series processor. This motherboard is designed for high performance computing and multi-GPU cards demands.

ASMB-805 offers 8 DIMM slots for memory capacity up to 512 GB at speeds 2666MHz.

In addition to dual GbE LAN, the 3rd LAN port is dedicated for IPMI functions. The IPMI firmware has already been installed on the board.

ASMB-805 makes M.2 interface flexible. It supports type 22110, 2282, and 2242. The standoff has been pre-installed on the board and is available to move depends on user requirements. ASMB-805 provides three PCIe x16 slots and two PCIe x4 slots at speed Gen 3. In addition, the ASMB-805 full SKU has dual Gigabit LAN port and dual dedicated IPMI LAN port.

Note!

1. *IPMI module will be installed in ASMB-805I SKUs. Only ASMB-805I supports dedicated IPMI LAN.*
2. *Please refer to the Ordering Information at the front for chipset, IPMI, and LAN support on individual product SKUs.*

1.2 Features

General

- **Intel xeon W processor support:** ASMB-805 is equipped with single LGA2066 socket to support Intel xeon W-2100 and W-2200 series.
- **High performance I/O capability:** 2 x GbE LAN, 3 x PCIe x16 slot + 2 x PCIe x4 slot. Slot 3 and slot 4 are switchable to x8 link; Slot 5 and slot 6 are switchable to x8 link. 6 x SATA and 1 x M.2 connector, 8 x USB 3.0 and 5 x USB 2.0 (including 1 x Type-A) ports.
- **Standard ATx form factor with industrial features:** ASMB-805 provides industrial features like reliable operation in strict environment, watchdog timer, etc.
- **IPMI 2.0 support:** ASMB-805 (I SKUs) equipped with ASPEED 2500 BMC chip and 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-805 (I SKUs) through your own computer.

1.3 Specifications

Table 1.1: Specifications

Processor	
CPU	■ Single Intel LGA2066 socket ■ Supports Intel xeon W-2100 and W-2200 series, up to 18 cores ■ TDP of processor up to 165 W
System Memory	
Memory Capacity	■ DDR4 memory bus ■ Total 8 memory slots ■ Up to 512 GB memory ■ Two DIMMs per channel
Memory Type	Supports DDR4 2133/2400/2666 MHz ECC-REG DIMM modules
DIMM Sizes	4GB, 8GB, 16GB, 32GB RDIMM 64GB LRDIMM
Memory Voltage	1.2 V
Error Detection	■ Corrects single-bit errors ■ Detects double-bit errors (using ECC memory)
On-Board Devices	
Chipsets	Intel C422
Network Controllers	Two Intel I210 support up to 1 Gbps
VGA	ASPEED AST2500 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	One Realtek 8201EL Gigabit PHY connected to AST2500 for BMC remote management
Input / Output	
Storage	■ 6 x SATA ports and 1 x M.2 22110/2280/2242 stud switchable (PCIe x4) ■ RAID 0, 1, 5, 10 supported (Windows only)
LAN	■ 2x RJ-45 LAN ports (I210 with 10/100/1000 Base-T) ■ 1 x Realtek 8201EL dedicated IPMI LAN port(100Mbps) for IPMI only, there is no regular LAN function (only for 805i sku)
USB	■ 4 x Rear USB 3.0 ports ■ 1 x Internal USB 3.0 header (2 ports) ■ 2 x Internal USB 2.0 headers (4 ports) ■ 1 x Internal Type-A USB 2.0 port
Graphics	■ 1 x VGA port (only for 805i sku)
Keyboard / Mouse	■ PS/2 keyboard and mouse internal header
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 24-pin SSI EPS 12V power connector (Input 12V, 5V, 3.3V, 5Vsb)
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

Table 1.1: Specifications	
Expansion Slots	
PCI-express	■ 1 x PCIe x16 slot (Gen3 x16 link) – PCIex16_slot2 ■ 2 x PCIe x16 slot (Gen3 x16 or x8 link) – PCIex16_slot4 (switchable with slot 3) – PCIex16_slot6 (switchable with slot 5) ■ 2 x PCIe x8 slot (No link or x8 link) – PCIex8_slot3 (switchable with slot 4) – PCIex8_slot5 (switchable with slot 6) ■ 2 x PCIe x4 slot (Gen3) – PCIEx4_slot1 (from PCH) – PCIEx4_slot7 (from PCH)
M.2	1 x PCIe x4 Gen3, 22110/2280/2242, B+M key
System BIOS	
BIOS Type	256 Mb SPI Flash EEPROM with AMI BIOS
PC Health Monitoring	
Voltage	Monitors for CPU Cores, +3.3V, +5V, +12V, +5VSB, VBAT
FAN	■ 1 x 4-pin header for CPU cooler and 5 x 4-pin headers for system fans (4 x front and 1 x rear) ■ All fans with tachometer status monitoring ■ Thermal control for all fan connectors
Temperature	■ Monitoring for CPU (PECI) ■ Monitoring for system external thermal sensor
Other Features	■ Chassis intrusion detection
Operating Environment / 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)

1.4 Board Layout, Jumpers and Connectors

Connectors on the ASMB-805 are linked to external devices such as hard disk drives. In addition, ASMB-805 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-805.

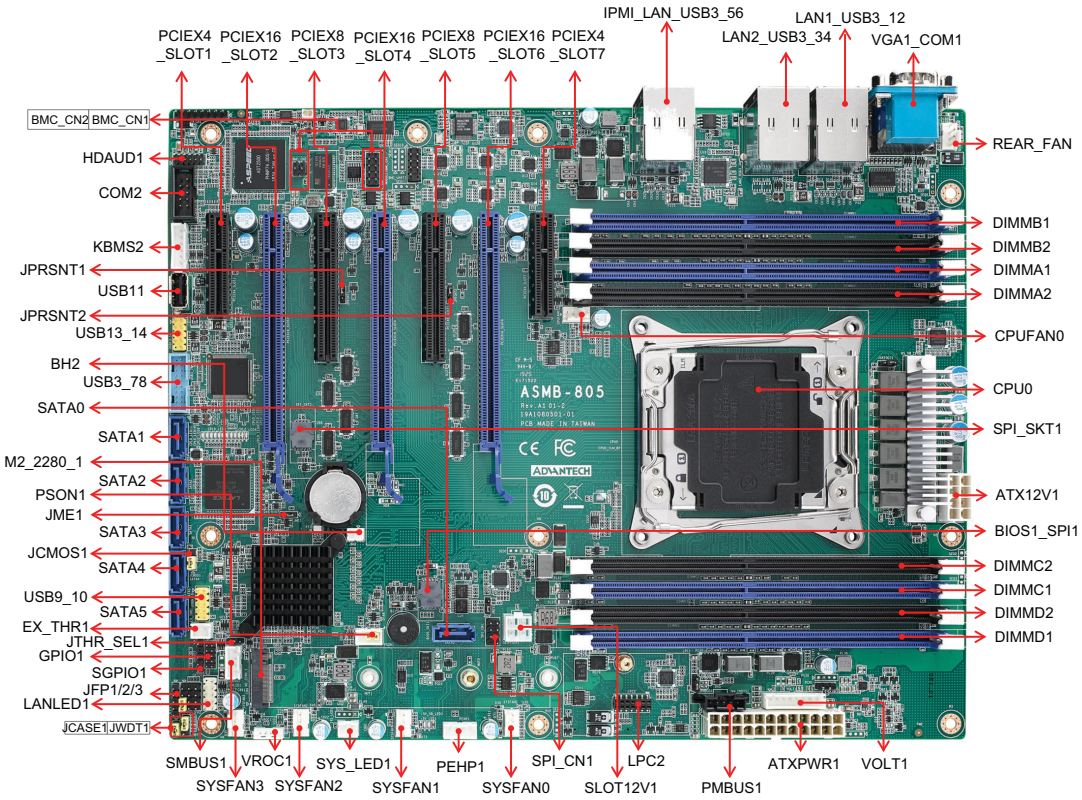


Figure 1.1 Board Layout

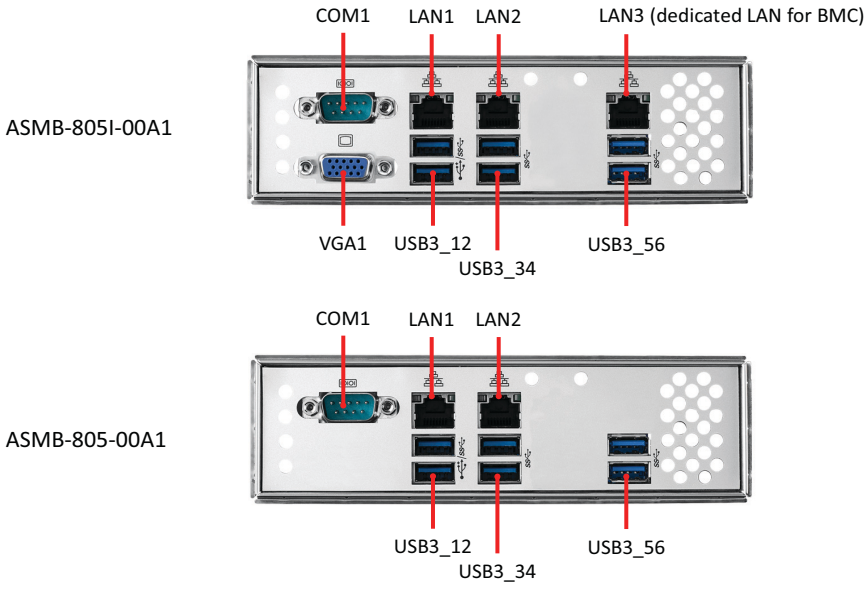
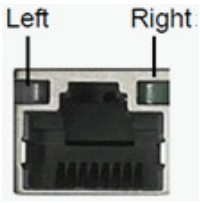


Figure 1.2 Rear I/O of two SKU

Note! *The pictures shown are for illustration purpose only. Actual product may vary due to product enhancement.*

Table 1.2: Onboard LAN LED Color Definition

10/100 Mbps and 1 Gbps LAN Link/Activity LED Scheme

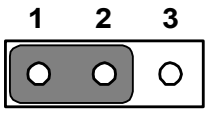


LAN1 & LAN2 (1G)

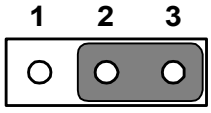
		Left LED	Right LED
10 Mbps	Link Active	Off Off	Green Blinking green
100 Mbps	Link Active	Amber Amber	Green Blinking green
1000 Mbps	Link Active	Green Green	Green Blinking green
No Link		Off	Off

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
ATxPWR1	ATx 24-pin main power connector
ATx12V1	Processor power connector (for CPU)
BH2	For optional battery kit
BIOS1_SPI1	BIOS ROM
BMC_CN1, BMC_CN2	IPMI module header
CN1	CPLD code update header

Table 1.4: Connectors	
COM2	Serial port RS-232
CPUFAN0	CPU FAN connector
DIMMA1, DIMMA2, DIMMB1, DIMMB2, DIMMC1, DIMMC2, DIMMD1, DIMMD2	DDR4 slot from CPU
Ex_THR1	Connector for external thermistor
GPIO1	GPIO connector
HDAUD1	Audio header
JFP1, JFP2, JFP3	Front panel header
KBMS1	External keyboard and mouse connector (6 pin)
LAN1_USB3_12	RJ-45 LAN port 1 + USB 3.0 port 1/2 connector
LAN2_USB3_34	RJ-45 LAN port 2 + USB 3.0 port 3/4 connector
LANLED1	LAN LED extension connector
LPC2	TPM connector
M2_2280_1	M.2 22110/2280/2242 (PCIe x4 Gen3)
PCIEx4_SLOT1	PCIE x4 slot from PCH
PCIEx16_SLOT2	PCIE x16 slot from CPU
PCIEx8_SLOT3	PCIE x8 slot from CPU
PCIEx16_SLOT4	PCIE x16 slot from CPU
PCIEx8_SLOT5	PCIE x8 slot from CPU
PCIEx16_SLOT6	PCIE x16 slot from CPU
PCIEx4_SLOT7	PCIE x4 slot from PCH
PEHP1	CPU SMBUS header
PMBUS1	PMBUS connector to communicate with power supply
SATA0~SATA5	Serial ATA0~5
SGPIO1	sSATA SGPIO header
SLOT12V1	For PCIe slot 12V input only
SMBUS1	SMBus header
SPI_CN1	Connector for BIOS update tool
SPI_SKT1	EC EEPROM
SYS_LED1	System LED connector
SYSFAN0~SYSFAN4, REAR_FAN	System FAN connector
USB9_10, USB13_14	USB 2.0 port 9, 10, 13, 14 (9-pin header)
USB11	USB 2.0 port 11 (Type-A)
USB3_78	USB 3.0 port 7,8 (20-pin header)
VGA1_COM1	VGA and COM connector
VOLT1	Alarm board power connector
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 on
+5V_SB_LED1	Standby LED	Off: No input AC Power	On (Green): System on, in sleep mode, or in soft-off mode
BMC_HBLED1	BMC heartbeat LED (ASMB-805I SKU)	Blinking (Green): Controller is working normally	

1.5 Block Diagram

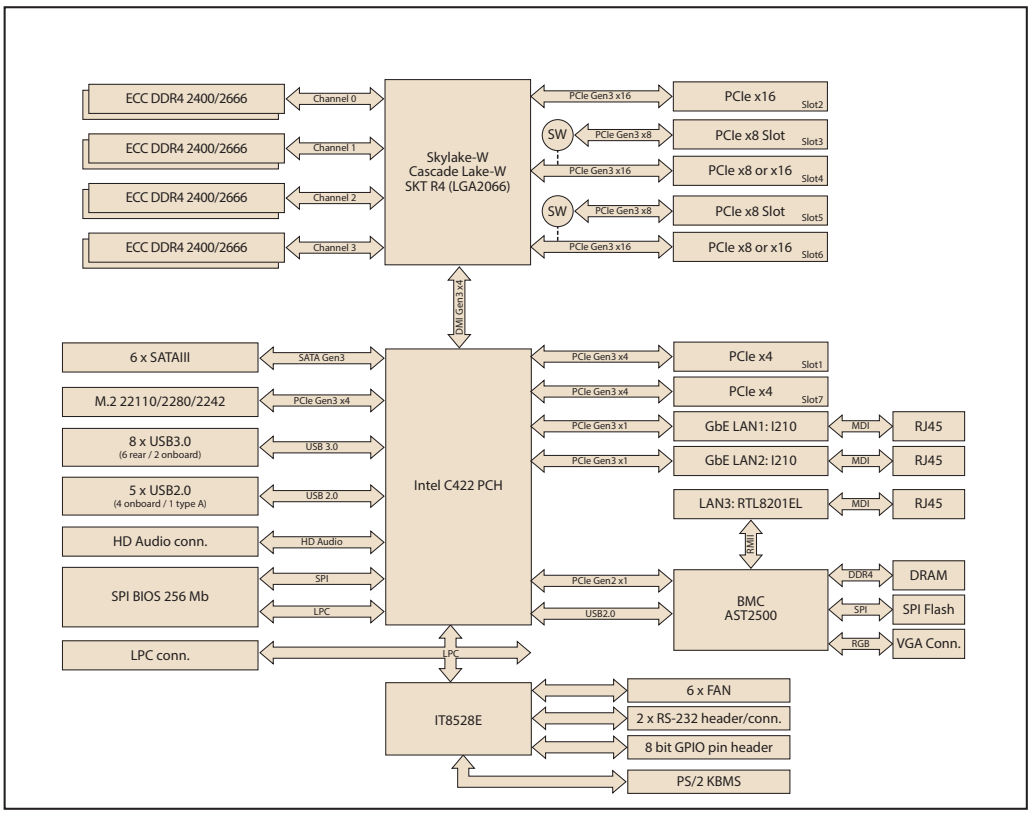


Figure 1.3 Block Diagram

1.6 System Memory

ASMB-805 has eight 288-pin memory slots for DDR4 2133/2400/2666 MHz memory modules with maximum capacity of 512 GB (Maximum 64 GB each DIMM). ASMB-805 supports non-3DS RDIMM and non-3DS LRDIMM.

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 processor, based on the guideline, you may adjust your memory configuration according to your PCIe expansion card configuration

Table 1.6: Balanced Memory Population

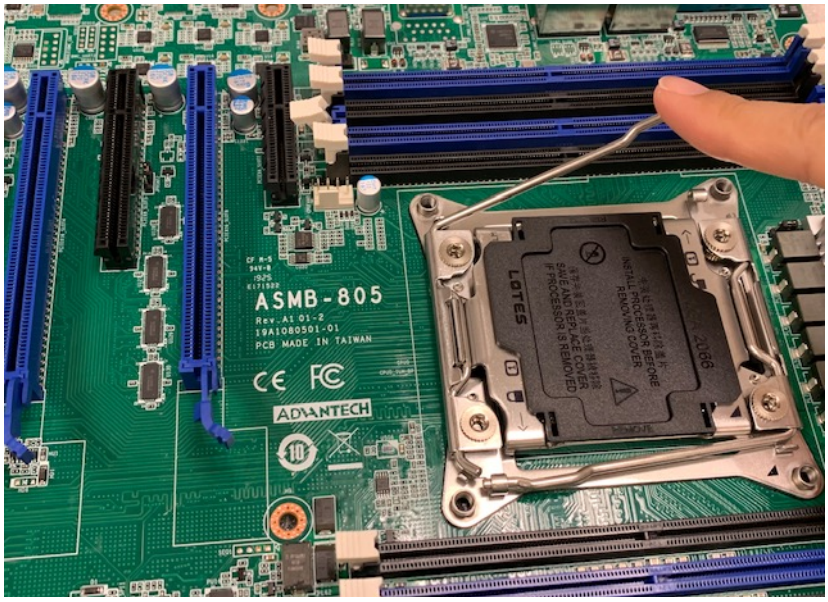
	Quantity of memory installed							
	1	2	3	4	5	6	7	8
DIMMA1	v	v		v		v		v
DIMMA2						v		v
DIMMB1		v		v		v		v
DIMMB2								v
DIMMC1				v		v		v
DIMMC2						v		v
DIMMD1				v		v		v
DIMMD2								v

Note! *3, 5, 7 DIMMs are not recommended DIMM population.*

1.8 Processor Installation

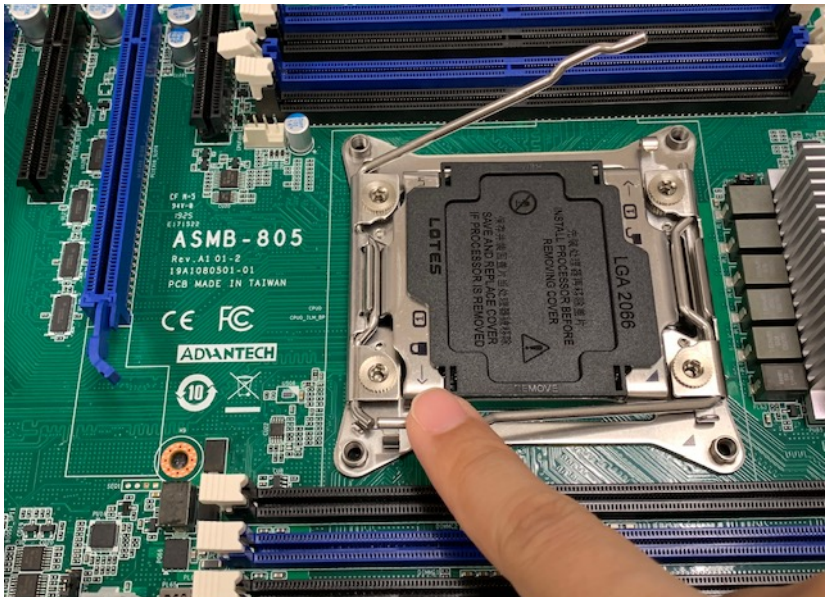
Step 1

Press the first lever and move it sideways slightly until it is released from the retention tab.



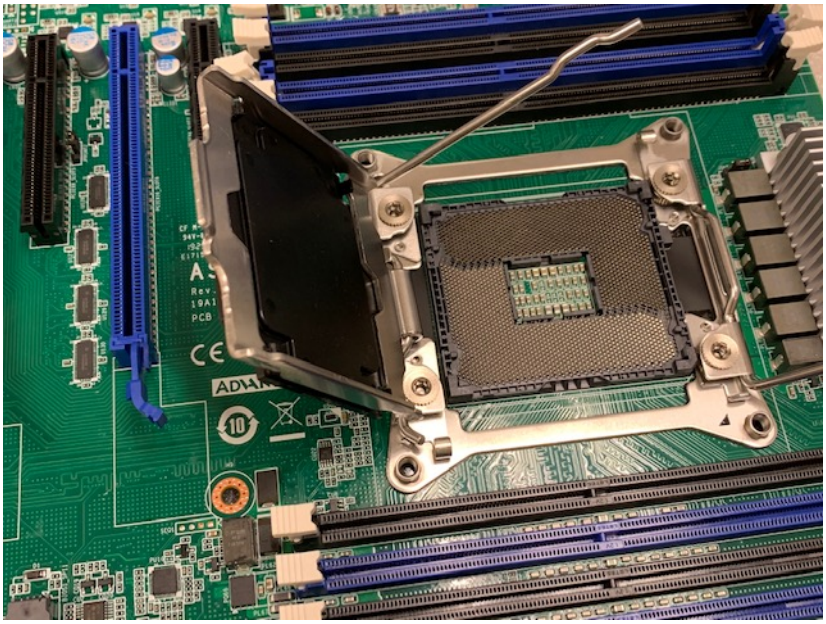
Step 2

Press the other lever and move it sideways slightly until it is also released from the retention tab.



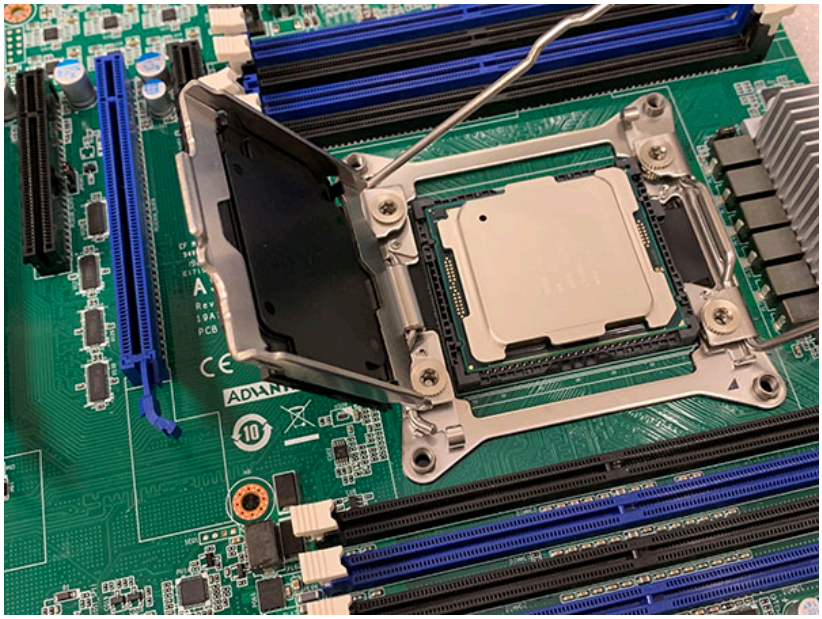
Step 3

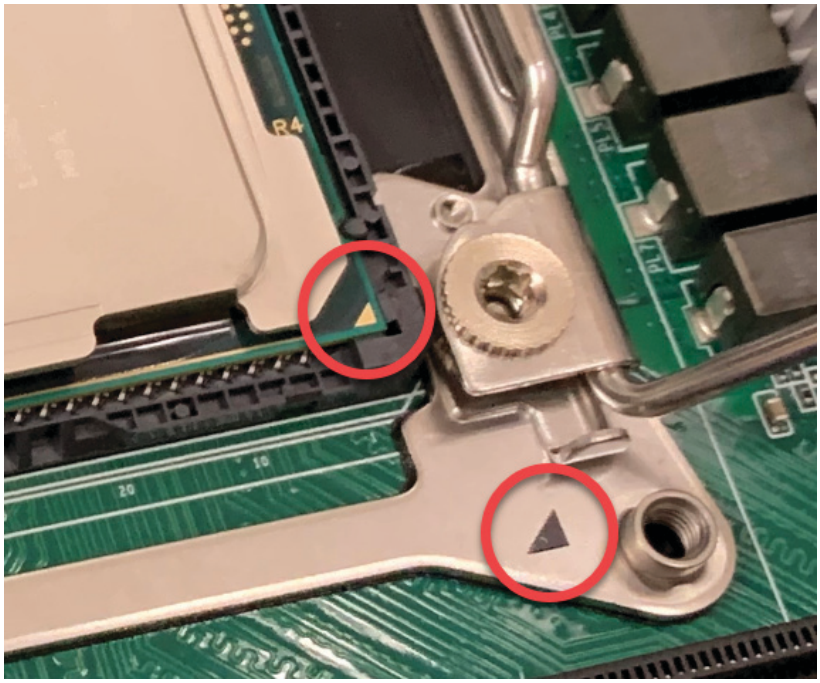
Lift the load plate.



Step 4

Place the processor on the CPU socket and align the triangle mark printed on the processor and CPU socket.



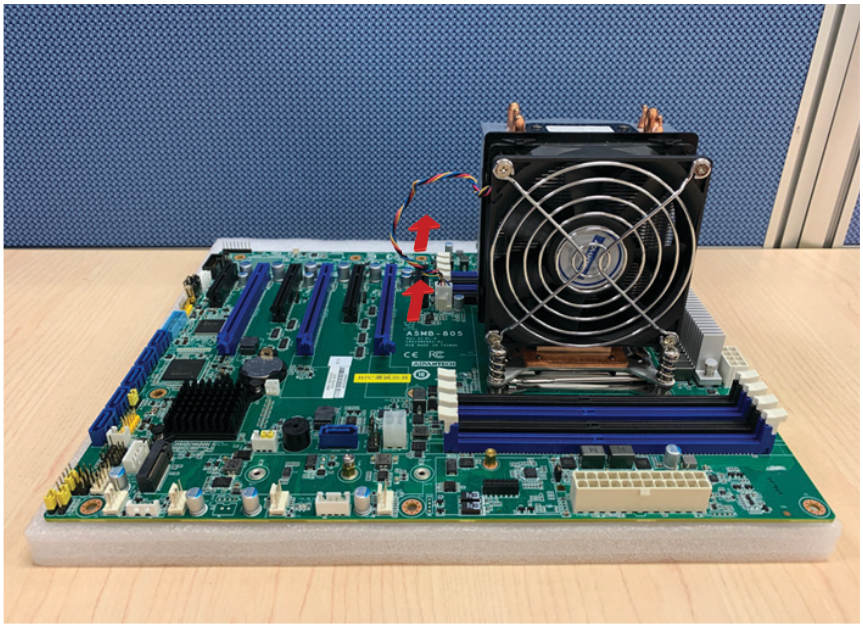


Step 5

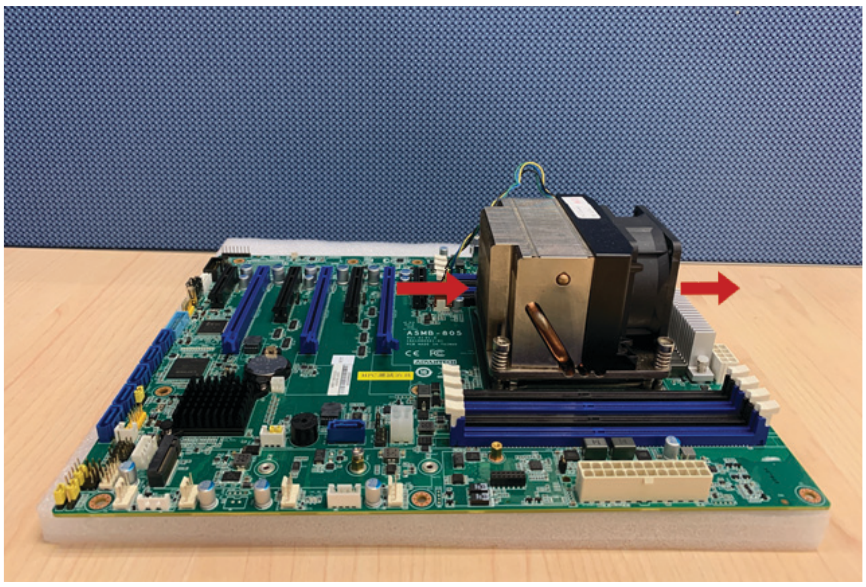
Close the load plate over the CPU. Push down both levers and insert them under the retention tabs ensuring the edge of the load plate is fixed securely by both levers.

Step 6

Install the CPU cooler on the top of the CPU and make sure air flow direction is same as following arrow indication. Tighten the screws in diagonal sequence.



Air flow direction of CPU cooler P/N 196006584N011



Air flow direction of CPU cooler P/N 1960055362N001

Chapter 2

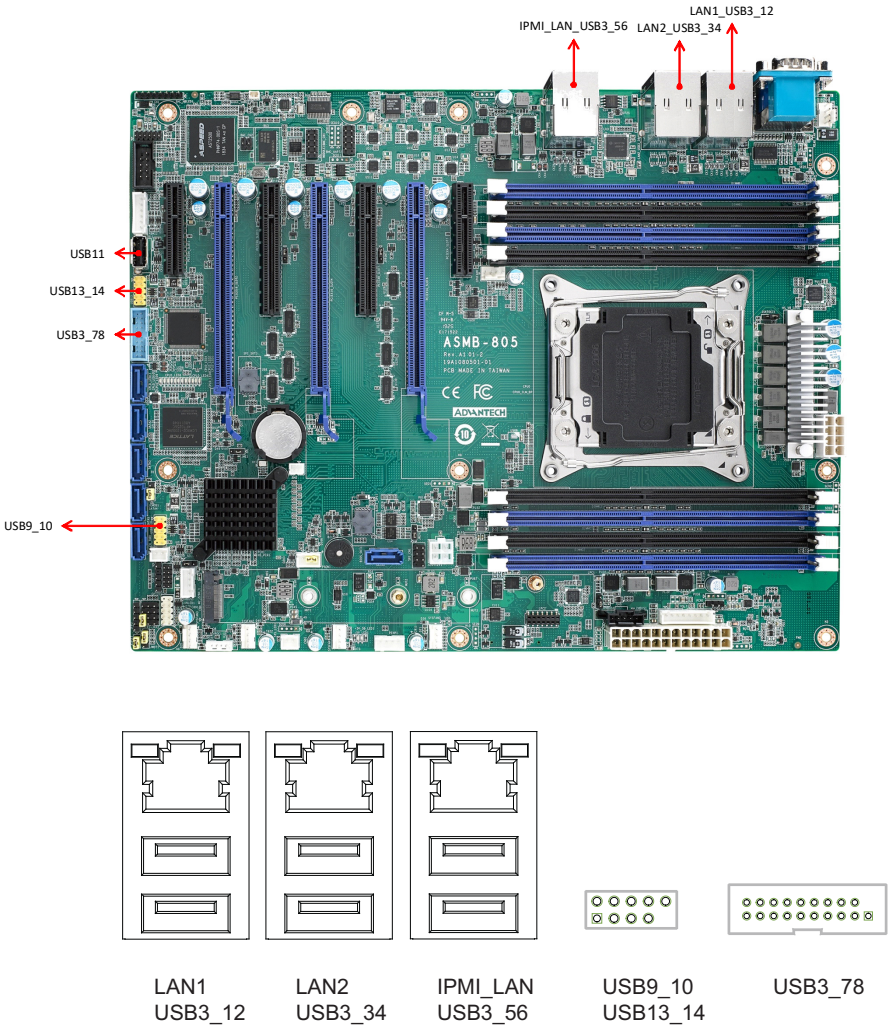
Connections

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.

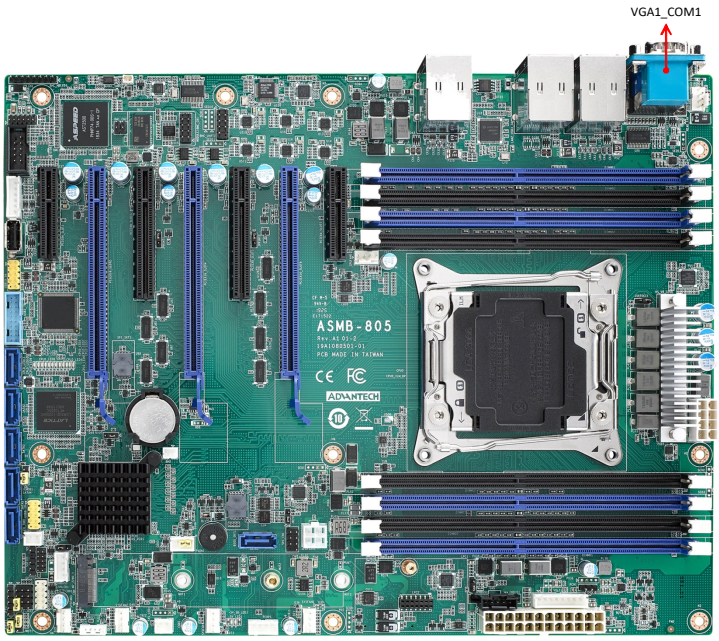
2.2 USB Ports and LAN Port

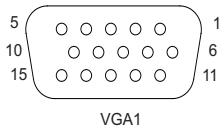
The USB ports comply with USB 2.0 & 3.0. Transmission rates of up to 480 Mbps (USB 2.0) / 5Gbps (USB 3.0) and fuse protection are supported. The USB interface can be disabled in the system BIOS setup. ASMB-805 series is equipped with two high-performance 1000 Mbps Ethernet LANs. They are supported by all major network operating systems. The RJ-45 jacks on the rear plate provide convenient 1000Base-T operation. LAN3 port is dedicated for IPMI function (ASMB-805I only).



2.3 VGA Connector (VGA1)

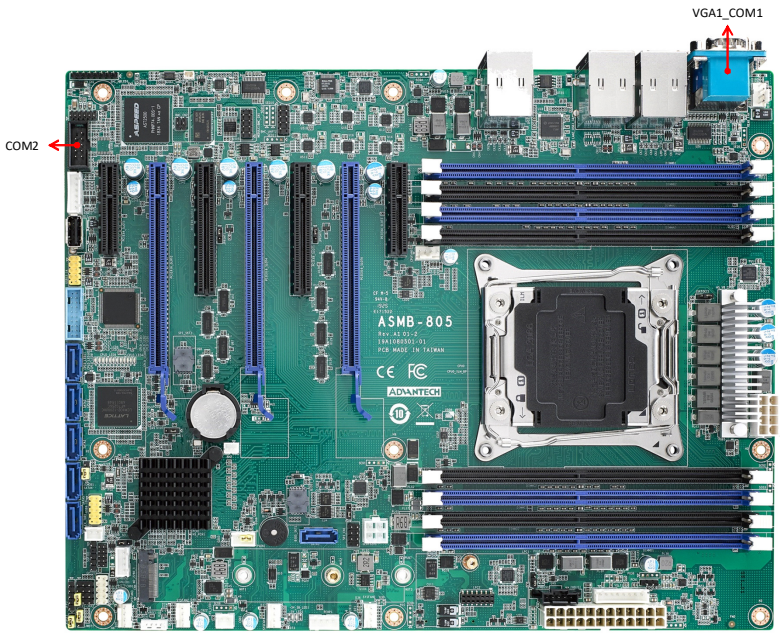
The ASMB-805I equips a VGA interface that can drive conventional CRT and LCD displays.

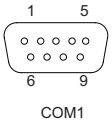


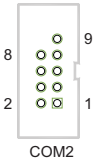


2.4 Serial Ports (COM1~2)

The ASMB-805 offers one serial port on the rear plate and one 2.50mm onboard with 2 x 5-pin pitch.

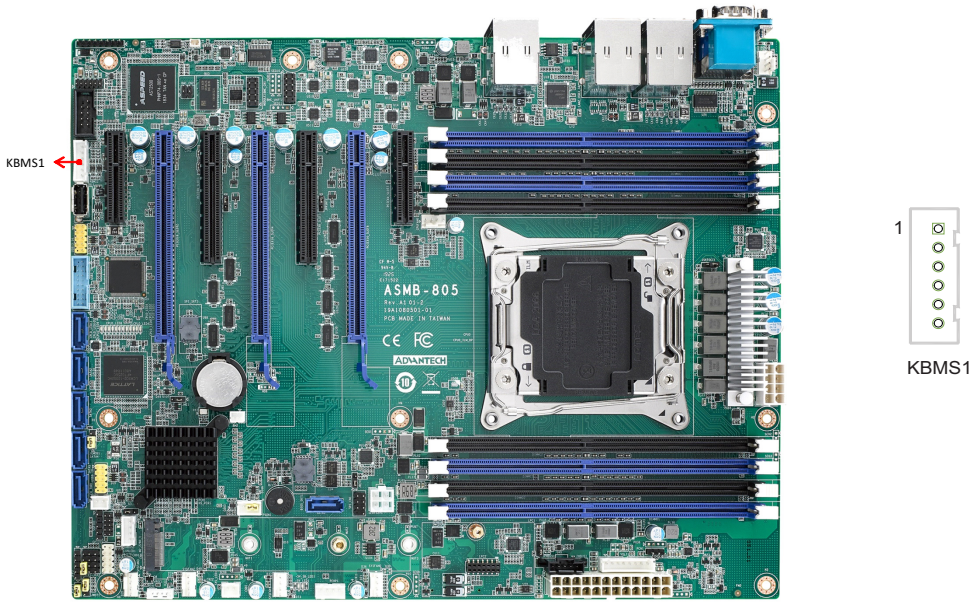






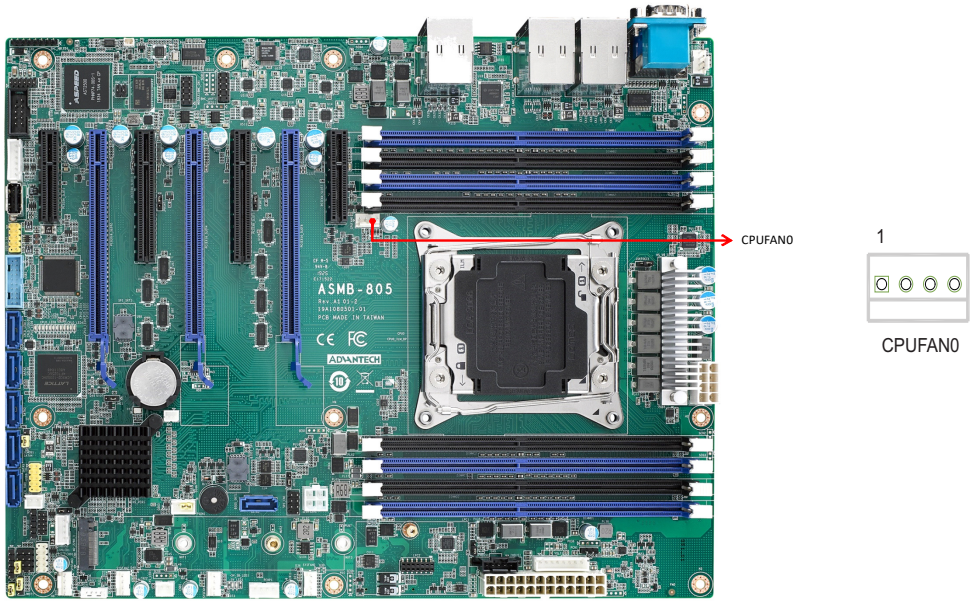
2.5 PS2 Keyboard and Mouse Connectors (KBMS1)

The 6-pin KBMS1 connector is for additional keyboard & mouse device usage.

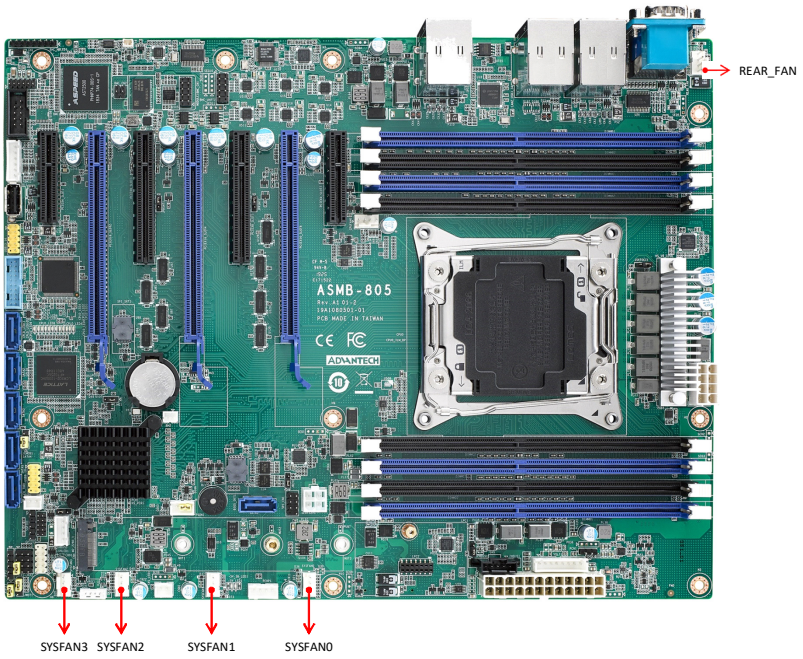


2.6 CPU Fan Connector (CPUFAN0)

This connector supports cooling fans that draw up to 1.5A (18W).

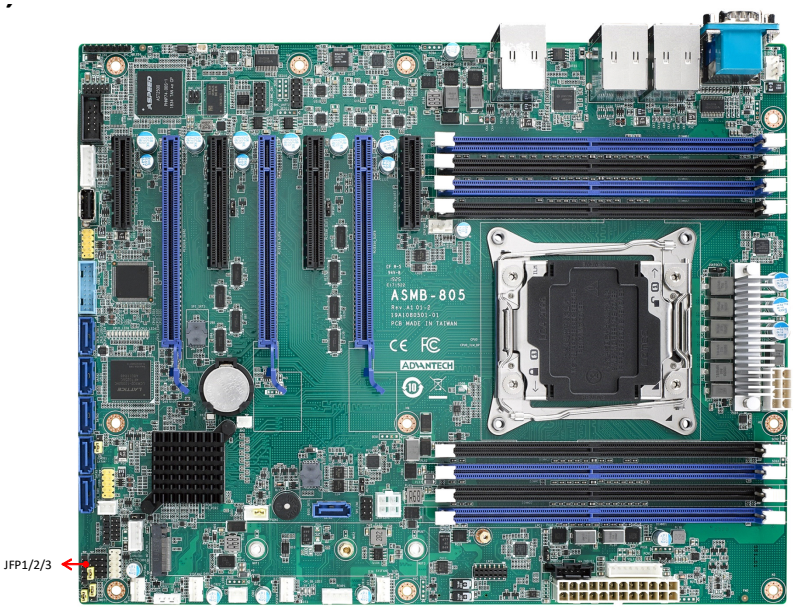


2.7 System Fan Connector (SYSFAN0~3, REAR_FAN)



2.8 Front Panel Connector (JFP1, JFP2, JFP3)

There are several external switches and LEDs to monitor and control ASMB-805.



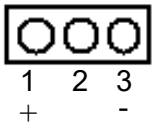
JFP1	3	6	9	12	PWRSW	RESET
&	2(+)	5(-)	8	11	HDDLED	
JFP2	1(+)	4	7	10(-)	SPEAKER	
JFP3	1(+)	2	3(-)	4	5	PWRLED	KEYLOCK

2.8.1 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

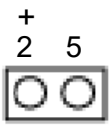


2.8.2 External Speaker (JFP2 pins 1, 4, 7, 10)

JFP2 pins 1, 4, 7, 10 connects to an external speaker. ASMB-805 provides an onboard buzzer as an alternative. To enable the buzzer, set pins 7-10 closed.

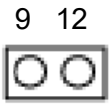
2.8.3 HDD LED Connector (JFP1 Pins 2 & 5)

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



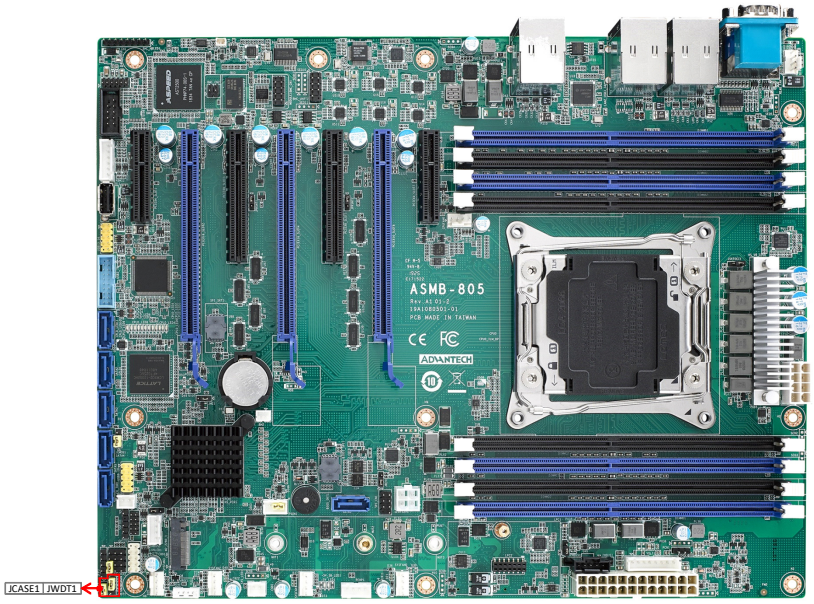
2.8.4 Reset Connector (JFP1 Pins 9 & 12)

Many computer cases offer the convenience of a reset button.



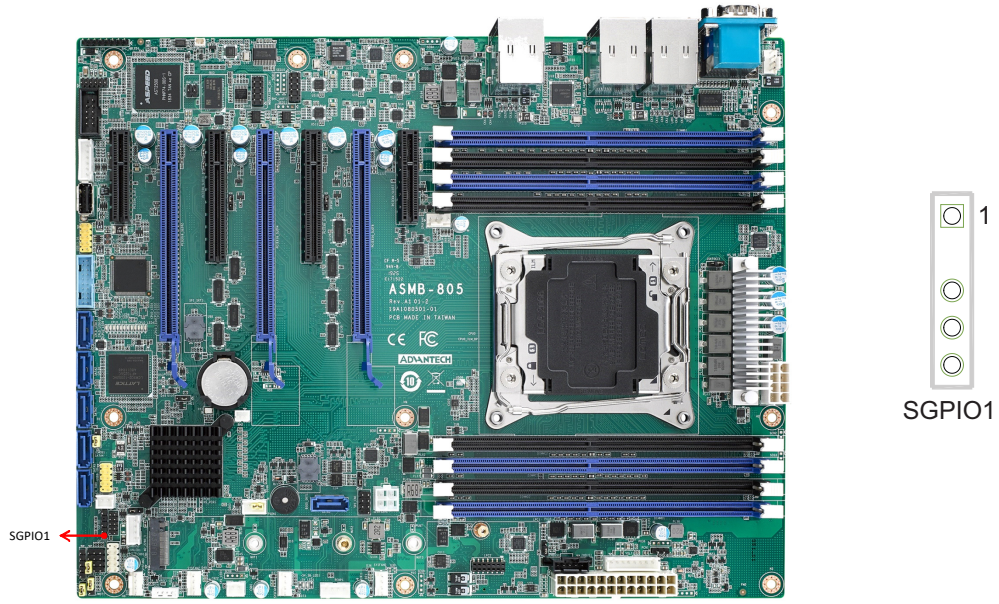
2.9 Case Open (JCASE1)

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

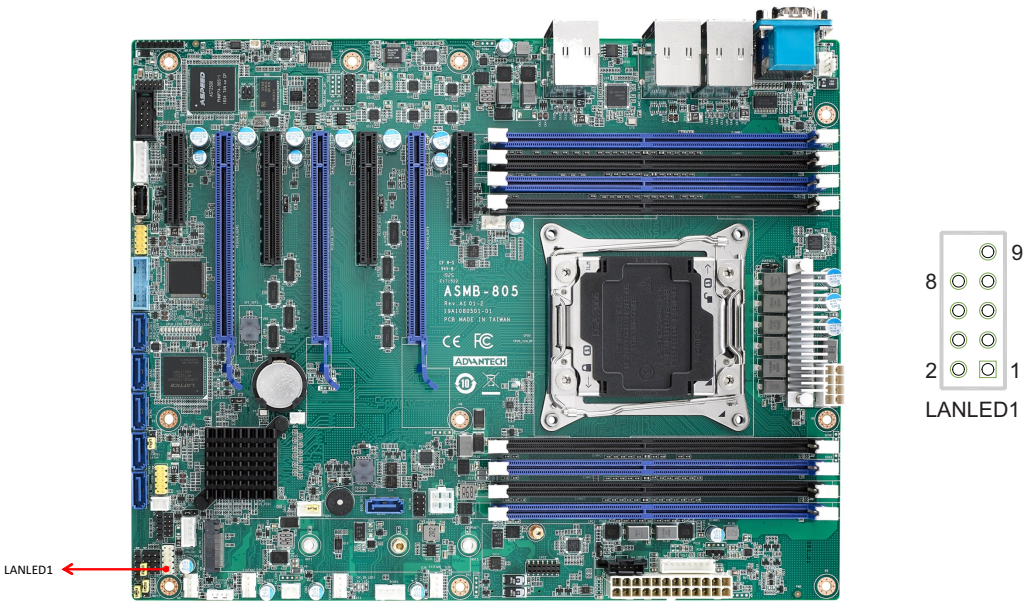


2.10 SATA SGPIO (SGPIO1)

Connect SGPIO1 to HDD backplane in Advantech HPC chassis to analyze HDD LED status.

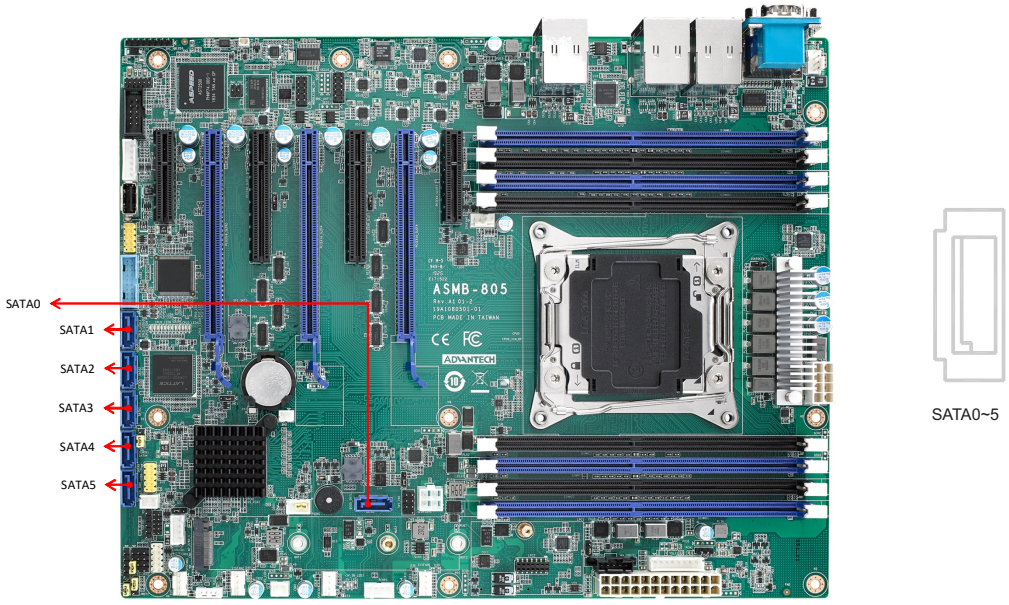


2.11 Front Panel LAN Indicator Connector (LANLED1)



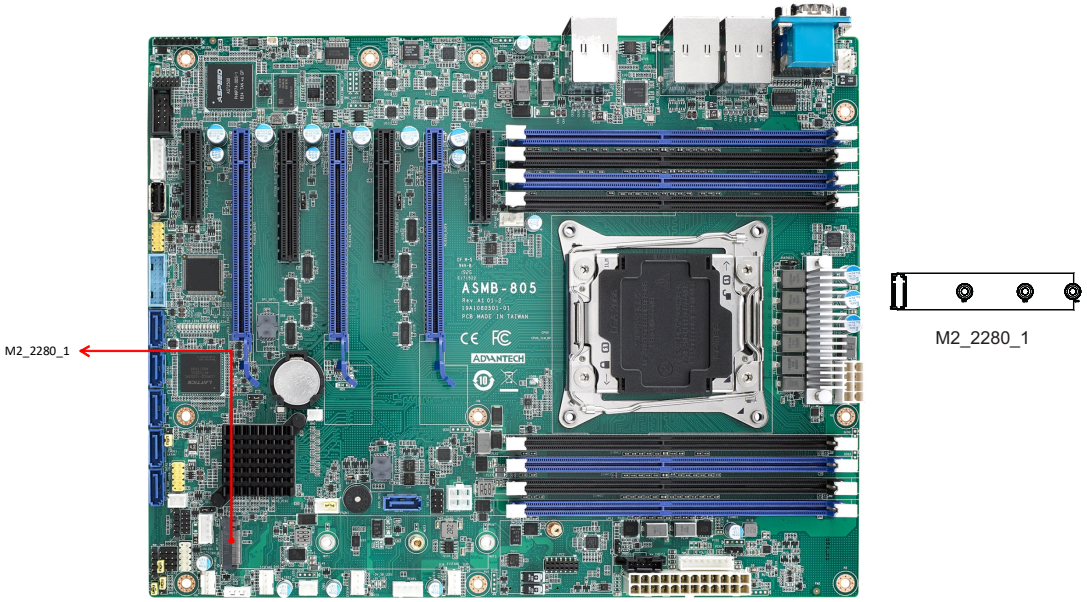
2.12 SATA (SATA0~5)

ASMB-805 features ten serial ATA III interfaces (up to 600 MB/s) which eases cabling to hard drives with thin and long cables.



2.13 M.2 Connector (M2_2280_1)

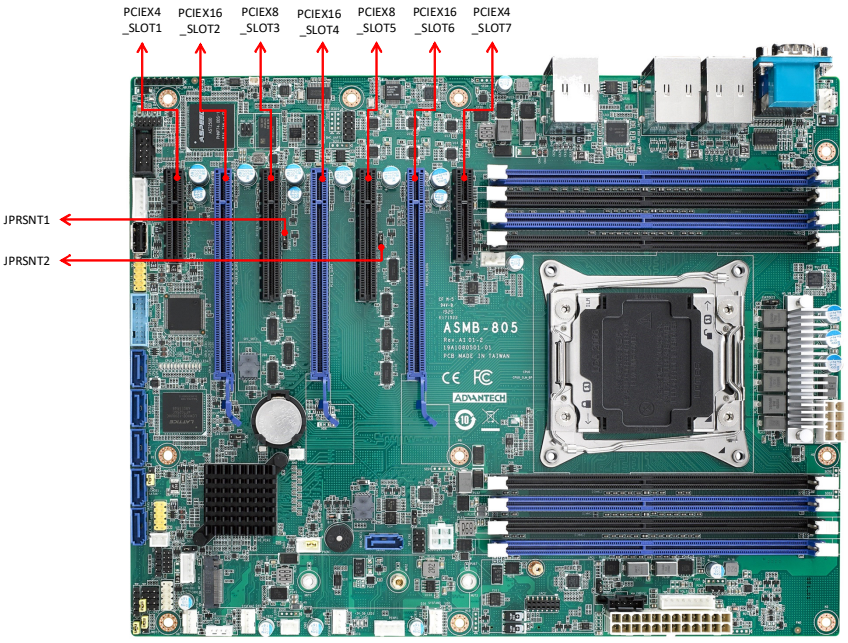
The M.2 connector supports the PCIe card in 22110, 2280, and 2242 form factor (three screw holes available).



2.14 PCIe Expansion Slots & PCIe switch(JPRSNT1/ JPRSNT2)

ASMB-805 provides seven expansion slots that can support three double-deck cards. The riser card for 2U chassis can be used in slot-6 only.

JPRSNT1 and JPRSNT2 jumper are to switch PCIe slot 3/4, and slot 5/6 to two x8 links manually. The jumper is 1-2 closed as default for auto detect. If the cards on slot 3 or slot 5 can't be recognized, manually force to 2-3 closed.



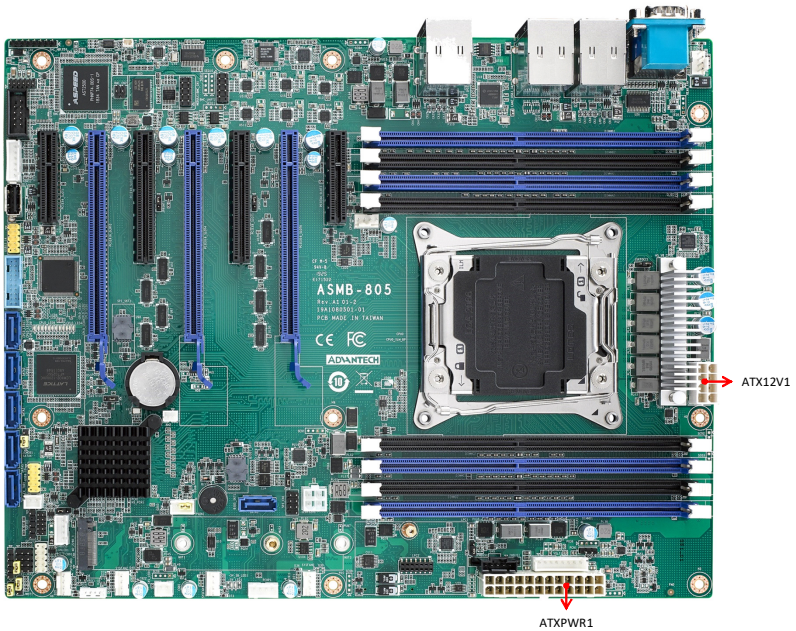
	Slot Length	Link	PCI-E Generation	PCIe link from
SLOT1	PCI-E x4	PCI-E x4	3	PCH
SLOT2	PCI-E x16	PCI-E x16	3	CPU
SLOT3	PCI-E x8	PCI-E x8 or no link	3	CPU
SLOT4	PCI-E x16	PCI-E x8 or x16	3	CPU
SLOT5	PCI-E x8	PCI-E x8 or no link	3	CPU
SLOT6	PCI-E x16	PCI-E x8 or x16	3	CPU
SLOT7	PCI-E x4	PCI-E x4	3	PCH

2.14.1 Compatible Riser Cards

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
ASMB-RF348-21A1E	AIMB-RF348 (2U riser card)	2*PCI-E x4 + 1*PCI-E x8
ASMB-RF3x8-21A1E	AIMB-RF3x8 (2U riser card)	1*PCI-E x4 + 1*PCI-x

Note: Refer to page 56. BIOS setting [x8,x4,x4] is required for Slot 6 when using ASMB-RF388-21A1E.

2.15 Auxiliary Power Connector (ATXPWR1/ ATX12V1)

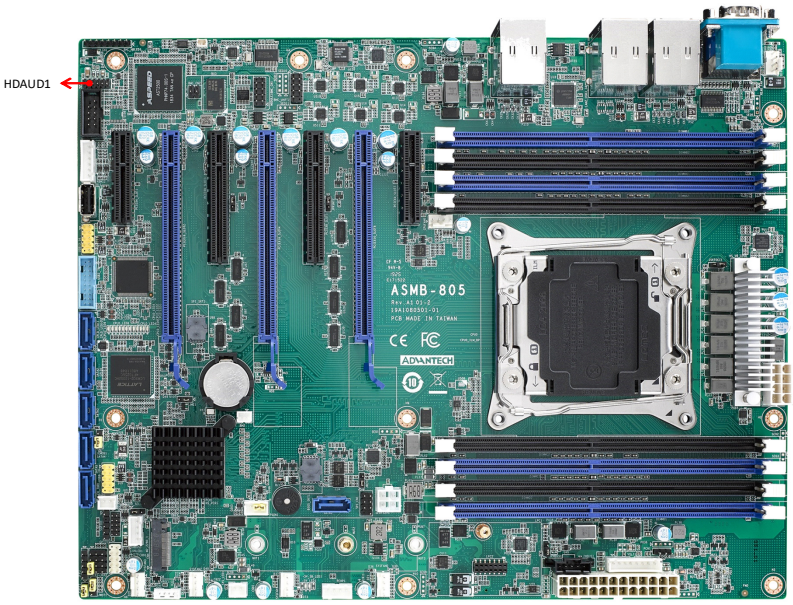


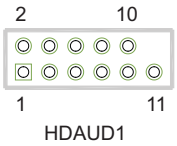
Note!

1. *Please use a power supply of SSI type; minimum output should be at least 500 W.*
2. *ATXPWR1 and ATX12V1 should be all connected with power supply, otherwise ASMB-805 will not boot up normally.*

2.16 HD Audio Interface Connector (HDAUD1)

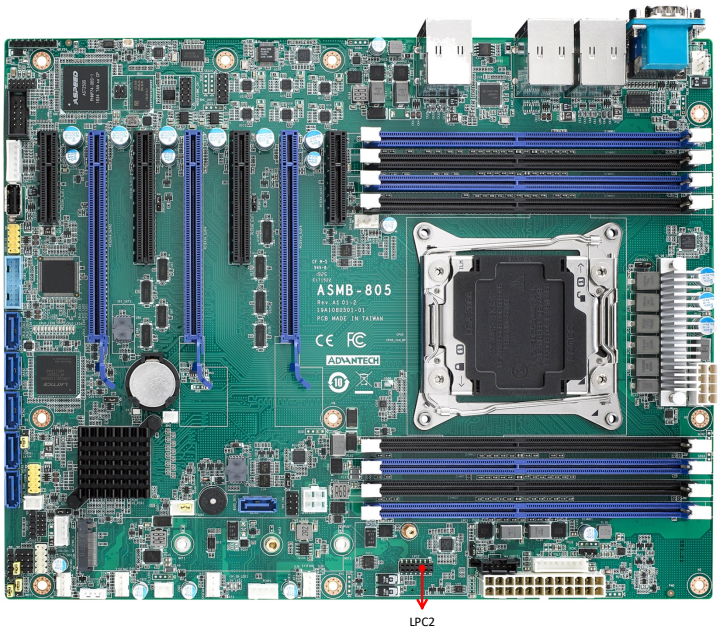
ASMB-805 has one audio connector for Advantech's audio board (P/N: PCA-AUDIO-HDB1E) installation.

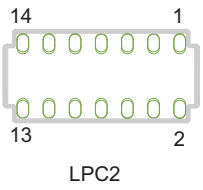




2.17 LPC Connector (LPC2)

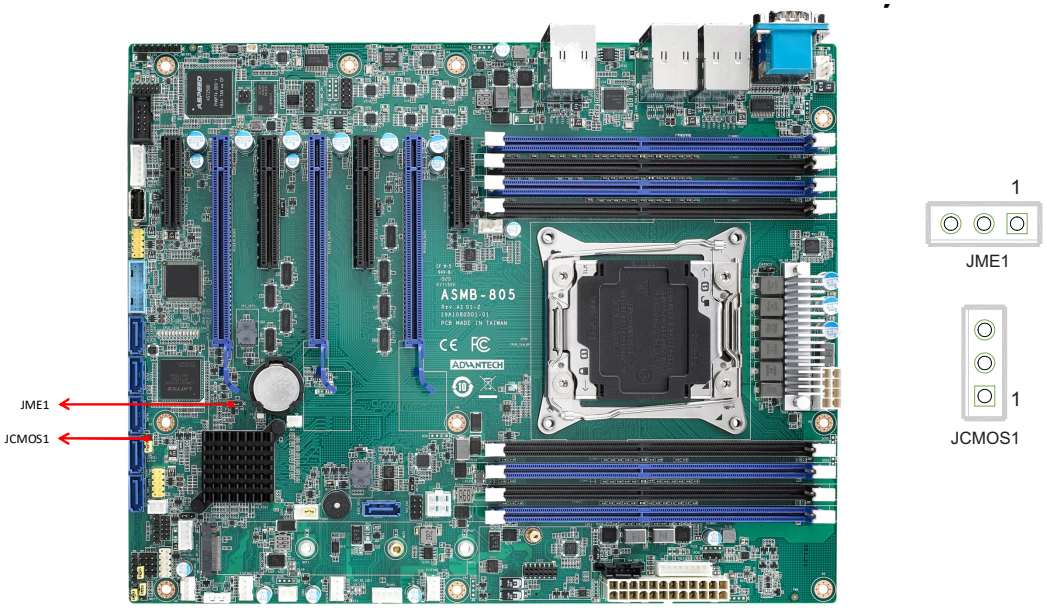
ASMB-805 has one LPC connector that can be used to install Advantech's TPM module (P/N: PCA-TPM-00A1E, PCA-TPM-00B1E) for security management and Advantech's COM module (P/N: PCA-COM232-00A1E, PCA-COM485-00A1E).





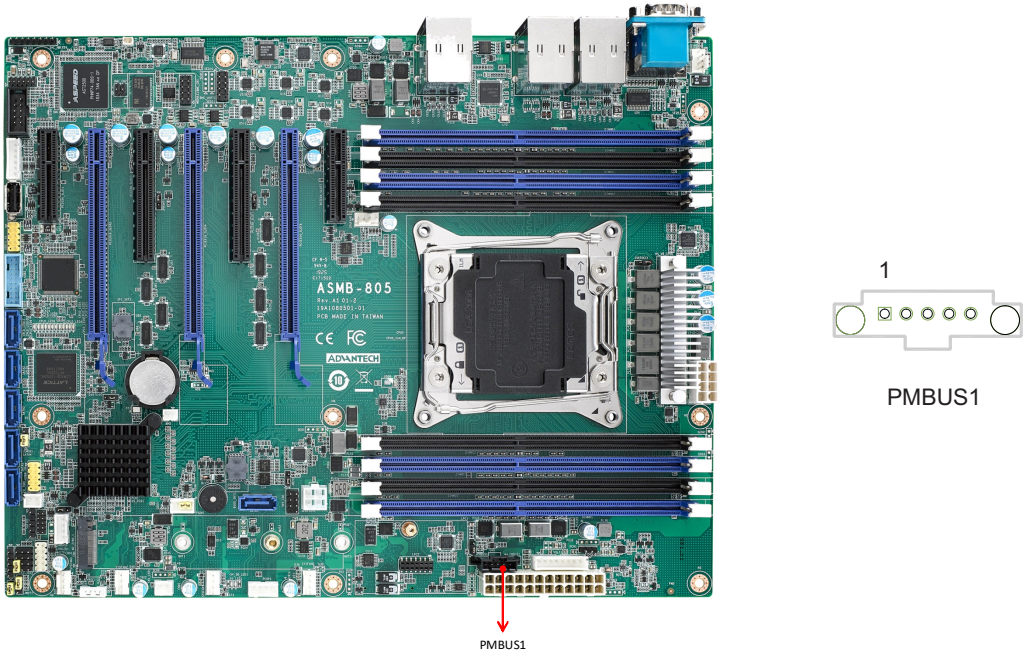
2.18 CMOS Clear and ME Update Connector (JCMOS1, JME1)

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

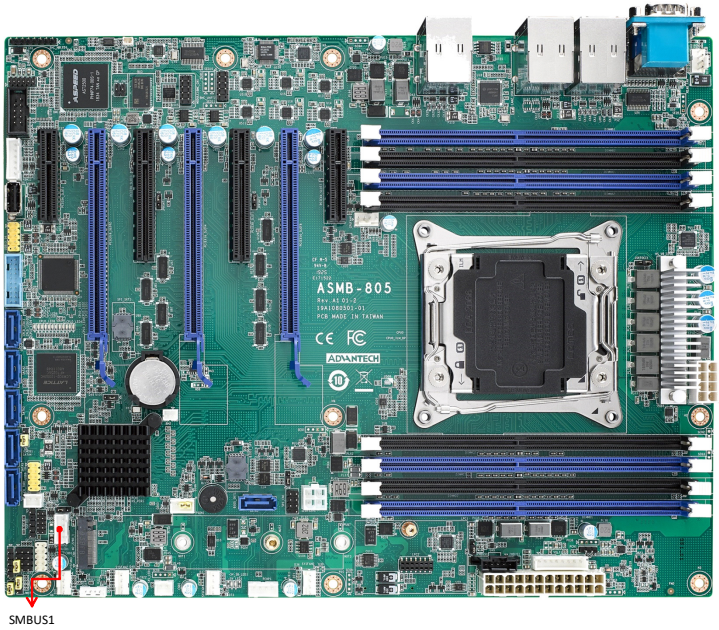


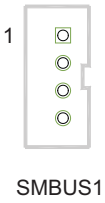
2.19 PMBUS Connector (PMBUS1)

PMBus monitors the power supplies, fans, and temperatures.



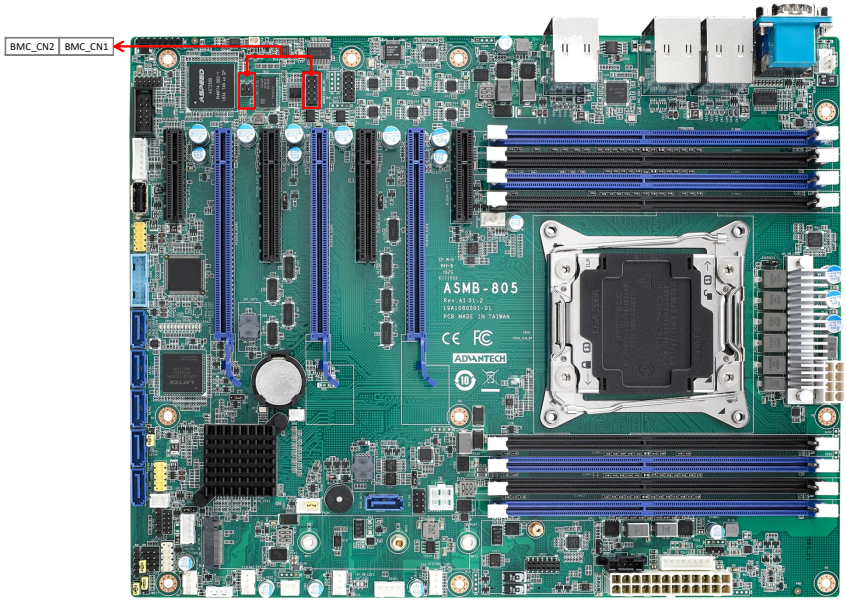
2.20 Front Panel SMBUS Connector (SMBUS1)

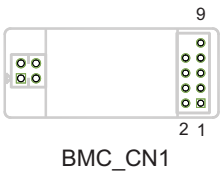




2.21 IPMI Module Connector (BMC_CN1)

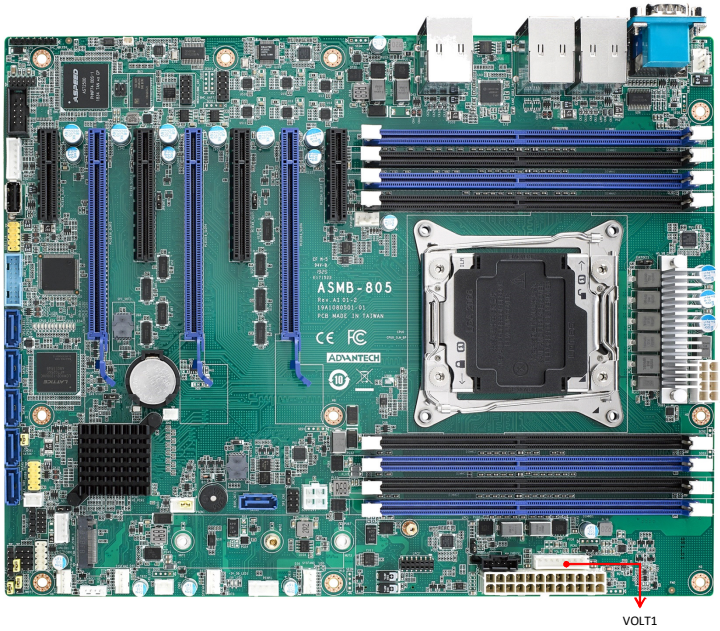
Enabling IPMI feature through BMC_CN1 and BMC_CN2. The BMC Module has already been pre-installed on ASMB-805I sku.

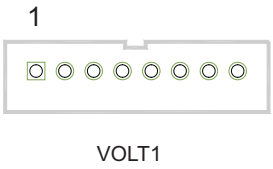




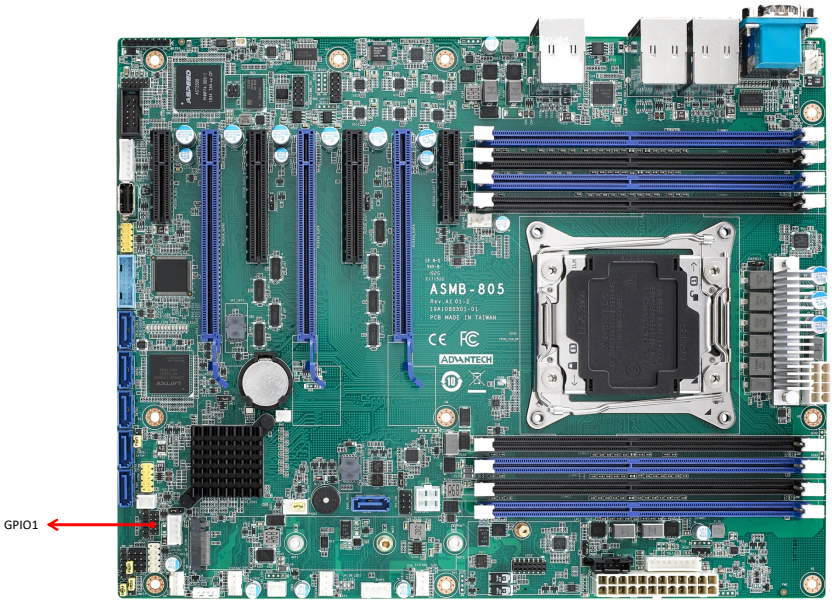
2.22 VOLT1 Connector (VOLT1)

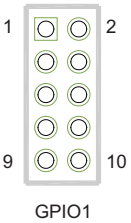
VOLT1 connects to the alarm board on the Advantech chassis. These alarm boards give warnings if a power supply or fan fails, if the chassis overheats, or if the back-plane malfunctions.





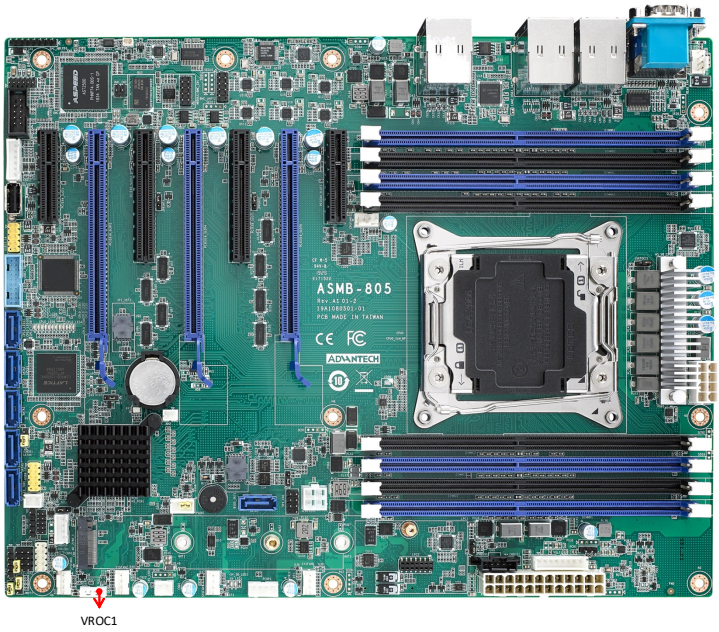
2.23 GPIO Connector (GPIO1)





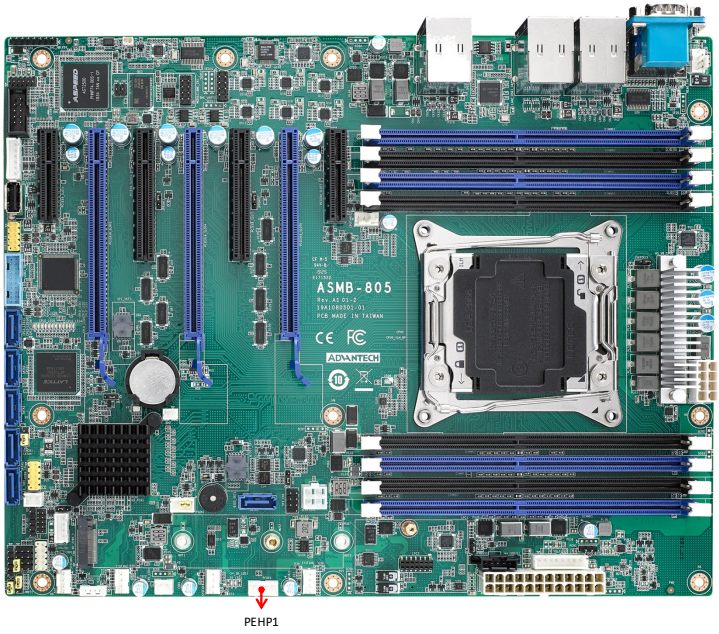
2.24 Intel Virtual RAID (VROC1)

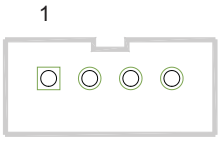
Intel VROC license key of VMD allows NVMe SSDs to connect via PCIe and directly manages the CPU for better RAID performance. Enable NVMe SSD RAID, hot-plug and LED management features via VROC connector.



2.25 NVMe RAID LED Control (PEHP1)

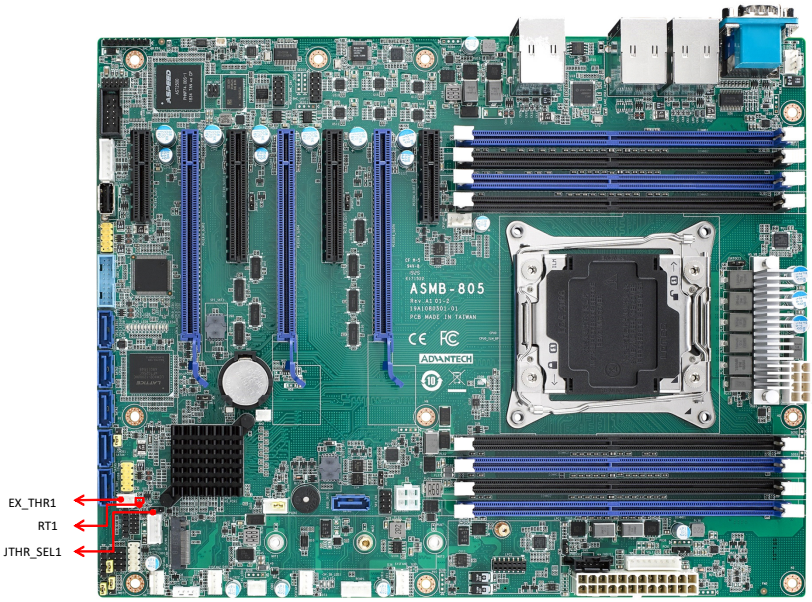
Connect to storage chassis to enable NVMe RAID LED control feature.

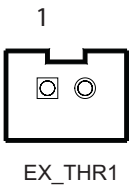




2.26 System Temperature Monitor (RT1, EX_THR1, JTHR_SEL1)

Select system temperature source by adjusting jumper JTHR_SEL1. Close pin 1-2 (default) to set up as onboard thermistor (RT1). Close pin 2-3 to set up as external thermistor (EX_THR1). Connect external thermistor to the suitable location in system.



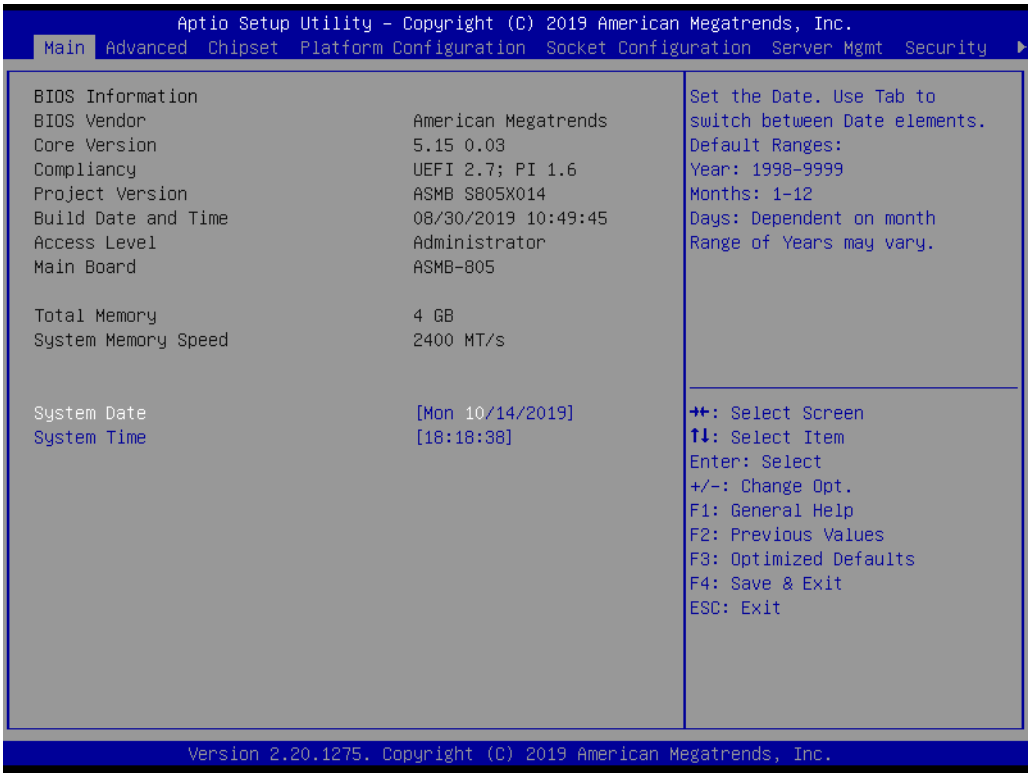


Chapter 3

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-805 setup screens.



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.*

3.2 BIOS Setup

3.2.1 Main Menu

Press <Del> 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.

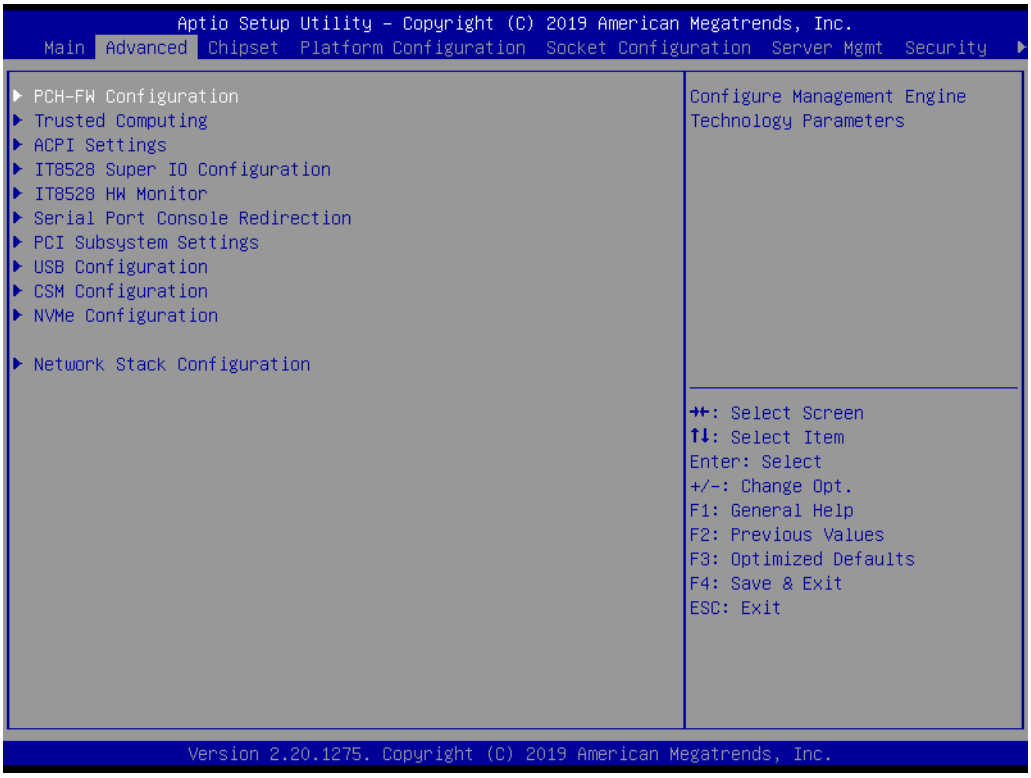
The Main BIOS setup screen has two main frames. The left frame displays all the options that can be configured. Grayed-out options cannot be configured; options in blue can be. The right frame displays the key legend. Above the key legend is an area reserved for a text message. When an option is selected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

- **System Date / System Time**

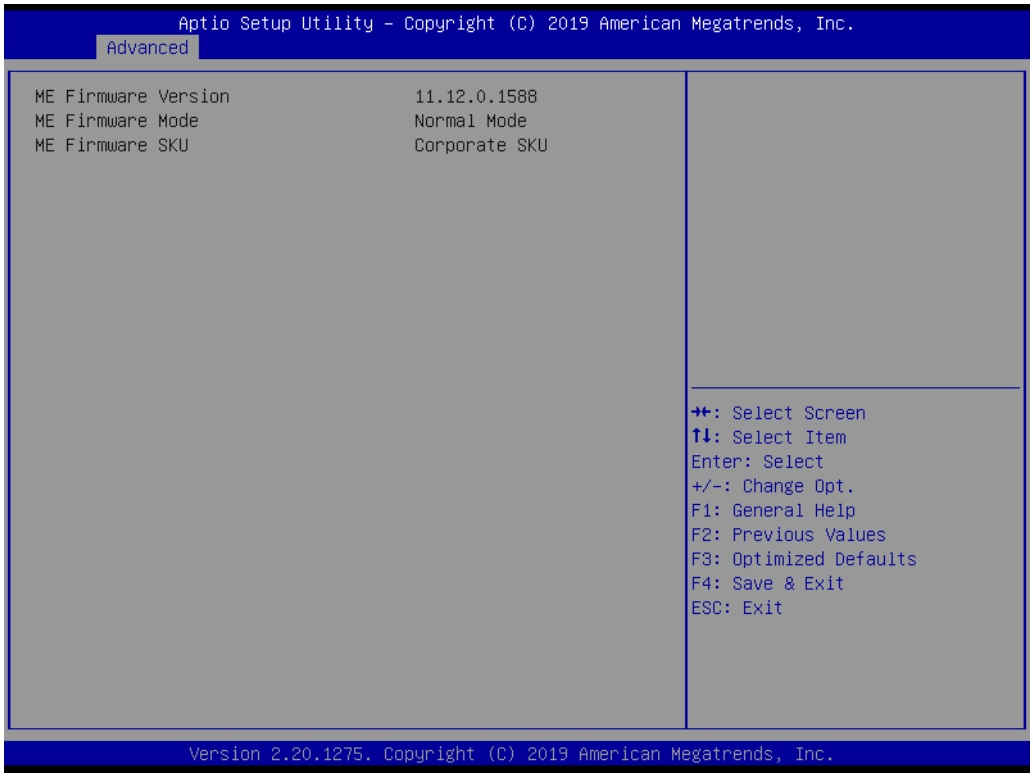
  Use this option to change the system time and date. Highlight System Time or System Date using the <Arrow> keys. Enter new values through the keyboard. Press the <Tab> key or the <Arrow> keys to move between fields. The date must be entered in MM/DD/YY format. The time must be entered in HH:MM:SS format.

3.2.2 Advanced BIOS Features Setup

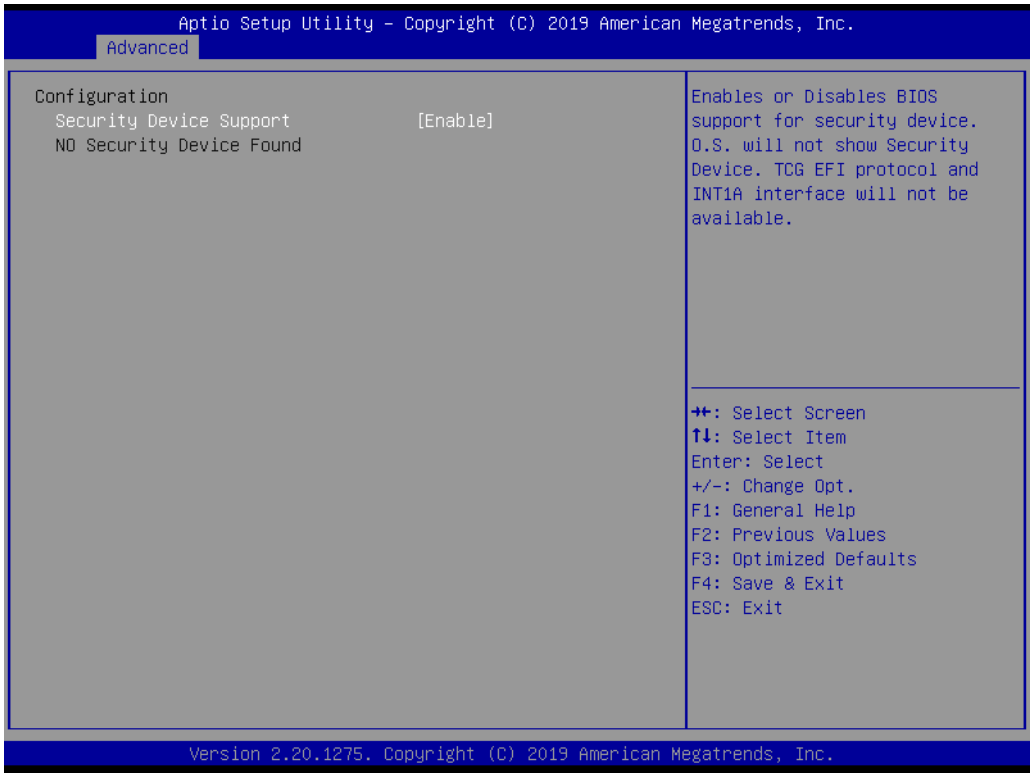
Select the Advanced tab from the ASMB-805 setup screen to enter the Advanced BIOS setup screen. You can select any of the items in the left frame of the screen, such as CPU configuration, to go to the sub menu for that item. You can display an Advanced BIOS Setup option by highlighting it using the <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.



3.2.2.1 PCH-FW Configuration



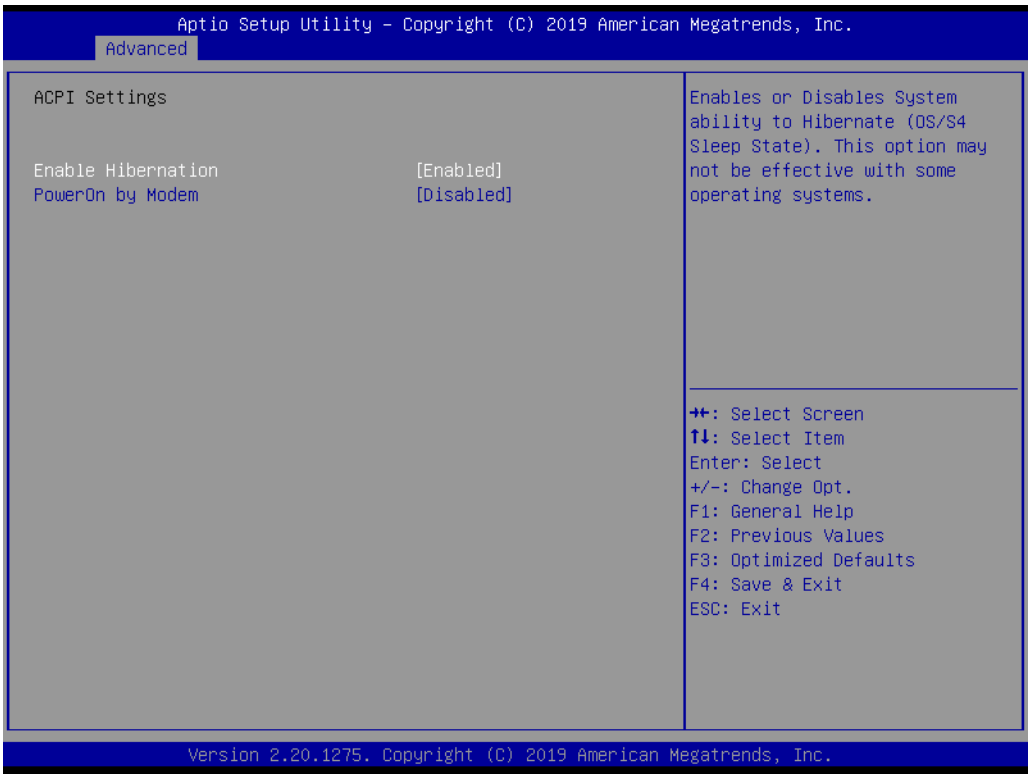
3.2.2.2 Trusted Computing



- **Security Device Support**
  Enables or disables BIOS support for security devices.

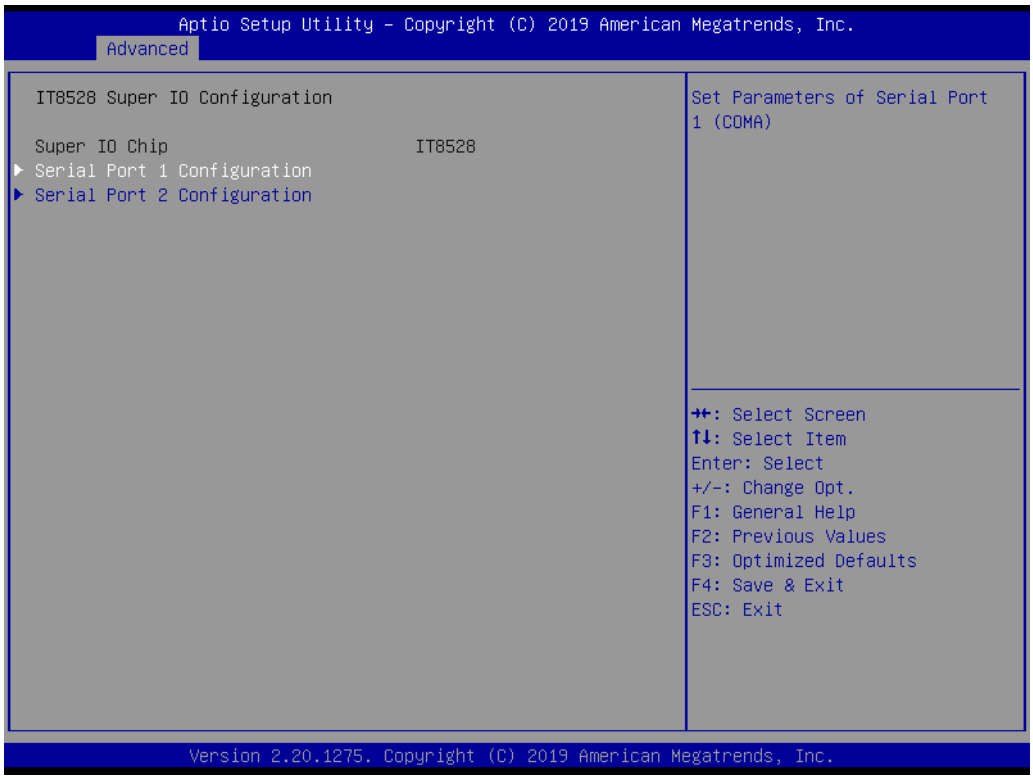
Note! *Purchase Advantech's LPC TPM module to enable TPM function. P/N: PCA-TPM-00A1E or PCA-TPM-00B1E.*

3.2.2.3 ACPI Settings

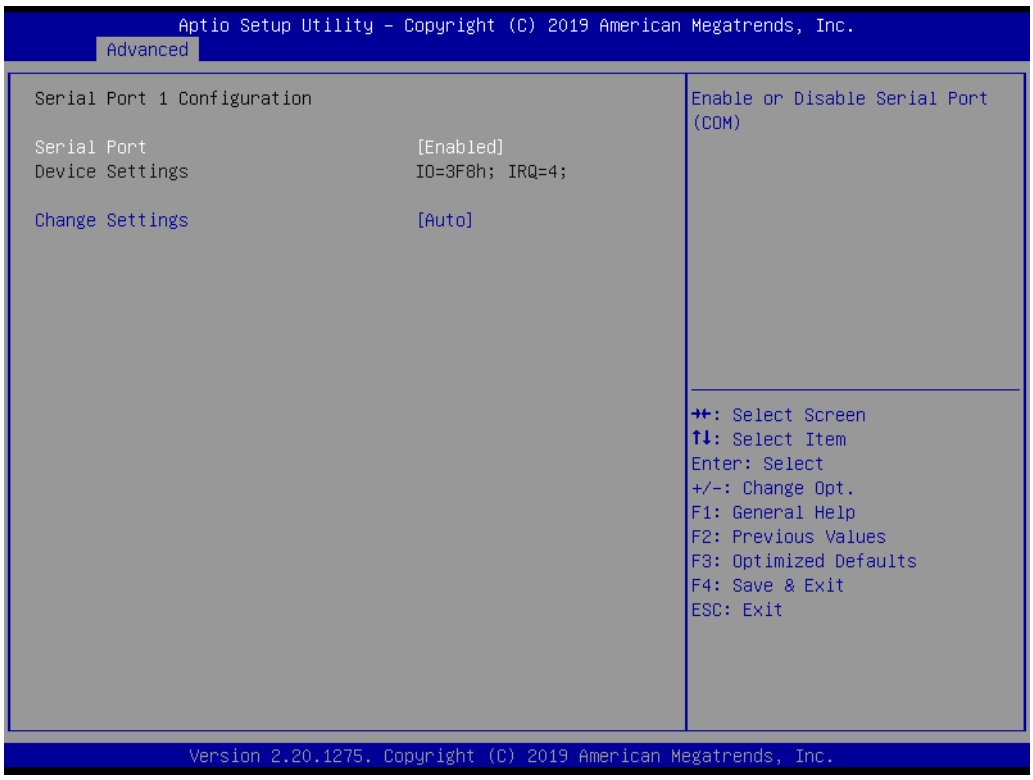


- **Enable Hibernation**
  Enable or disable hibernation feature.
- **PowerOn By Modem**
  Enable or disable power on by modem feature.

3.2.2.4 IT8528 EC Super IO Configuration

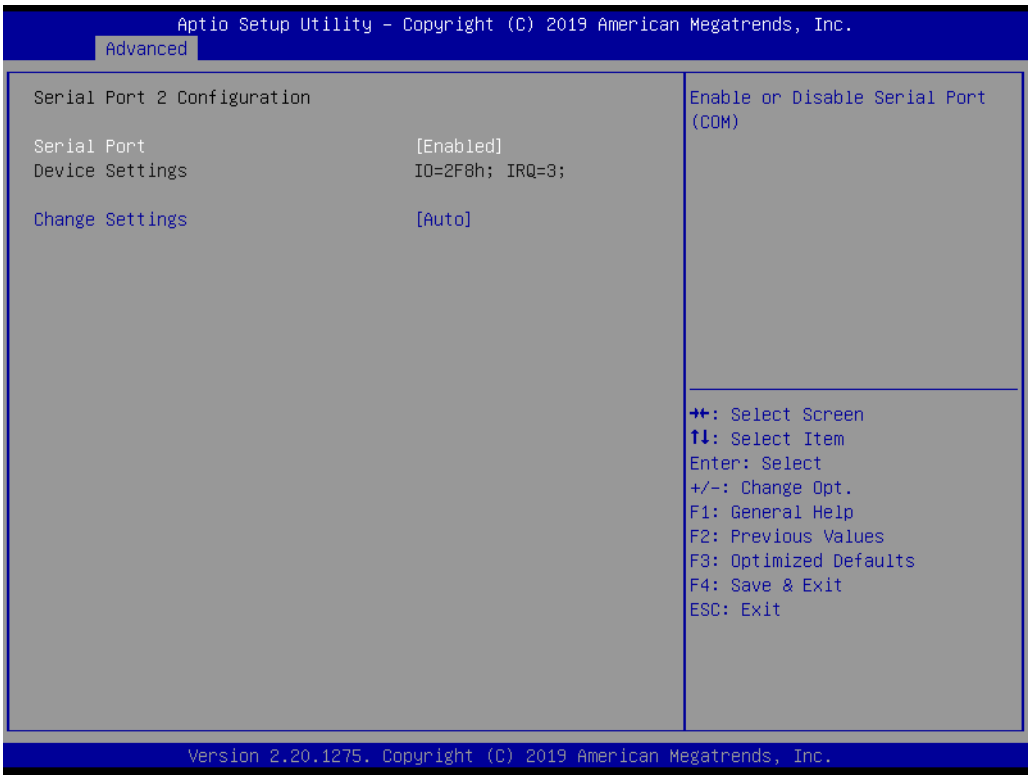


- **Serial Port 1 Configuration**



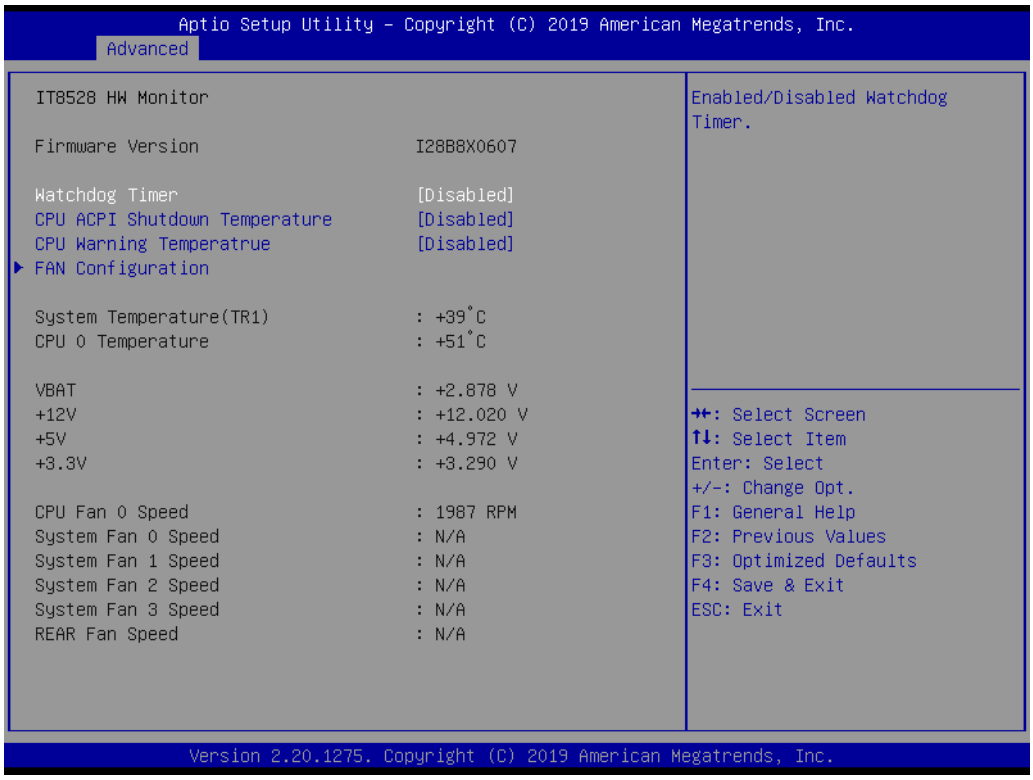
– **Serial Port**
  Enable or disable serial port 1.
– **Change Settings**
  To select an optimal setting for serial port 1.

Serial Port 2 Configuration



- **Serial Port**
  Enable or disable serial Port 2.
- **Change Settings**
  To select an optimal setting for serial port 2.

3.2.2.5 IT8528 HW Monitor



- **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**

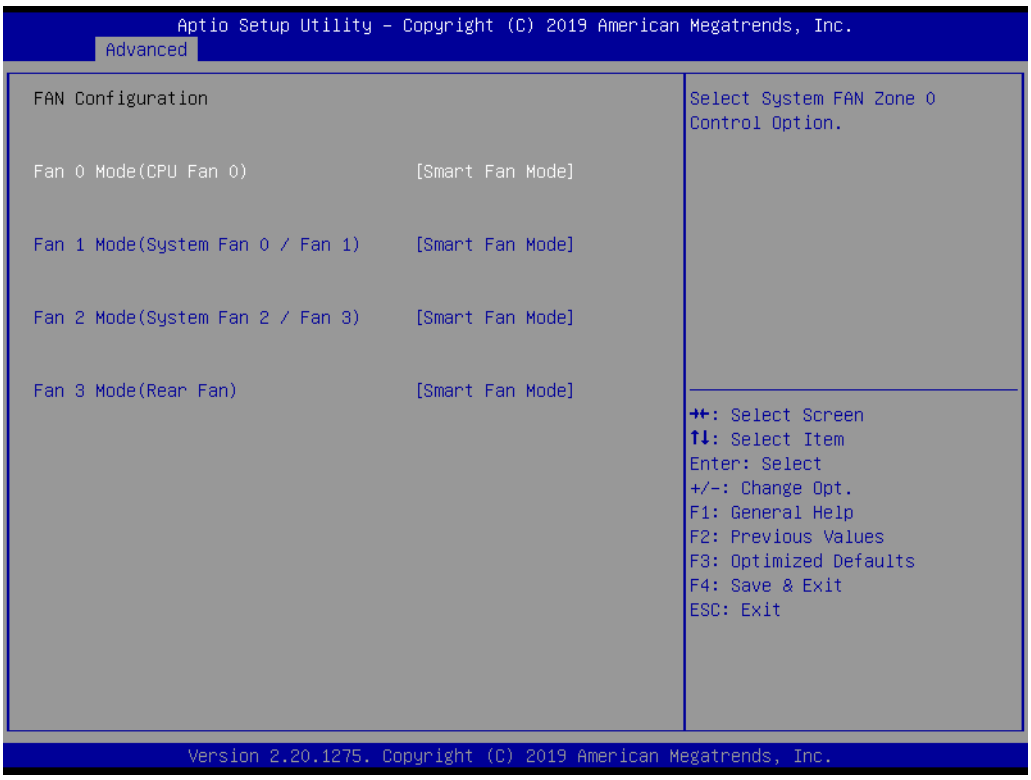
  Enable or disable the CPU warning temperature threshold. When the system reaches the warning temperature, the speaker will beep.

- **Fan Configuration**

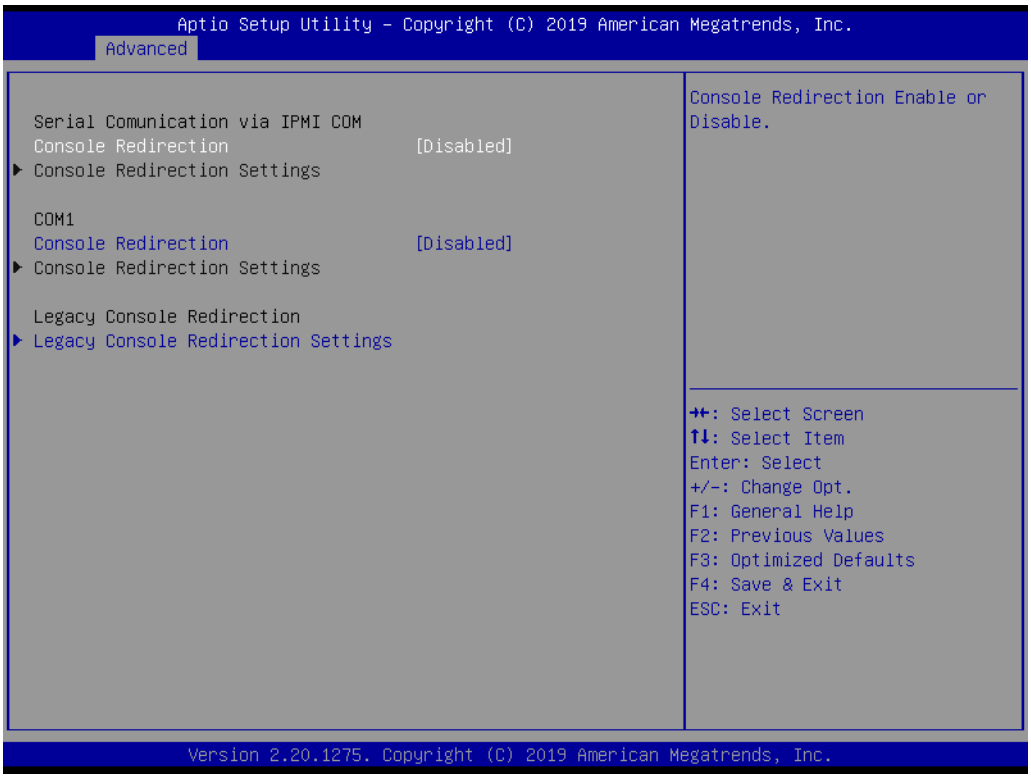
  Fan 0 mode controls CPUFAN0, Fan 1 mode controls SYSFAN0 and SYSFAN1, FAN 2 mode controls SYSFAN2 and SYSFAN3; and FAN 3 mode controls rear fan.

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

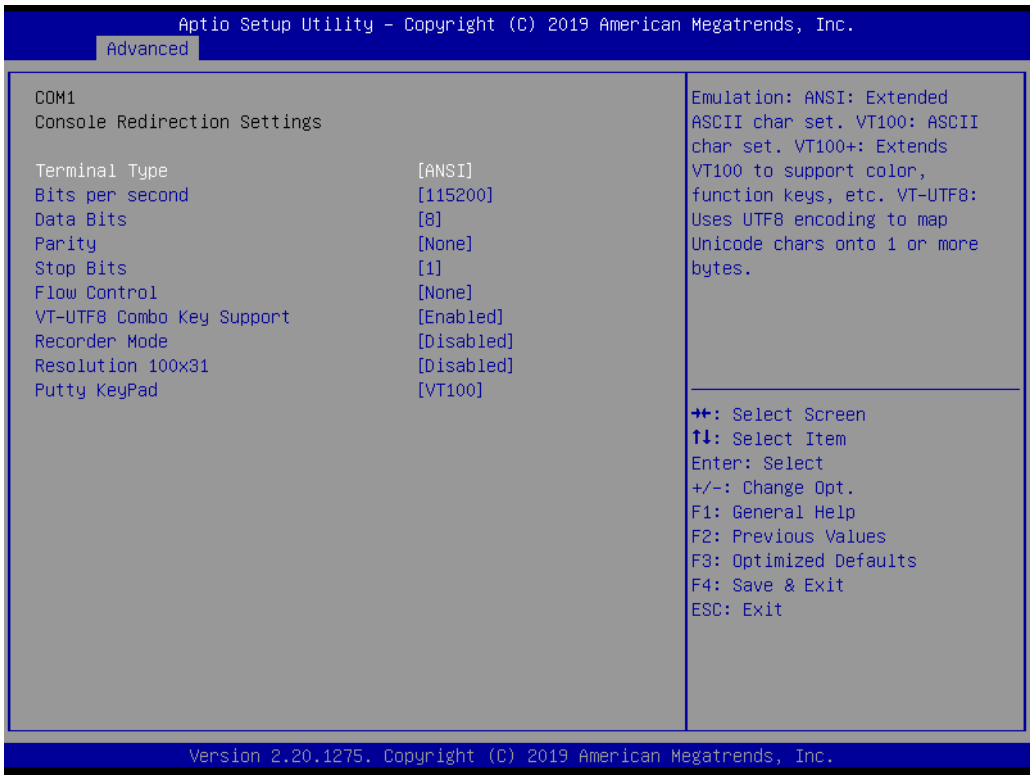
  When set to manual mode, fan duty setting can be changed; the range is from 20%~100%, default setting is 50%.



3.2.2.6 Serial Port Console Redirection



COM1 Console Redirection Settings

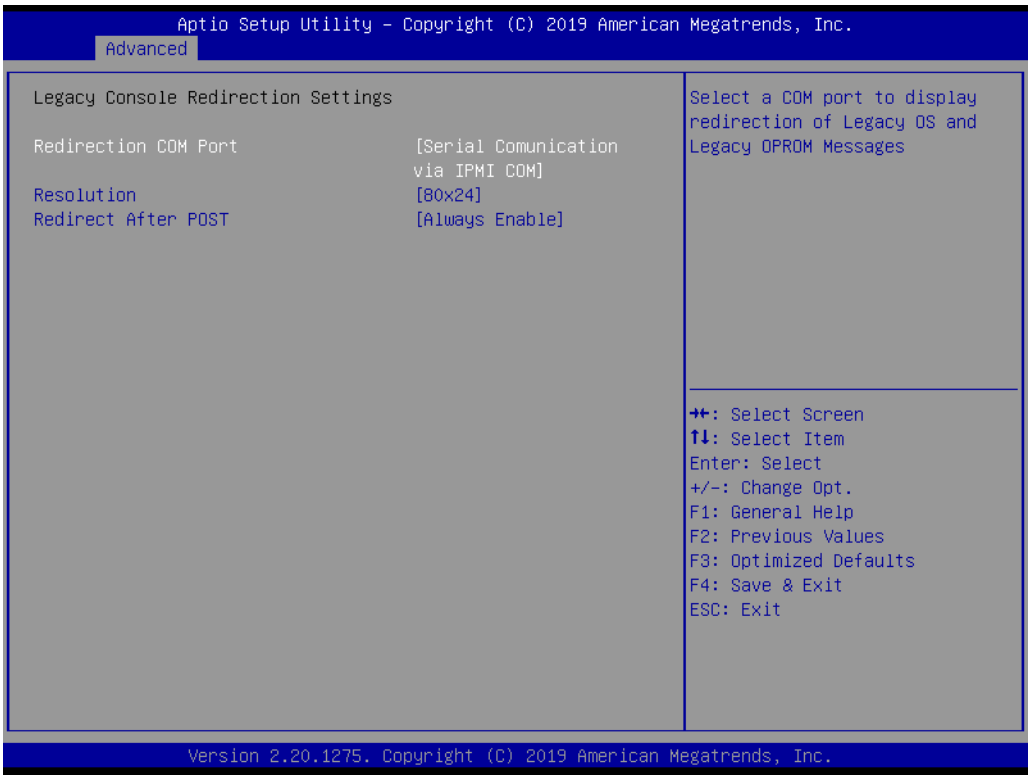


- **Terminal Type**
  Select a terminal type to be used for console redirection.
  Options available: VT100/VT100+/VT-UTF8/ANSI.
- **Bits Per Second**
  Select the baud rate for console redirection.
  Options available: 9600/19200/38400/57600/115200.
- **Data Bits**
  Options available: 7/8
- **Parity**
  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.

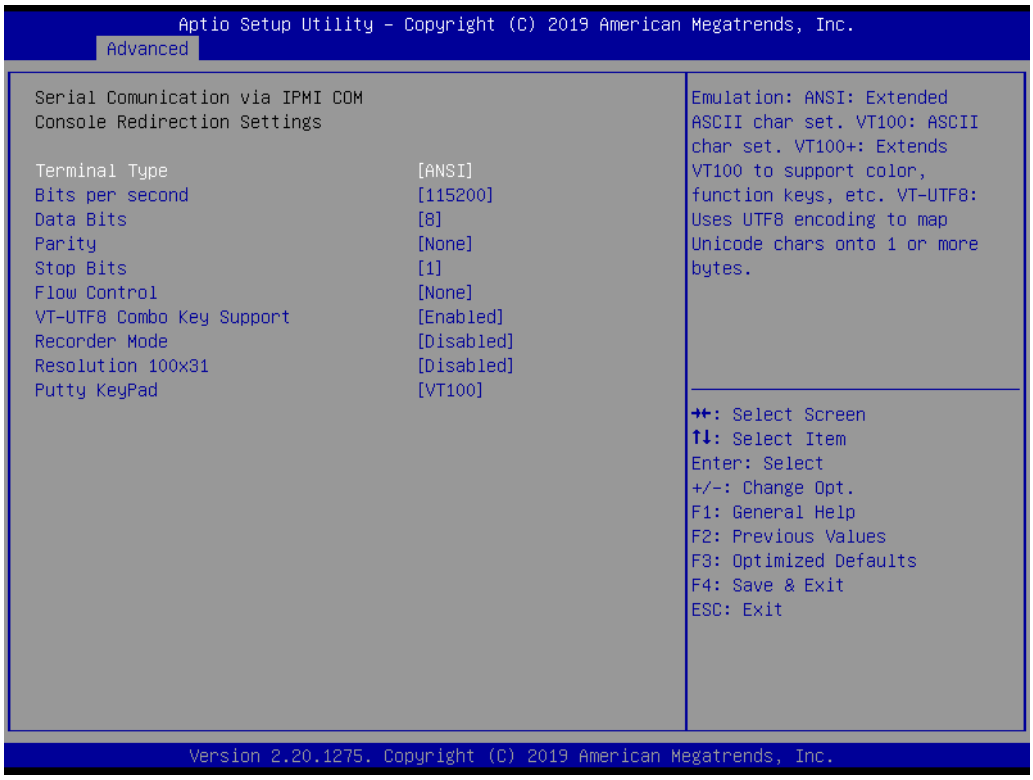
- **VT-UTF8 Combo Key Support**
  Enable VT-UTF8 combination key support for ANSI/VT100 terminals
- **Recorder Mode**
  When this mode enabled, only text will be sent; this is to capture terminal data.
  Options available: Enabled/Disabled.
- **Resolution 100x31**
  Enables or disables extended terminal 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.

■ **Legacy Console Redirection Settings**

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



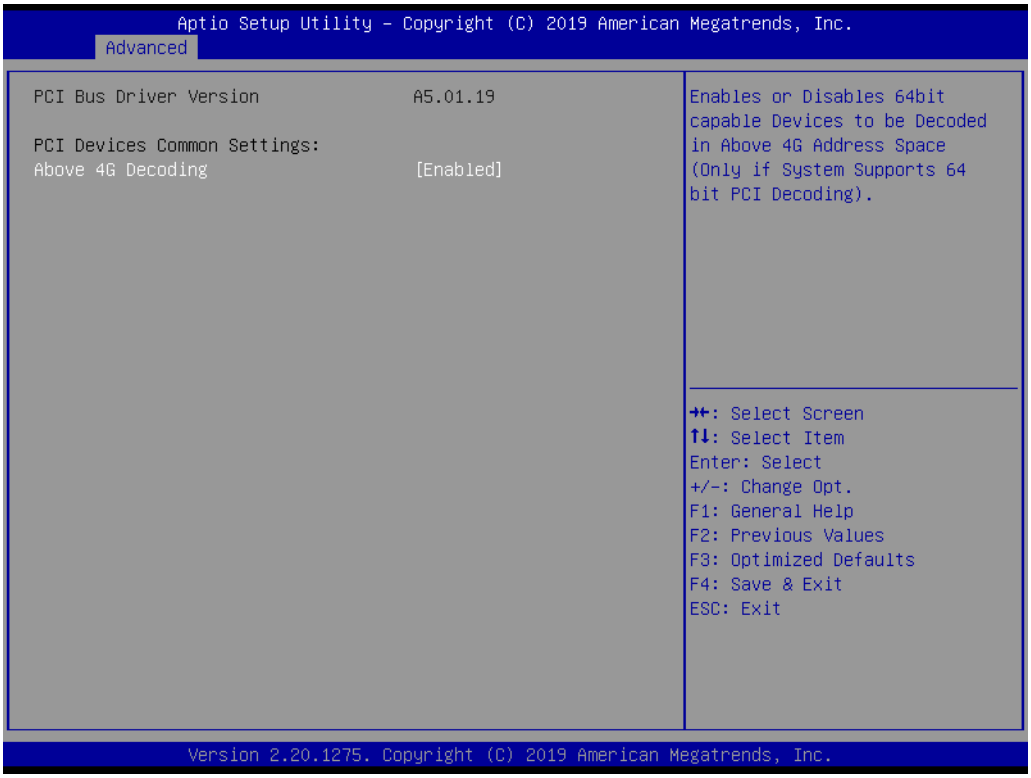
Console Redirection Settings



- **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.
- **Data Bits**
  Options available: 7/8
- **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. It can be set as "None", "Hardware RTS/CTS", or "Software Xon/Xoff". "None" is the default setting.

- **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 sent; 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.

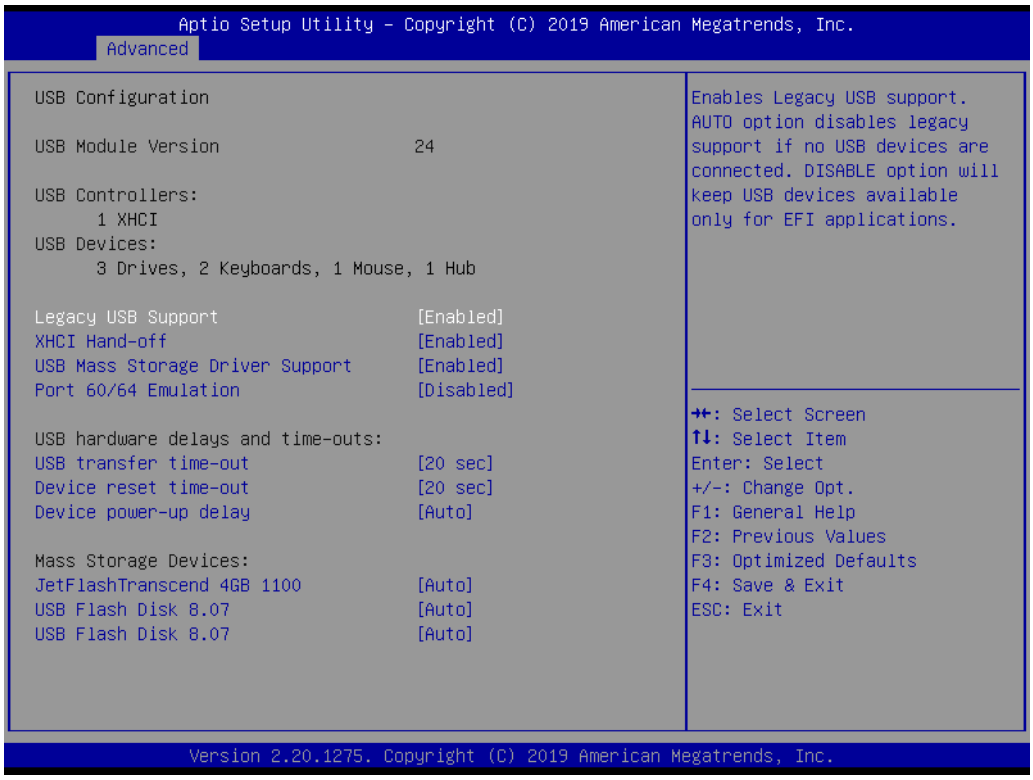
3.2.2.7 PCI Subsystem Settings



- **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).

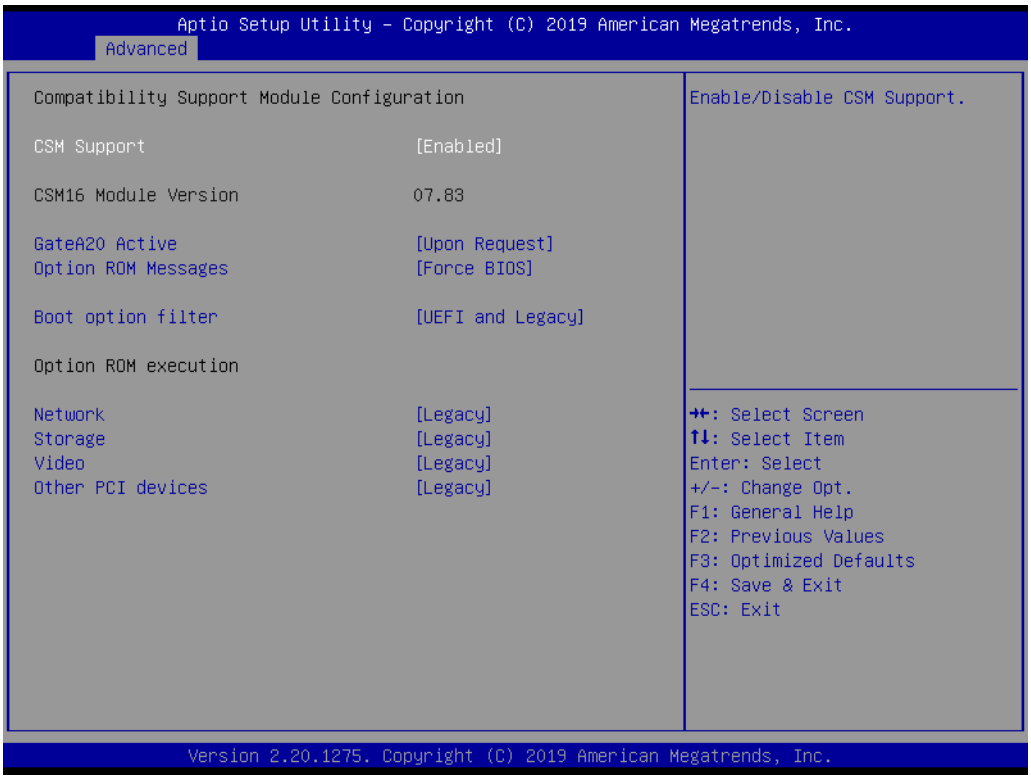
Note! *Some graphics or GPU cards need to enable 4G decoding.*

3.2.2.8 USB Configuration



- **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. [1/5/10/20 sec]
- **Device Reset Time-out**
  Selects the USB device reset time-out value. [10,20,30,40 sec]
- **Device Power-up Delay**
  This item appears only when Device power-up delay item is set to [manual].

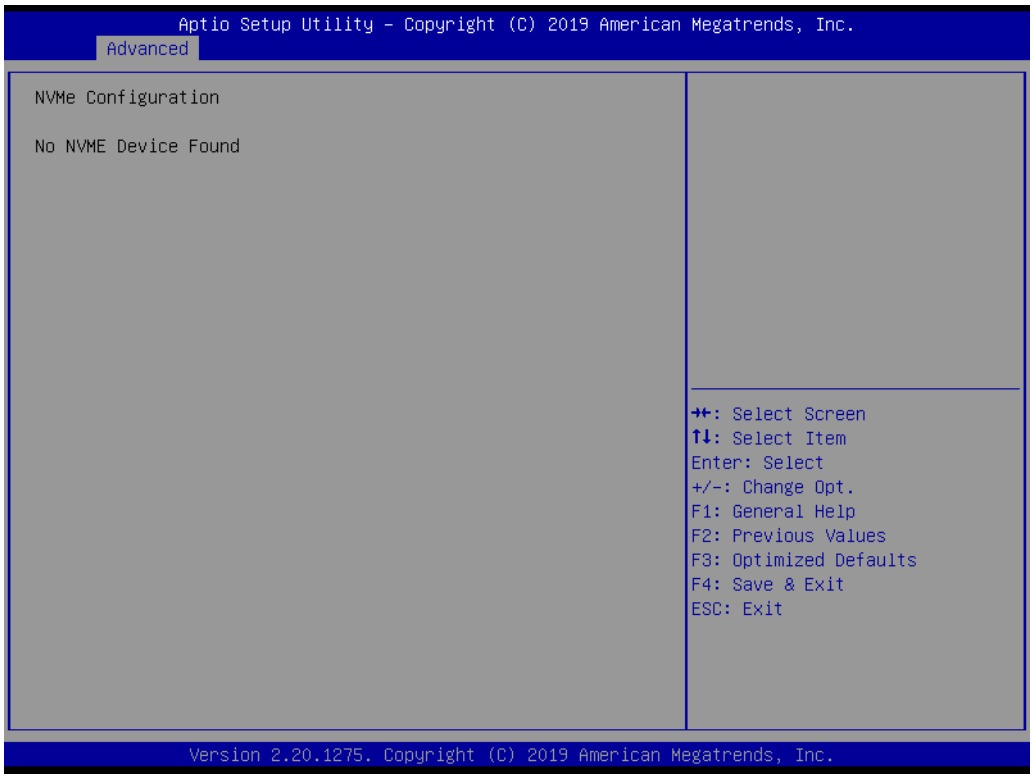
3.2.2.9 CSM Configuration



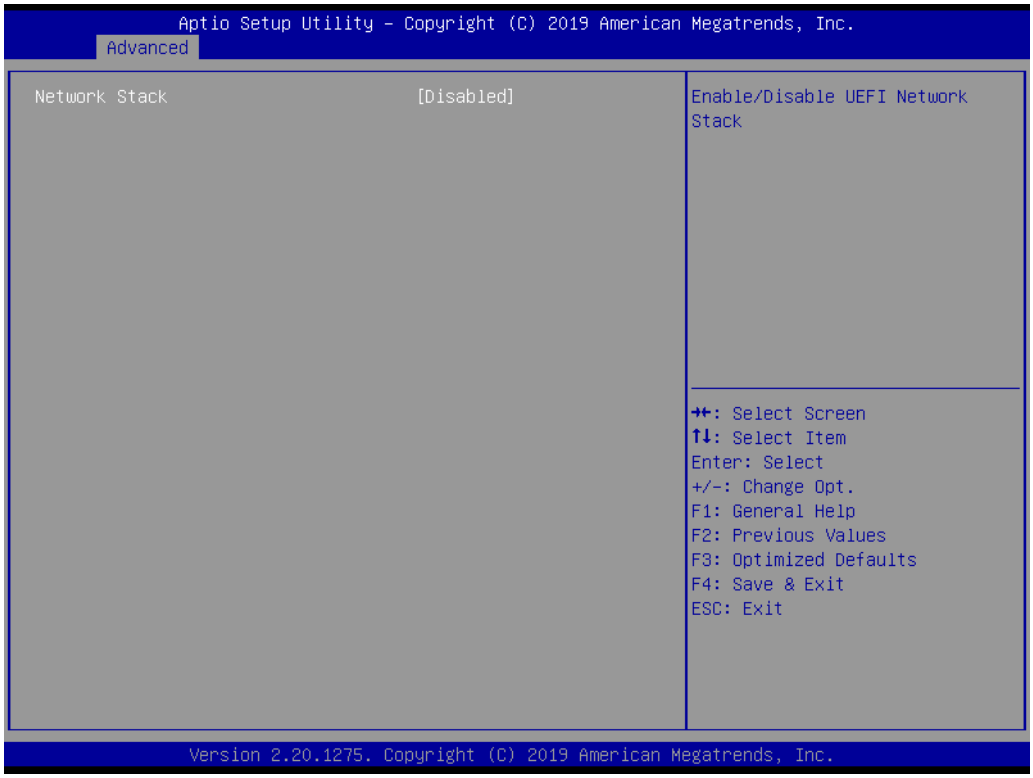
- **CSM Support**
  Enable or disable UEFI CSM (Compatibility Support Module) to support a legacy PC boot process.
- **GateA20 Active**
  This items is useful when RT code is executed above 1MB. When it's set as "Upon Request", GA20 can be disabled using BIOS services. When it's set as "Always", it does not allow disabling of GA20.
- **Option ROM Messages**
  "Force BIOS or keep current" to set the display mode for Option ROM.
- **Boot option filter**
  Change UEFI/legacy ROM priority for boot option.
- **Network**
  Control the execution of UEFI and legacy PXE option ROM.
- **Storage**
  Control the execution of UEFI and legacy storage option ROM.
- **Video**
  Control the execution of UEFI and legacy video option ROM
- **Other PCI devices**
  Determines option ROM execution policy for devices other than Network, Storage, or Video

3.2.2.10 NVMe Configuration

Set up NVMe device options.



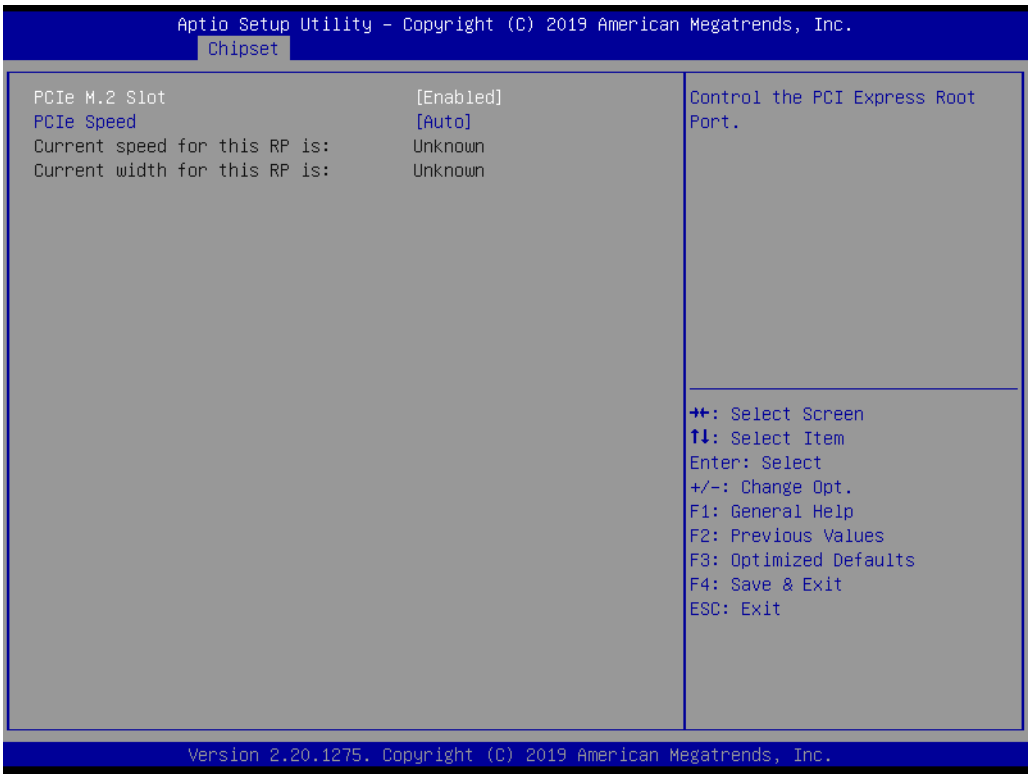
3.2.2.11 Network Stack Configuration



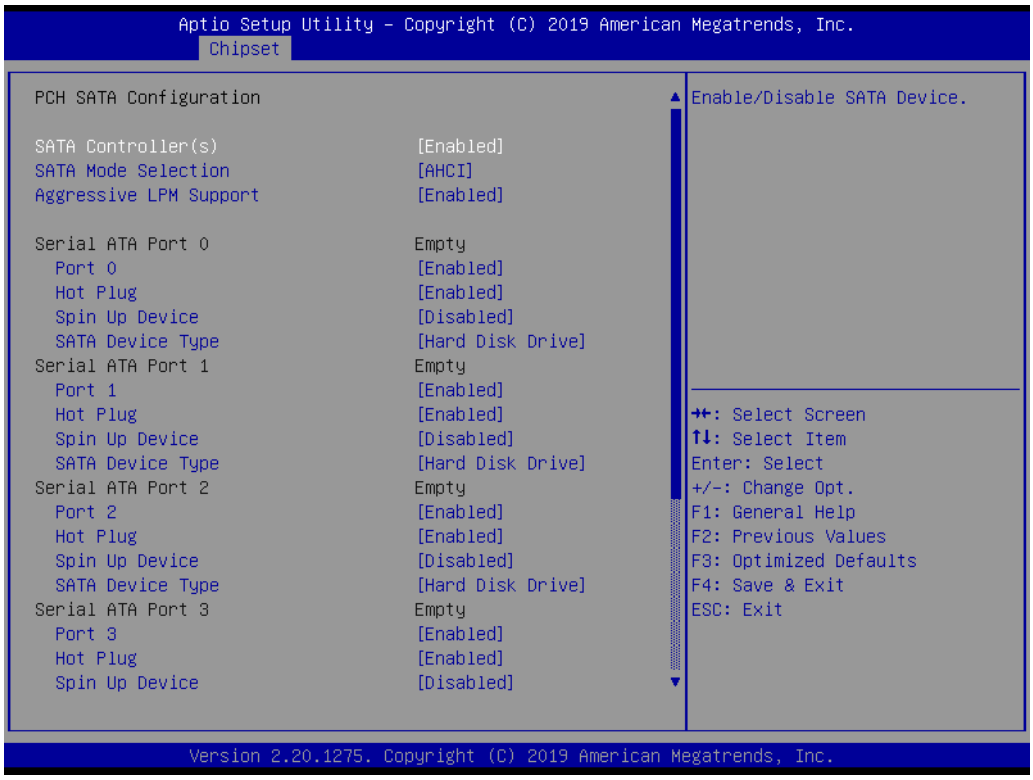
3.2.3 Chipset

3.2.3.1 PCH-IO Configuration

- **PCIe M.2 Slot Configuration**
  Enable or disable the PCI Express root port.

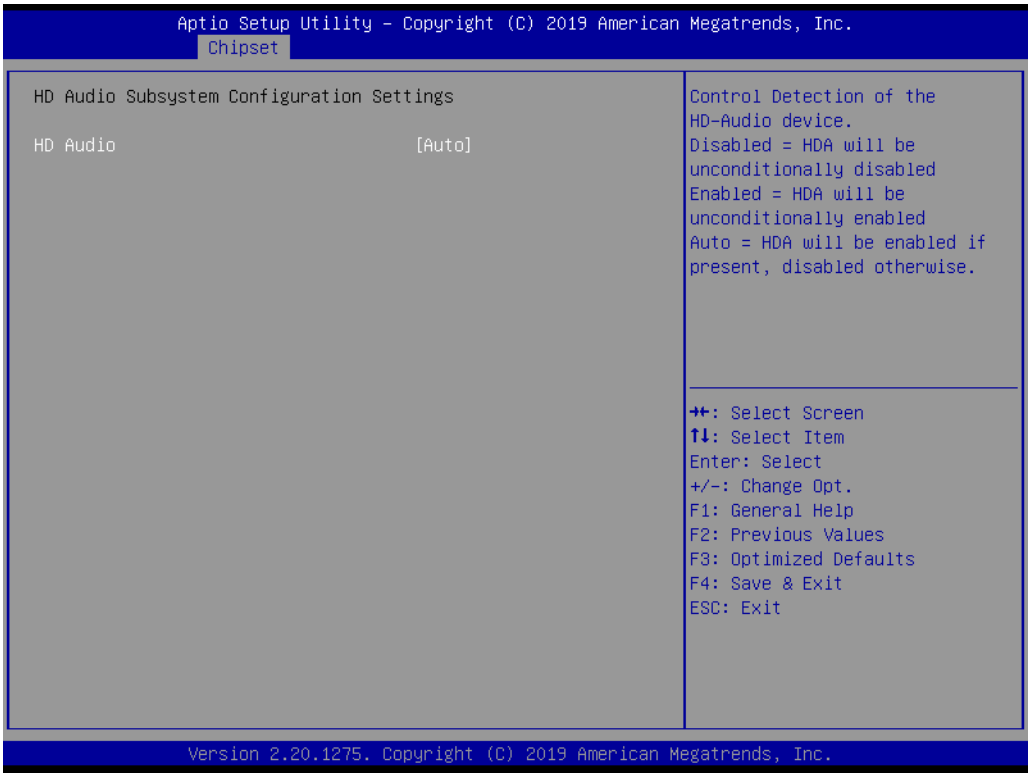


PCH SATA Configuration



- **SATA Controller**
  Enable or disable SATA devices.
- **SATA Mode Selection**
  Set as AHCI or Intel RSTe Premium when SATA Controllers are enabled.
- **Support sALPM**
  Enable or disable Aggressive Link Power Management (ALPM) protocol for AHCI SATA devices.
- **SATA Port 0~5**
  Enable or disable SATA port 0~5.
- **Hot Plug Port 0~5**
  Designates SATA port 0~5 as hot pluggable.
- **SATA Port 0~5 Spin Up Device**
  If enabled for any of ports, staggered spin up will be performed and only the drives which have this option enabled will spin up at boot. Otherwise all drives spin up at boot.
- **SATA Port 0~5 Device Type**
  To identify the SATA is connected to Solid State Drive or Hard Disk Drive.

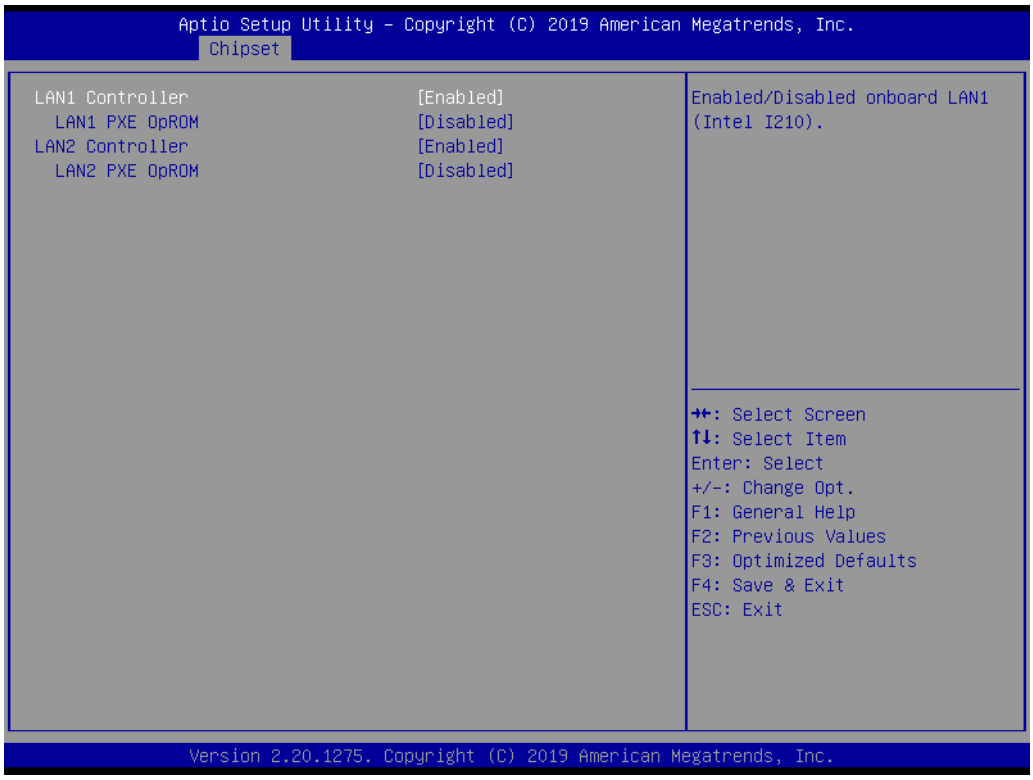
- **HD Audio Configuration**
  Enables or disables audio devices



.

Note! *Purchase Advantech's audio module to have audio function. P/N: PCA-AUDIO-HDA1E or PCA-AUDIO-HDB1E.*

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.

Restore AC Power Loss

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

Case Open Warning

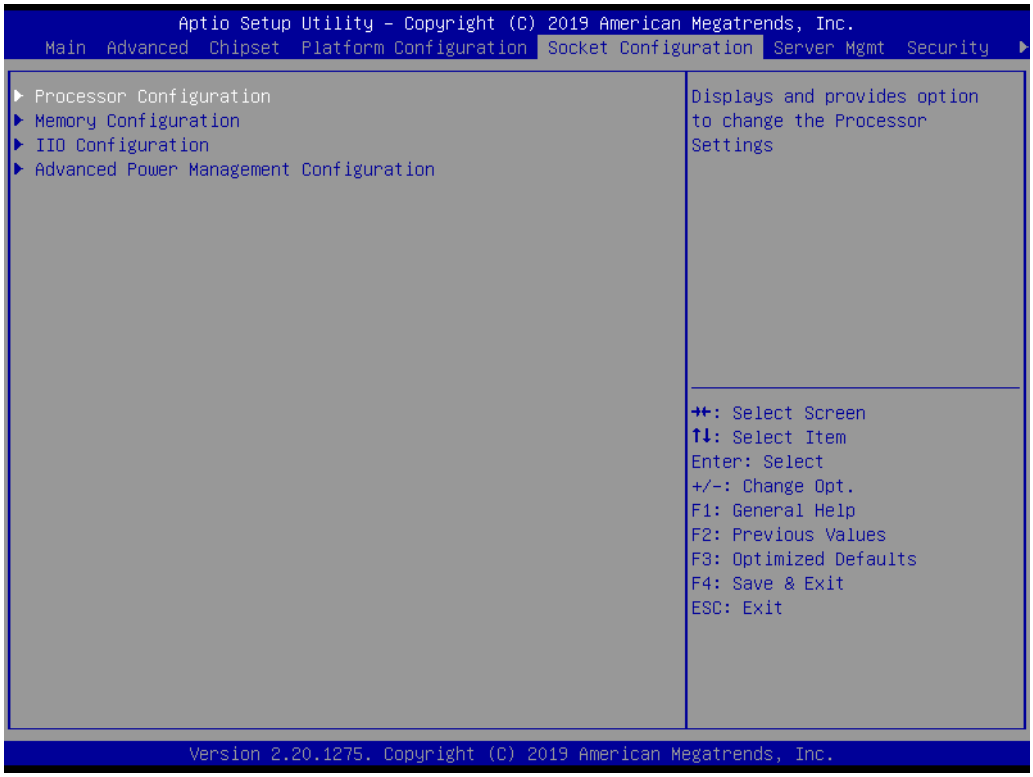
Enable or disable the chassis intrusion monitoring function. When enabled and the case is opened, the warning message will show in POST screen.

3.2.4 Platform Configuration

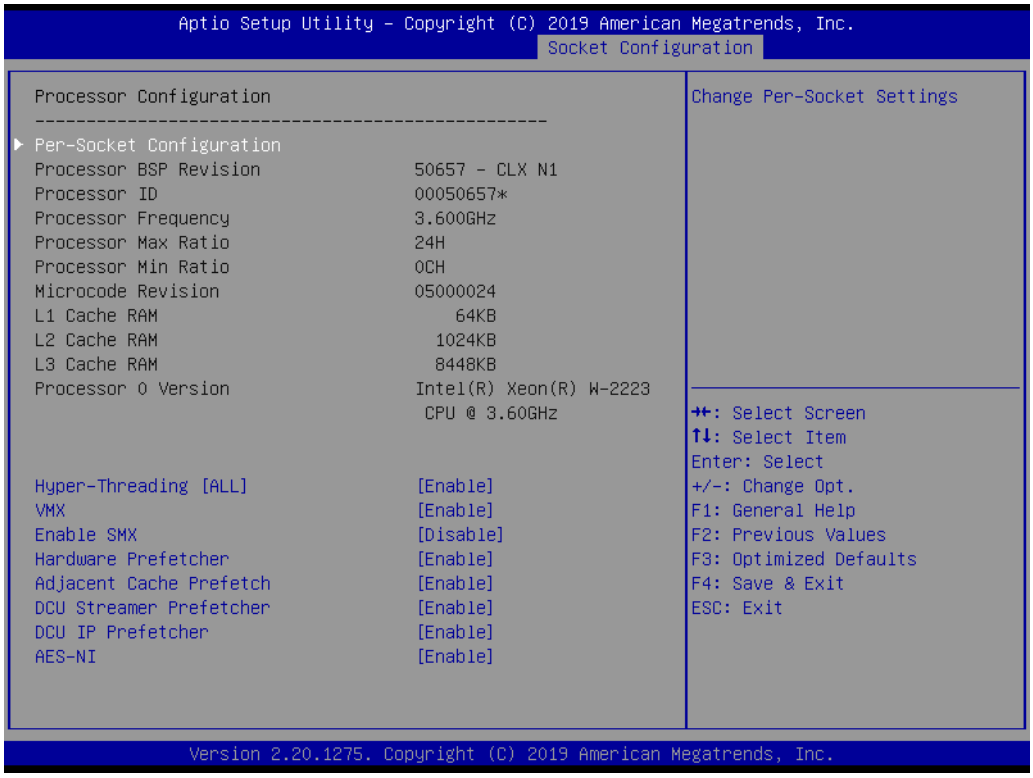
3.2.4.1 Miscellaneous Configuration

- **VGA Priority**
  Determine priority between onboard and 1st off-board device found.
- **RTC Wake System form S5**
  Enable or disable system wake on alarm event.

3.2.5 Socket Configuration



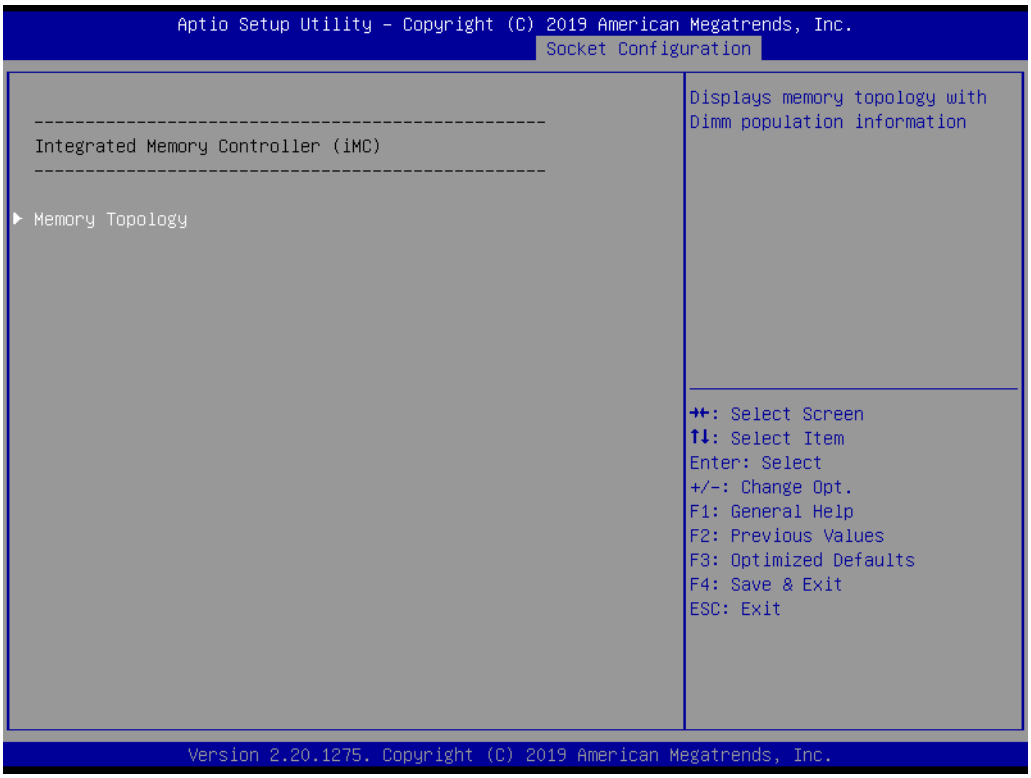
3.2.5.1 Processor Configuration



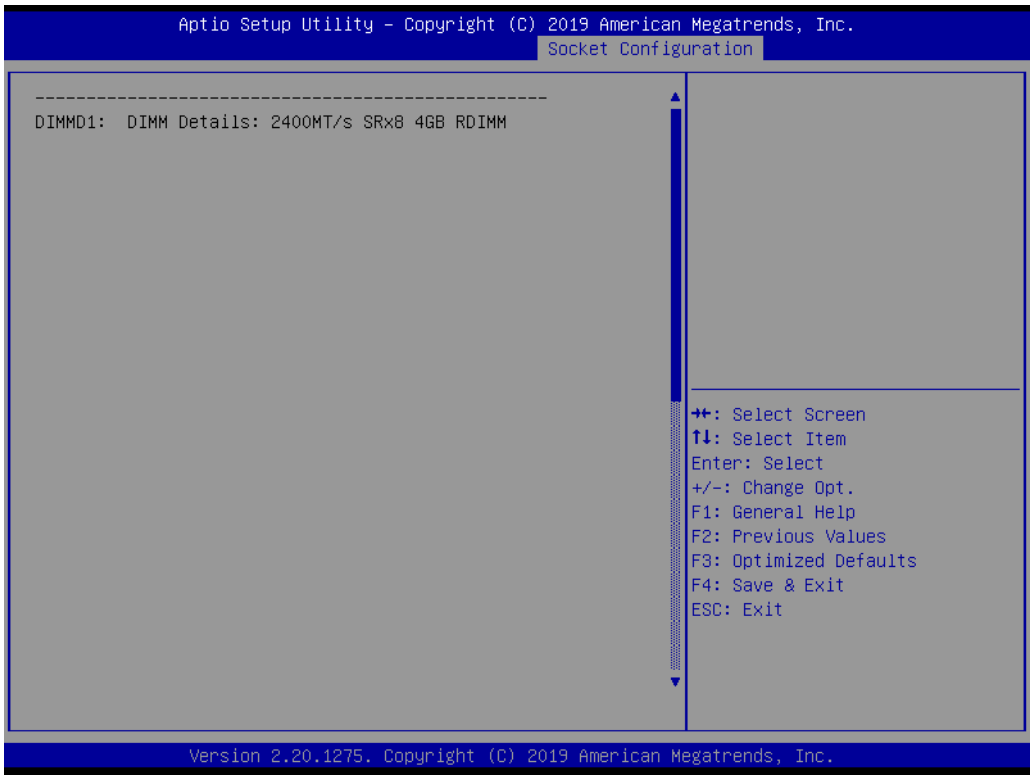
- **Per-Socket Configuration**
  Use this to select how many processor cores you want to activate.

- **Hyper-threading [All]**
  Enable or disable Intel Hyper Threading technology.
- **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.
- **AES-NI**
  This item is enables or disables CPU advanced encryption standard instructions.

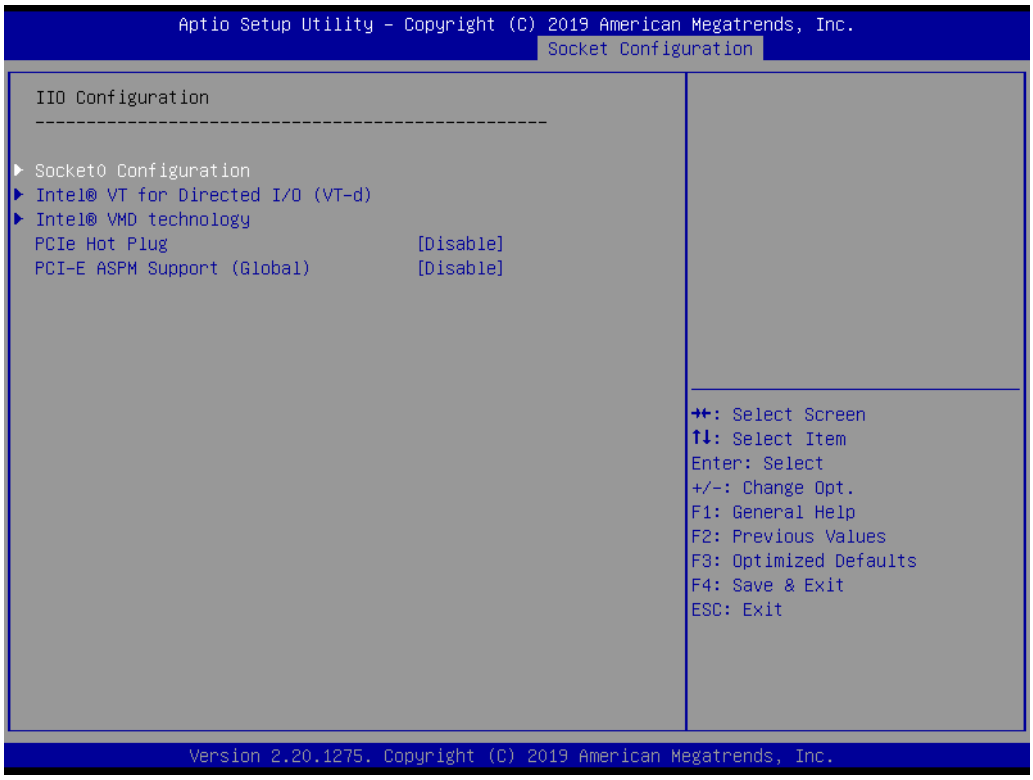
3.2.5.2 Memory Configuration



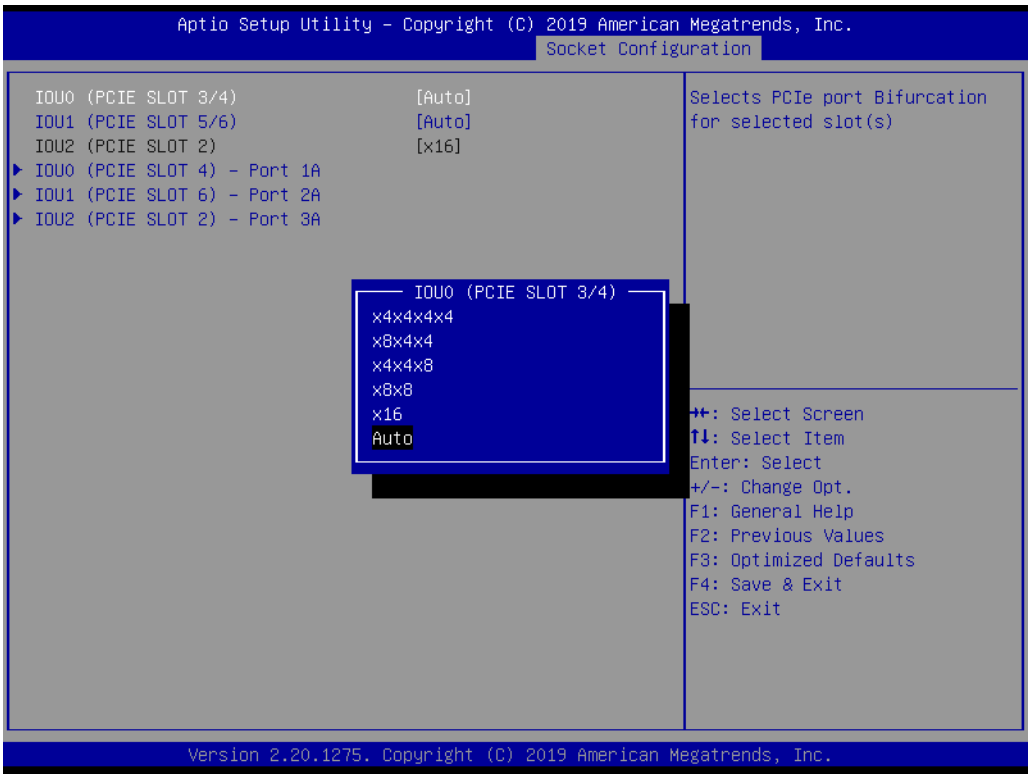
- **Memory Technology**
  Display memory topology with DIMM population information.

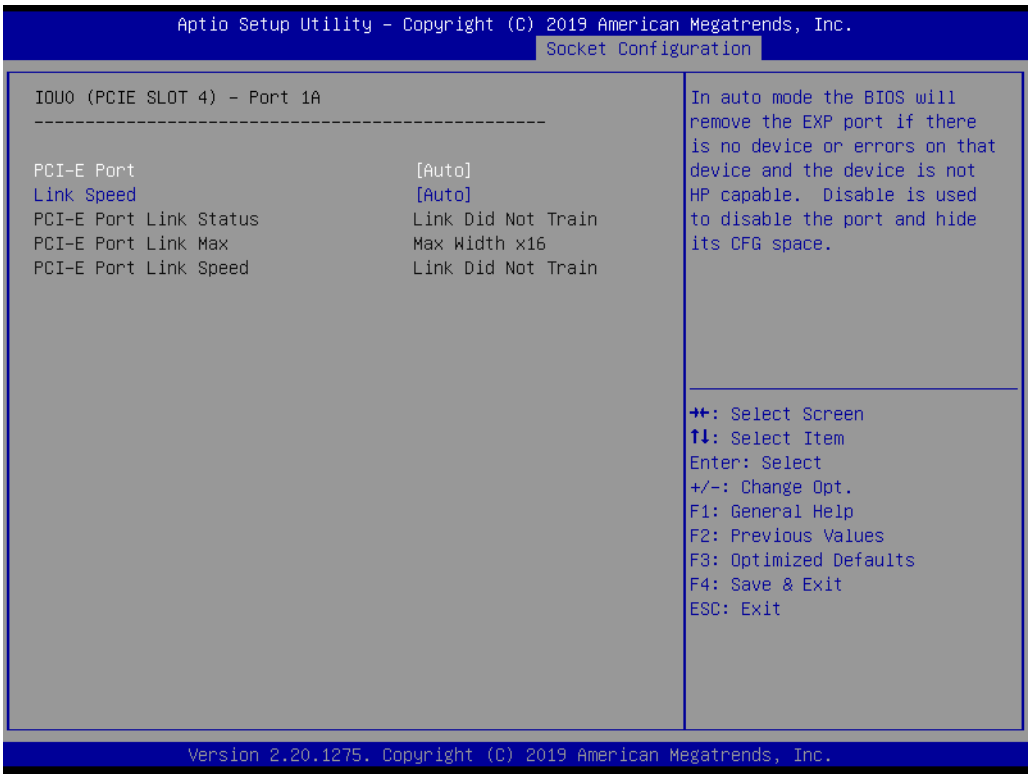


3.2.5.3 IIO Configuration



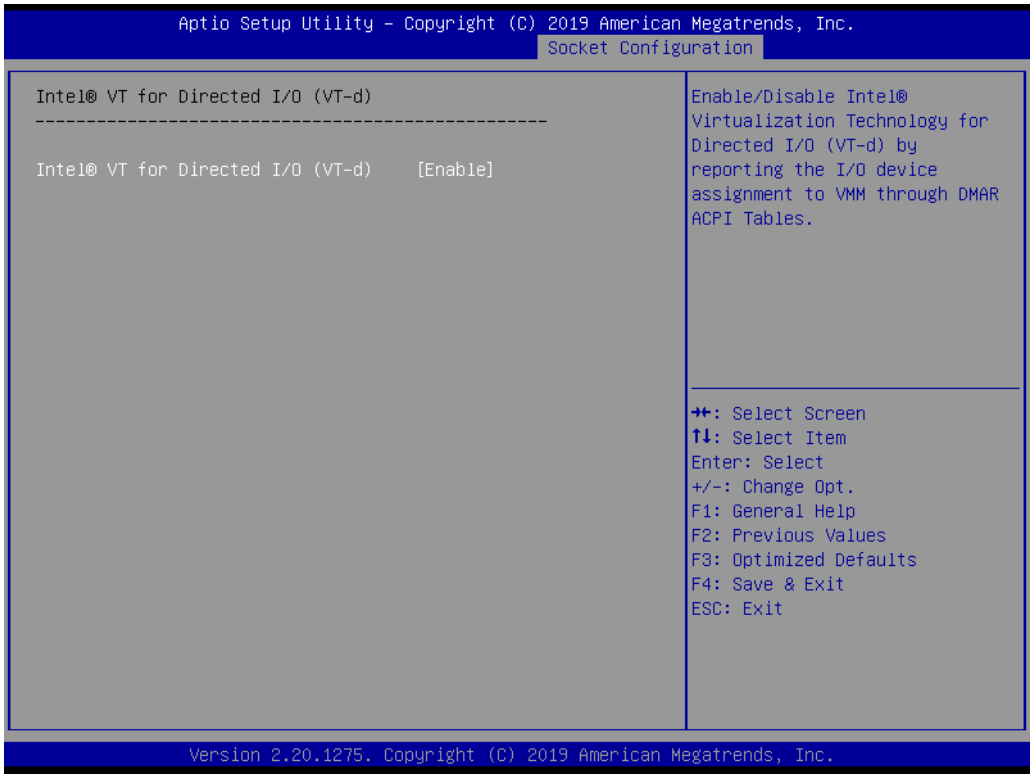
- **Socket0 Configuration**
  PCIe port bifurcation control and select target link speed as Gen1, Gen2, Gen3.


Aptio Setup Utility – Copyright (C) 2019 American Megatrends, Inc.
Socket Configuration
IOU0 (PCIE SLOT 3/4) [Auto]
IOU1 (PCIE SLOT 5/6) [Auto]
IOU2 (PCIE SLOT 2) [x16]
IOU0 (PCIE SLOT 4) – Port 1A
IOU1 (PCIE SLOT 6) – Port 2A
IOU2 (PCIE SLOT 2) – Port 3A
IOU0 (PCIE SLOT 3/4)
x4x4x4x4
x8x4x4
x4x4x8
x8x8
x16
Auto
Selects PCIe port Bifurcation for selected slot(s)
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.20.1275. Copyright (C) 2019 American Megatrends, Inc.


Aptio Setup Utility – Copyright (C) 2019 American Megatrends, Inc.
Socket Configuration
IOU0 (PCIE SLOT 4) – Port 1A
PCI-E Port [Auto]
Link Speed [Auto]
PCI-E Port Link Status Link Did Not Train
PCI-E Port Link Max Max Width x16
PCI-E Port Link Speed Link Did Not Train
In auto mode the BIOS will remove the EXP port if there is no device or errors on that device and the device is not HP capable. Disable is used to disable the port and hide its CFG space.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.20.1275. Copyright (C) 2019 American Megatrends, Inc.

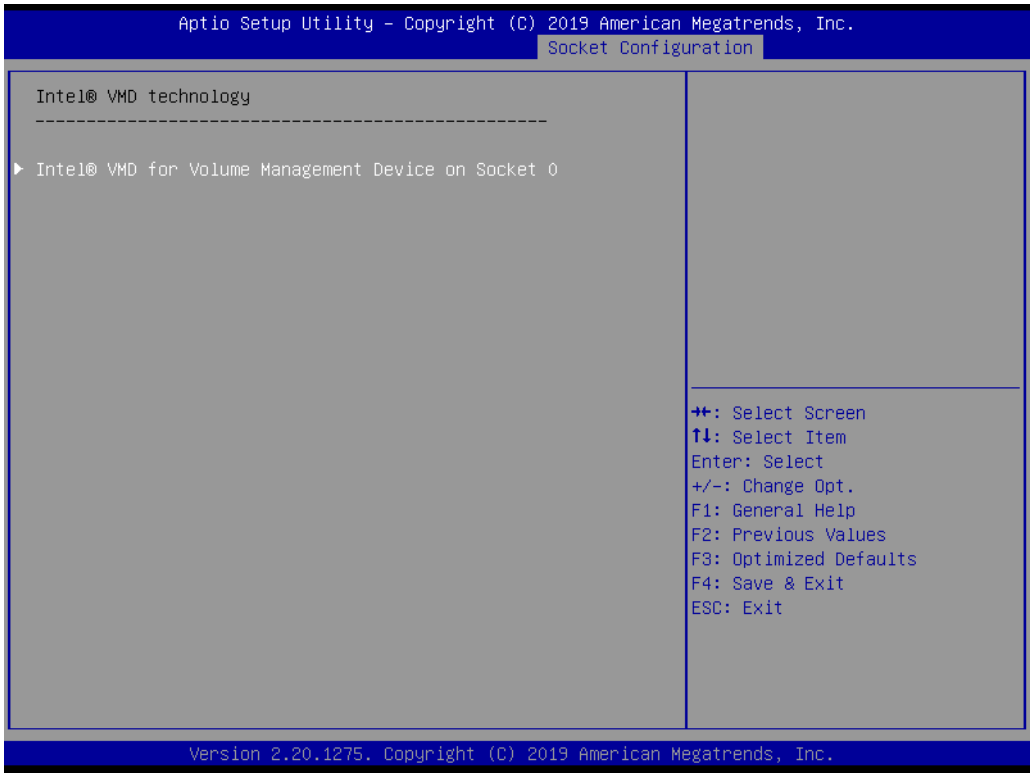
Intel VT for Directed I/O (VT-d)

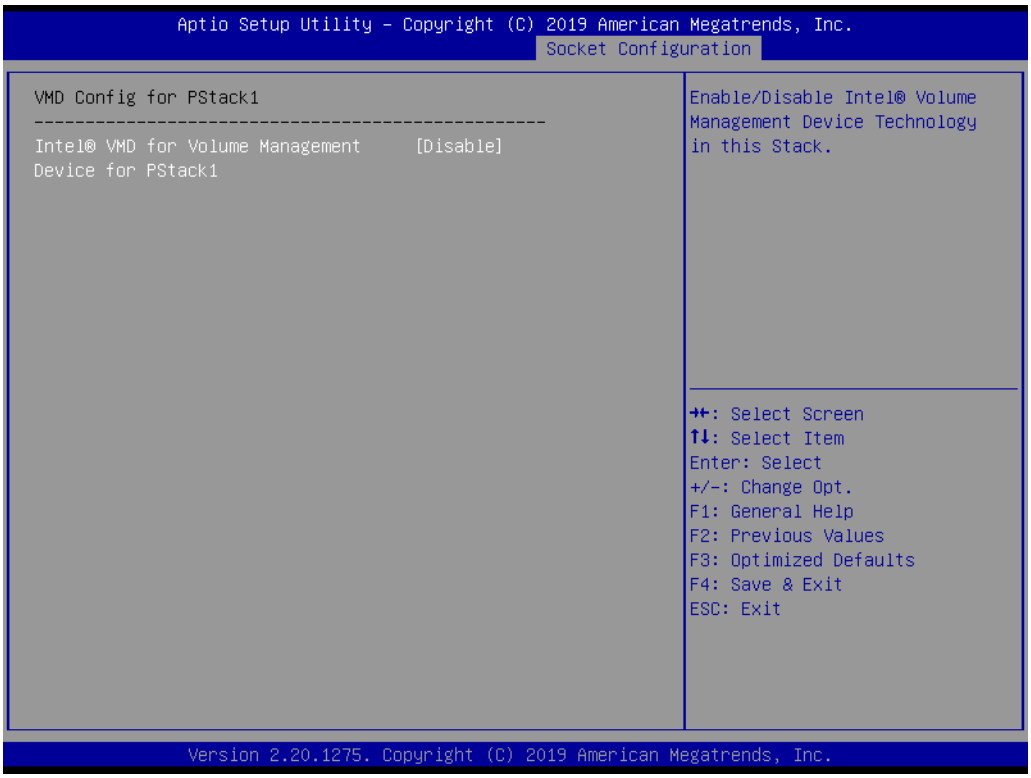
Enable or disable Intel Virtualization Technology for Directed I/O.



Intel VMD technology

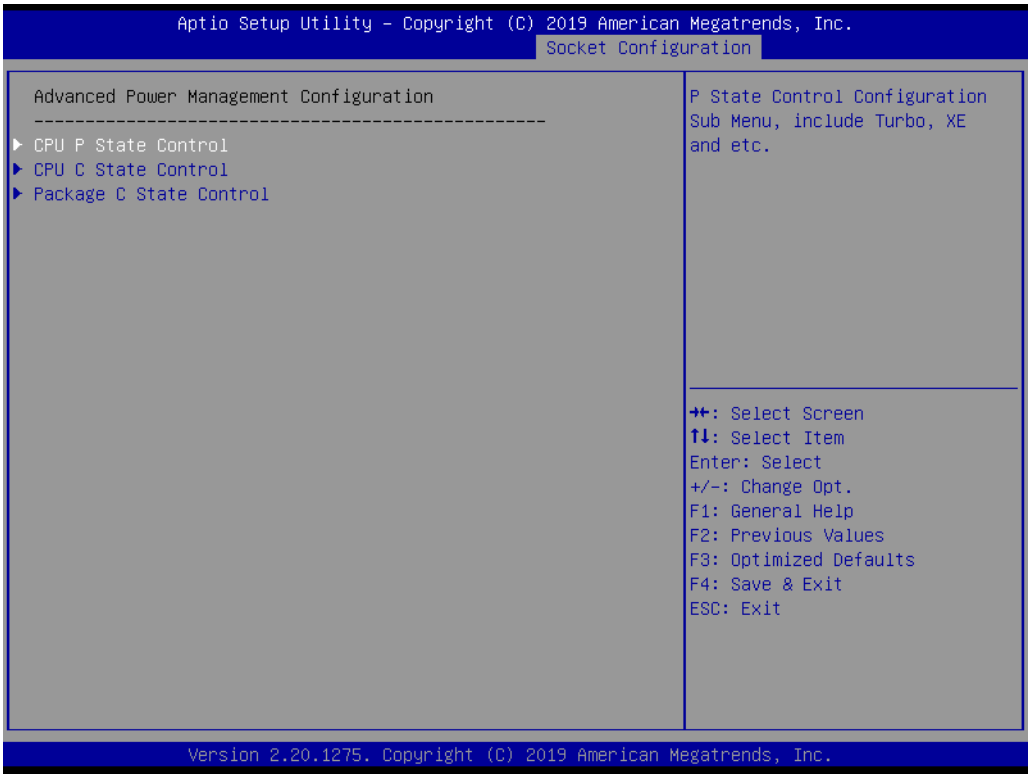
Enable or disable Intel Volume Management Device Technology.



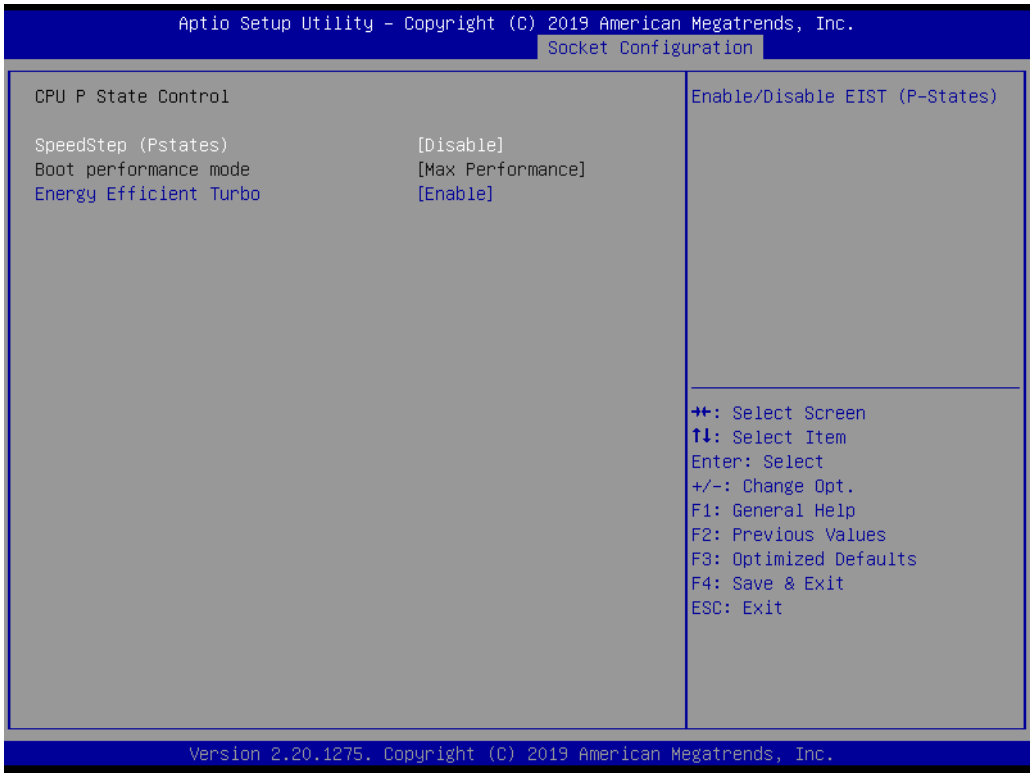


- **PCIe Hot Plug**
  Enable or disable PCIe hot plug globally.
- **PCI-E ASPM Support (Global)**
  Enable or disable ASPM support for all downstream devices.

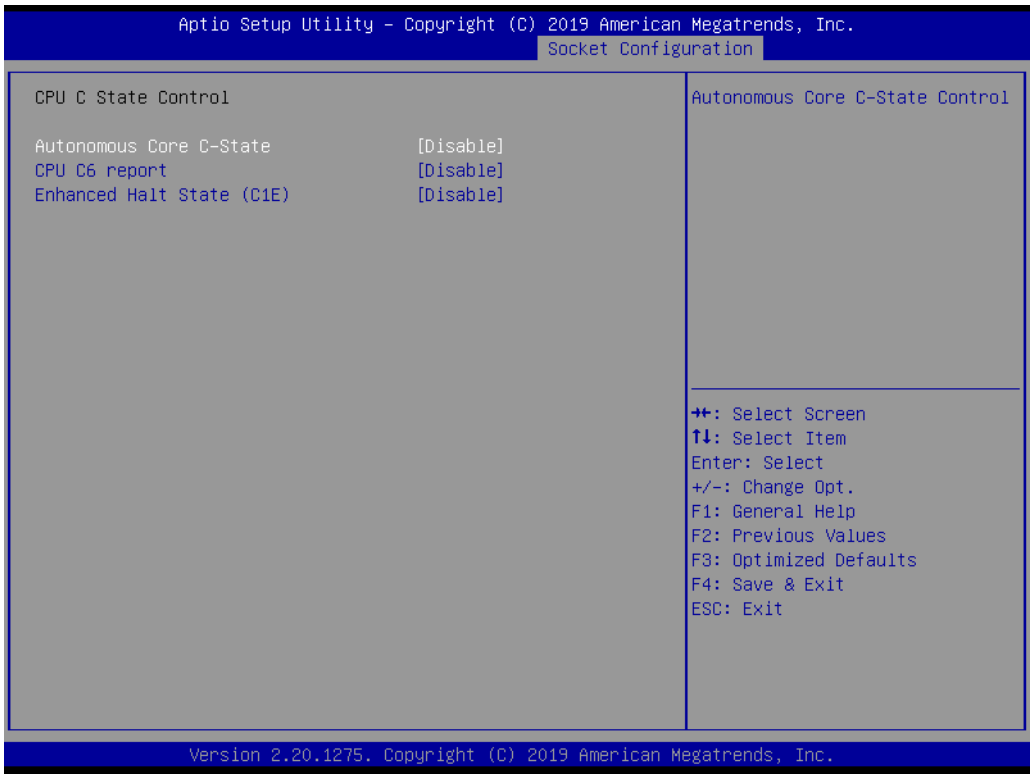
3.2.5.4 Advanced Power Management Configuration



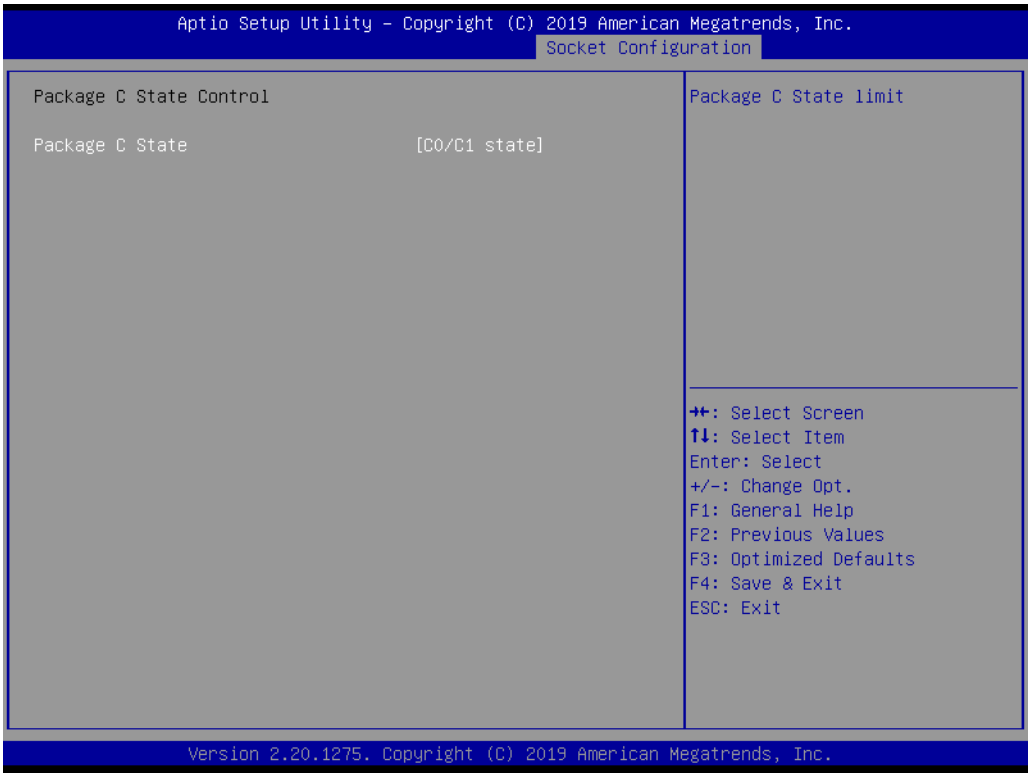
CPU P State Control



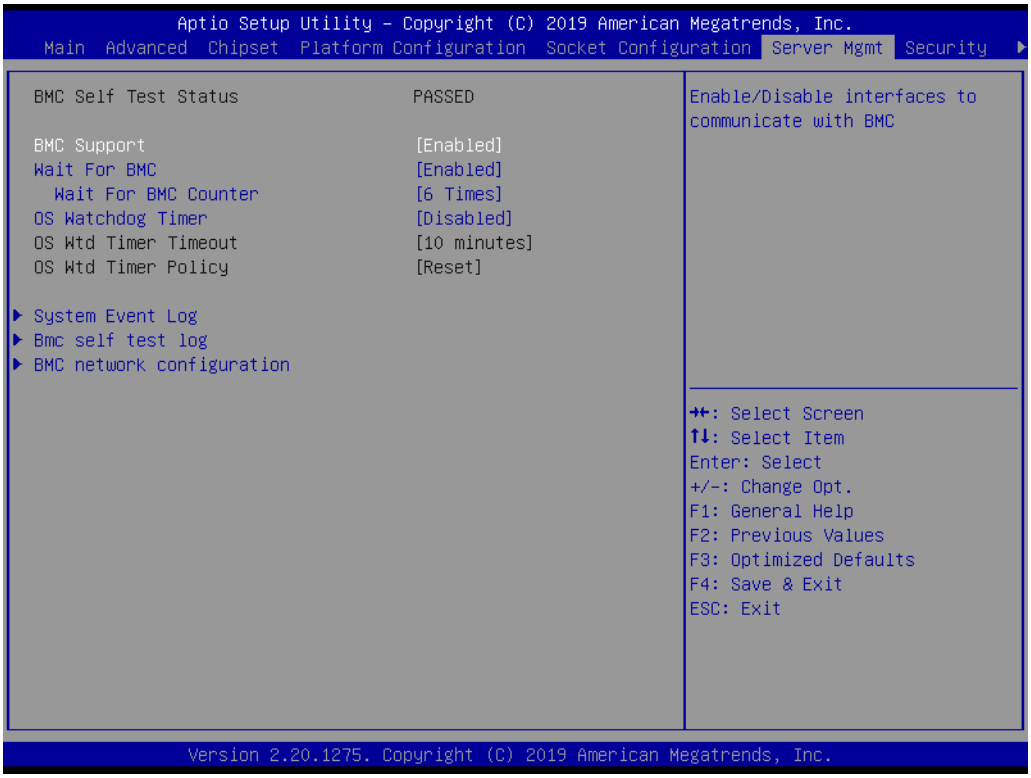
CPU C State Control



- **Package C State Control**



3.2.6 Sever Management (ASMB-805I only)

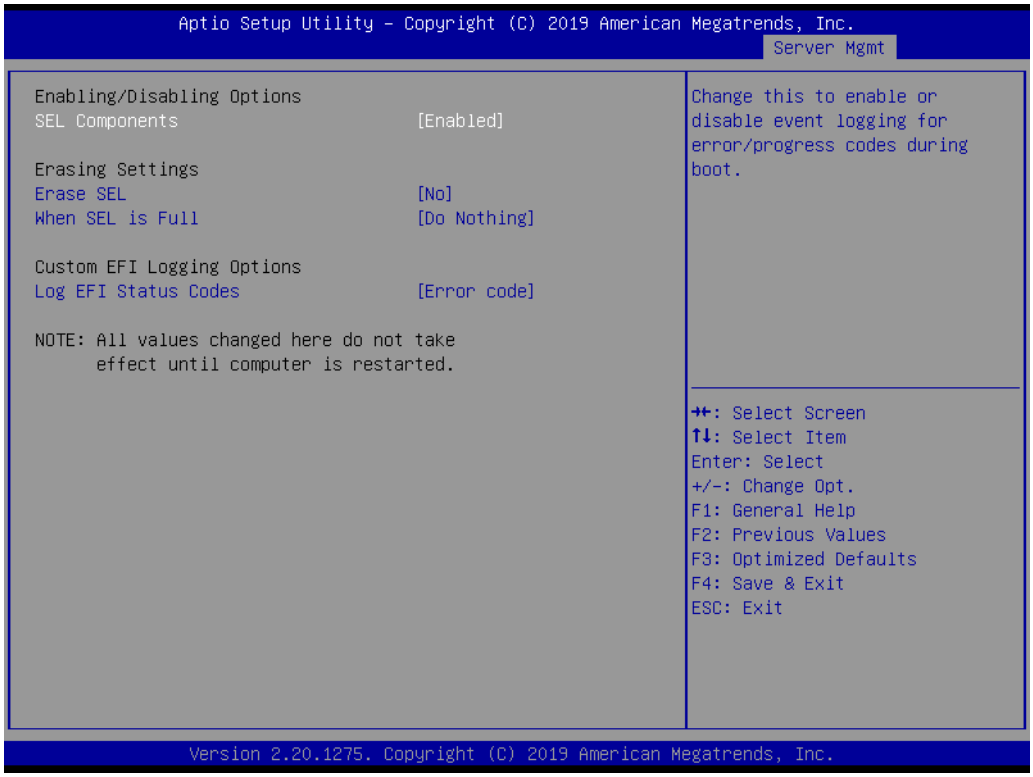


- **BMC Support**
  Enable or disable interfaces to communicate with BMC.
- **Wait for BMC**

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.

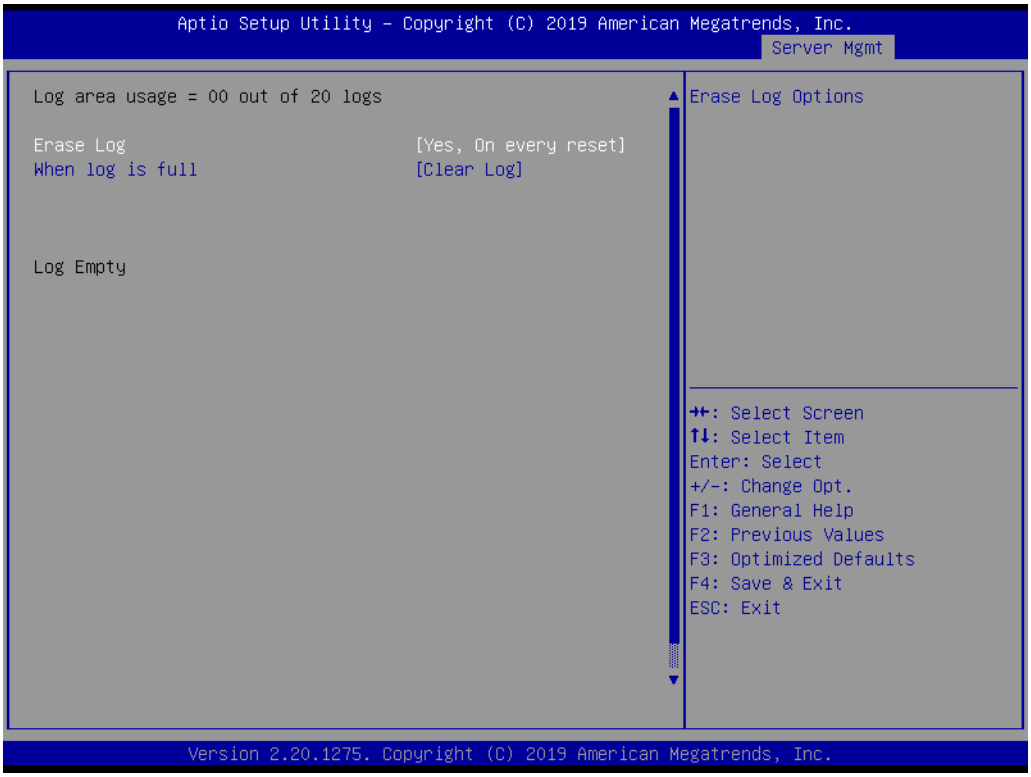
- **Wait for BMC counter**
  Initialize host to BMC interfaces.
  The MB beeps per 5 seconds to check it.

3.2.6.1 System Event Log



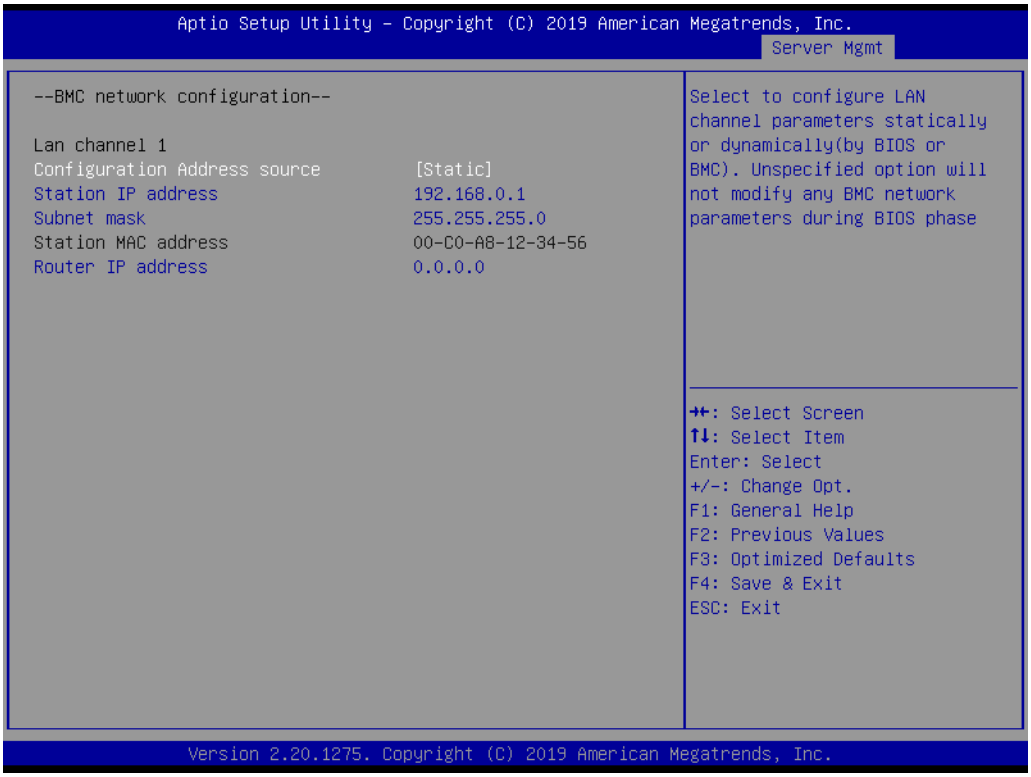
- **SEL Components**
  Enable or disable all features of system event logging during boot.
- **Erase SEL**
  Choose options for erasing SEL.
- **When SEL is Full**
  Choose options for reactions to a full SEL.
- **Log EFI Status Codes**
  Disable the logging of EFI status codes or log only error code or only progress code or both.

3.2.6.2 BMC Self Test Log



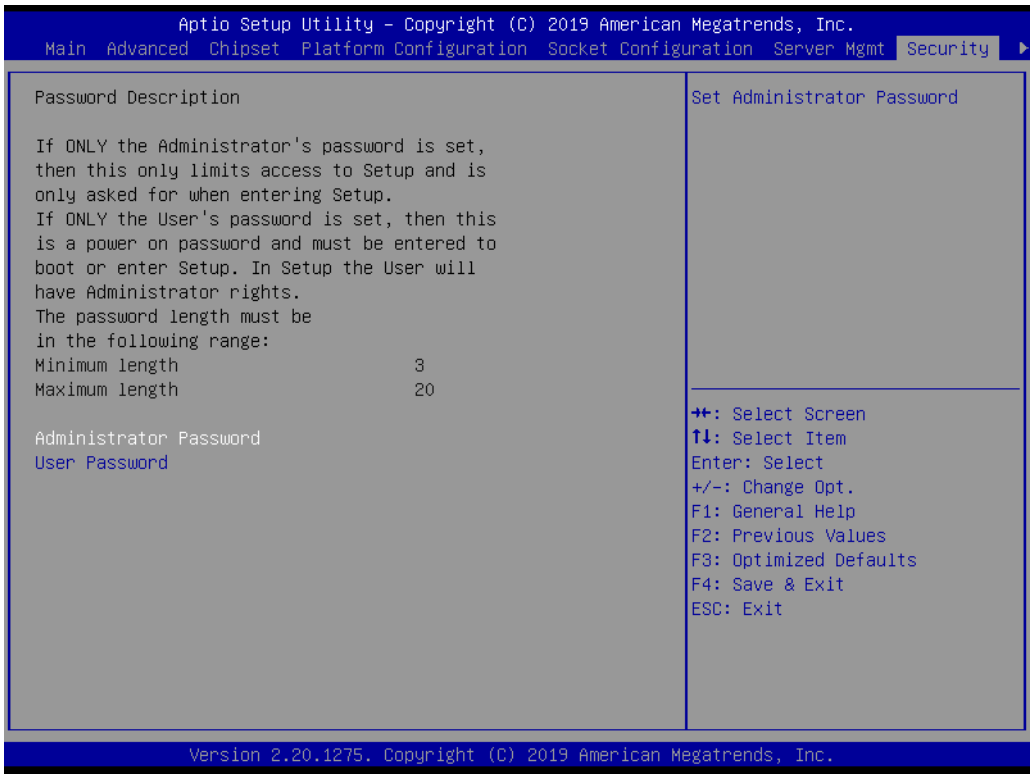
- **Erase Log**
  Erase log options.
- **When Log is Full**
  Select the action to be taken when log is full.

3.2.6.3 BMC Network Configuration



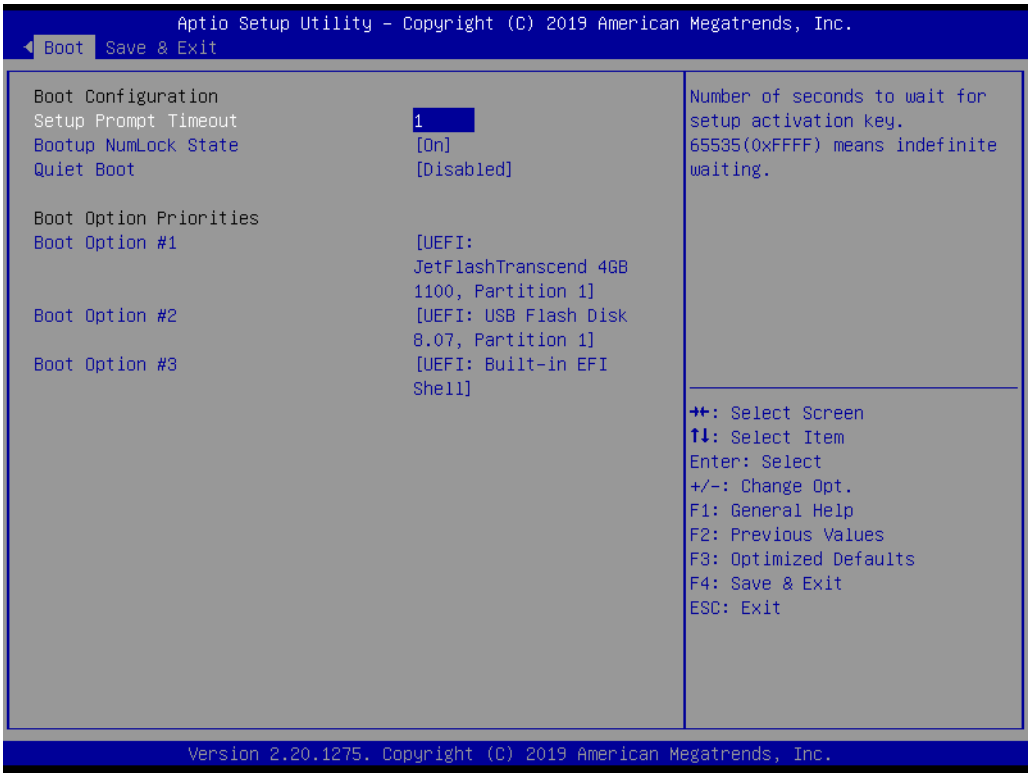
- **Configuration Address Source**
  Select to configure LAN channel parameters statically or dynamically (by BMC). Unspecified option will not modify any BMC network parameters during BIOS phase.

3.2.7 Security



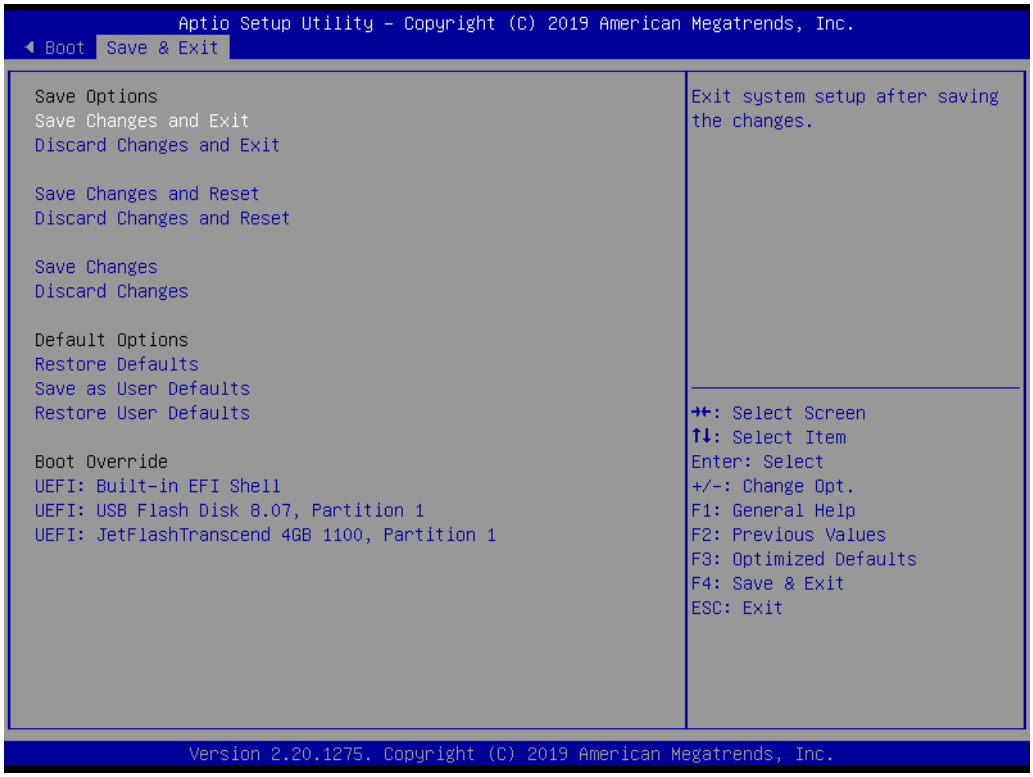
Note! ***With AC power & Battery. Short CMOS1 Jumper:***
Date/Time & Password: Keep
Setting: reset to default
AC power and CMOS battery are removed. Short CMOS1 Jumper:
Date/Time: reset to default
Password: Keep
Setting: reset to default

3.2.8 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**
  Enable or disable quiet boot option.
- **Boot Option Priorities**
  Sets the system boot priorities.

3.2.9 Save & 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.

Chapter 4

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-805 are located on Advantech support website (http://www.advantech.com/support). Updates are provided via Service Packs from Microsoft.

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

Windows 10 *x64*

4.3 Windows Series Driver Setup

Enter the Advantech support website, then search product ASMB-805. You can see all necessary drivers.

Windows 10 Driver Setup

Win10(64bit) driver for ASMB-805

Solution : 1. Chipset driver has to be installed before installing all other drivers.
2. To ensure motherboard drivers work properly, please use Windows® 10 Version 1809 (RS5) or later.

Download File	Released Date	Download Site	
ASMB-805_Chipset_Win10(64bit).zip	2019-09-26	Primary	Secondary
ASMB-805_Graphic_Win10(64bit).zip	2019-09-26	Primary	Secondary
ASMB-805_LAN_Win10(64bit).zip	2019-09-26	Primary	Secondary
ASMB-805_Others_Win10(64bit).zip	2019-09-26	Primary	Secondary

Chapter 5

Graphic Setup

5.1 Introduction

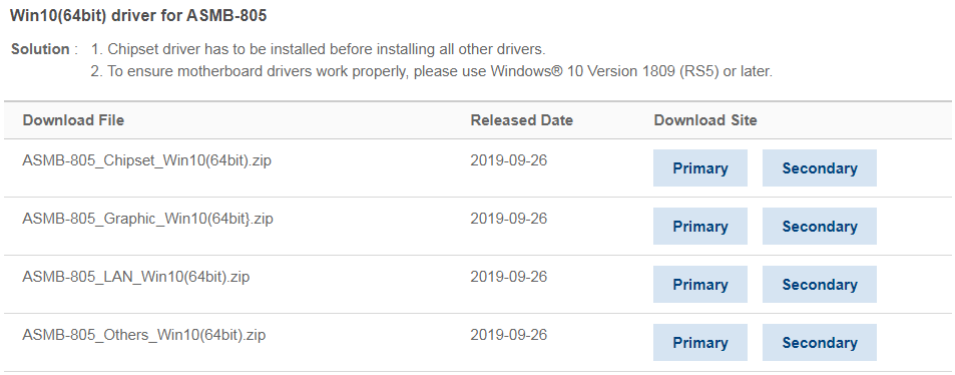
Install the ASPEED VGA driver to enable this function, which includes the following features:

- 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 "BMC" folder and click the executable file to complete the installation of the drivers for OS that you need.

Windows 10 Driver Setup



Win10(64bit) driver for ASMB-805

Solution : 1. Chipset driver has to be installed before installing all other drivers.
2. To ensure motherboard drivers work properly, please use Windows® 10 Version 1809 (RS5) or later.

Download File	Released Date	Download Site	
ASMB-805_Chipset_Win10(64bit).zip	2019-09-26	Primary	Secondary
ASMB-805_Graphic_Win10(64bit).zip	2019-09-26	Primary	Secondary
ASMB-805_LAN_Win10(64bit).zip	2019-09-26	Primary	Secondary
ASMB-805_Others_Win10(64bit).zip	2019-09-26	Primary	Secondary

Note!

1. *If ASMB-805 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 10 x86/x64 version*
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*

Chapter 6

LAN and RSTe RAID

6.1 LAN Configuration

6.1.1 Introduction

The ASMB-805 has two Gigabit Ethernet LAN connections via dedicated PCI Express x1 lanes: GbE LAN1 - Intel I210 and GbE LAN2 - I210.

- 10/100/1000 Ethernet controller
- 10/100/1000 triple-speed MAC
- Full duplex at 10/100/1000 Mbps and half duplex at 10/100/1000 Mbps
- Wake-on-LAN (WOL) support
- PCIe x1 host 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

Enter the Advantech support website, then search product ASMB-805. You can see all necessary drivers.

Windows 10 Driver Setup

Win10(64bit) driver for ASMB-805

Solution : 1. Chipset driver has to be installed before installing all other drivers.
2. To ensure motherboard drivers work properly, please use Windows® 10 Version 1809 (RS5) or later.

Download File	Released Date	Download Site	
ASMB-805_Chipset_Win10(64bit).zip	2019-09-26	Primary	Secondary
ASMB-805_Graphic_Win10(64bit).zip	2019-09-26	Primary	Secondary
ASMB-805_LAN_Win10(64bit).zip	2019-09-26	Primary	Secondary
ASMB-805_Others_Win10(64bit).zip	2019-09-26	Primary	Secondary

6.2 SATA & PCIe SSD RAID

6.2.1 Introduction

Intel C422 chipset offers SATA & PCIe SSD RAID under Windows operating system.

Note!

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.

6.2.2 Windows Series Driver Setup

Enter the Advantech support website, then search product ASMB-805. You can see all necessary drivers.

Windows 10 Driver Setup

Win10(64bit) driver for ASMB-805

Solution : 1. Chipset driver has to be installed before installing all other drivers.
2. To ensure motherboard drivers work properly, please use Windows® 10 Version 1809 (RS5) or later.

Download File	Released Date	Download Site	
ASMB-805_Chipset_Win10(64bit).zip	2019-09-26	Primary	Secondary
ASMB-805_Graphic_Win10(64bit).zip	2019-09-26	Primary	Secondary
ASMB-805_LAN_Win10(64bit).zip	2019-09-26	Primary	Secondary
ASMB-805_Others_Win10(64bit).zip	2019-09-26	Primary	Secondary

Appendix A

Programming the Watchdog Timer

The ASMB-805'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)	

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	

Appendix B

I/O Pin Assignments

B.1 USB2.0 Header (USB9_10, USB13_14)

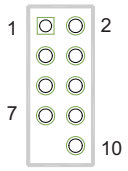


Table B.1: USB Header (USB9_10, USB13_14)

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	Key	10	GND

B.2 USB3.0 Header (USB3_78)

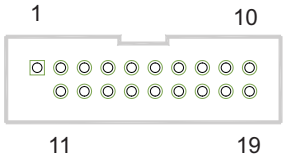


Table B.2: USB Header (USB78)

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)

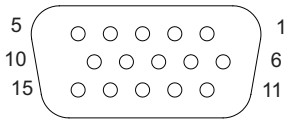


Table B.3: VGA Connector (VGA1)			
Pin	**Signal**	**Pin**	**Signal**
1	RED	9	VCC
2	GREEN	10	GND
3	BLUE	11	N/C
4	N/C	12	SDT
5	GND	13	H-SYNC
6	GND	14	V-SYNC
7	GND	15	SCK
8	GND		

B.4 RS-232 Interface (COM1)

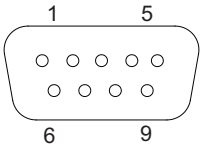


Table B.4: RS-232 Connector (COM1)	
Pin	**Signal**
1	DCD
2	RXD
3	TXD
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI

B.5 RS-232 Interface (COM2)

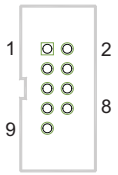


Table B.5: RS-232 Connector (COM2)	
Pin	**Signal**
1	DCD
2	DSR
3	RXD
4	RTS
5	TXD
6	CTS
7	DTR
8	RI
9	GND

B.6 External Keyboard Connector (KBMS2)

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

B.7 System & CPU Fan Power Connector (CPUFAN0, SYSFAN0~3, REAR_FAN)

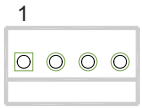


Table B.7: CPU FAN Connector (CPUFAN0)	
	CPUFAN0
1	GND
2	+12V
3	CPU_TACH
4	CPU0_PWM

Table B.8: SYS FAN Connector (SYSFAN0~3, REAR_FAN)					
	SYS FAN0	**SYS FAN1**	**SYS FAN2**	**SYSFAN3**	**REAR_FAN**
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.8 Power LED (JFP3)

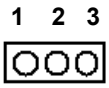


Table B.9: Power LED Connector (JFP1)	
Pin	**Function**
1	LED power (3.3 V)
2	NC
3	Ground

B.9 External Speaker Connector (JFP2)

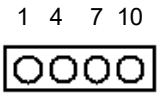


Table B.10: External Speaker Connector (JFP2)	
Pin	**Function**
1	SPK+
4	NC
7	BZ-
10	SPK-

B.10 Reset Connector (JFP1)

Table B.11: Reset Connector (JFP1)	
Pin	**Signal**
9	RESET
12	GND

B.11 HDD LED Connector (JFP1)

Table B.12: HDD LED Connector (JFP1)	
Pin	**Signal**
2	HDD_LED+
5	HDD_LED-

B.12 ATX Soft Power Switch (JFP1)

Table B.13: ATX Soft Power Switch (JFP1)	
Pin	**Signal**
3	PWR-BTN
6	GND

B.13 SMBus Connector (SMBUS1)

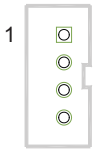


Table B.14: Front panel SMBus Connector (SMBUS1)	
Pin	**Signal**
1	+3.3V_AUX
2	SMB_SCL_FRU
3	SMB_SDA_FRU
4	GND

B.14 Audio Connector (HDAUD1)

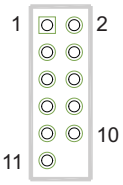


Table B.15: Front Panel Audio Connector (HDAUD1)			
Pin	**Signal**	**Pin**	**Signal**
1	+V5_AUDIO	2	GND
3	ACZ_SYNC	4	ACZ_BITCLK
5	ACZ_SDOUT	6	ACZ_SDIN0
7	ACZ_SDIN1	8	ACZ_RST#
9	ACZ_12V	10	GND
11	GND	12	N/C

B.15 Alarm Board Connector (VOLT1)

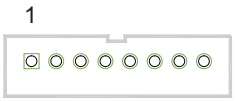


Table B.16: Alarm Board Connector (VOLT1)

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)

Table B.17: Case Open Connector (JFP1)

Pin	Signal
1	CASEOP
2	GND

B.17 Front Panel LAN LED Connector (LANLED1)

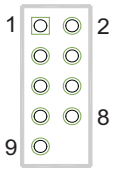


Table B.18: LAN LED Connector (LANLED1)

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.19: 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)

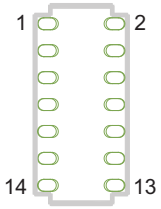


Table B.20: LPC Connector (LPC2)			
Pin	**Signal**	**Pin**	**Signal**
1	CLK_33M_TPM	2	LPC_AD1
3	PLTRST_LPC	4	LPC_AD0
5	LPC_FRAME	6	+3.3V
7	LPC_AD3	8	GND
9	LPC_AD2	10	SMB_SCL_LPC
11	SERIRQ_PCH	12	SMB_SDA_LPC
13	+5V_AUX	14	+5V

B.20 Clear CMOS Connector (JCMOS1, JME1)

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

B.21 PMBUS Connector (PMBUS1)

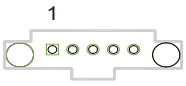


Table B.22: PMBUS Connector (PMBUS1)

Pin	Signal
1	SMB_SCL_PM
2	SMB_SDA_PM
3	SMB_ALT_PM
4	GND
5	+3.3V

B.22 GPIO Connector (GPIO1)

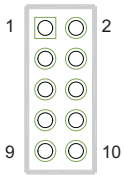


Table B.23: GPIO Connector (GPIO1)

Pin	Signal	Pin	Signal
1	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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Please verify specifications before quoting. This guide is intended for reference purposes only.

All product specifications are subject to change without notice.