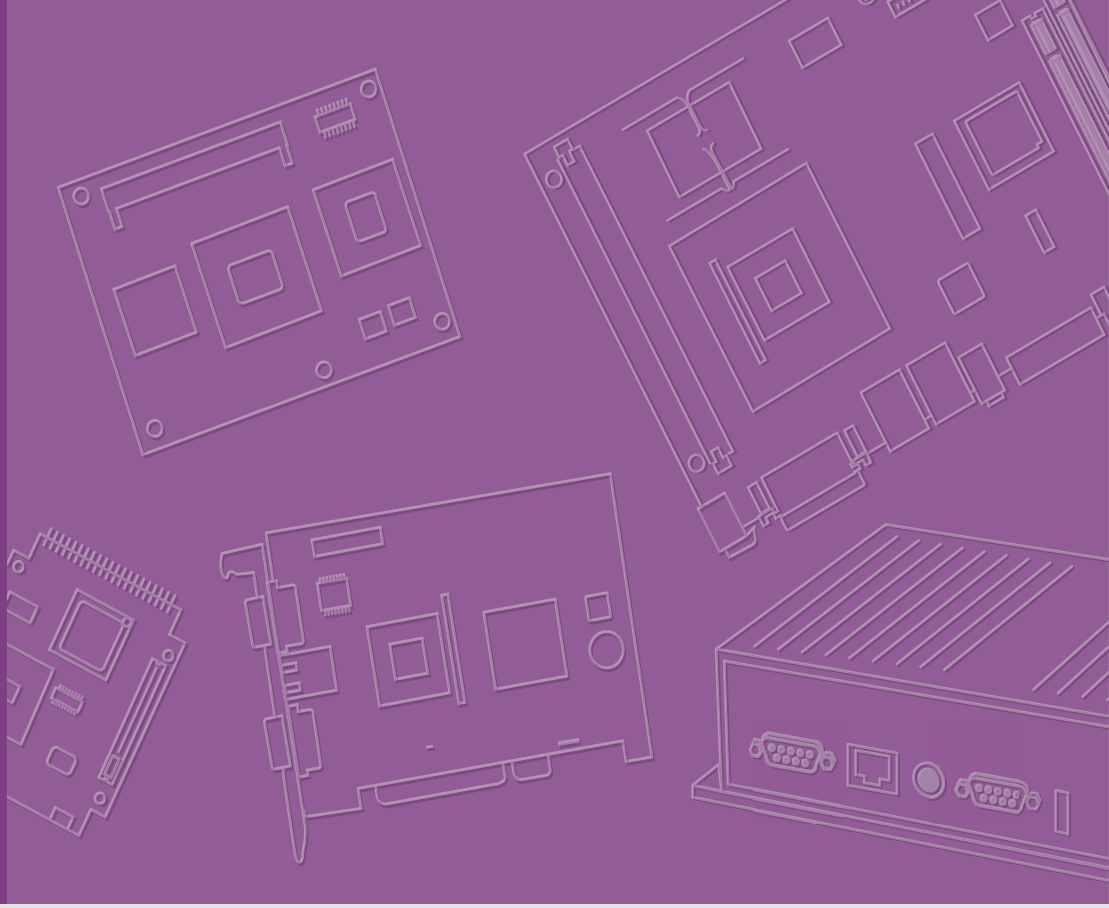

User Manual

ASMB-831 Series

Socket SP5 (LGA 6096) AMD EPYC™ 9004 Server Board with 6 REG-DDR5, 5 PCIe 5.0 x16, 2 PCIe 5.0 x8, 2 M.2 NVMe, 9 SATA3, 7 USB 3.2 Gen1, Dual 10GbE, IPMI

ADVANTECH

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Advantech warrants 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 that have been repaired or altered by persons other than repair personnel authorized by Advantech, or products that 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 customers never need to use our repair service. If an Advantech product is defective, it will be repaired or replaced free of charge during the warranty period. For out-of-warranty repairs, customers will be billed according to the cost of replacement materials, service time, and freight. Please consult your dealer for more details.

If you believe your product is defective, follow the steps outlined below.

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 displayed 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 a return merchandise authorization (RMA) number from your dealer. This allows us to process your return more quickly.
4. Carefully pack the defective product, a completed Repair and Replacement Order Card, and a proof of purchase date (such as a photocopy of your sales receipt) into a shippable container. Products returned without a proof of purchase date are not eligible for warranty service.
5. Write the RMA number clearly on the outside of the package and ship the package prepaid to your dealer.

Part No. 2002083100 Edition 1

Printed in China August 2023

A Message to the Customer

Advantech Customer Services

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

Technical Support

We want you to get the maximum performance from your products, so if you run into technical difficulties, we are here to help. For the most frequently asked questions, you can easily find answers in your product documentation. These answers are normally a lot more detailed than the ones we can give over the phone, so please consult this manual first. If you still cannot find the answer, gather all the information or questions that apply to your problem, and with the product close at hand, call your dealer. Our dealers are well trained and ready to give you the support you need to get the most from your Advantech products. In fact, most problems reported are minor and are easily solved over the phone.

In addition, free technical support is available from Advantech engineers every business day. We are always ready to give advice on application requirements or specific information on the installation and operation of any of our products.

Declaration of Conformity

FCC Class B

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. 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. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment to a power outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for assistance.

Caution! *There is 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 the motherboard, please make sure that the following materials have been shipped:

- 1 x ASMB-831 ATX motherboard
- 1 x ASMB-831 Startup Manual
- 1 x Serial ATA HDD data cable
- 1 x I/O port bracket
- 2 x CPU power cables (8P)
- 1 x SATA power cable
- 1 x front panel converter cable
- 2 x screws for an M.2 device
- 1 x warranty card
- 1 x PCIe I/O support plate

If any of these items are missing or damaged, contact your distributor or sales representative immediately. We have carefully inspected the ASMB-831 mechanically and electrically before shipment. It should be free of marks and scratches and in perfect working order upon receipt. When unpacking the ASMB-831, 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	Storage	Expansion Slot	IPMI	10GbE LAN	VGA Chip
ASMB-831T2-00A1	9*SATA3 + 2*M.2	5 PCIe x16 + 2 PCIe x8 (Gen5)	Yes	Yes	AST2600

Contents

Chapter 1

Overview

1.1 Introduction

The ASMB-831 server board is the most advanced AMD EPYC 9004 Processor family board for server-grade IPC applications that require high-performance computing power and multi-expansion slots. This board supports DDR5 ECC-REG 4800 MHz memory up to a maximum of 768 GB. Equipped with PCIe 5.0, the ASMB-831 offers a configuration that comprises five PCIe x16 slots and two PCIe x8 slots. Additionally, the variant ASMB-831T2 SKU includes dual 10GbE Ethernet LAN ports, effectively eliminating potential network bottlenecks. Furthermore, there's a dedicated GbE LAN RJ-45 reserved for IPMI function, enabling seamless remote-control management through AST-2600 BMC.

The ASMB-831 excels as an industrial server and networking solution due to its high reliability and exceptional performance. Leveraging EPYC processors, this board incorporates a range of features such as seven USB 3.2 Gen1 connectors, two Mini-SAS HD ports supporting eight SATA III connections, one SATA III port, and two M.2 NVMe interfaces operating at PCIe 4.0 speeds. The integration of AMD Infinity Guard enhances security by minimizing potential attack surfaces during software boot-up and execution, ensuring data protection during processing.

Benefitting from the capabilities of the EPYC processor, the ASMB-831 single-socket server board delivers robust computing power capable of efficiently managing substantial workloads. This eliminates the need to transition to dual-socket servers, thereby reducing licensing costs and minimizing power consumption while still satisfying your business requirements.

Note!

1. *The IPMI module will be included in ASMB-831T2 SKU, and the ASMB-831T2 SKU can support 10GbE LAN ports.*
2. *Please refer to the ordering information at the front for IPMI and LAN support for individual product SKUs.*

1.2 Features

1.2.1 General

- **AMD EPYC 9004 Series Processor support:** ASMB-831 is equipped with a single CPU socket to support AMD EPYC 9004 Series processors from 16 to 96 cores (or 32 to 192 threads per socket).
- **High performance I/O capability:** 2 x 10GbE LAN, 5 x PCIe 5.0 x16 slots (x16 link) + 2 x PCIe 5.0 x8 slots (x8 link), 9 x SATA (incl. 8 via Mini-SAS HD), and 2 x M.2 NVMe 2280/22110, 7 x USB 3.2 Gen1 (incl. 1 x Type-A) ports.
- **Standard ATX form factor with industrial features:** ASMB-831 provides industrial features like a long product lifecycle, reliable operation under a wide temperature range, watchdog timer, etc.
- **IPMI 2.0 support:** ASMB-831 is equipped with an ASPEED 2600 BMC chip and supports IPMI 2.0 (Intelligent Platform Management Interface 2.0) via a dedicated LAN and a shared LAN port.
- **KVM over IP:** KVM over IP allows BIOS level remote control of ASMB-831 through your own computer.

1.3 Specifications

Table 1.1: Specifications	
Processor	
CPU	■ Single socket LGA 6096 SP5 ■ Supports the AMD EPYC 9004 processor family, from 16 to 96 cores (32 to 192 threads) ■ Supports TDP for up to 240 W
System Memory	
Memory Capacity	■ DDR5 memory bus ■ Total 6 memory slots ■ Maximum 128GB ECC-REG per DIMM ■ One DIMM per channel
Memory Type	Supports DDR5 3600/4000/4400/4800 MHz RDIMM modules
DIMM Sizes	Each memory slot supports 8GB, 16GB, 32GB, 64GB, 128GB memory modules.
Memory Voltage	1.1 V
Error Detection	■ Corrects single-bit errors ■ Detects double-bit errors (using ECC memory)
Onboard Devices	
SoC	AMD EPYC 9004 SoC
Network Controllers	■ 2 x Intel® X710 10GbE Ethernet Controllers connected to an AMD EPYC CPU ■ Network supports 10GbE Base-T with RJ-45 output.
VGA	ASPEED AST2600 controller with 64 MB VGA memory provides basic 2D VGA functionality.
BMC Chip	One Realtek 8211F Gigabit PHY connected to AST2600 for BMC remote management
Input/Output	
Storage	■ Total 9 x SATA ports and 2 x M.2 provide SATA 6 Gb/s and PCIe 8 Gb/s bandwidth
LAN	■ 2 x RJ-45 LAN ports (2 x 10GbE LAN) ■ 1 x RJ-45 dedicated IPMI LAN port (10/100 Mbps) for IPMI only, there is no regular LAN function
USB	■ 4 x USB 3.2 Gen1 ports at the rear window ■ 1 x USB 3.2 Gen1 internal header (2 ports) ■ 1 x USB 3.2 Gen1 internal Type-A port
Graphics	■ 1 x VGA port.
Serial Port	■ 1 x RS232 port at the rear window
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 and 1 x 4-pin SSI EPS 12V power connectors for CPU & memory power (12V)
PCIe slot power	1 x 8-pin 12V power connector for PCIe slot 12V input
Expansion Slots	

Table 1.1: Specifications	
PCI-Express Gen5	■ 5 x PCIe x16 slots – PCIEx16_SLOT1 (Gen5 x16 link, from CPU) – PCIEx16_SLOT3 (Gen5 x16 link, from CPU) – PCIEx16_SLOT5 (Gen5 x16 link, from CPU) – PCIEx16_SLOT6 (Gen5 x16 link, from CPU) – PCIEx16_SLOT7 (Gen5 x16 link, from CPU) ■ 2 x PCIe x8 slots – PCIEx8_SLOT2 (Gen5 x8 link, from CPU) – PCIEx8_SLOT4 (Gen5 x8 link, from CPU)
System BIOS	
BIOS Type	256 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 the CPU cooler and five 4-pin headers for system fans (front*4 + rear*1) ■ All fans have tachometer status monitoring ■ Thermal control for all fan connectors
Temperature	■ Monitoring for CPU (PECI) ■ Monitoring for System (BMC)
Other Features (Case Open)	■ Chassis intrusion detection ■ Chassis intrusion header
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 95% (non-condensing) ■ Non-operating relative humidity: 10% to 95% (non-condensing)

1.4 Board Layout, Jumpers and Connectors

Connectors on the ASMB-831 are linked to external devices such as hard disk drives. In addition, ASMB-831 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-831.

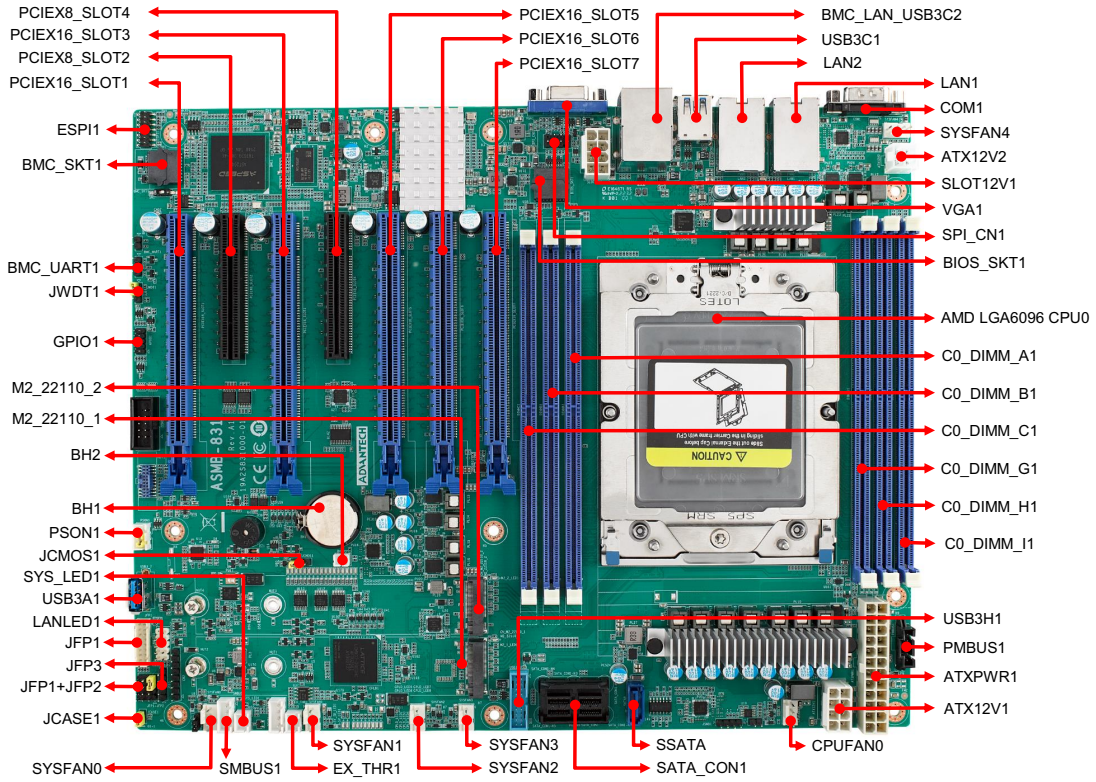


Figure 1.1 Board Layout

ASMB-831T2-00A1
Dual 10G + IPMI SKU

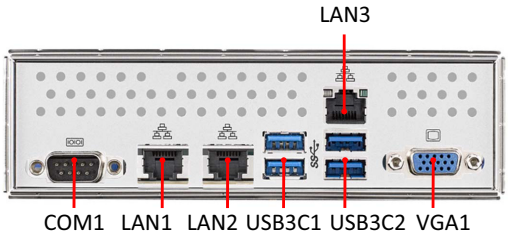


Figure 1.2 Rear IO of Full SKU

- LAN 2 is shared LAN with BMC.
- LAN 3 is dedicated BMC LAN.

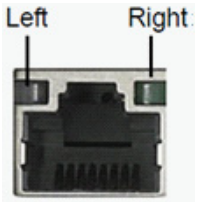
Table 1.2: Onboard LAN LED Color Definition			
100/1000 & 10G Mbps LAN Link/Activity LED Scheme			
		LAN1 & LAN2 (10G)	
		Left LED	Right LED
100 Mbps	Link Active	Off Off	Green Blinking green
1000 Mbps	Link Active	Amber Amber	Green Blinking green
10G Mbps	Link Active	Green Green	Green Blinking green
No Link		Off	Off

Table 1.3: Jumpers		
Label	**Function**	**Default**
JCMOS1	Clear CMOS	1-2
JWDT1	Watchdog timer reset	1-2
PSON1	AT(1-2) / ATX(2-3)	2-3
JCASE1	Chassis case open alarm	1-2

Keep CMOS data

Clear CMOS data

Table 1.4: Connectors	
Label	**Function**
ATX12V1	SSI EPS 12V auxiliary power connector for CPU0
ATX12V2	SSI EPS 12V auxiliary power connector for CPU0
ATXPWR1	SSI EPS 24-pin main power connector (for system)
BH1	For RTC battery
BH2	For optional battery kit
BIOS_SKT1	BIOS SPI ROM
BMC_LAN_USB3C2	IPMI dedicated LAN connector & USB 3.2 port 3, 4
BMC_SKT1	IPMI ROM
BMC_UART1	IPMI UART connector
COM1	Serial port: RS-232
CPU0	AMD LGA6096 CPU0 socket
CPUFAN0	CPU0 fan connector (4-pin)
C0_DIMM_A1	Channel A DIMM1
C0_DIMM_B1	Channel B DIMM1

Table 1.4: Connectors	
C0_DIMM_C1	Channel C DIMM1
C0_DIMM_G1	Channel G DIMM1
C0_DIMM_H1	Channel H DIMM1
C0_DIMM_I1	Channel I DIMM1
ESPI1	ESPI connector
EX_THR1	Connector for external thermistor. Jumper JTHR_SEL1 doesn't need to be adjusted
GPIO1	GPIO function for customized usage
JFP1	Front panel pin header. To support 1U chassis (Cable P/N: 1700031926-11) Power Switch/Power Reset/Power LED/ LAN1LED/LAN2LED/HDD LED
JFP1+JFP2	Front panel pin header. Power Switch/Reset connector External speaker/HDD LED connector / SMBus connector
JFP3	Front panel pin header. Keyboard Lock and Power LED
LAN1, LAN2	RJ-45 LAN connector
LANLED1	LAN LED extension connector
M2_22110_1	M.2 connector (SATA & PCIe x4)
M2_22110_2	M.2 connector (PCIe x4)
PMBUS1	PMBUS connector to communicate with power supply
SATA_CON1, SSATA	Serial ATA0~8 (SATA 0~7 via SFF8643 connector)
PCIEX16_SLOT1	PCIE x16 slot (x16 link) (CPU)
PCIEX8_SLOT2	PCIE x8 slot (x8 link) (CPU)
PCIEX16_SLOT3	PCIE x16 slot (x16 link) (CPU)
PCIEX8_SLOT4	PCIE x8 slot (x8 link) (CPU)
PCIEX16_SLOT5	PCIE x16 slot (x16 link) (CPU)
PCIEX16_SLOT6	PCIE x16 slot (x16 link) (CPU)
PCIEX16_SLOT7	PCIE x16 slot (x16 link) (CPU)
SLOT12V1	For PCIe slot 12V input only
SMBUS1	SMBus header (SMBus from either BMC or CPU)
SPI_CN1	Connector for BIOS update tool
SYSFAN0~SYSFAN4	System FAN connector
SYS_LED1	System LED connector
USB3A1, USB3C1, USB3H1	USB 3.2 port 1, 2; USB 3.2 port 5, 6 (20-pin header); USB 3.2 port 7 (Type-A)
VGA1	VGA connector

Table 1.5: Onboard LED			
LED	**Description**	**LED Definition**	
+5V_LED1	Power on LED	Off: Power off	On (Green): System is on
+5V_SB_LED1	Standby LED	Off: No input AC Power	On (Green): System is on, in sleep mode, or in soft-off mode
BMC_HBLED1	BMC heartbeat LED	Blinking (Green): Controller is working normally	

1.5 Block Diagram

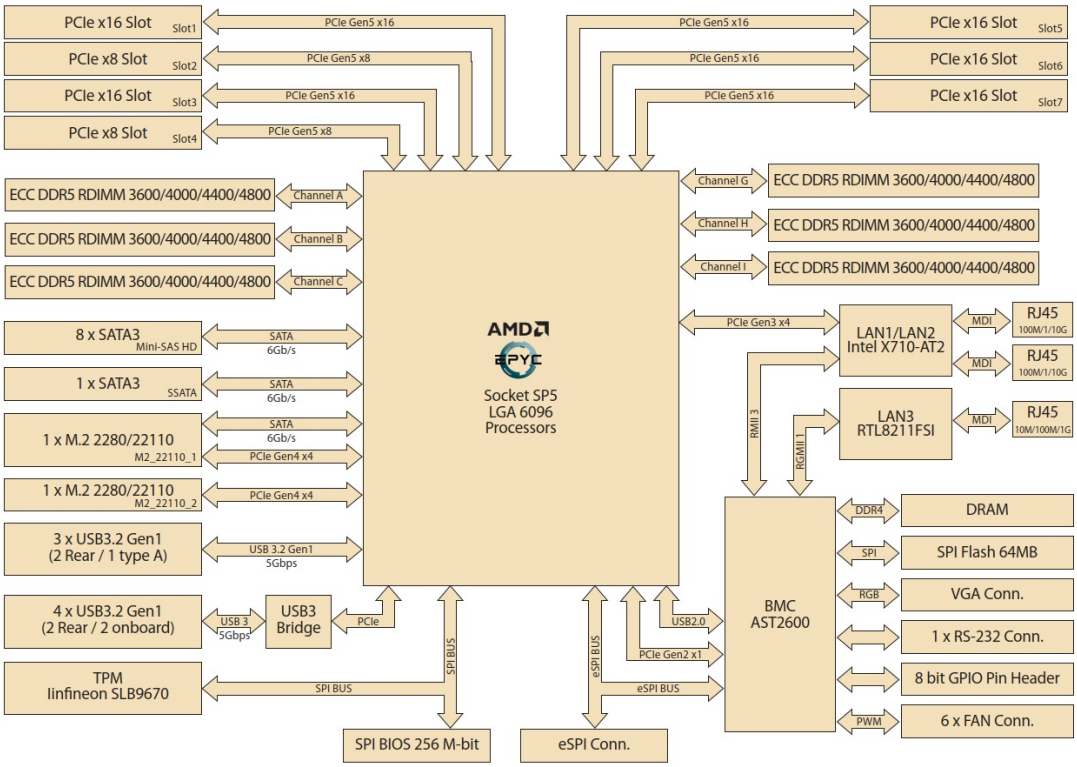


Figure 1.3 Block Diagram

1.6 System Memory

ASMB-831 has 6 x 288-pin memory slots for DDR5 4400/4800 MHz memory modules, maximum 128 GB for each DIMM. ASMB-831 supports registered DIMM memory modules.

1.7 Installation of Memory Modules

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

The motherboard will support odd-numbered modules (1 or 3 modules installed) but is unable to activate Dual Channel Technology. For great performance, a balanced memory population is recommended.

Table 1.6: DIMM Configurations with a Single CPU

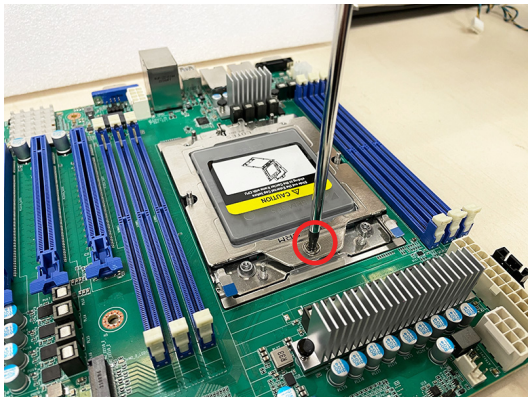
	Quantity of memory installed			
	1	2	4	6
DIMMA1	V	V	V	V
DIMMB1				V
DIMMC1			V	V
DIMMG1		V	V	V
DIMMH1				V
DIMMI1			V	V

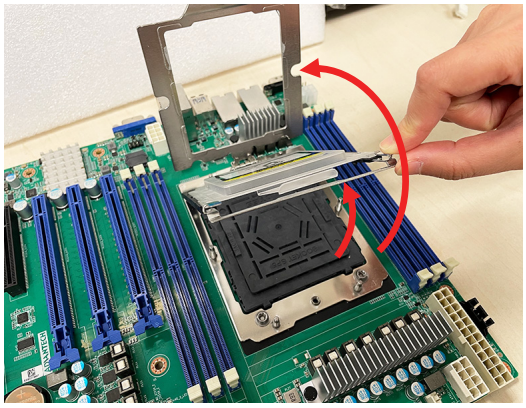
Note! *3, 5 DIMMs are not recommended DIMM populations.*

1.8 Processor Installation

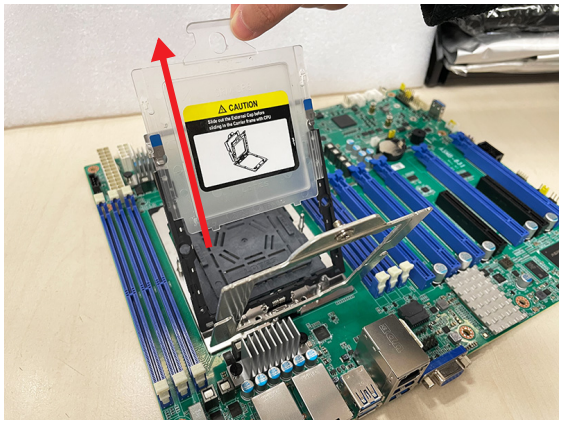
The ASMB-831 is designed for AMD EPYC 9004 Series processors.

1. Unscrew the one screw (shown above in red circle) on the top of the socket retention mechanism (SRM), then rotate the Retention Frame and Rail Frame (with external cap).

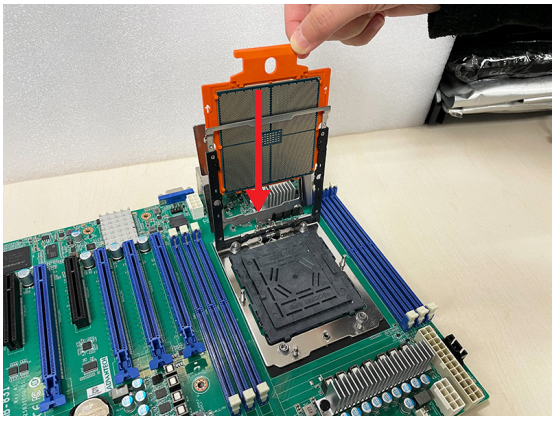


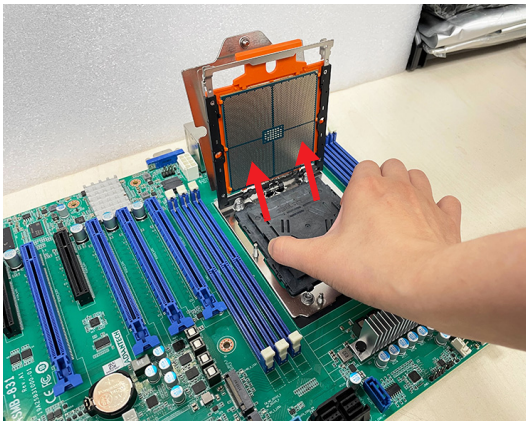


2. Remove the external cap by pulling upwards.

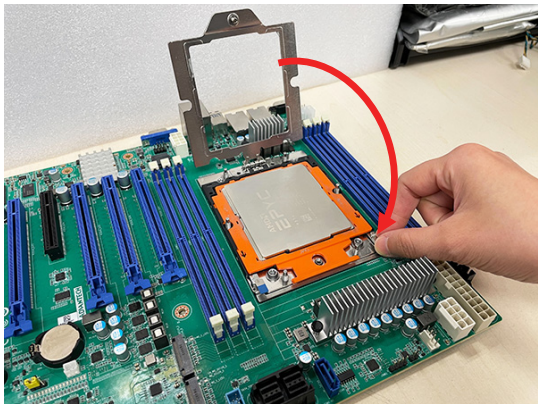
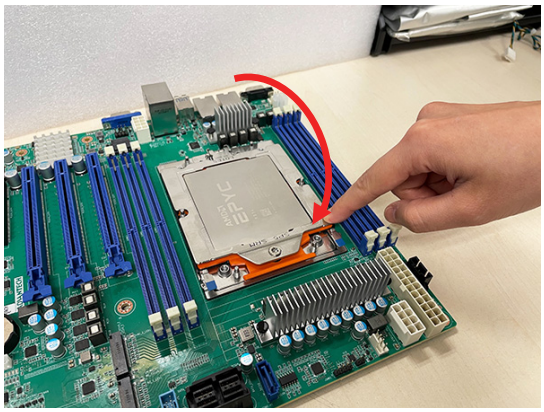


3. Install the carrier frame/CPU package to the rail frame, then remove the PnP cover cap. Be very careful not to drop the PnP cover cap into the exposed contact field during the removal process.

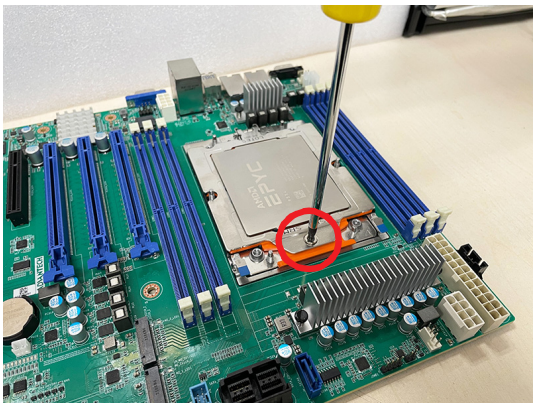




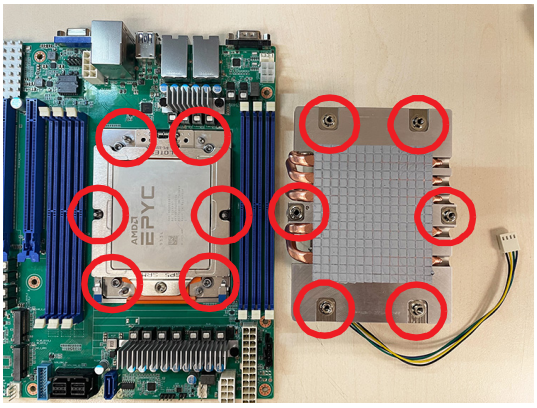
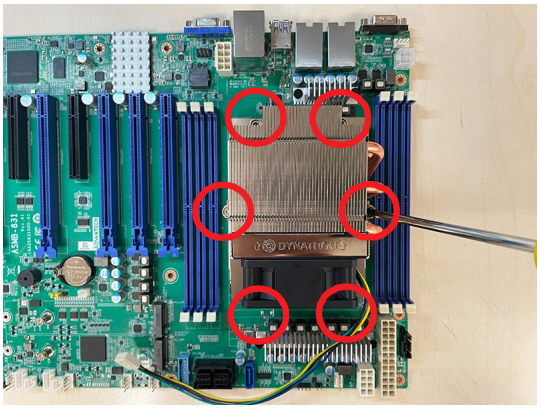
4. Rotate and push the rail frame and retention frame until they are in the horizontal position.

5. Tighten the one screw (shown above in red circle) by using a T-20 screwdriver.



6. Install the processor heatsink module into the socket retention mechanism (SRM) by using a T-20 screwdriver (follow the heatsink label direction 1-2-3-4-5-6).

Chapter 2

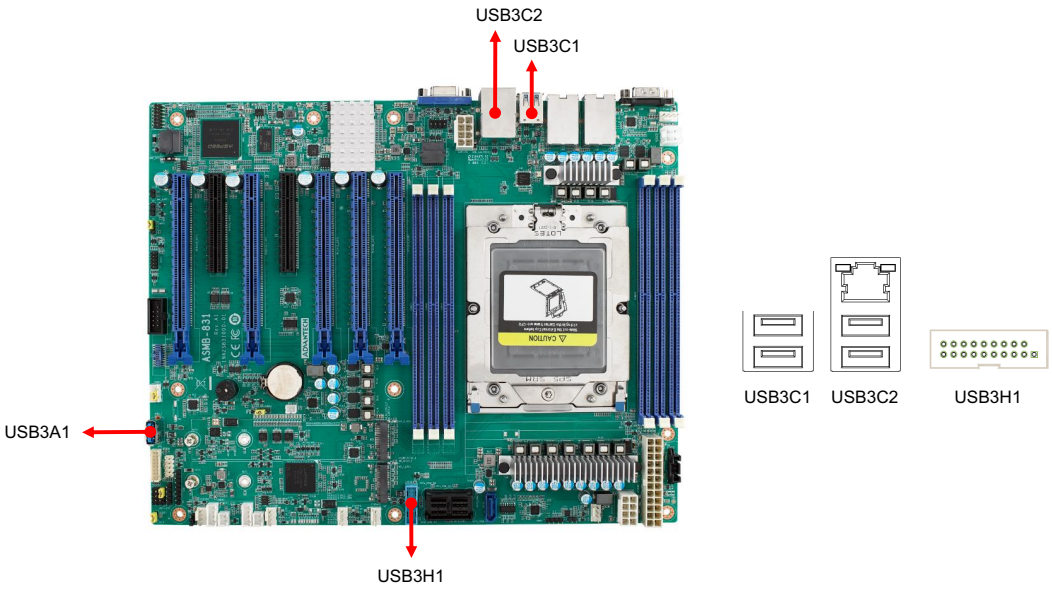
Connections

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.

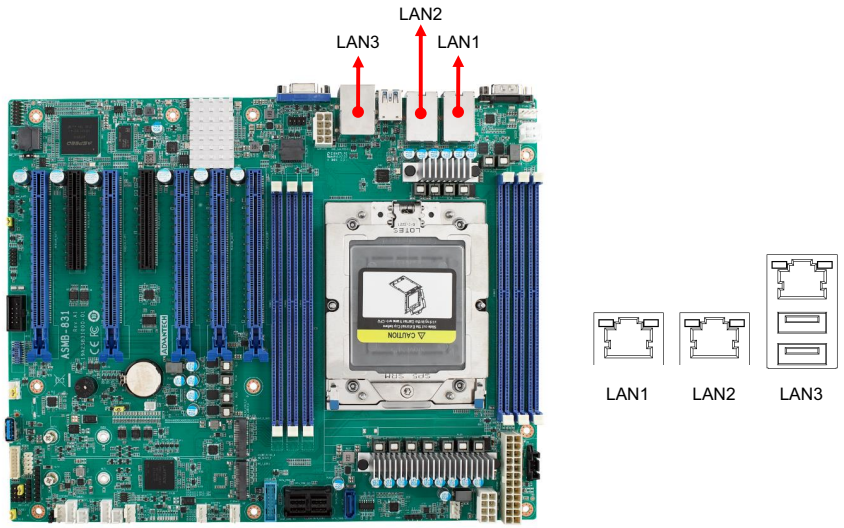
2.2 USB Ports (USB3C1, USB3C2, USB3H1, USB3A1)

The USB ports comply with USB 2.0 and USB 3.2 Gen1. Transmission rates of up to 480 Mbps (USB 2.0) / 5Gbps (USB 3.2 Gen1) and fuse protection are supported. The USB interface can be disabled in the system BIOS setup.



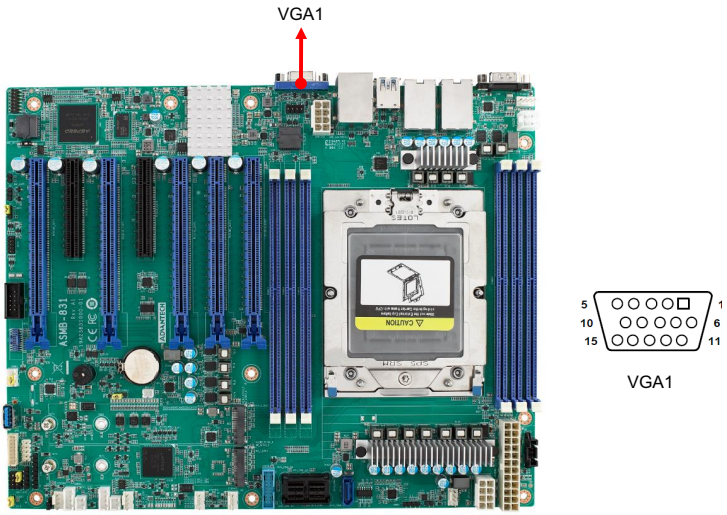
2.3 LAN Ports (LAN1, LAN2, LAN3)

The ASMB-831 is equipped with two 10GbE LAN ports. They are all with RJ-45 jacks and supported by all major network operating systems. One GbE LAN (LAN3) is for IPMI for system management.



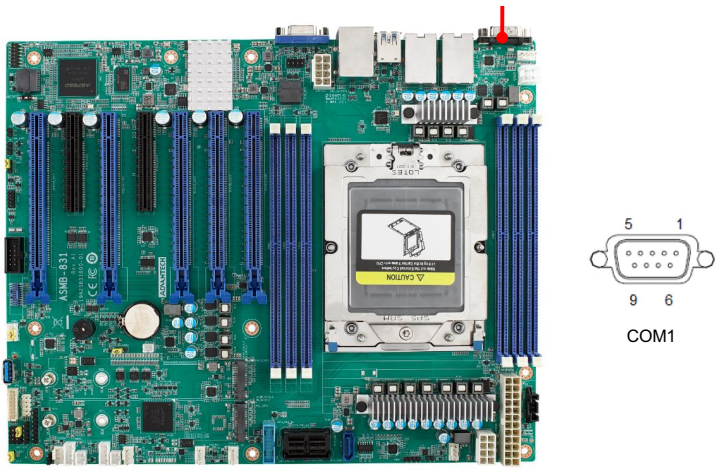
2.4 VGA Connector (VGA1)

The ASMB-831 includes a VGA interface that can drive conventional CRT and LCD displays.



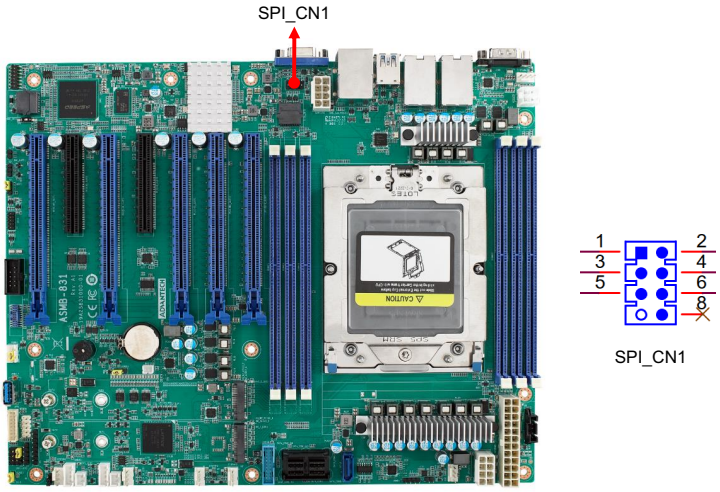
2.5 Serial Ports (COM1)

The ASMB-831 offers one serial port on the rear plate and one 2.50 mm on board with 2 x 5-pin pitch.



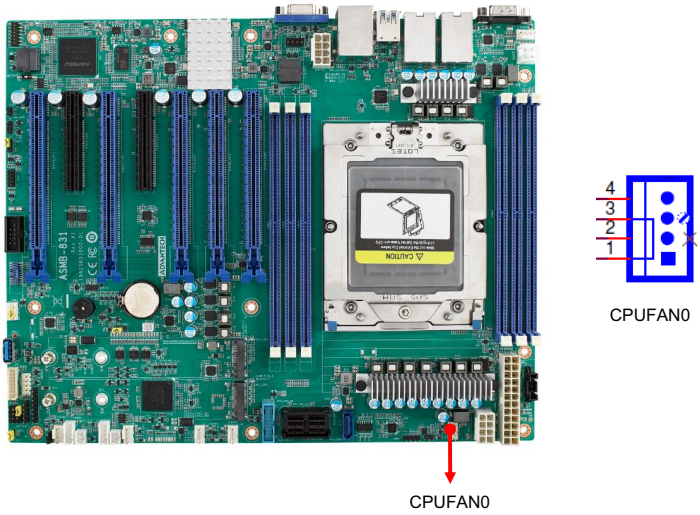
2.6 SPI Flash Connector (SPI_CN1)

The SPI flash programmer pin header (for RMA) can be connected to the BIOS-flashing tools for flashing the BIOS. Remember to power off the ASMB-831 motherboard before flashing the BIOS.

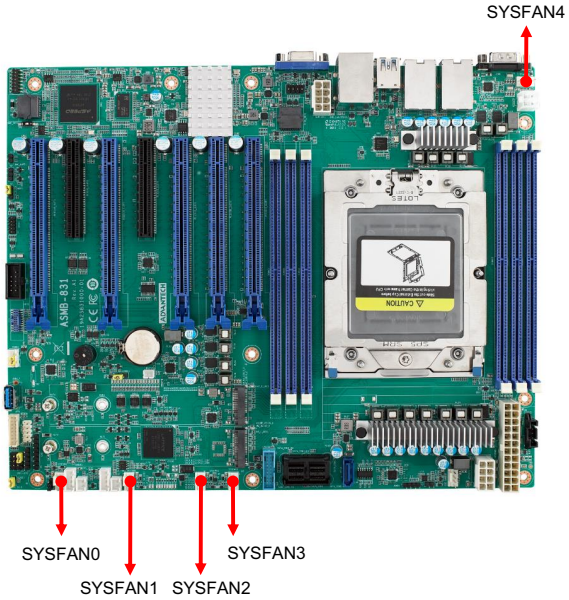


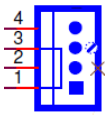
2.7 CPU Fan Connector (CPUFAN0)

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



2.8 System Fan Connector (SYSFAN0~4)

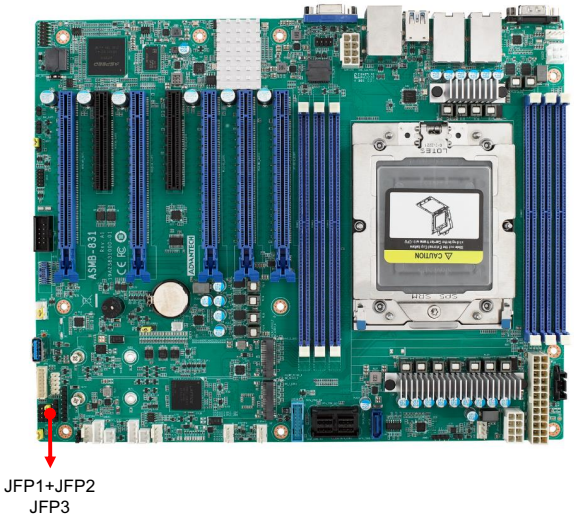




SYSFAN0~4

2.9 Front Panel Connector (JFP1+JFP2, JFP3)

There are several external switches and LEDs to monitor and control the ASMB-831.



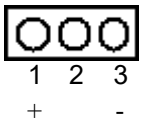
JFP1	3	6	9	12	PWRSW	RESET
&	2(+)	5(-)	8	11	HDDLED	
JFP2	1(+)	4	7	10(-)	SPEAKER	
JFP3	1(+)	2	3(-)	4	5	PWRLED	KEYLOCK

JFP1+JFP2
JFP3

2.9.1 Power LED (JFP3)

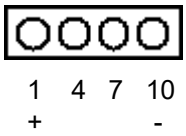
JFP3 pin 1 and pin 3 are for the power LED. Refer to Appendix B for detailed information on the pin assignments. If an ATX power supply is used, the system's power LED status will be as indicated.

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



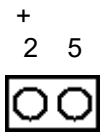
2.9.2 External Speaker (JFP1+JFP2 Pins 1, 4, 7, 10)

JFP1+JFP2 pins 1, 4, 7, and 10 connect to an external speaker. ASMB-831 provides an onboard buzzer as an alternative. To enable the buzzer, set pins 7-10 as closed.



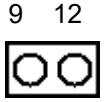
2.9.3 HDD LED Connector (JFP1+JFP2 Pins 2 & 5)

You can connect an LED to JFP1+JFP2 to indicate when the HDD is active.



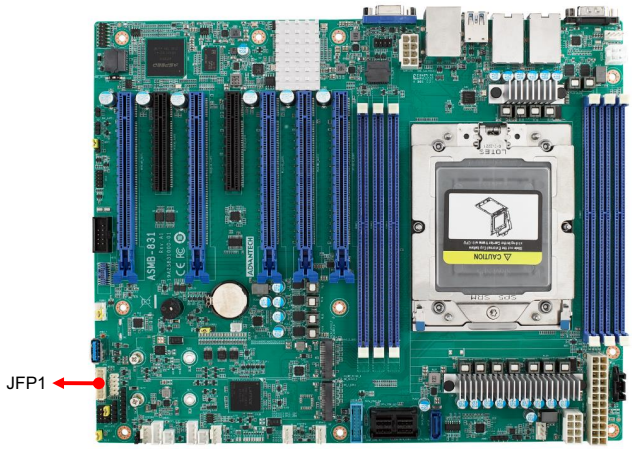
2.9.4 Reset Connector (JFP1+JFP2 Pins 9 & 12)

Many computer cases offer the convenience of a reset button.



2.10 Front Panel Connector (JFP1)

There are several external switches and LEDs to monitor and control the ASMB-831.



2.0 mm JPF on board			
Description	Pin Number		Description
RST BTN	2	▼1	PWR BTN
RST GND	4	3	PWR GND
LAN1_LED+	6	5	LAN2_LED+
LAN1_LED-	8	7	LAN2_LED-
CRPS Detect (Reserved)	10	9	SYS_LED+ (Reserved)
GND	12	11	SYS_LED- (Reserved)
PWR LED+	14	13	HDD_LED+
PWR LED-	16	15	HDD_LED-

2.0 mm JPF to 2.54 mm Pitch Header			
Description	Pin Number		Description
(Red) PWR BTN	▼1	2	RST BTN (White)
(Black) PWR GND	3	4	RST GND (Black)
(Blue) LAN1_LED+	5	6	LAN2_LED+ (Brown)
(Red) LAN1_LED-	7	8	LAN2_LED- (Black)
		Key	
(Orang) HDD_LED+	13	14	PWR LED+ (Red)
(Black) HDD_LED-	15		
	Key	16	PWR LED- (Black)

2.10.1 ATX Soft Power Switch (Pins 1, 3)

If your computer case is equipped with an ATX power supply, you should connect the power on/off button on your computer case to pins 1 and 3 on JFP1. This connection enables you to turn your computer on and off.

2.10.2 Reset Connector (Pins 2, 4)

JFP1 pins 2 & 4 are for a reset button.

2.10.3 Front Panel LAN Indicator Connector (Pins 5, 6, 7, 8)

You can connect an LED to connector JFP1 to indicate when LAN1 & LAN2 are active.

2.10.4 HDD LED Connector (Pins 13, 15)

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

2.10.5 Power LED (Pins 14, 16)

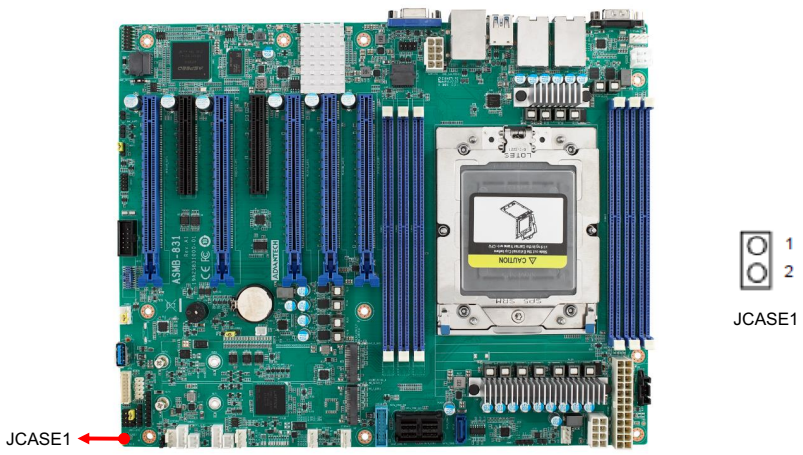
Refer to Appendix A for detailed information on the pin assignments. If an ATX power supply is used, the system's power LED status is as follows.

Table 2.2: System's power LED status

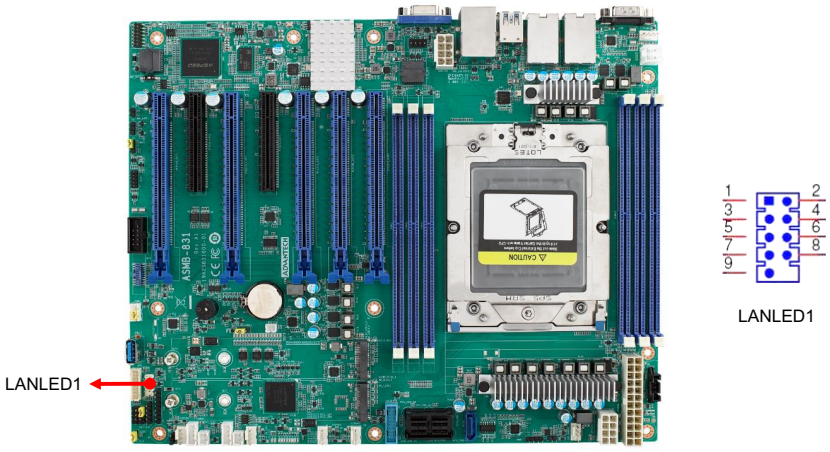
Power Mode	LED Status
System On	On
System Suspend	Fast Flash (S1, S3) / Slow Flash (S4)
System Off	Off
System Off in deep sleep	Off

2.11 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 Pins 1 and 2 are bridged by a jumper cap.

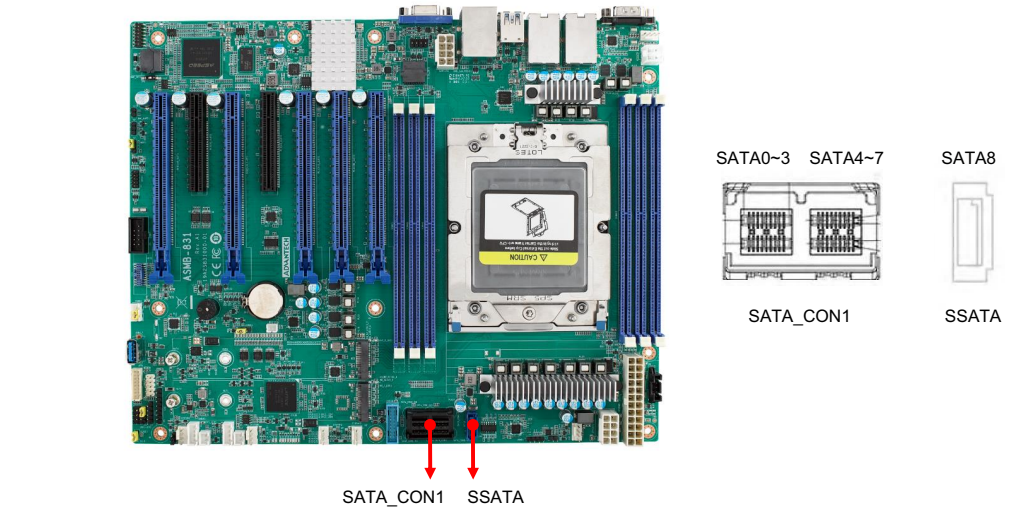


2.12 Front Panel LAN Indicator Connector (LANLED1)



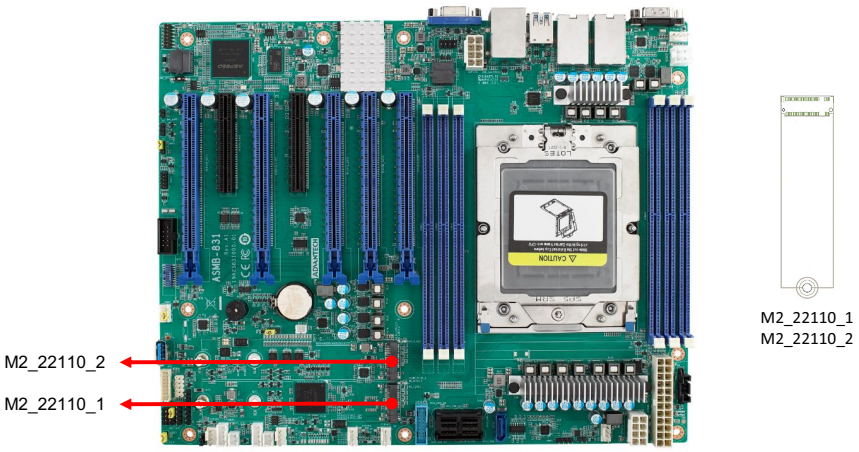
2.13 SATA Connector (SATA_CON1, SSATA)

ASMB-831 features eight serial ATA III interfaces (up to 600 MB/s) and eases cabling to hard drives with long and thin cables.



2.14 M.2 Connector (M2_22110_1, M2_22110_2)

The M.2 22110 connector can support both SATA and PCIe SSD devices.



2.15 PCIe Expansion Slots

The ASMB-831 provides seven expansion slots that can support four double-deck cards. The riser card for 1U or 2U chassis can be used in slot 6 only.

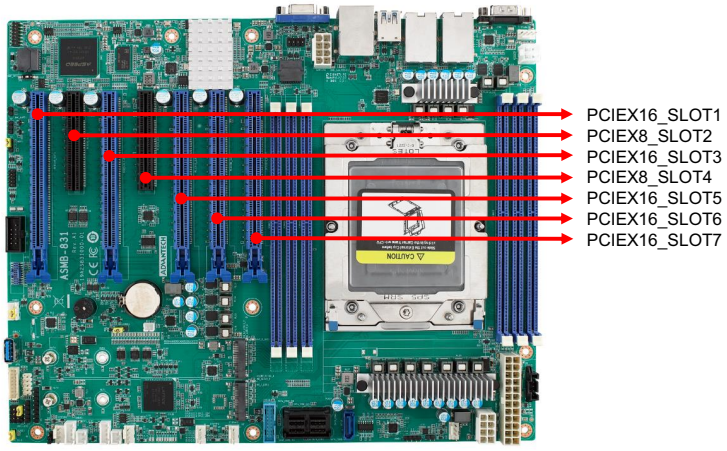
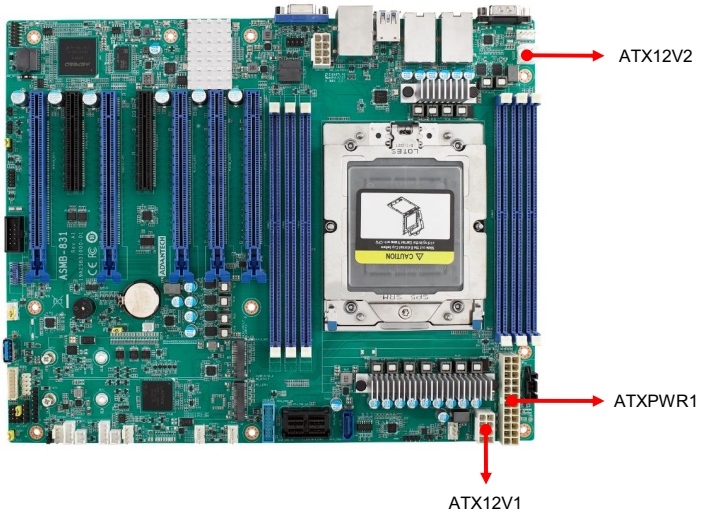


Table 2.3: PCIe Expansion Slots

	Slot Length	Link	PCI-E Generation	PCIe link from
SLOT1	PCI-E x16	PCI-E x16	5	CPU
SLOT2	PCI-E x8	PCI-E x8	5	CPU
SLOT3	PCI-E x16	PCI-E x16	5	CPU
SLOT4	PCI-E x8	PCI-E x8	5	CPU
SLOT5	PCI-E x16	PCI-E x16	5	CPU
SLOT6	PCI-E x16	PCI-E x16	5	CPU
SLOT7	PCI-E x16	PCI-E x16	5	CPU

Table 2.4: PCIe Expansion Slots			
	Part Number	**Description**	**Remarks**
Riser Card	ASMB-RF28-20B1	ASMB-RF28 (2U Gen5 riser card)	2*PCI-E x8
	ASMB-RF2F-10B1	ASMB-RF2F (2U Gen5 riser card)	1*PCI-E x16
	ASMB-RF1F-10B1	ASMB-RF1F (1U Gen5 riser card)	1*PCI-E x16

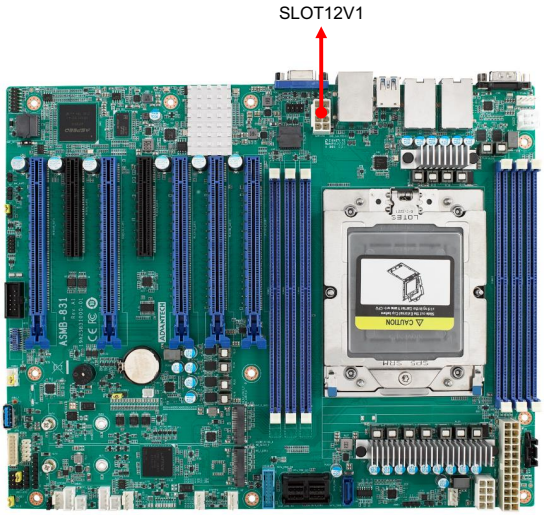
2.16 Auxiliary Power Connector (ATXPWR1/ ATX12V1/ATX12V2)



Note!

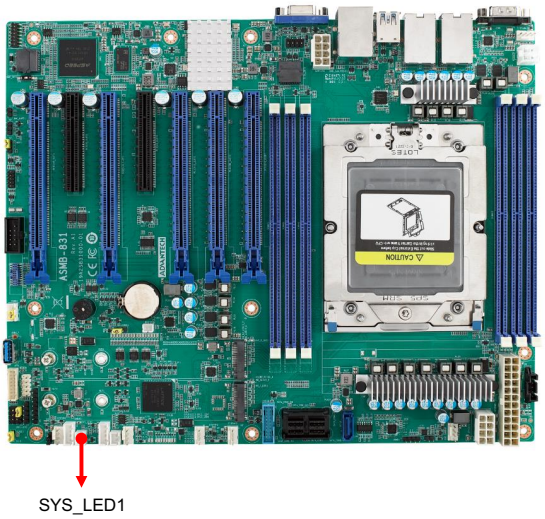
1. *Please use a power supply of SSI type; minimum output should be at least 700W with 5Vsb @ 2.5A.*
2. *ATXPWR1 & ATX12V1 & ATX12V2 should be all connected to the power supply, otherwise ASMB-831 will not boot up normally.*

2.17 PCIe Power Connector (SLOT12V1)



Note! *This EPS style connector is only necessary if PCIe cards that draw more than 70 watts from the PCIe bus are installed on the motherboard.*

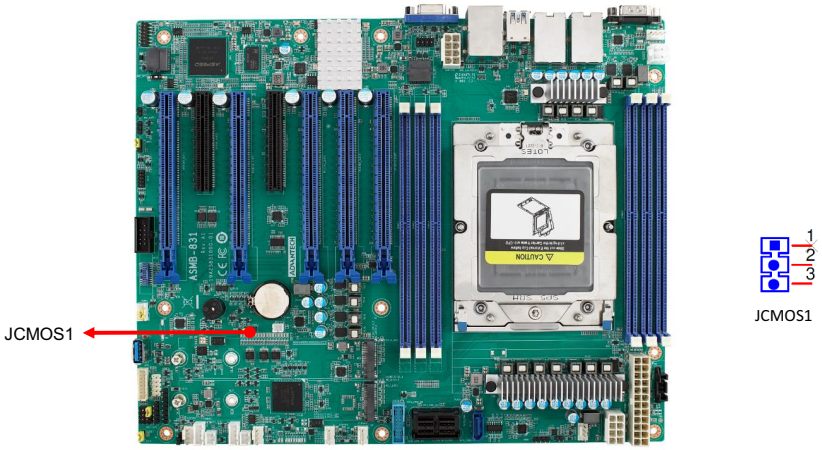
2.18 System LED Connector (SYS_LED1)



SYS_LED1

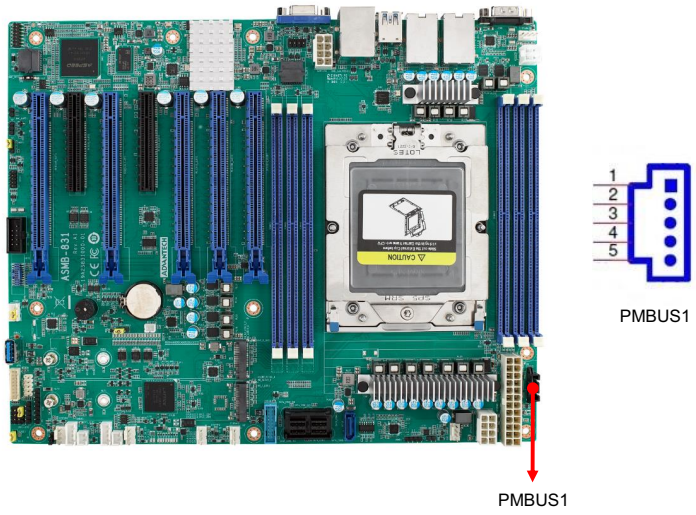
2.19 Clear CMOS Connector (JCMOS1)

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

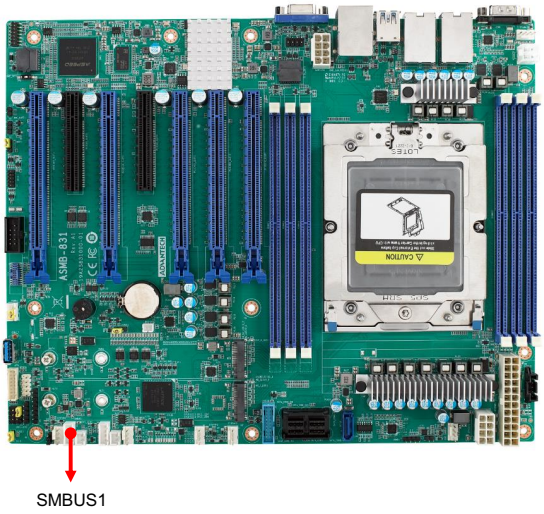


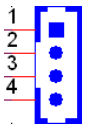
2.20 PMBUS Connector (PMBUS1)

The PMBUS connector on ASMB-831 is reserved for communicating with the power supply via BMC



2.21 Front Panel SMBUS Connector (SMBUS1)

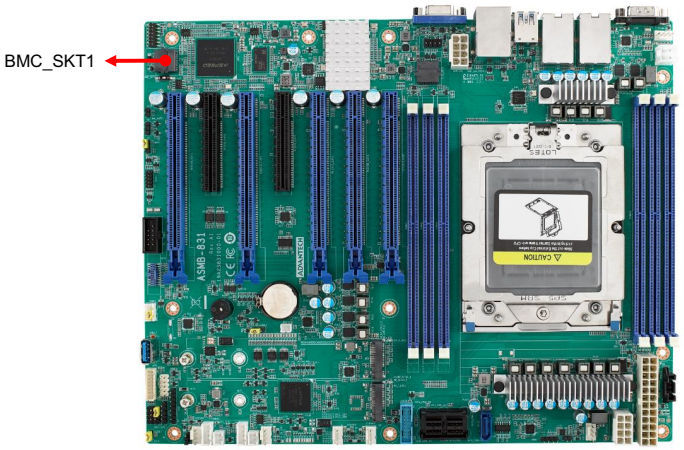


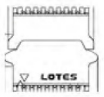


SMBUS1

2.22 BMC IC Socket (BMC_SKT1)

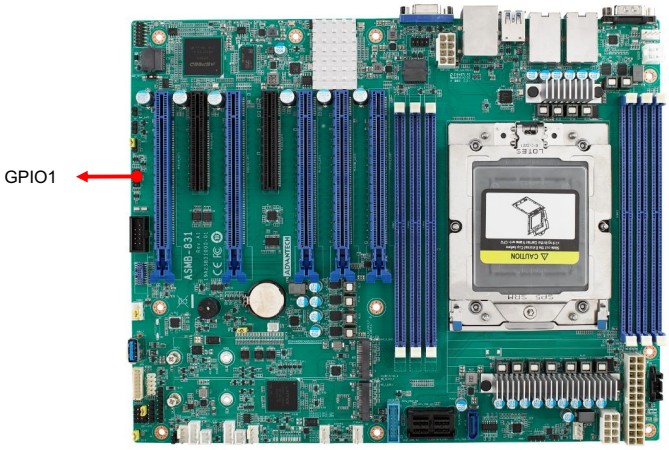
The IPMI feature can be enabled with BMC_SPI1. The BMC IC socket has already been pre-installed on ASMB-831T2.

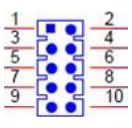




BMC_SKT1

2.23 GPIO Connector (GPIO1)





GPIO1

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 special features on or off. This chapter describes the basic navigation of the ASMB-831 setup screens.

Figure 3.1 Main Setup Screen

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 CMOS which is backed up by a battery to retain 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 Entering BIOS Setup

3.2.1 Main Menu

Press <Del> during bootup to enter the AMI BIOS CMOS setup utility; the Main menu will appear on the screen. Use the arrow keys to select among the items and press <Enter> to accept or enter the submenu.

Figure 3.2 Main Setup Screen

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 legend. Above the 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.

3.2.2 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.

3.3 Advanced BIOS Features Setup

Select the Advanced tab from the ASMB-831 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 submenu 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 submenus are described on the following pages.

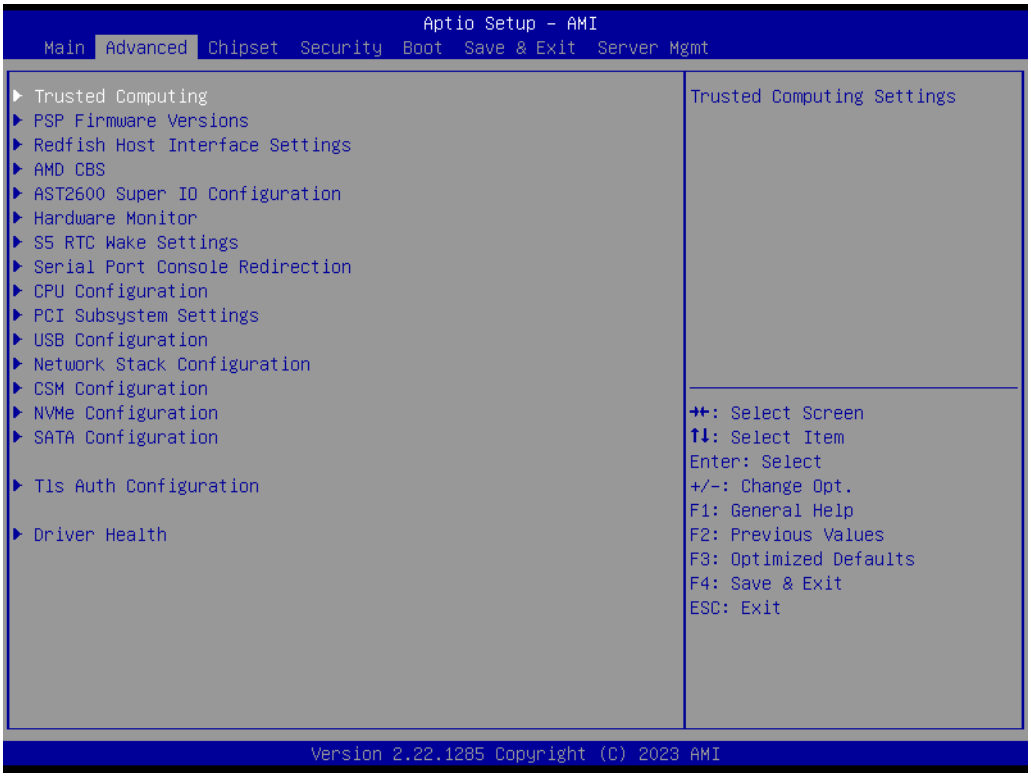


Figure 3.3 Advanced BIOS Features Setup Screen

3.3.1 Trusted Computing

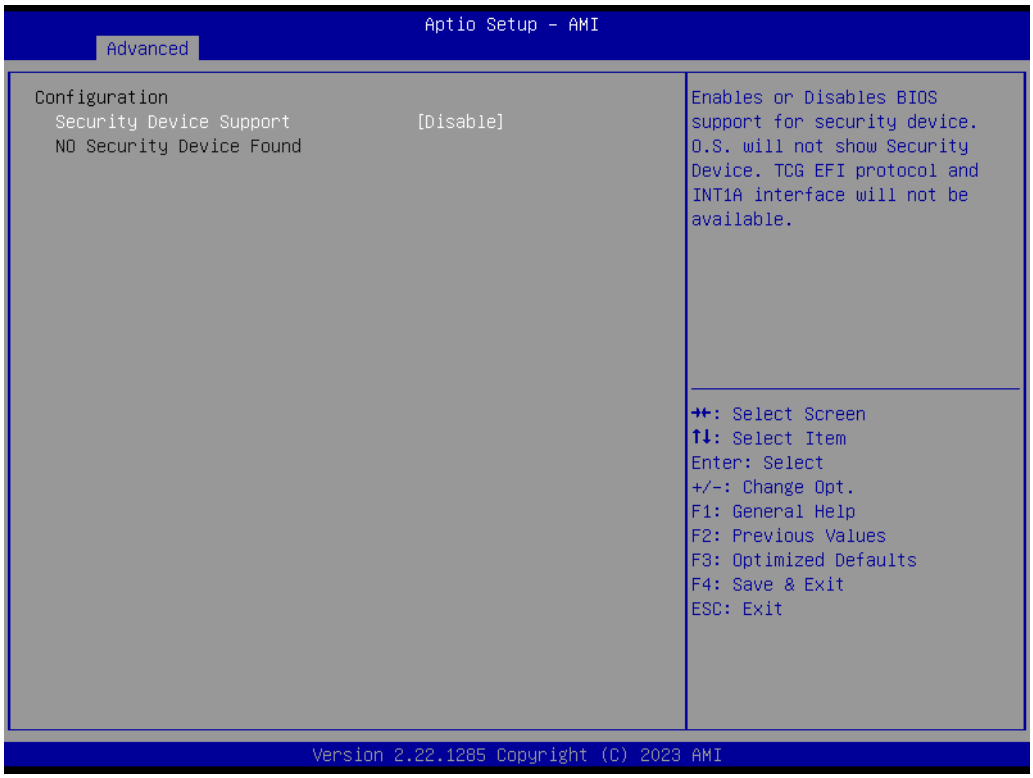


Figure 3.4 Trusted Computing Screen

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

3.3.2 PSP Firmware Versions

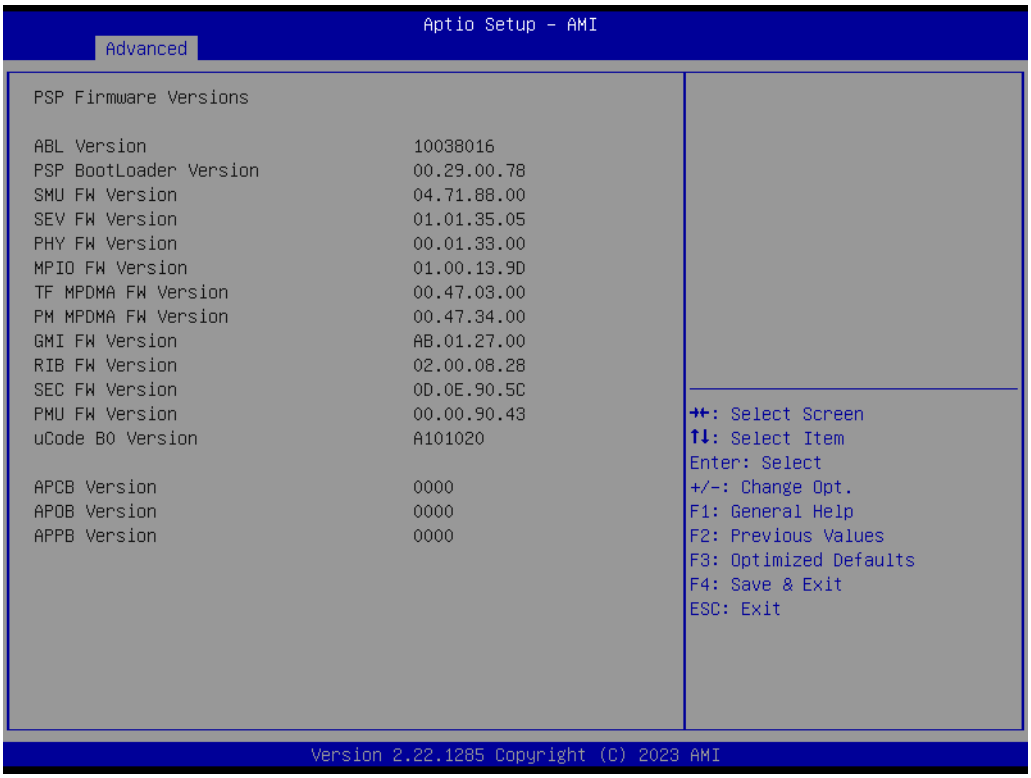


Figure 3.5 PSP Firmware Versions Screen

3.3.3 Redfish Host Interface Settings

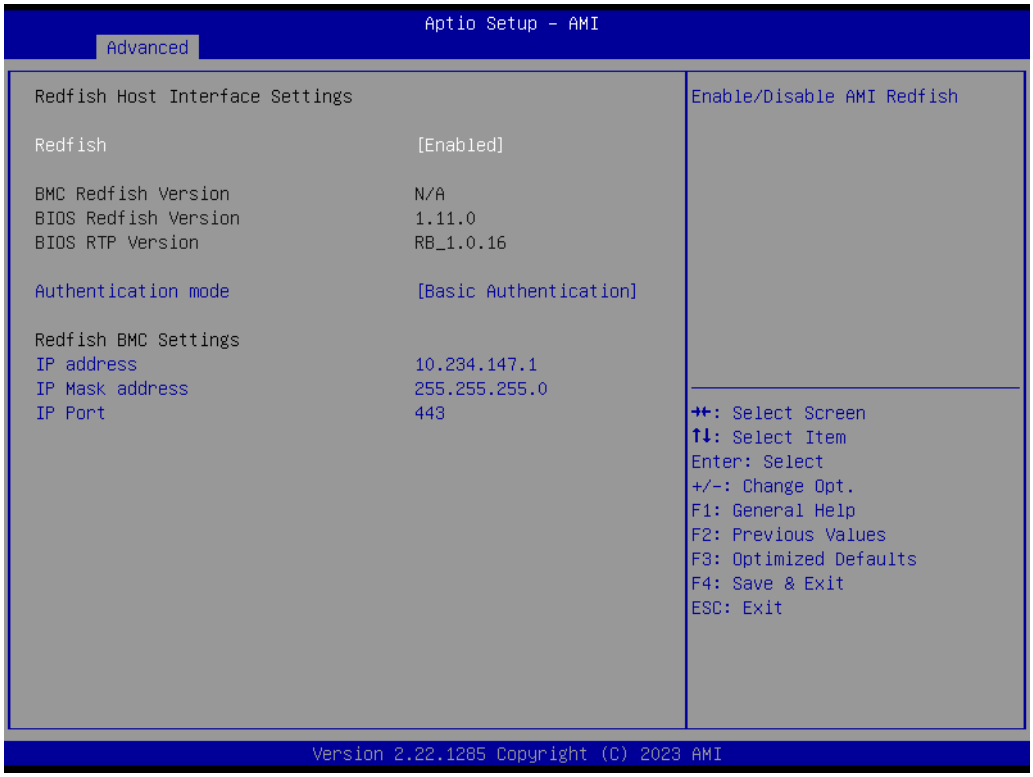


Figure 3.6 Redfish Host Interface Settings screen

- **Redfish**
  Enable/Disable AMI Redfish.
- **Authentication mode**
  Select authentication mode: Basic Authentication; Session Authentication
- **Redfish BMC Settings**
  Set IP address, IP Mask address, IP Port.

3.3.4 AMD CBS

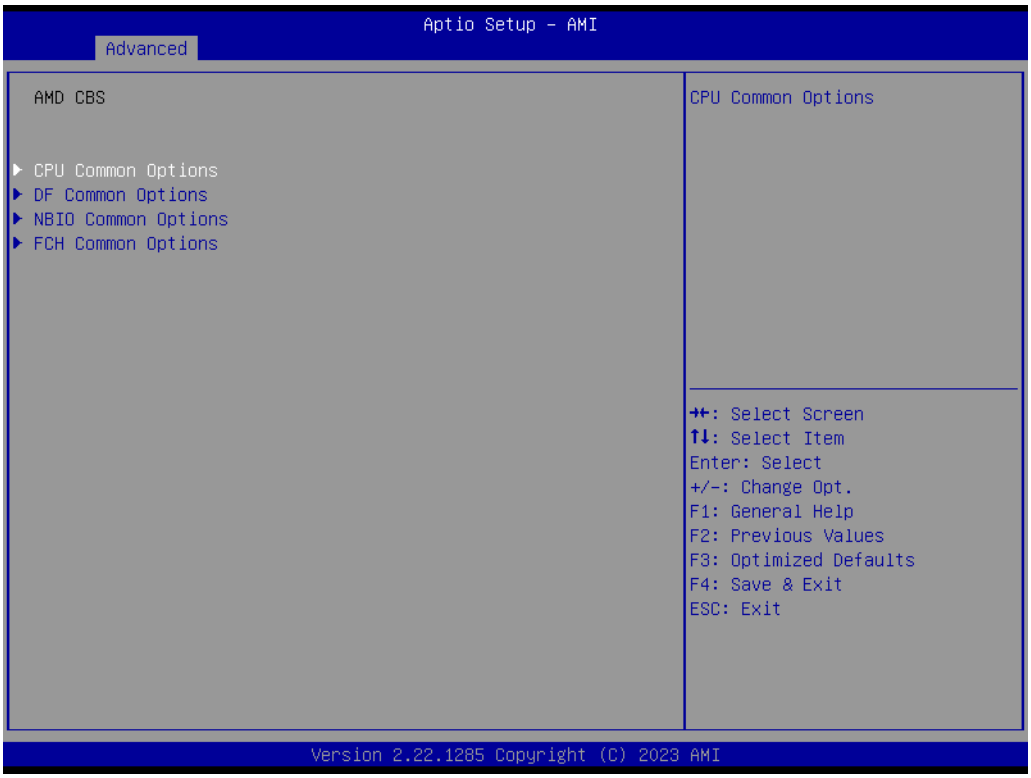


Figure 3.7 AMD CBS Screen

3.3.4.1 CPU Common Options

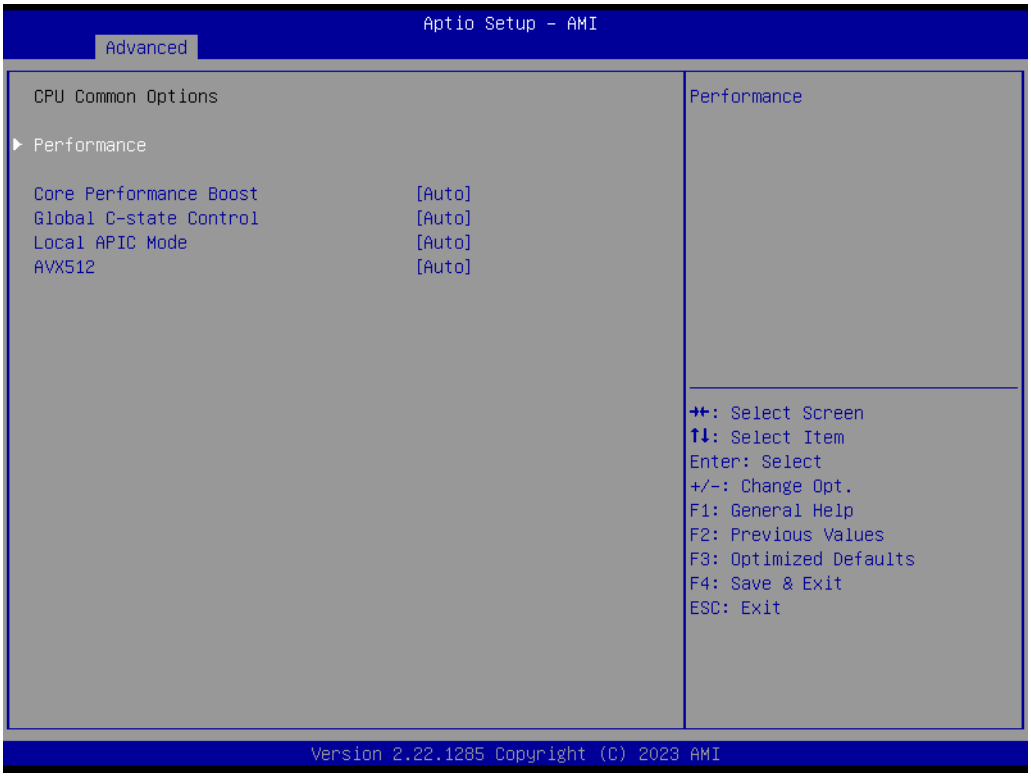


Figure 3.8 CPU Common Options Screen

- **Core Performance Boost**
  Enable or Disable Core Performance Boost (CPB) options.
- **Global C-state Control**
  Controls I/O-based C-state generation and DF C-states.
- **Local APIC Mode**
  Select local APIC mode:
  Compatibility, xAPIC or x2APIC.
- **AVX512**
  Enable or Disable AVX512.
- **Performance**

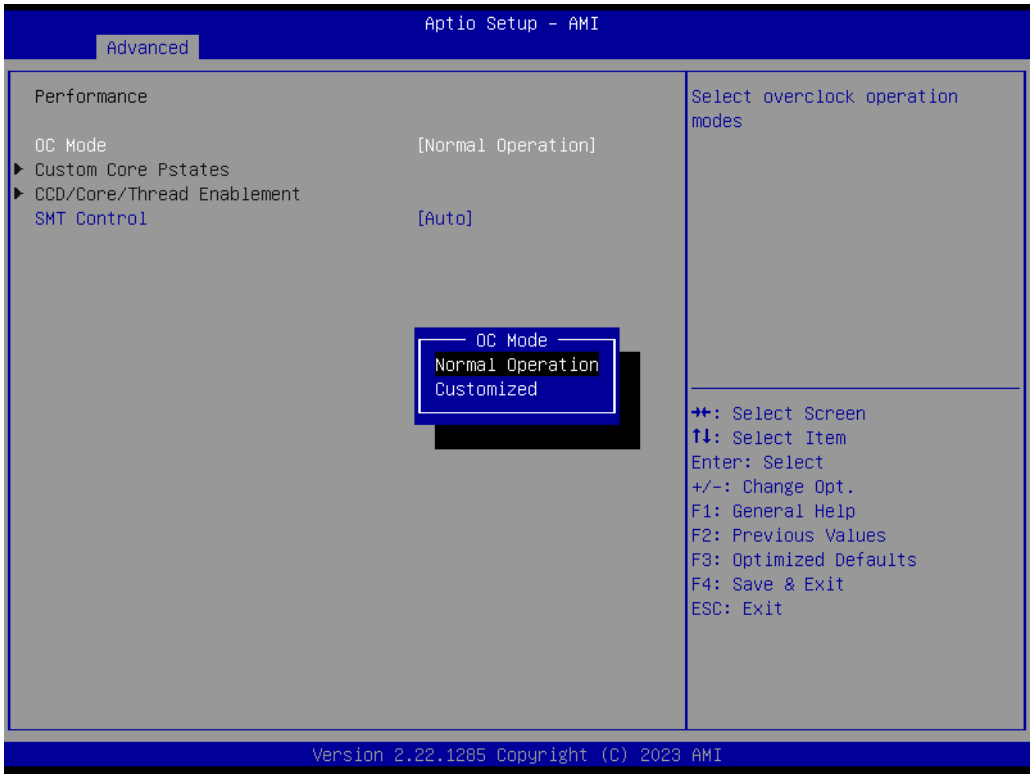


Figure 3.9 CPU Common Options - Performance screen

- **OC Mode**
  Select overclock operation modes: Normal Operation; Customized.
- **Custom Core Pstates**
- **CCD/Core/Thread Enablement**
- **SMT Control**
  Can be used to disable symmetric multi-threading. To re-enable SMT, a POWER CYCLE is needed after selecting the 'Enable' option. Select 'Auto' based on the BIOS PCD (PcdAmdSmtMode) default setting.

3.3.4.2 DF Common Options

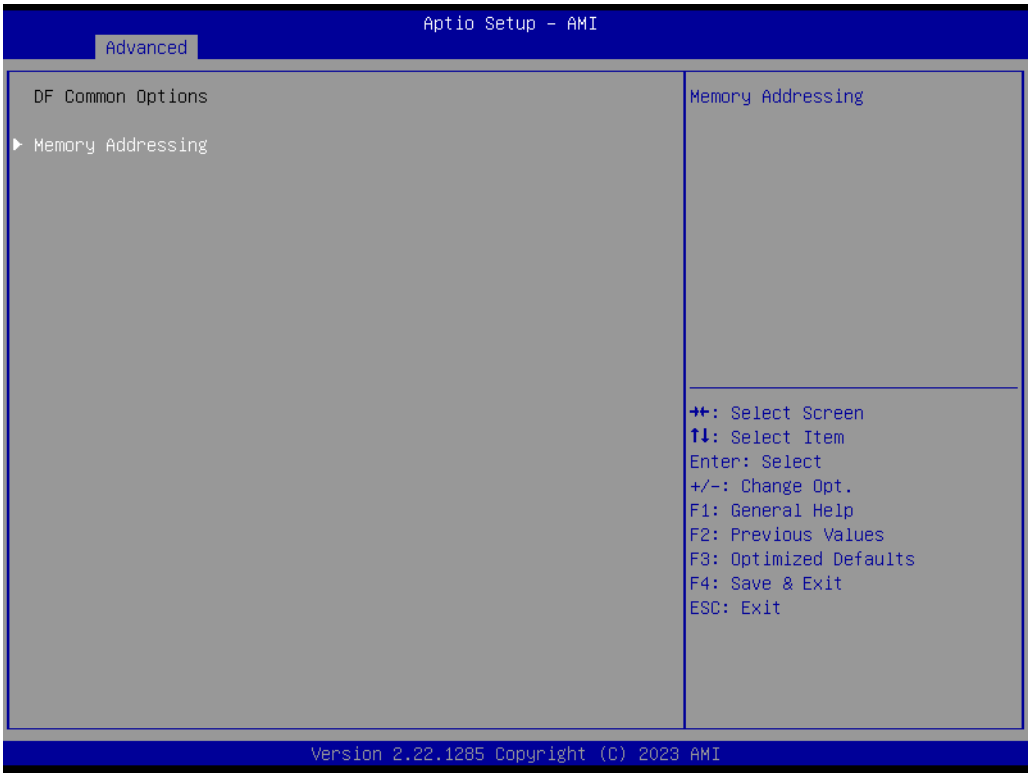


Figure 3.10 DF Common Options Screen

- **Memory Addressing**

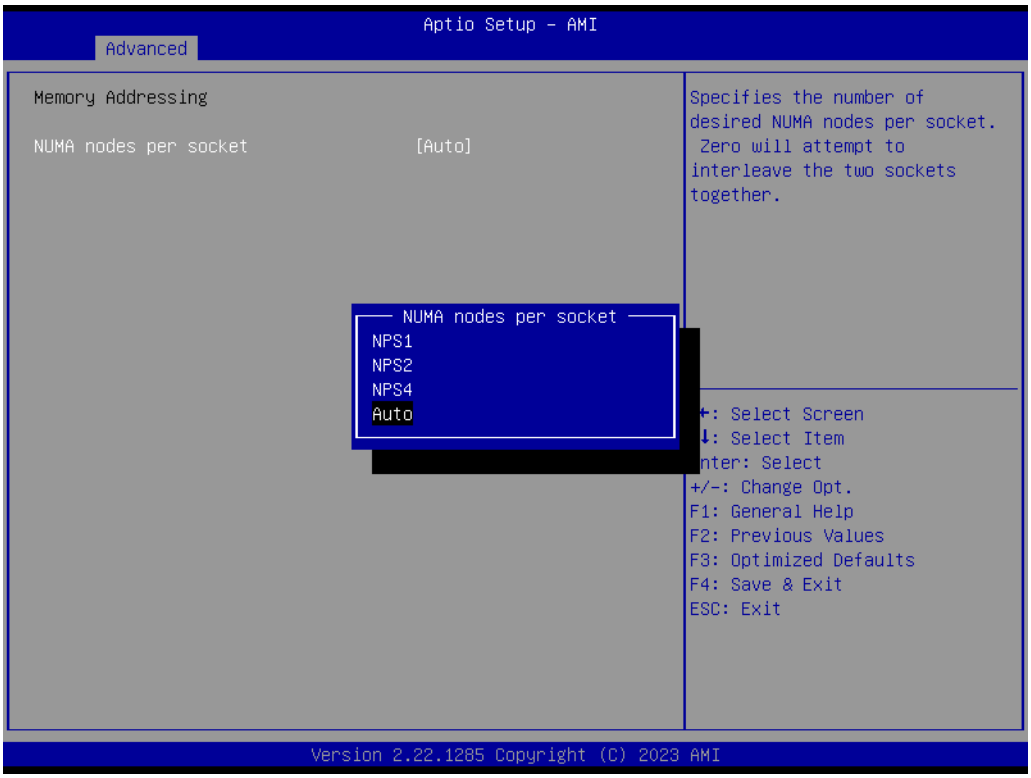


Figure 3.11 DF Common Options - Memory Addressing Screen

– **NUMA nodes per socket**
Specifies the number of desired NUMA nodes per socket: NPS1; NPS2; NPS4, Auto.

3.3.4.3 NBIO Common Options

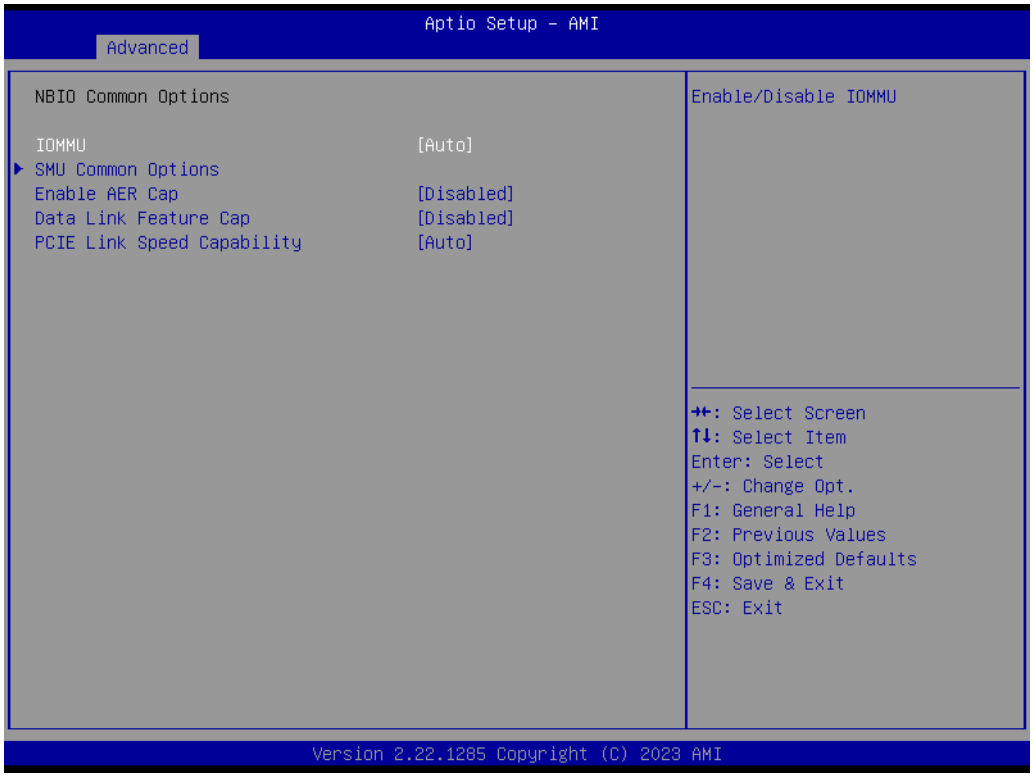


Figure 3.12 NBIO Common Options Screen

- **IOMMU**
  Enable or Disable IOMMU function.
- **Enable AER Cap**
  Enables Advanced Error Reporting Capability.
- **Data Link Feature Cap**
  Data Link Feature Capability.

SMU Common Options

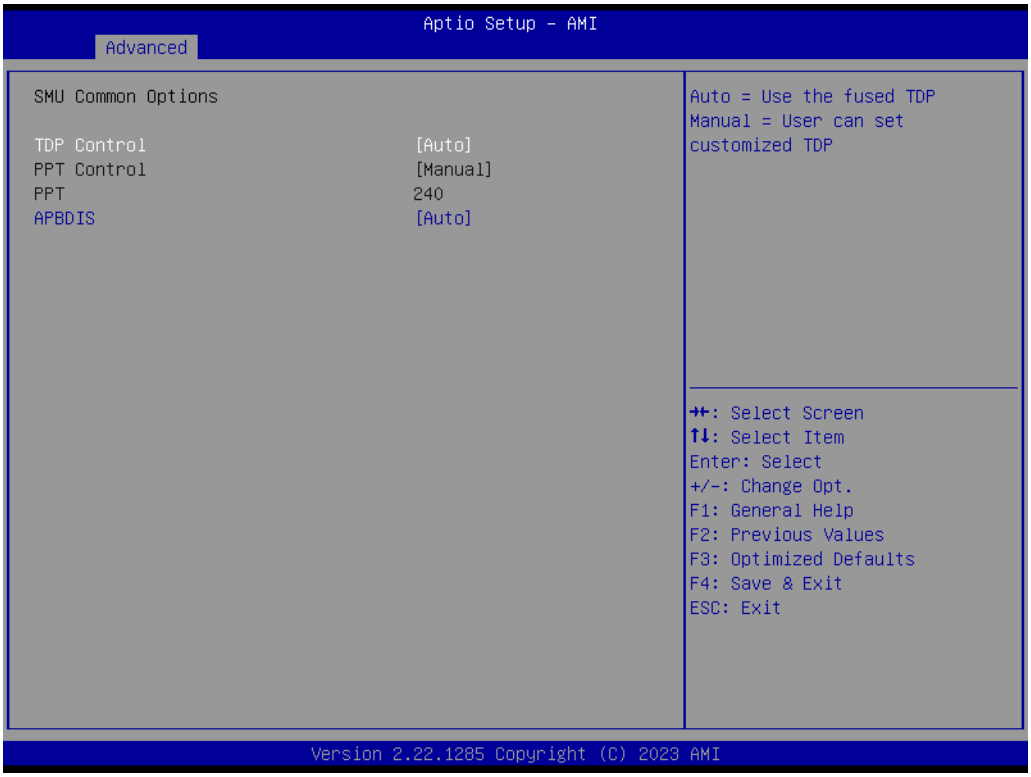


Figure 3.13 SMU Common Options Screen

- **TDP Control**
  Auto = Use the fused TDP; Manual = User can set customized TDP.
- **PPT Control**
  Package Power Limit 240W based on ASMB-831 CPU power design.
- **APBDIS**
  0 = not APBDIS (mission mode), 1 = APBDIS.

- **PCIE Link Speed Capability**

  Set all PCIe port speed capability:

  Maximum speed; Gen1; Gen2; Gen3; Gen4; Gen5; Auto.

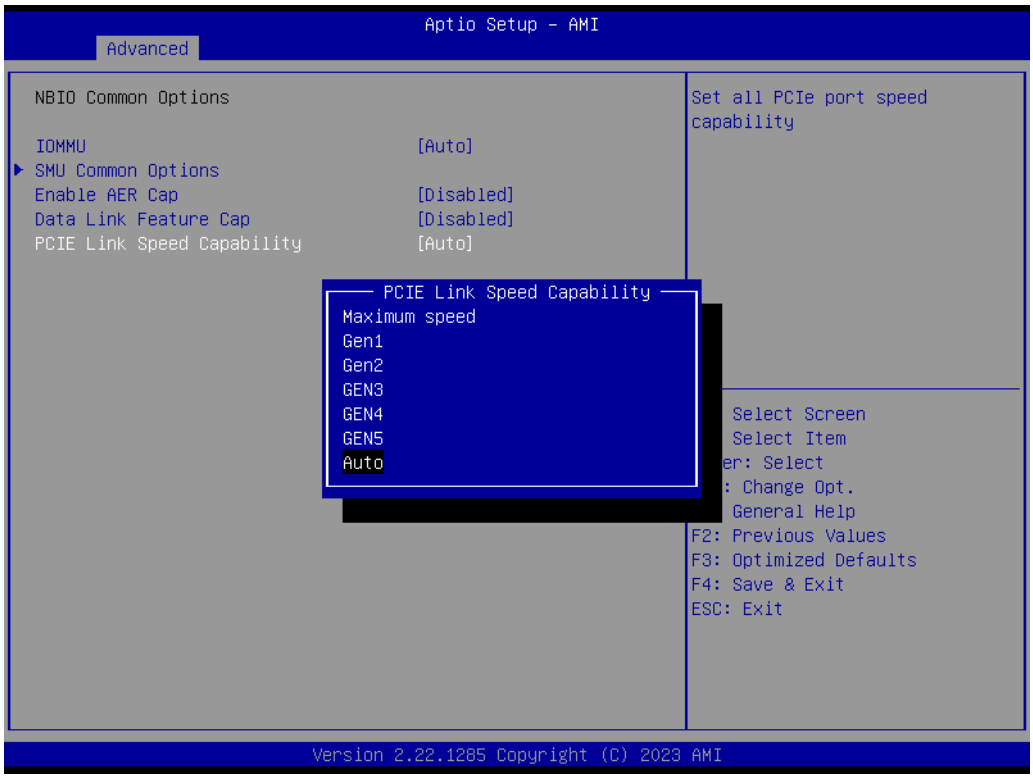


Figure 3.14 NBIO Common Options - PCIE Link Speed Capability screen

3.3.4.4 FCH Common Options

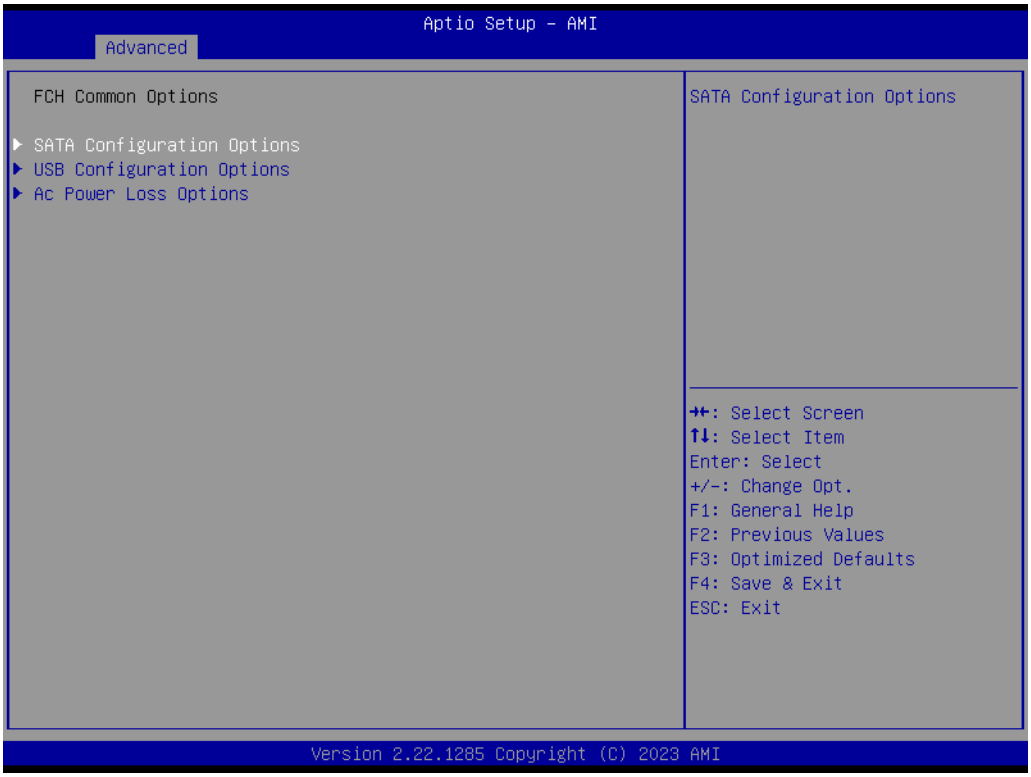


Figure 3.15 FCH Common Options Screen

SATA Configuration Options

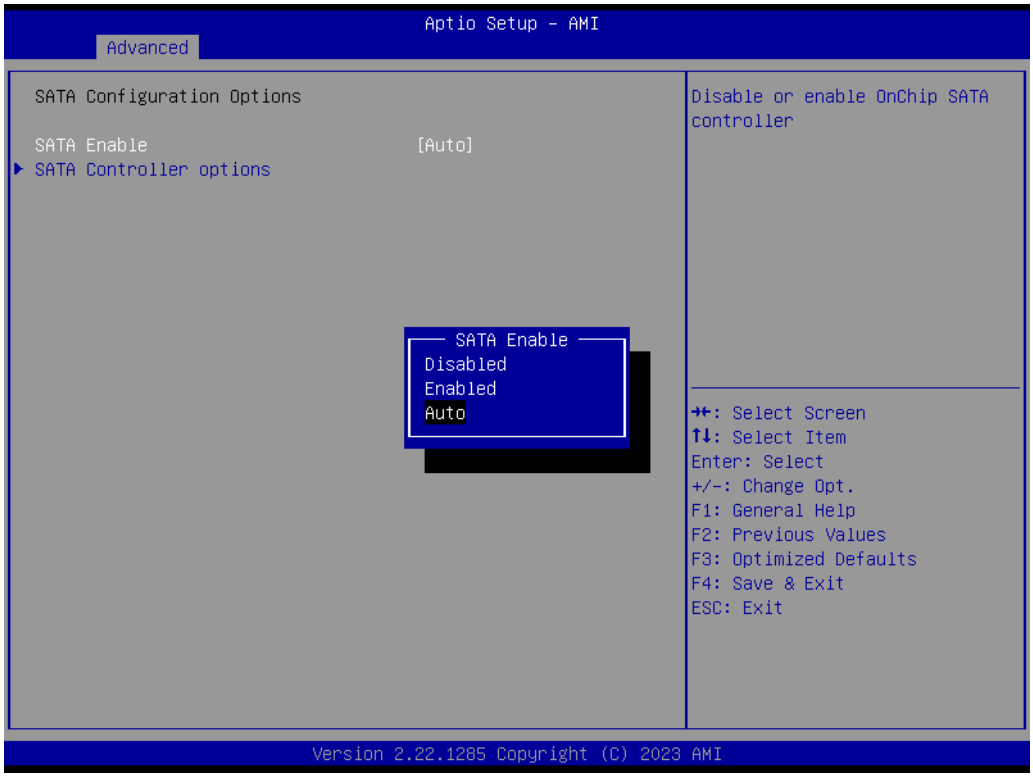


Figure 3.16 SATA Configuration Options Screen

– **SATA Enable**
Disable or enable the OnChip SATA controller.

SATA Controller options

Figure 3.17 SATA Controller Options Screen

SATA Controller Enable

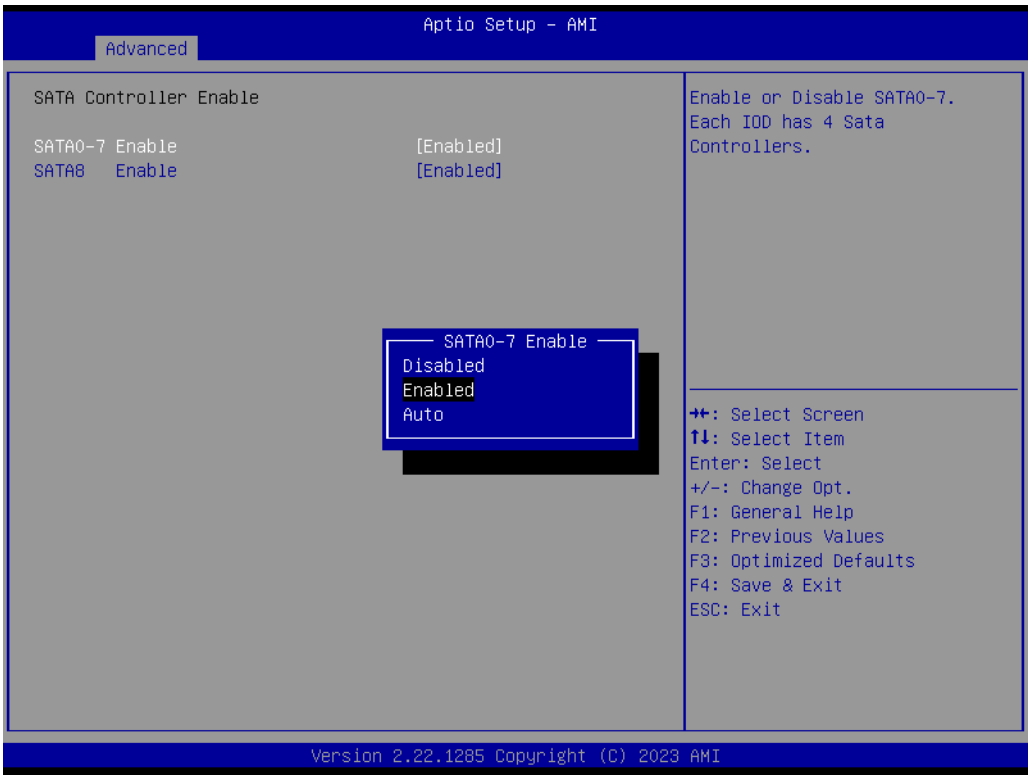


Figure 3.18 SATA Controller Enable Screen

- **Sata0-7 Enable**
  Enable or Disable Sata0~7. Each IOD has 4 SATA Controllers.
- **Sata8 Enable**
  Enable or Disable Sata8. Each IOD has 4 SATA Controllers.

SATA Controller eSATA

Figure 3.19 SATA Controller eSATA Screen

- **SATA Port HotPlug**
  Enable or Disable SATA Port0~Port8 HotPlug function.

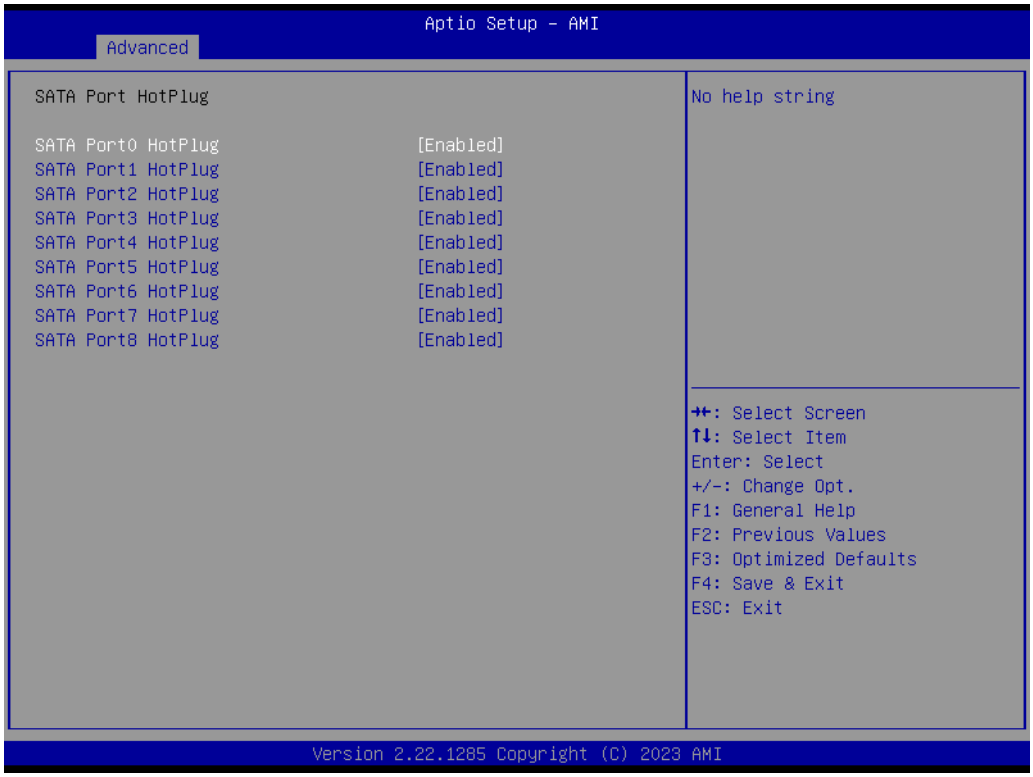


Figure 3.20 SATA Port HotPlug Screen

USB Configuration Options

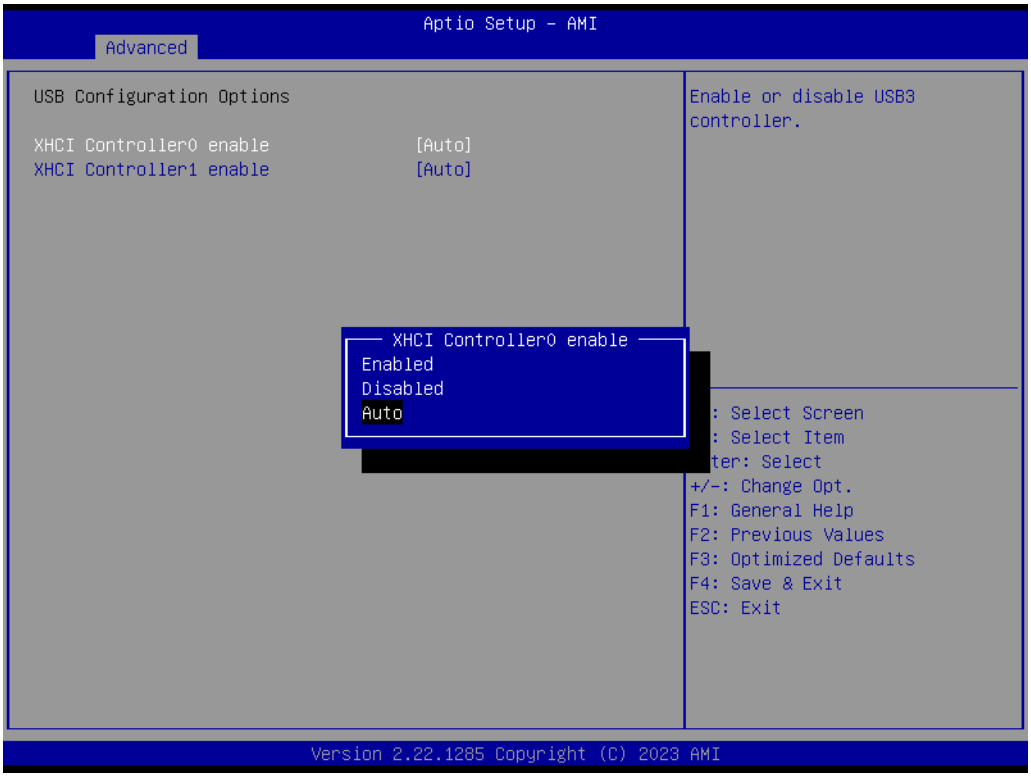


Figure 3.21 USB Configuration Options Screen

- **XHCI Controller0 enable**
  Enable or disable USB3 controller0.
- **XHCI Controller1 enable**
  Enable or disable USB3 controller1.

AC Power Loss Options

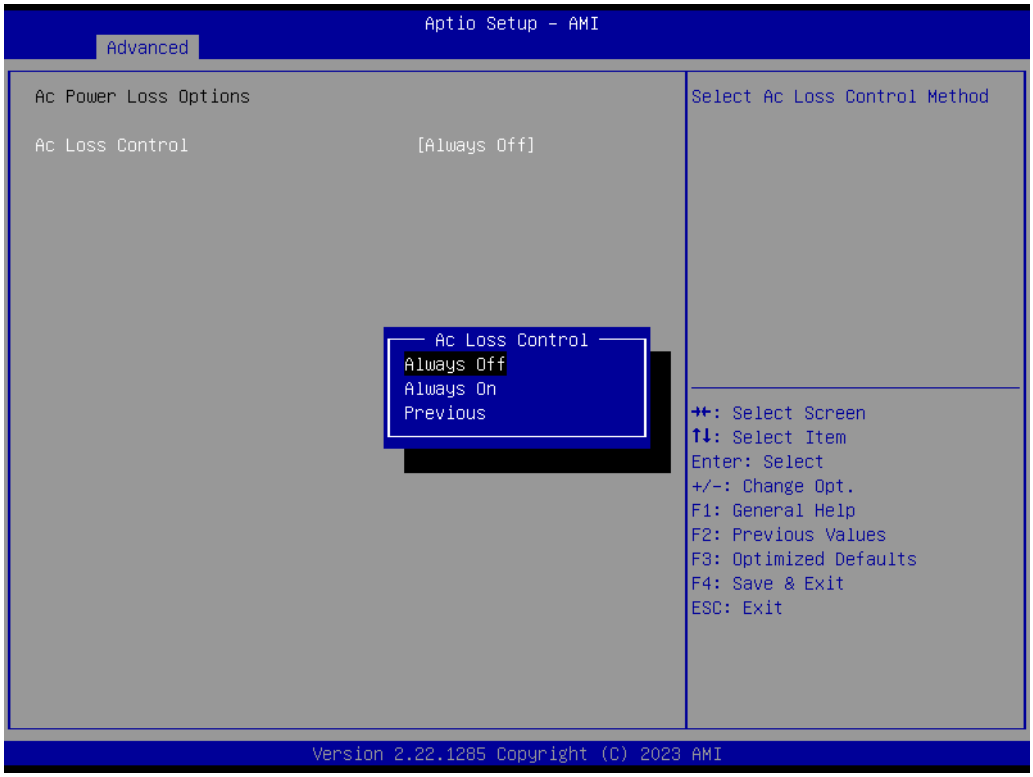


Figure 3.22 AC Power Loss Options Screen

– **AC Loss Control**
Select AC Loss Control Method:
Always Off; Always On; Previous.

3.3.5 AST2600 Super IO Configuration

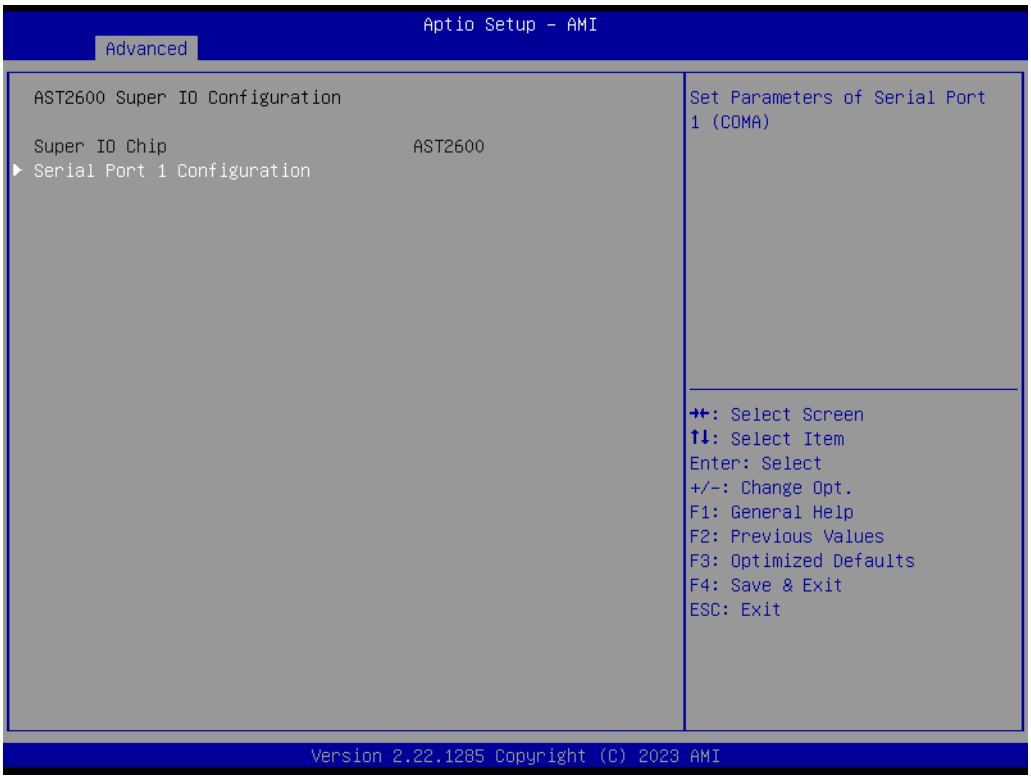


Figure 3.23 AST2600 Super IO Configuration Screen

- **Serial Port 1 Configuration**

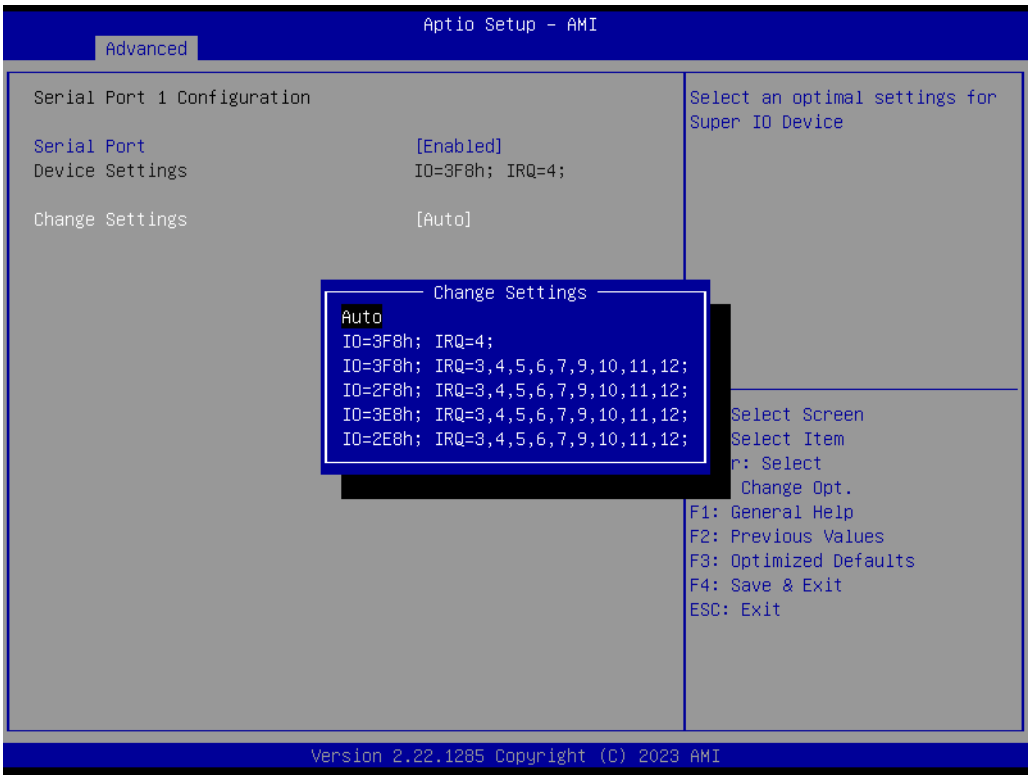


Figure 3.24 Serial Port 1 Configuration Screen

– **Serial Port**
  Enable or Disable Serial Port (COM).
– **Change Settings**
  To select an optimal setting for Super IO Device.

3.3.6 Hardware Monitor

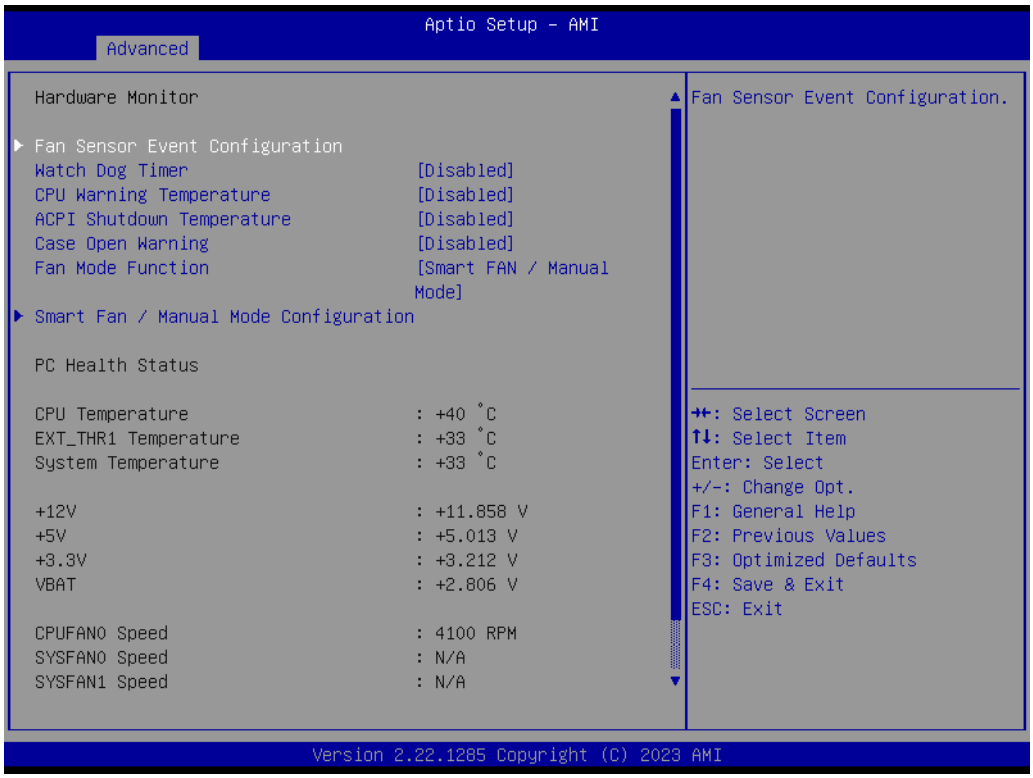


Figure 3.25 IT8528 HW Monitor Screen

■ **Fan Sensor Event Configuration**
Enabled/Disabled CPUFAN1 and SYSFAN0~SYSFAN4 Fan Sensor Event.

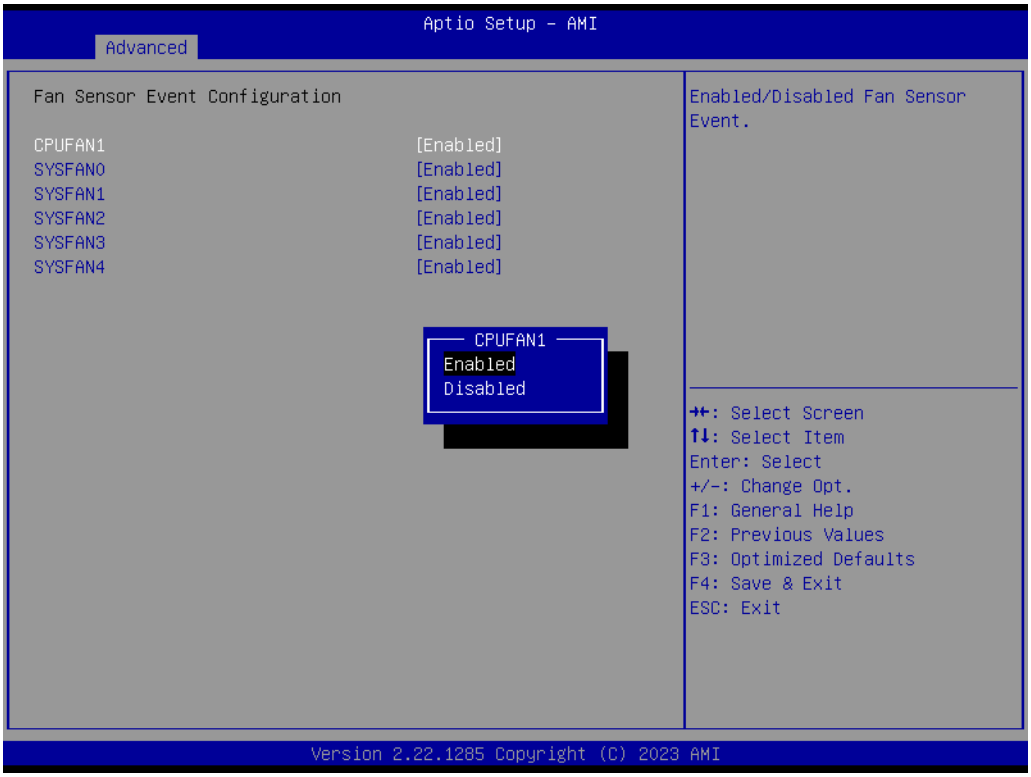


Figure 3.26 Fan Sensor Event Configuration screen

- **Watchdog Timer**
  Enable or Disable the watchdog timer function.
- **CPU Warning Temperature**
  Enable or Disable the CPU warning temperature threshold. When the system reaches the warning temperature, the speaker will beep.

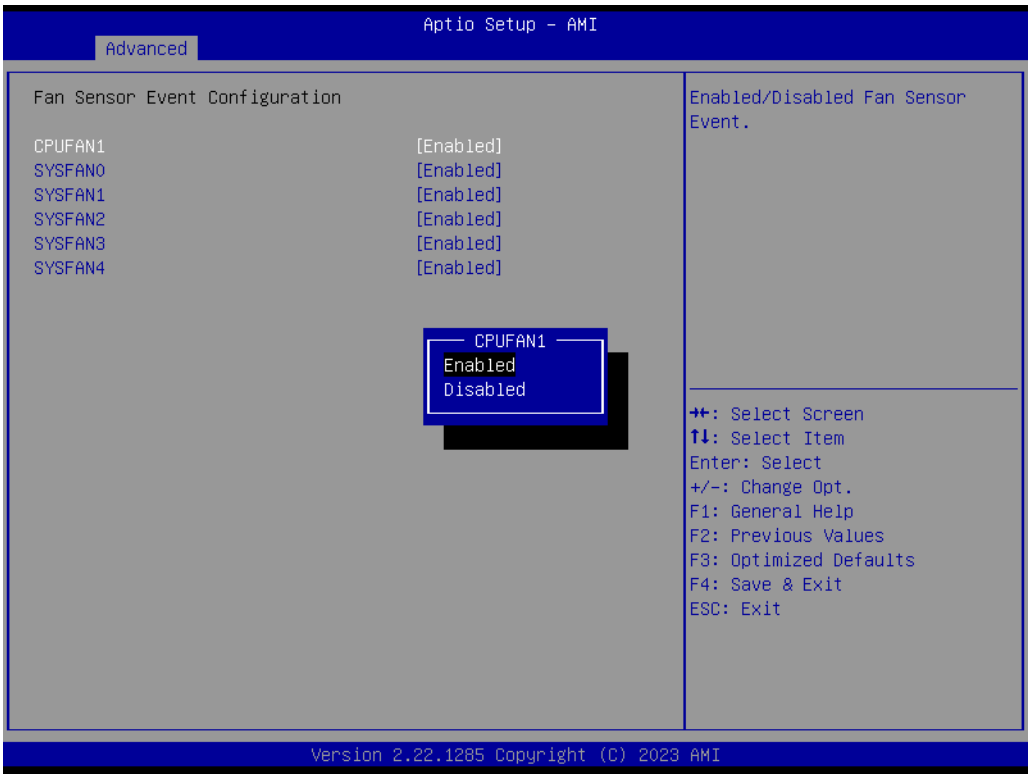


Figure 3.27 CPU Warning Temperature screen

- **ACPI Shutdown Temperature**

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

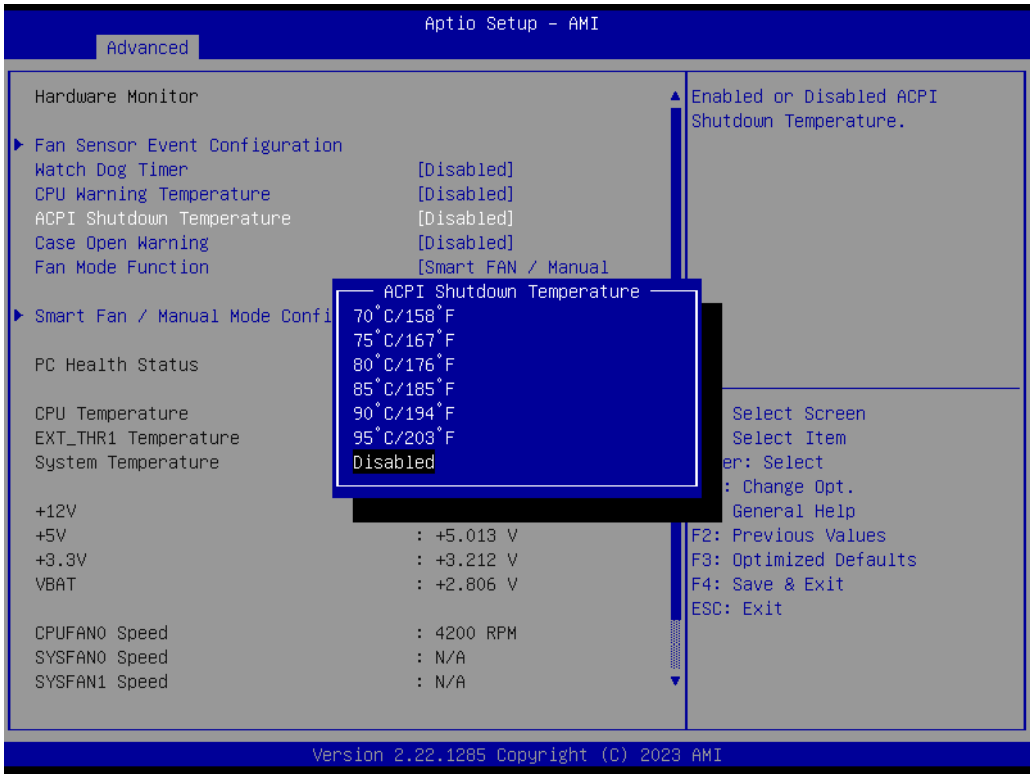


Figure 3.28 ACPI Shutdown Temperature screen

- **Case Open Warning**

  Enable or Disable Case Open Warning Message.

- **Fan Mode Function**

  Select FAN control policy:

  Full Speed; Smart FAN/Manual Mode; Quiet Mode.

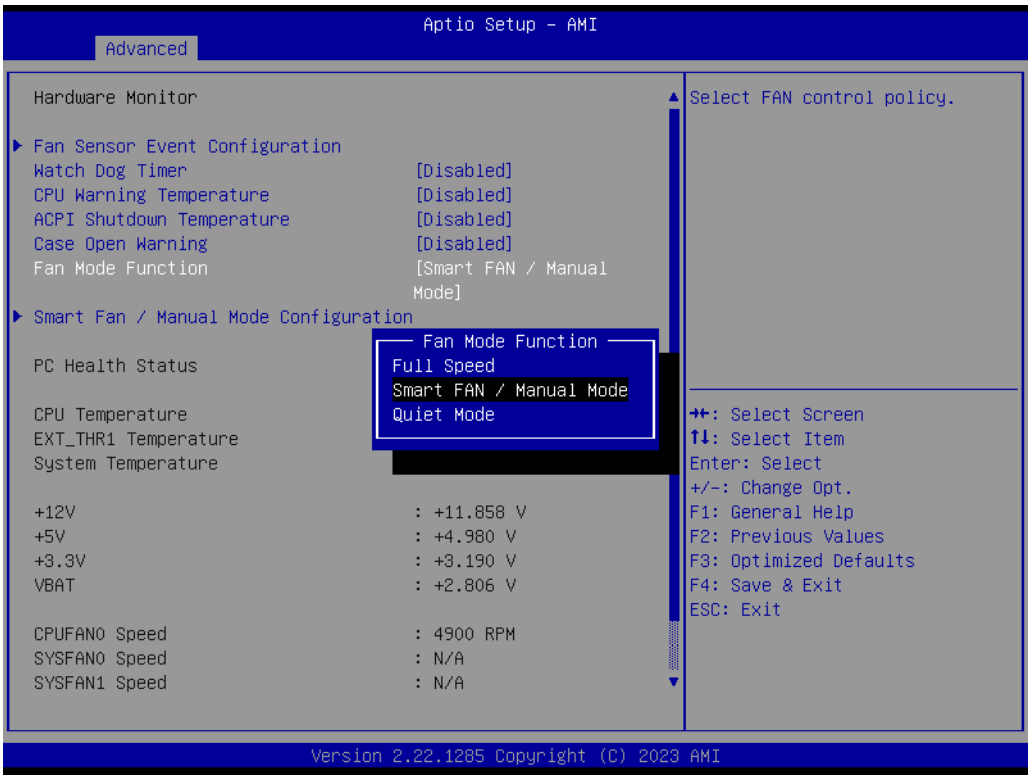


Figure 3.29 Fan Mode Function screen

- **Smart Fan / Manual Mode Configuration**

  The default mode of the CPU/System FAN is Smart FAN mode and the BIOS will automatically control the FAN speed according to the CPU temperature. When set to manual mode, the fan duty setting can be changed; the range is from 10%~100%, and the default setting is 100%.

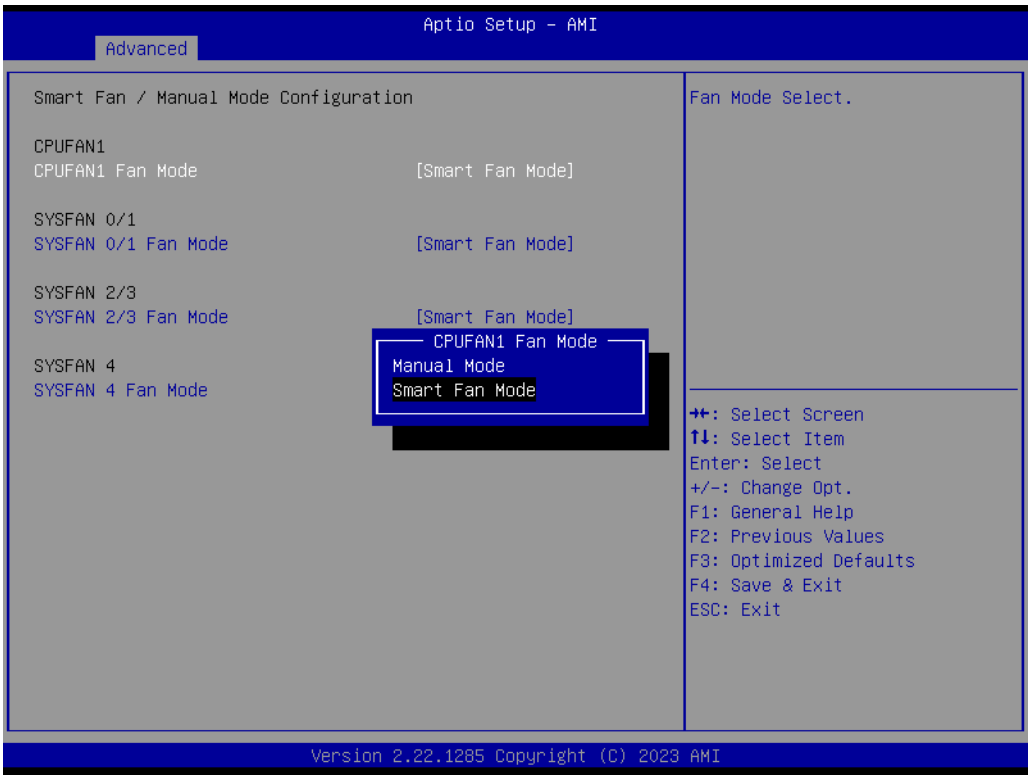


Figure 3.30 Smart Fan and Manual Mode Configuration screen

3.3.7 S5 RTC Wake Settings

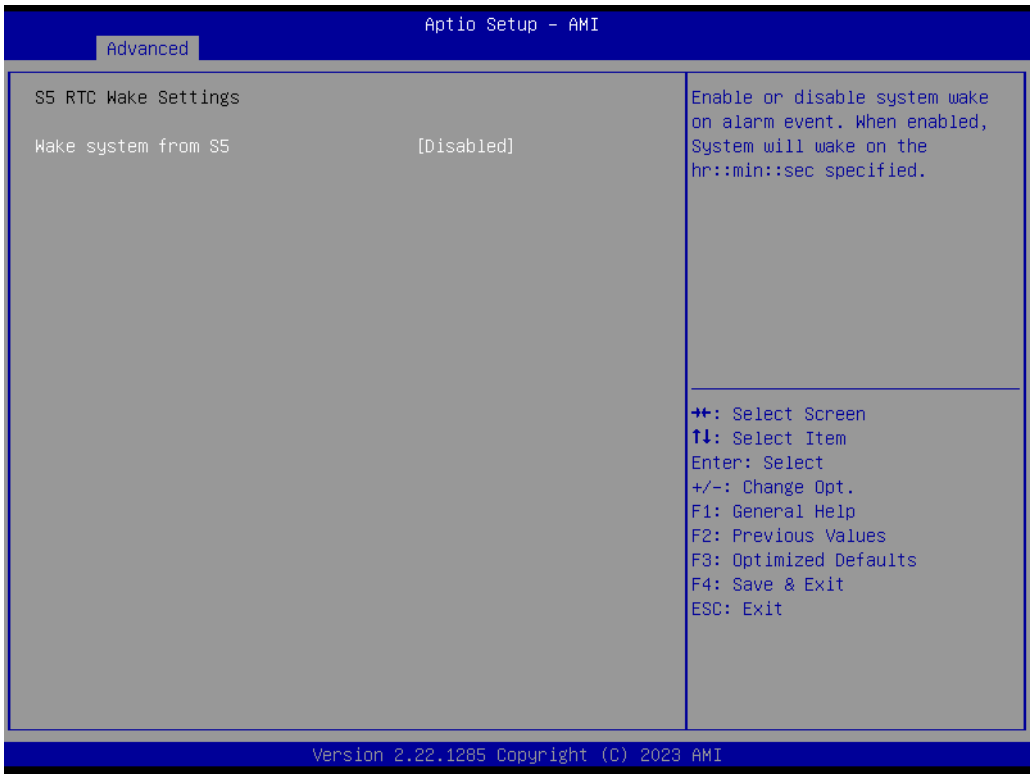


Figure 3.31 S5 RTC Wake Settings Screen

- **Wake system from S5**
  Enable or disable system wake on alarm event. Select FixedTime, and the system will wake on the hr:min:sec specified. Select DynamicTime, and the system will wake at the current time + the added minute(s).

3.3.8 Serial Port Console Redirection

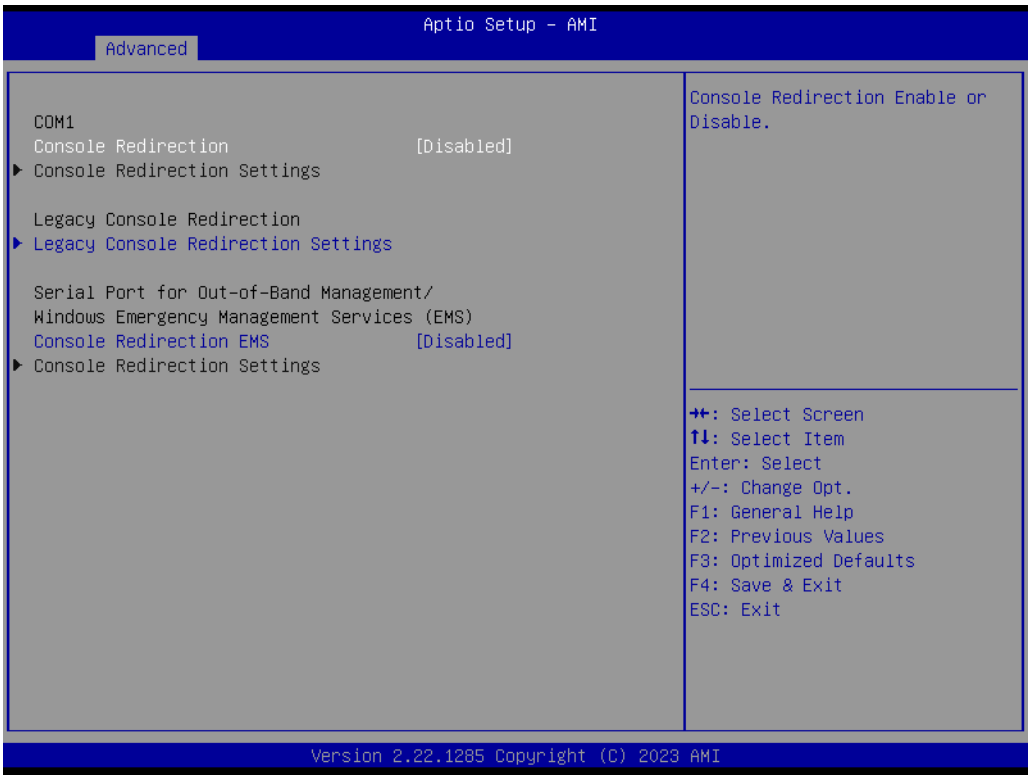


Figure 3.32 Serial Port Console Redirection Screen

- **Console Redirection Settings**

  The settings specify how the host computer and the remote computer (which the user is using) will exchange data. Both computers should have the same or compatible settings.

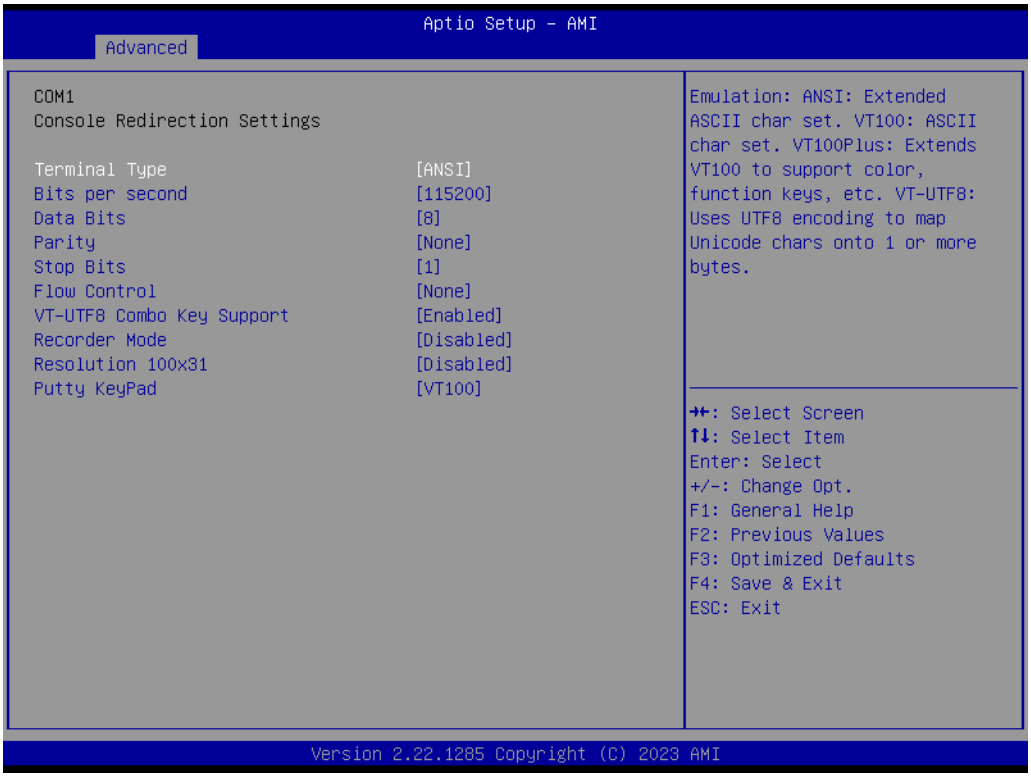


Figure 3.33 COM1 Console Redirection Settings Screen

- **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 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 the number of 1's in the data bits is odd. Mark: parity bit is always 1. Space: Parity bit is always 0. Mark and Space Parity do not allow for error detection. 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 is enabled, only text will be sent. This is to capture terminal data.
  Options available: Enabled/Disabled.
- **Resolution 100x31**
  Enables or disables extended terminal resolution.
- **Putty Keypad**
  Select function keys and keypad on putty.

Legacy Console Redirection Settings

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

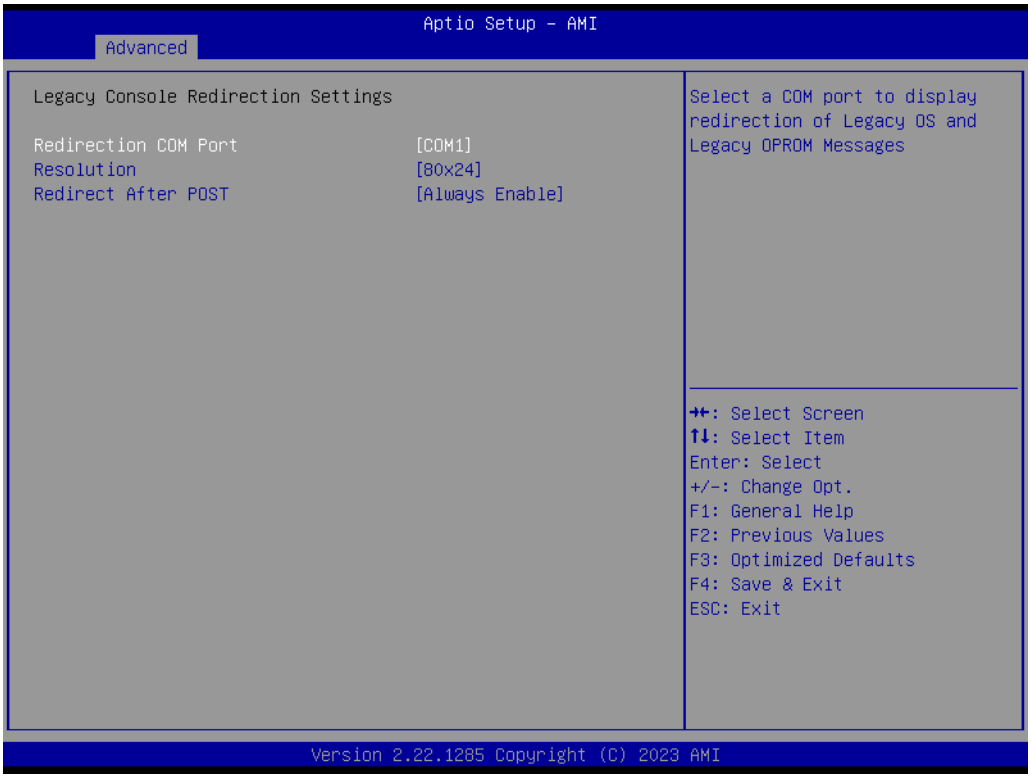


Figure 3.34 Legacy Console Redirection Settings Screen

Console Redirection Settings

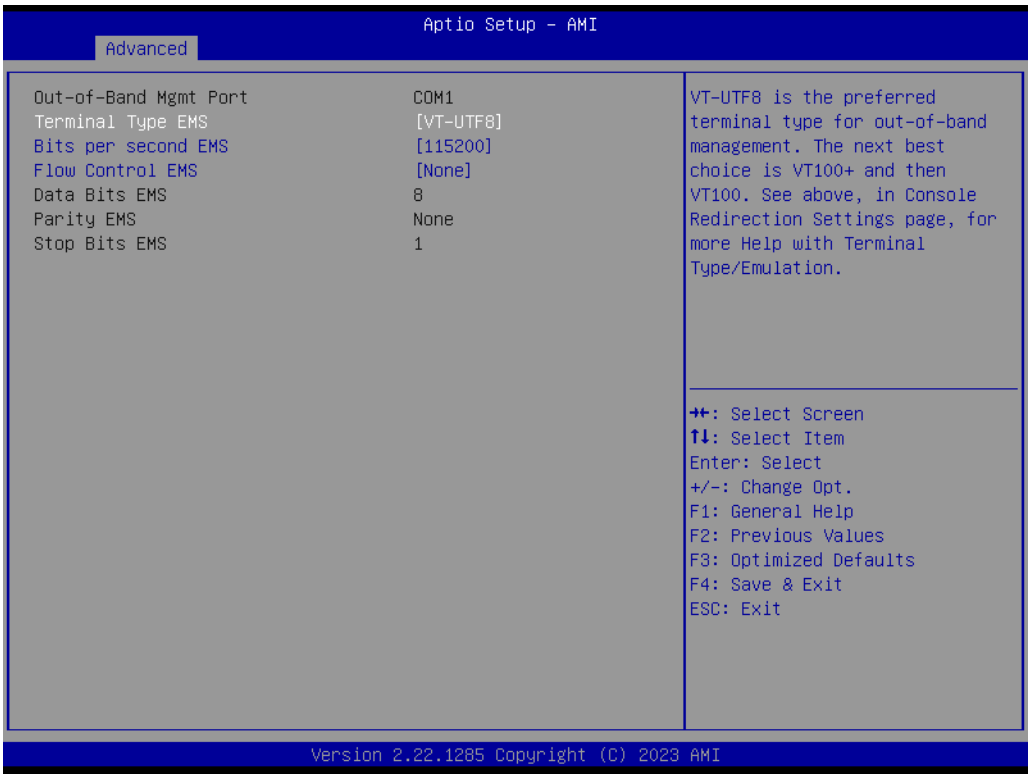


Figure 3.35 Console Redirection Settings Screen

- **Out-of-Band Mgmt Port**
  To select the com port the user would like to set for console redirection.
- **Terminal Type EMS**
  Set as "VT100", "VT100+", "VT-UTF8", or "ANSI". "VT-UTF8" is the default setting.
- **Bits Per Second EMS**
  To select serial port transmission, the 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 EMS**
  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 EMS**
- **Parity EMS**
- **Stop Bits EMS**

3.3.9 CPU Configuration

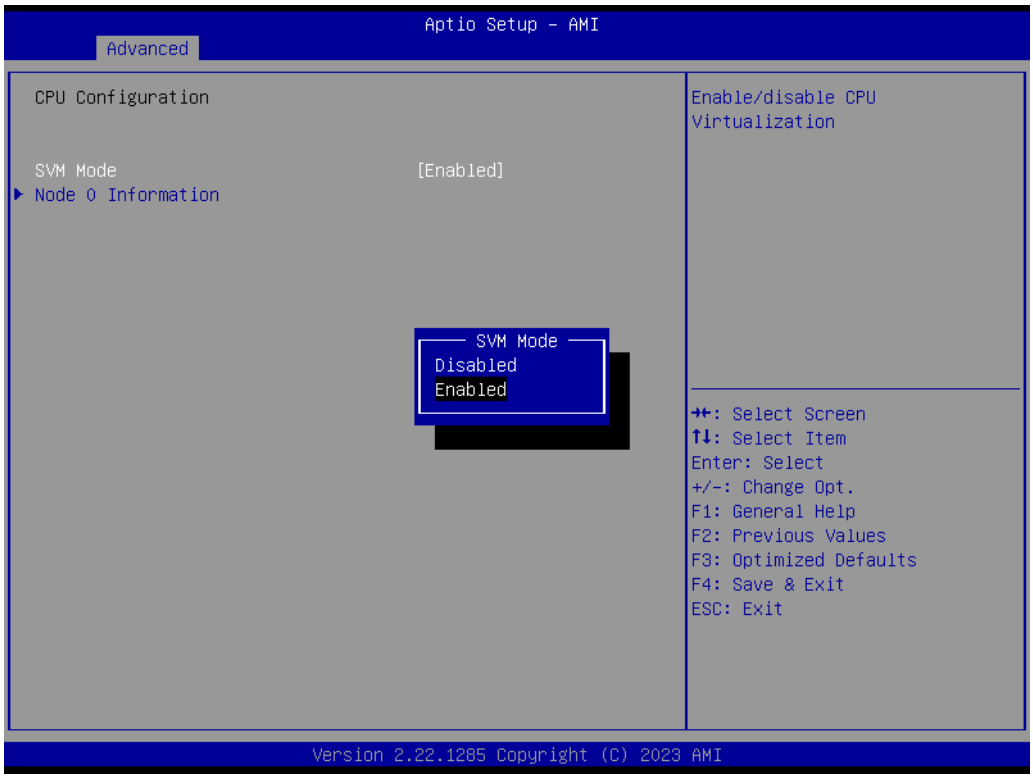


Figure 3.36 CPU Configuration Screen

- **SVM Mode**
  Enable/Disable CPU Virtualization.
- **Node 0 Information**
  View memory information related to Node 0 AMD EPYC CPU.

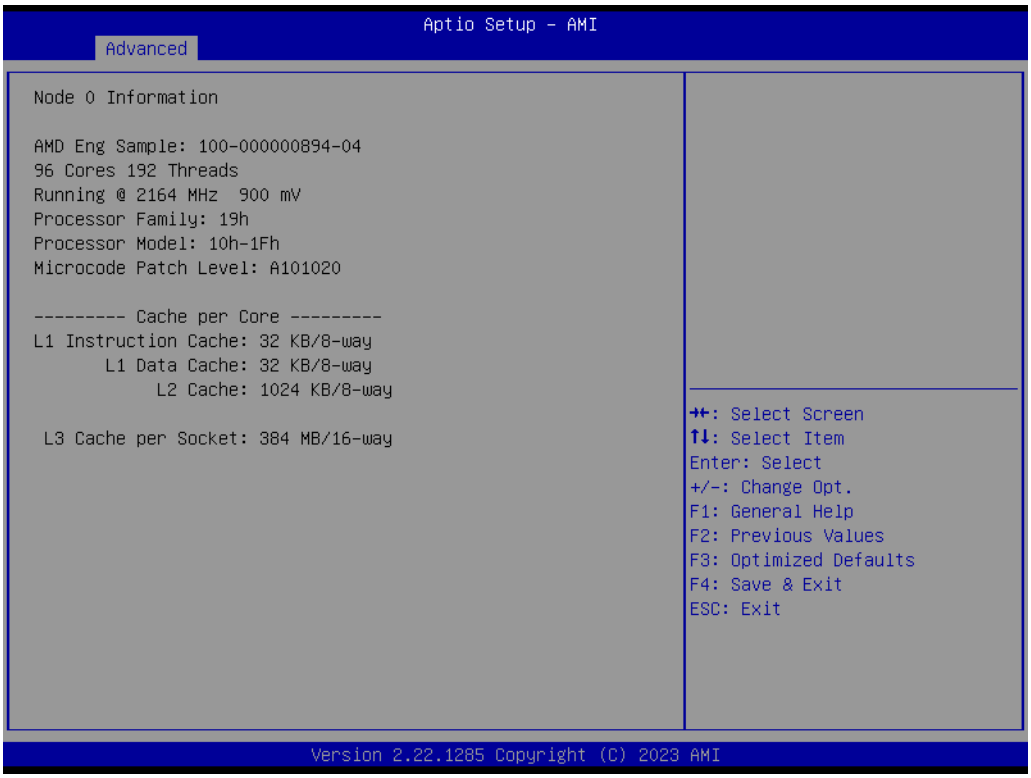


Figure 3.37 Node 0 Information Screen

3.3.10 PCI Subsystem Settings

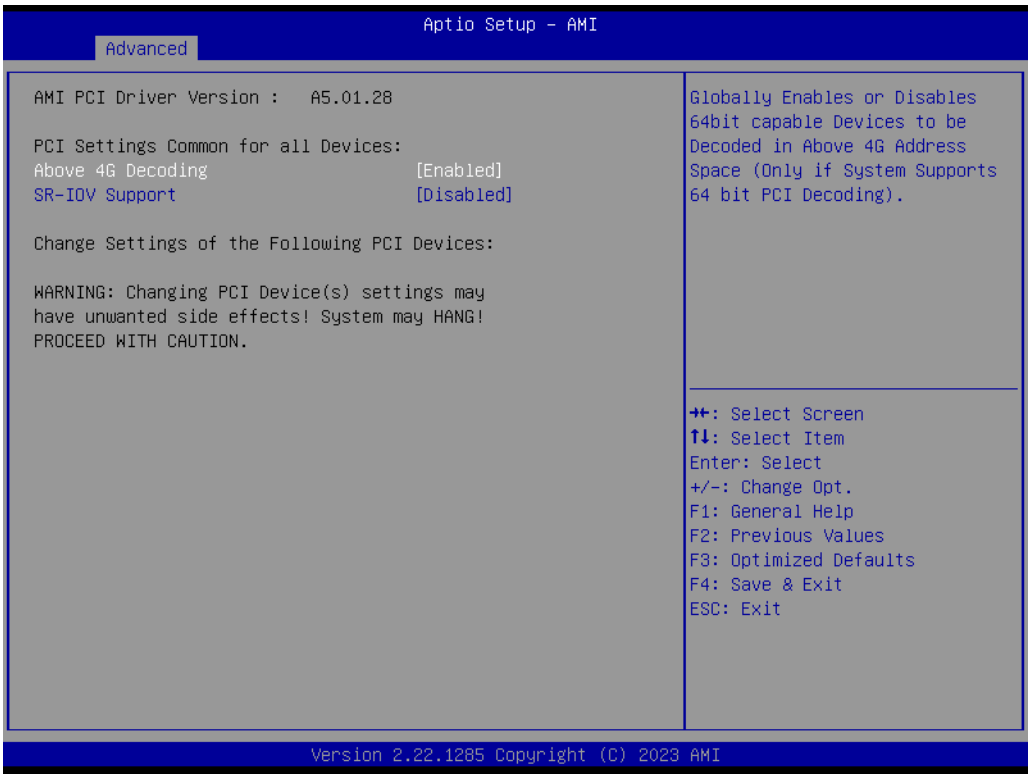


Figure 3.38 PCI Subsystem Settings Screen

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

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

- **SR-IOV Support**
  If the system has SR-IOV capable PCIe Devices, this option Enables or Disables Single Root IO Virtualization support.

3.3.11 USB Configuration

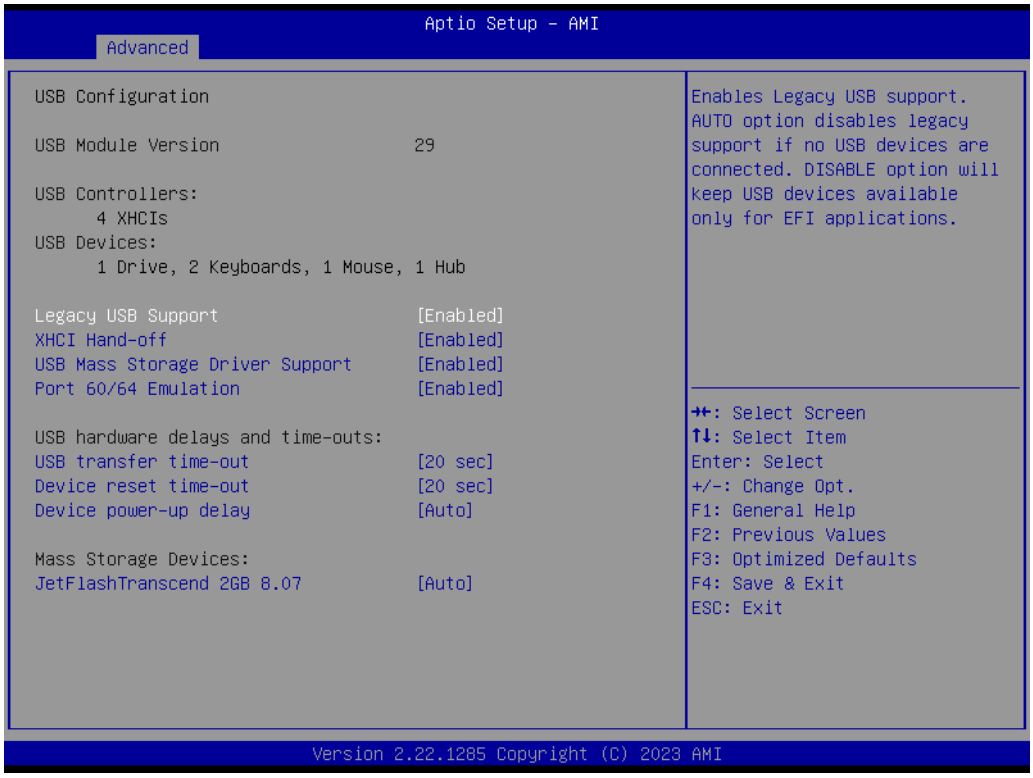


Figure 3.39 USB Configuration Screen

- **Legacy USB Support**
  This is to support a USB device under a legacy OS such as DOS. When "Auto" is selected, the system will automatically detect if a USB device is plugged into the computer and enable USB legacy mode when a USB device is plugged in, or disable USB legacy mode when no USB device is attached.
- **XHCI Hand-off**
  This is a workaround for an OS without XHCI hand-off support. The XHCI ownership change should be claimed by the XHCI driver.
- **USB Mass Storage Driver Support**
  Enable or Disable USB mass storage driver support.
- **Port 60/64 Emulation**
  Enables I/O port 60h/64h emulation support. This should be enabled for the complete USB keyboard legacy support for non-USB aware OS.

USB Transfer Time-out

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

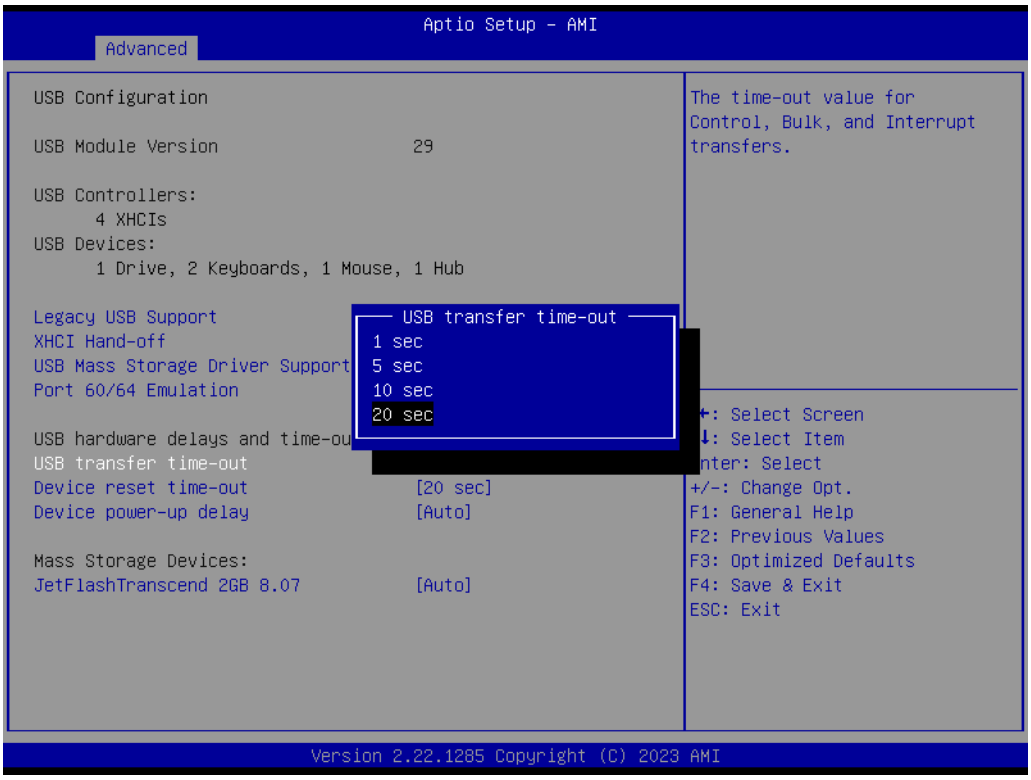


Figure 3.40 USB Transfer Time-Out Screen

Device Reset Time-out

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

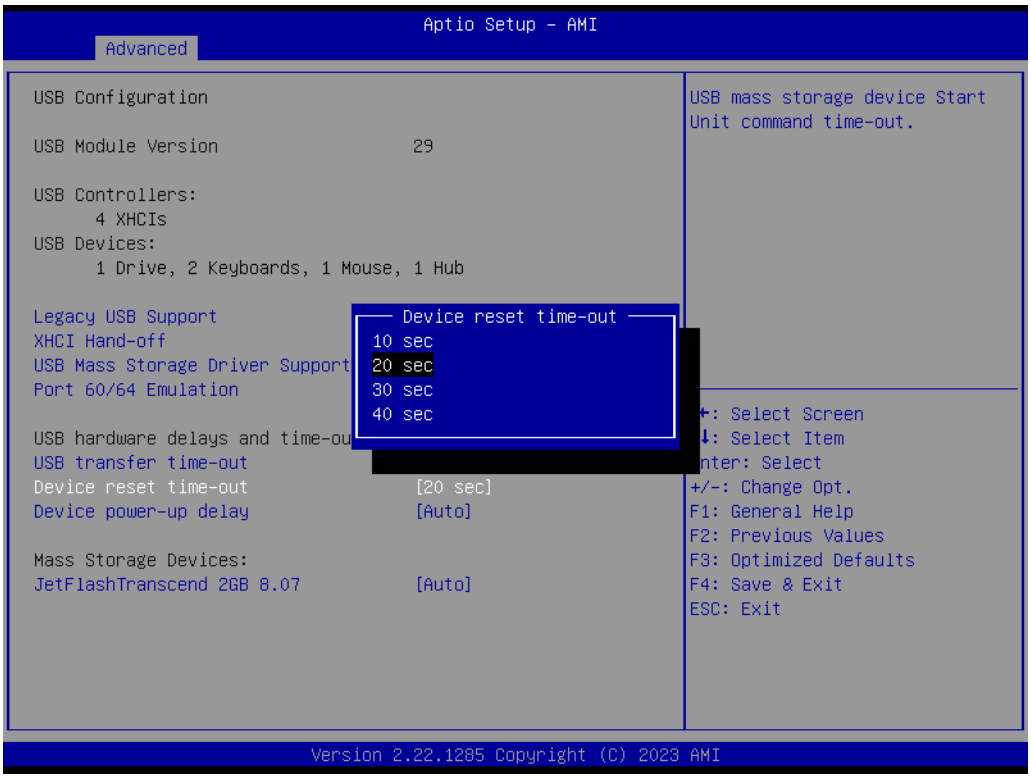


Figure 3.41 Device Reset Time-Out Screen

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

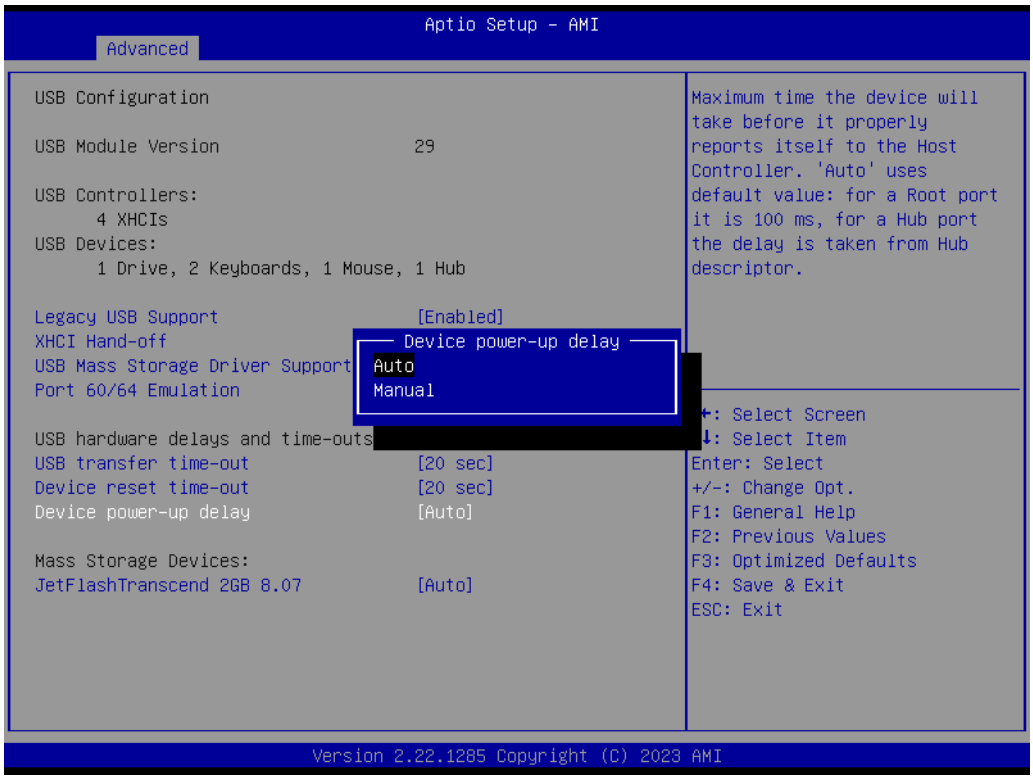


Figure 3.42 Device Power-Up Delay Screen

- **Mass Storage Devices**
  Default is "Auto" to enumerate mass storage devices according to media format. Auto; Floppy; Forced FDD; Hard Disk; CD-ROM.

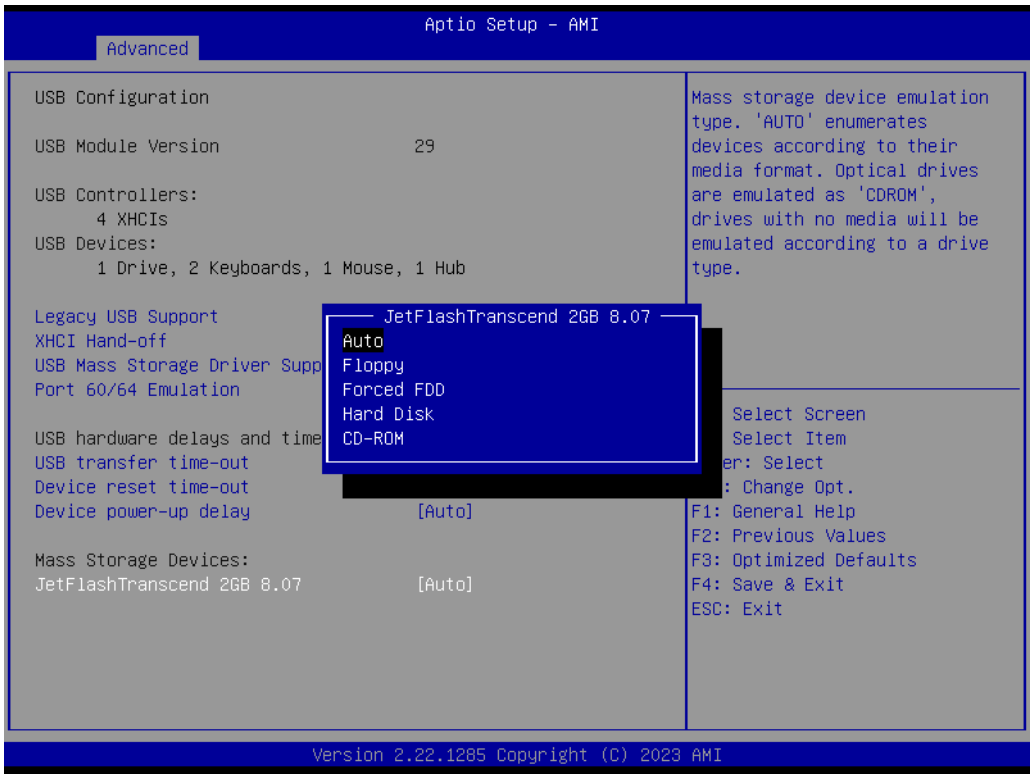


Figure 3.43 Mass Storage Devices Screen

3.3.12 Network Stack Configuration

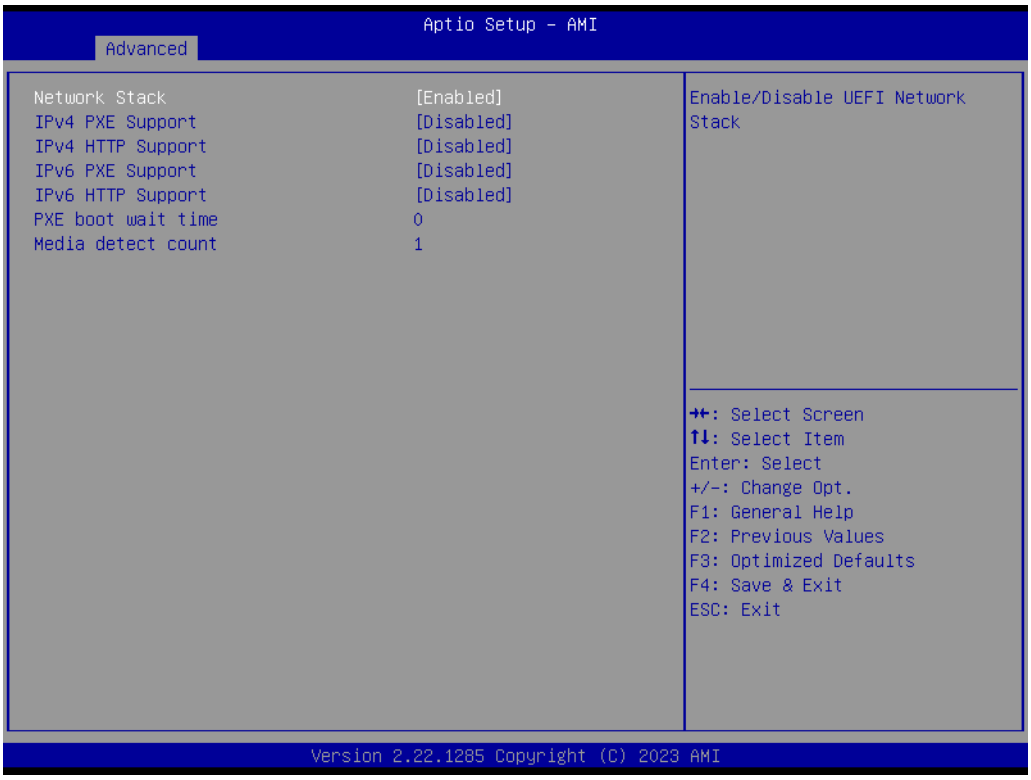


Figure 3.44 Network Stack Configuration Screen

- **Network Stack**
  Enable or Disable UEFI network stack function.
  IPv4 PXE support
  IPv4 HTTP support
  IPv6 PXE support
  IPv6 HTTP support
  PXE boot wait time
  Media detect count

3.3.13 CSM Configuration

Enable or disable CSM (Compatibility Support Module) configuration support. When disabled, the system can only support UEFI mode.

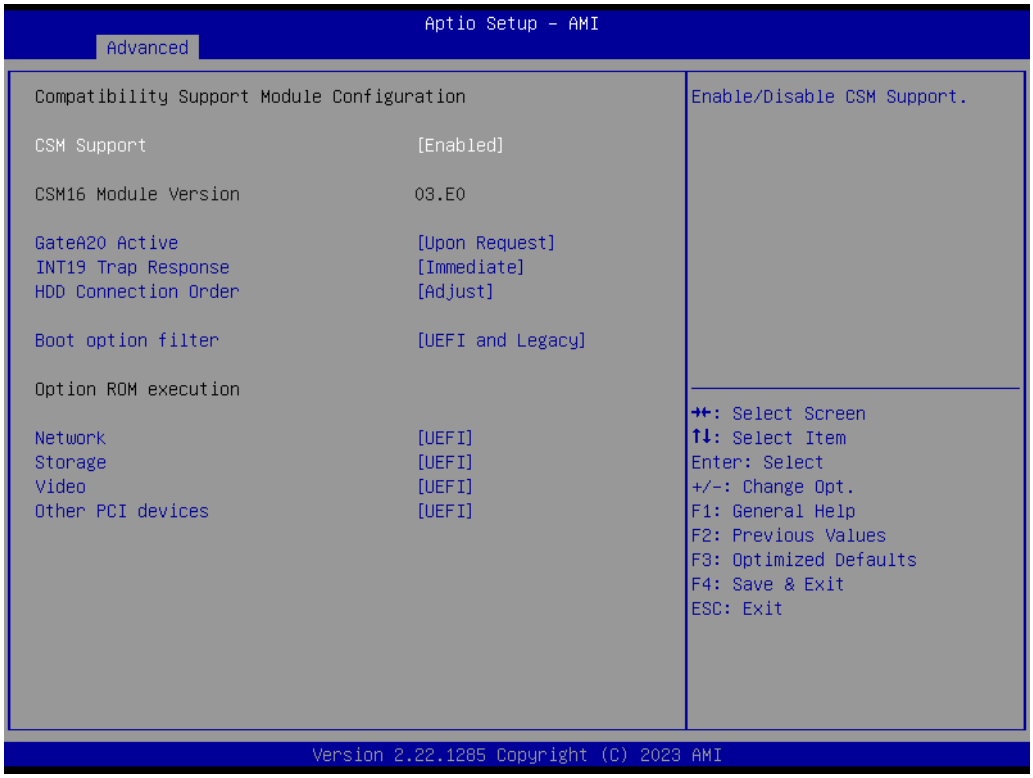


Figure 3.45 CSM Configuration Screen

- **GateA20 Active**
  This 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.
- **INT19 Trap Response**
  The BIOS INT19 trap response is set by option ROM. When it's set as 'Immediate', the trap will be executed right away. When it's set as 'Postponed', the trap will be executed during legacy boot.
- **HDD Connection Order**
  Some OS require HDD handles to be adjusted.

- **Boot Option Filter**
  Change UEFI/legacy ROM priority for the boot option.

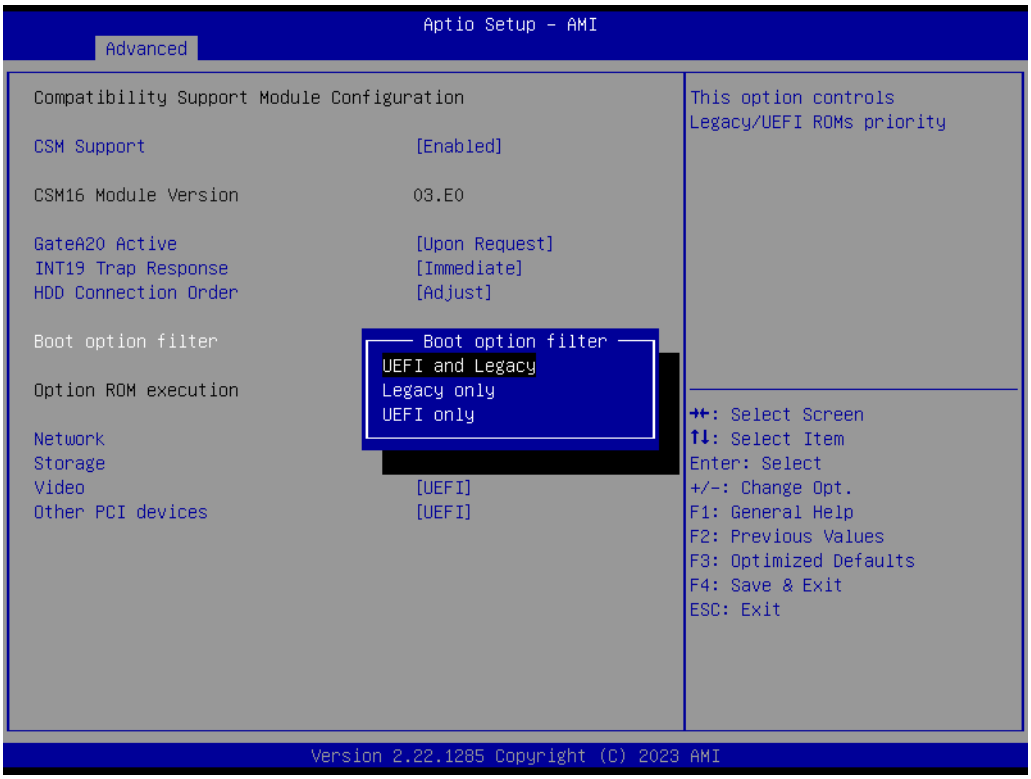


Figure 3.46 Boot Option Filter Screen

- **Network**
  Controls the execution of UEFI and legacy PXE OpROM.

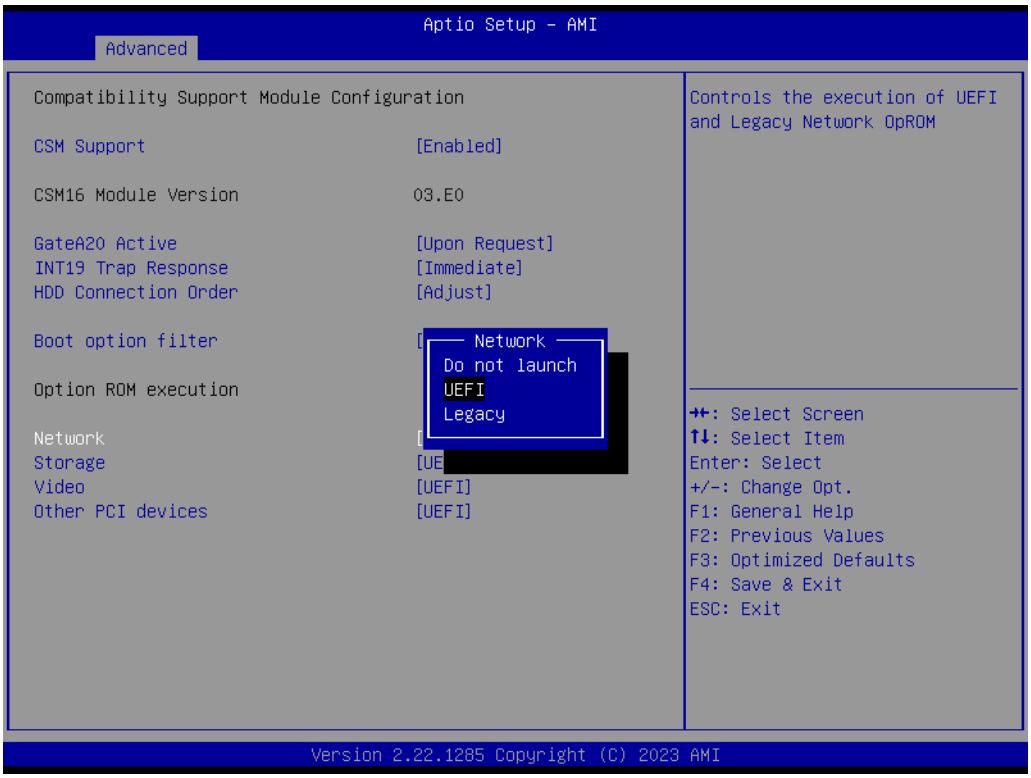


Figure 3.47 Option ROM Execution - Network Screen

- **Storage**
  Control the execution of UEFI and legacy storage OpROM.

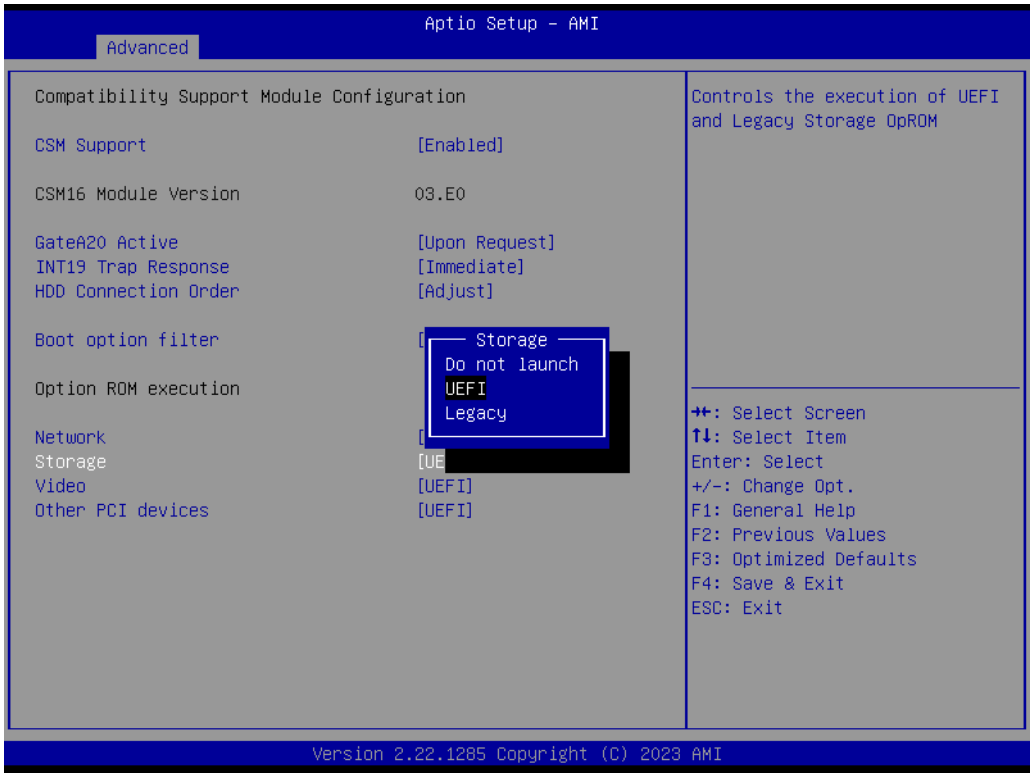


Figure 3.48 Option ROM Execution – Storage Screen

- **Video**
  Control the execution of UEFI and legacy Video OpROM.

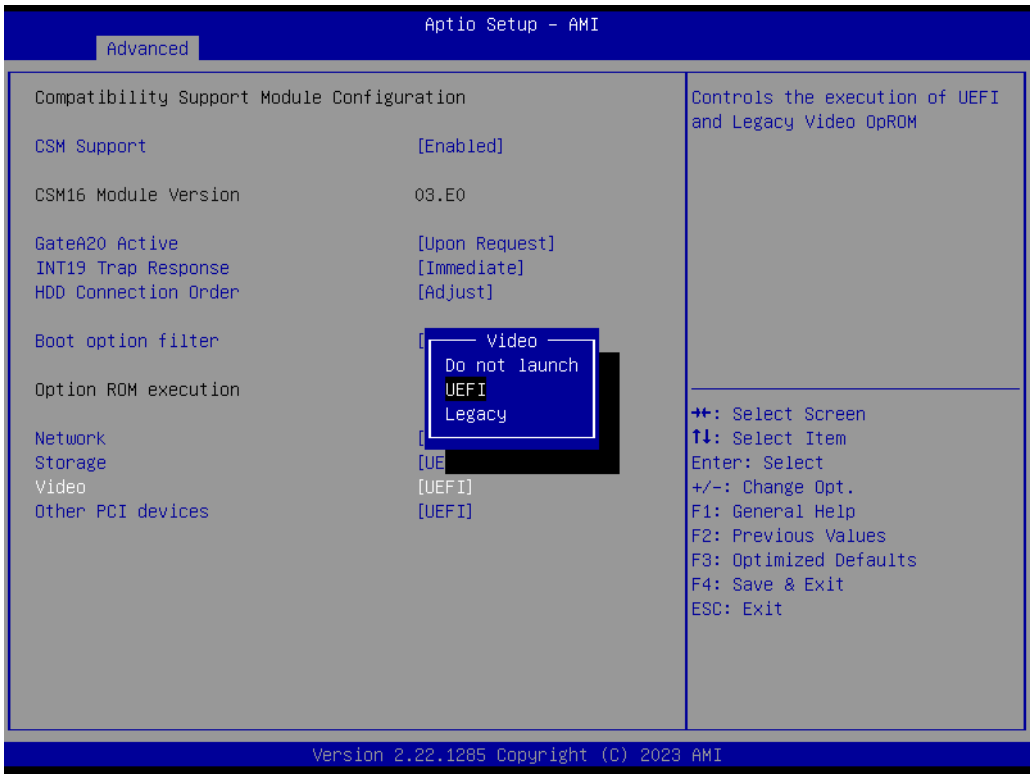


Figure 3.49 Option ROM execution - Video screen

- **Other PCI devices**
  Determines execution of OpROM policy for devices other than Network, Storage, or Video.

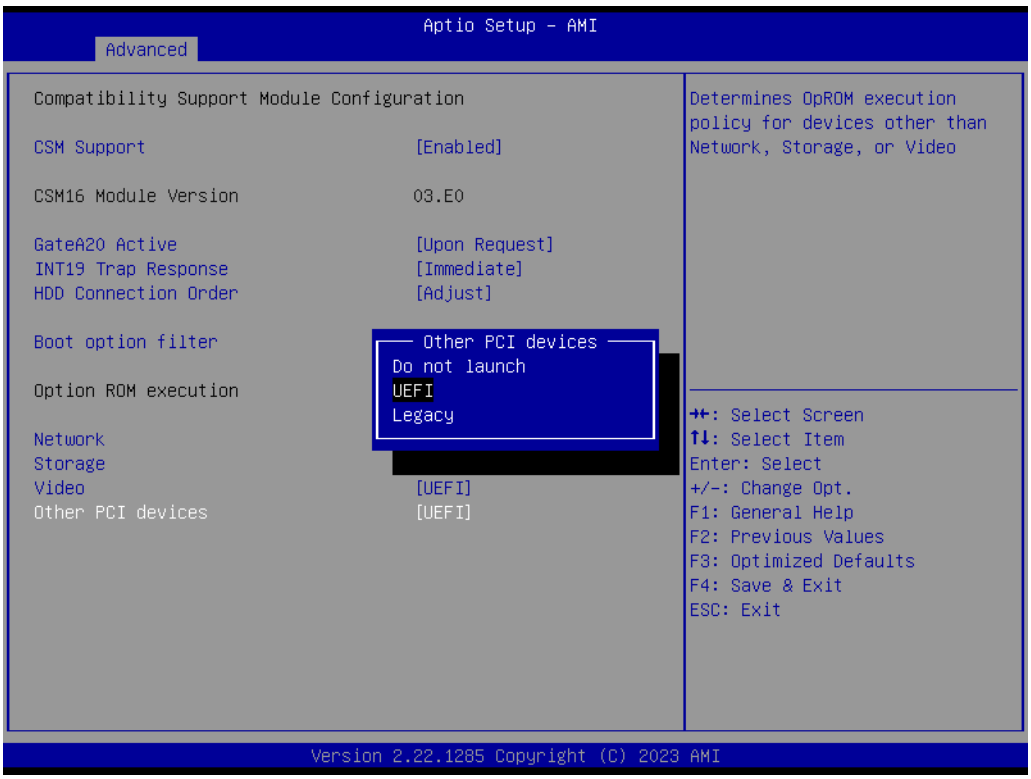


Figure 3.50 Option ROM execution - Other PCI devices screen

3.3.14 NVMe Configuration

NVMe Device Options Settings

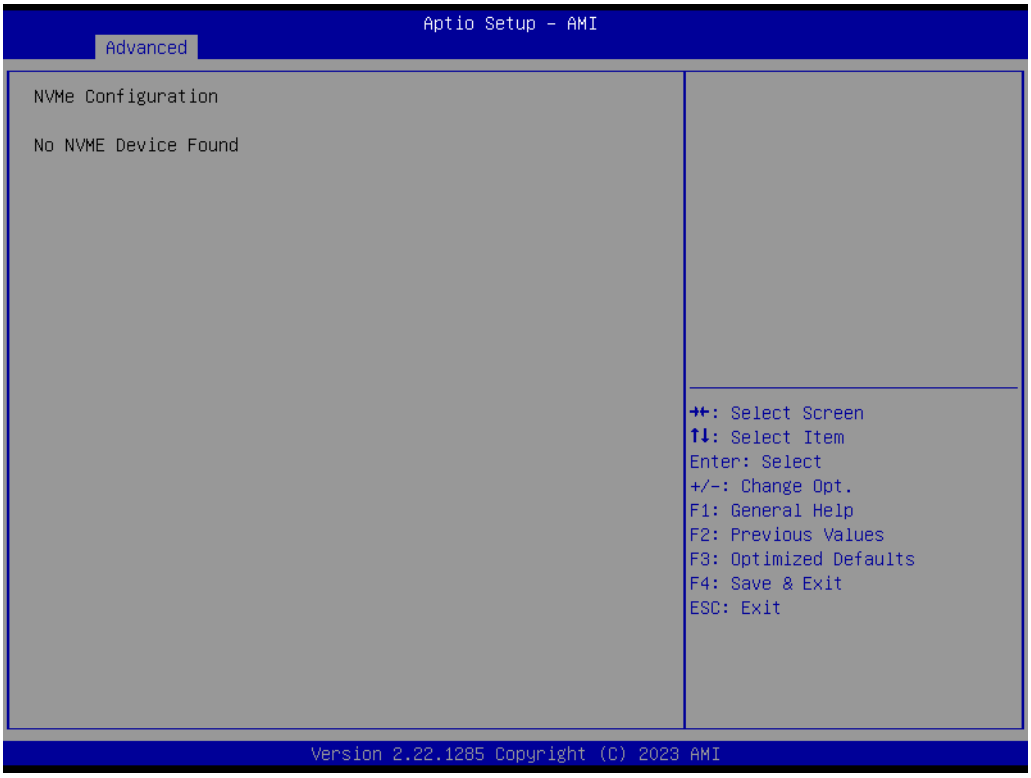


Figure 3.51 NVMe Configuration Screen

3.3.15 SATA Configuration

SATA Device Information

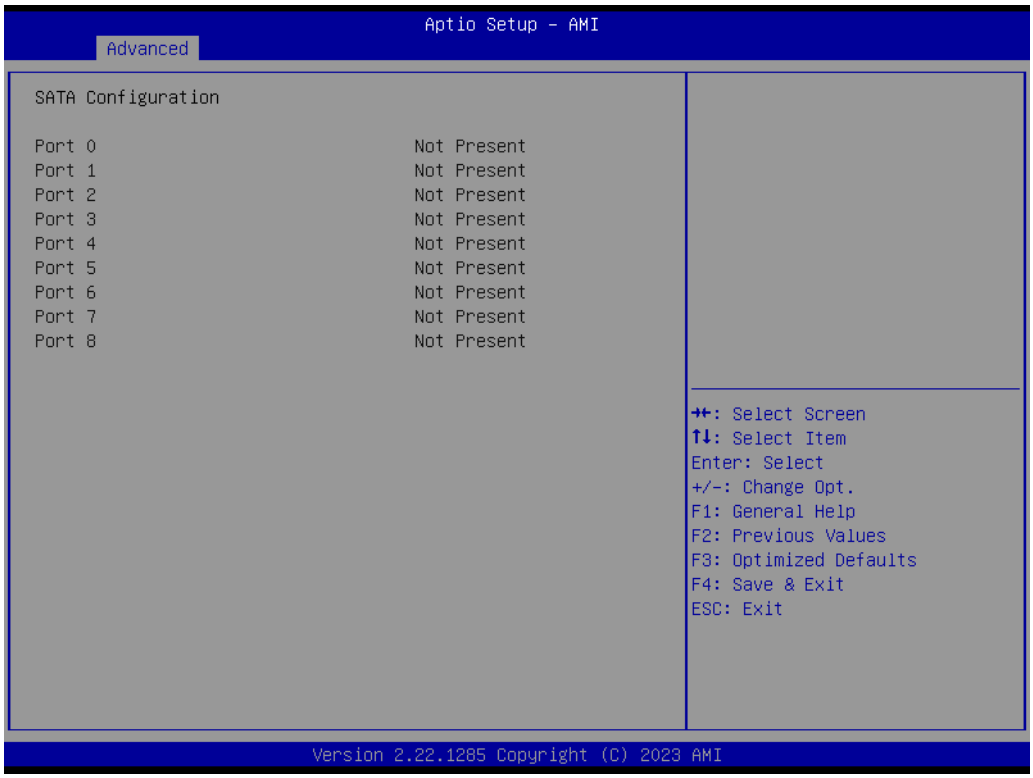


Figure 3.52 SATA Configuration Screen

3.3.16 TLs Auth Configuration

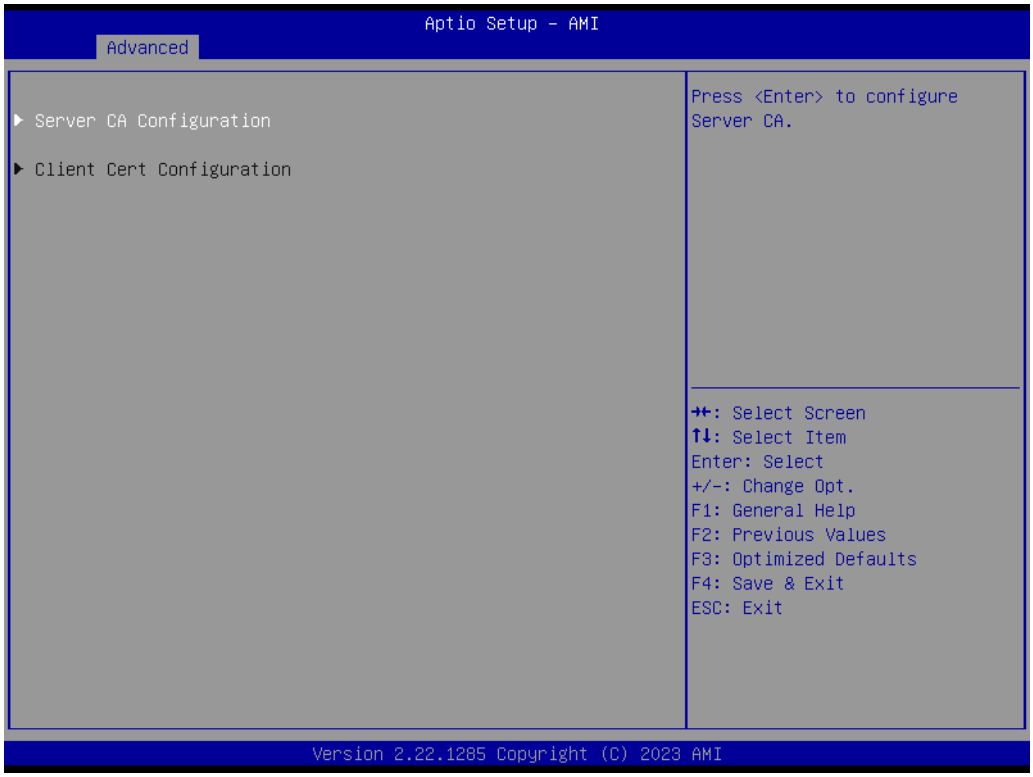


Figure 3.53 TLS Auth Configuration Screen

- **Server CA Configuration**
  Configure Server CA. Enroll or Delete Cert.

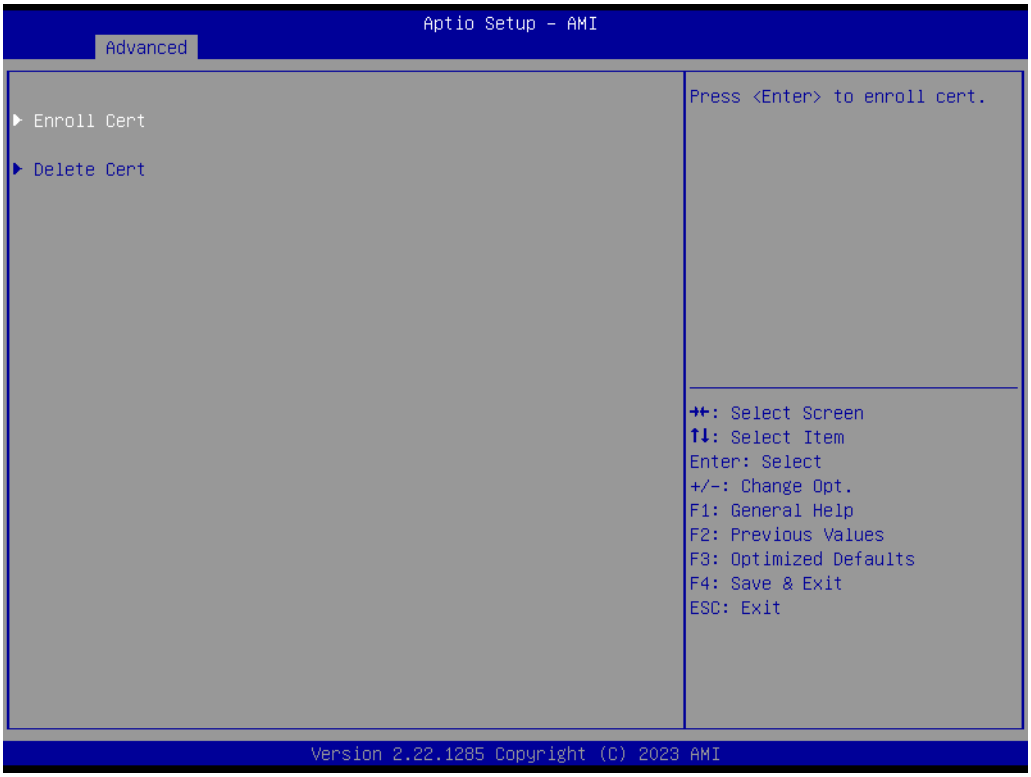


Figure 3.54 Server CA Configuration Screen

- **Enroll Cert**
  Enroll Cert Using File
  Cert GUID: Input digit characters in 11111111-2222-3333-4444-1234567890ab format.

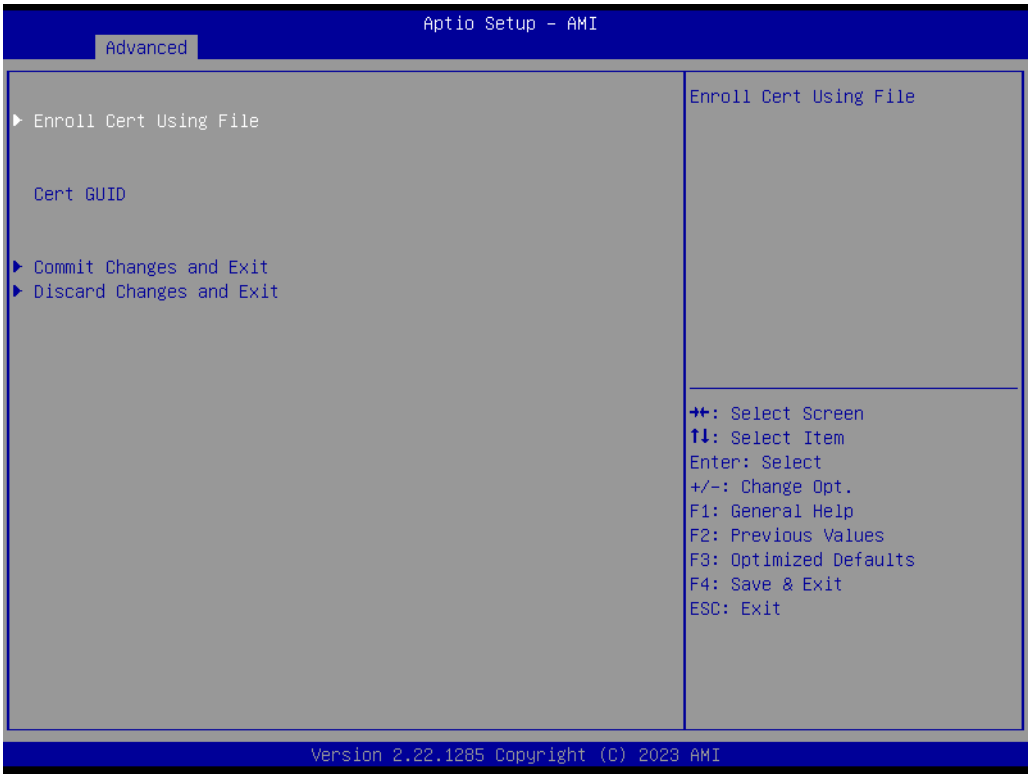


Figure 3.55 Server CA Configuration - Enroll Cert screen

3.3.17 Driver Health

Provides Health Status for the Drivers/Controllers.

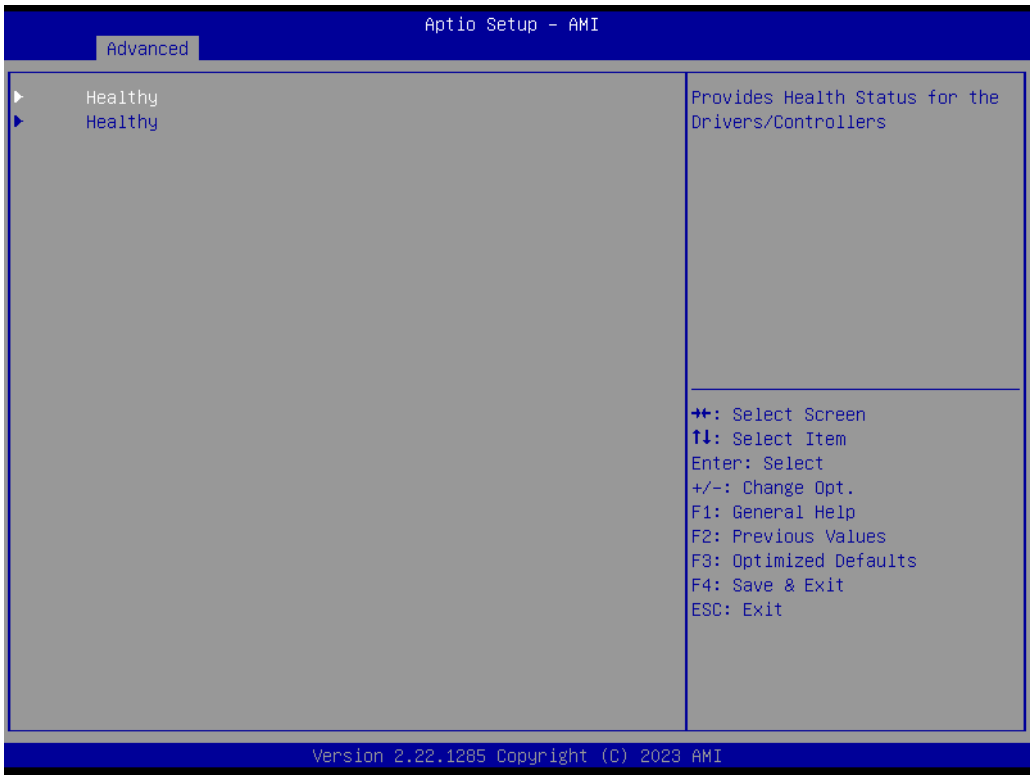


Figure 3.56 Driver Health screen

3.4 Chipset

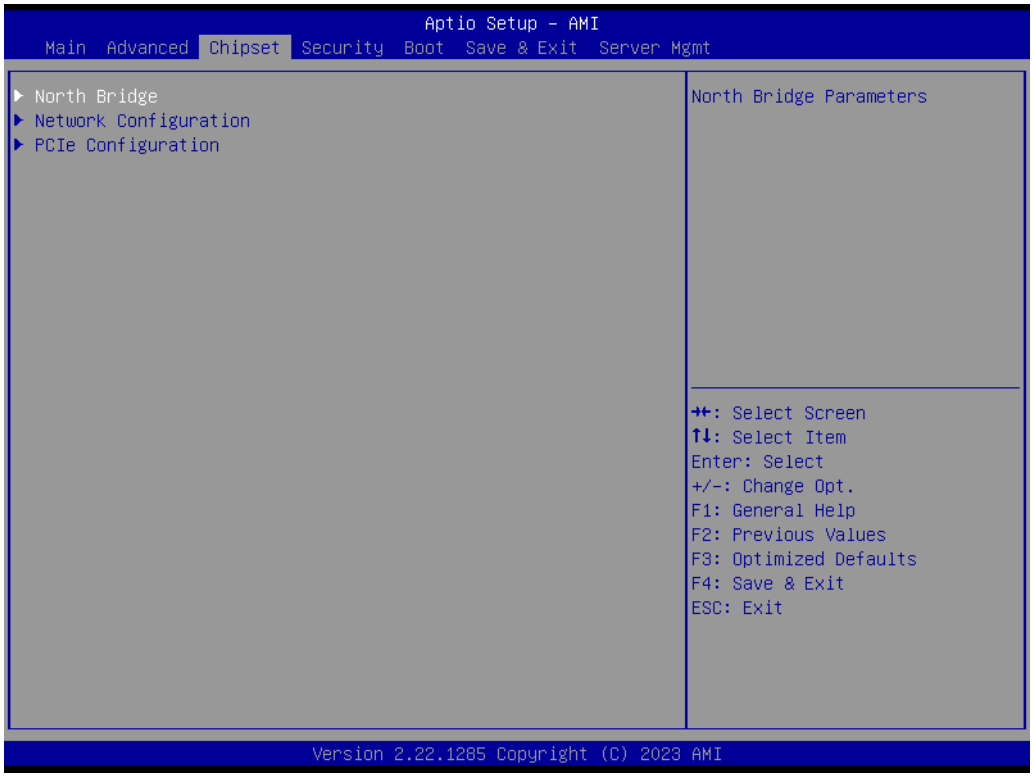


Figure 3.57 Chipset Screen

3.4.1 North Bridge

North Bridge Parameters.

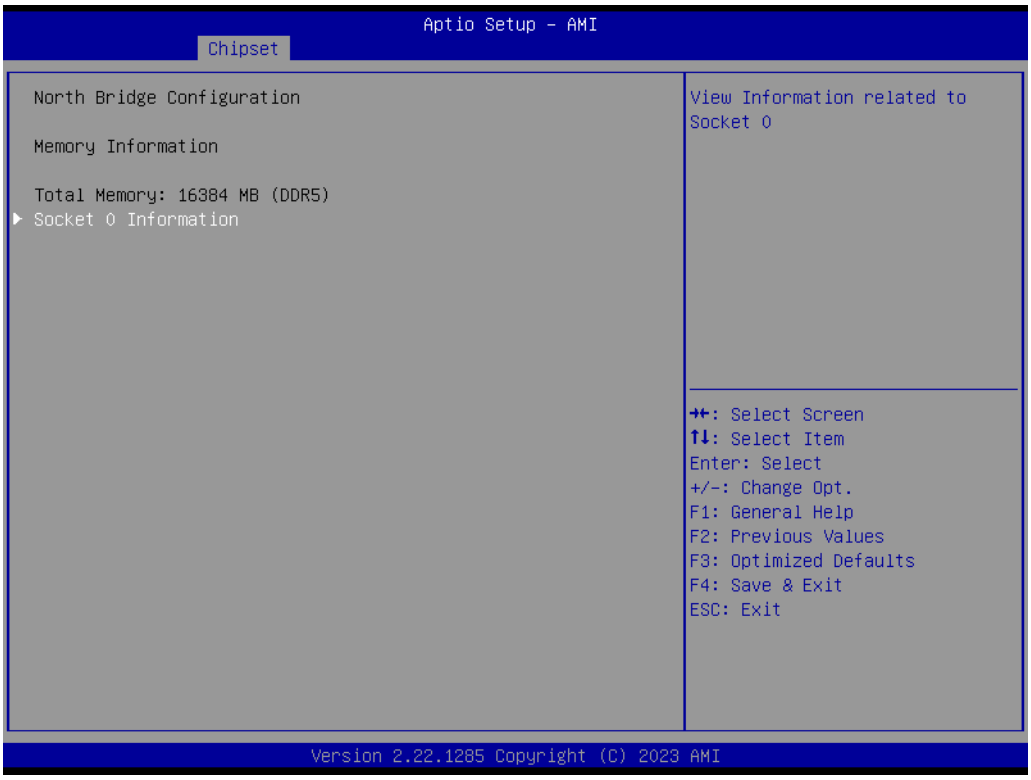


Figure 3.58 North Bridge Screen

- **Memory Information**

  Total memory capacity information.

- **Socket 0 Information**
  View Information related to Node 0 AMD EPYC CPU.

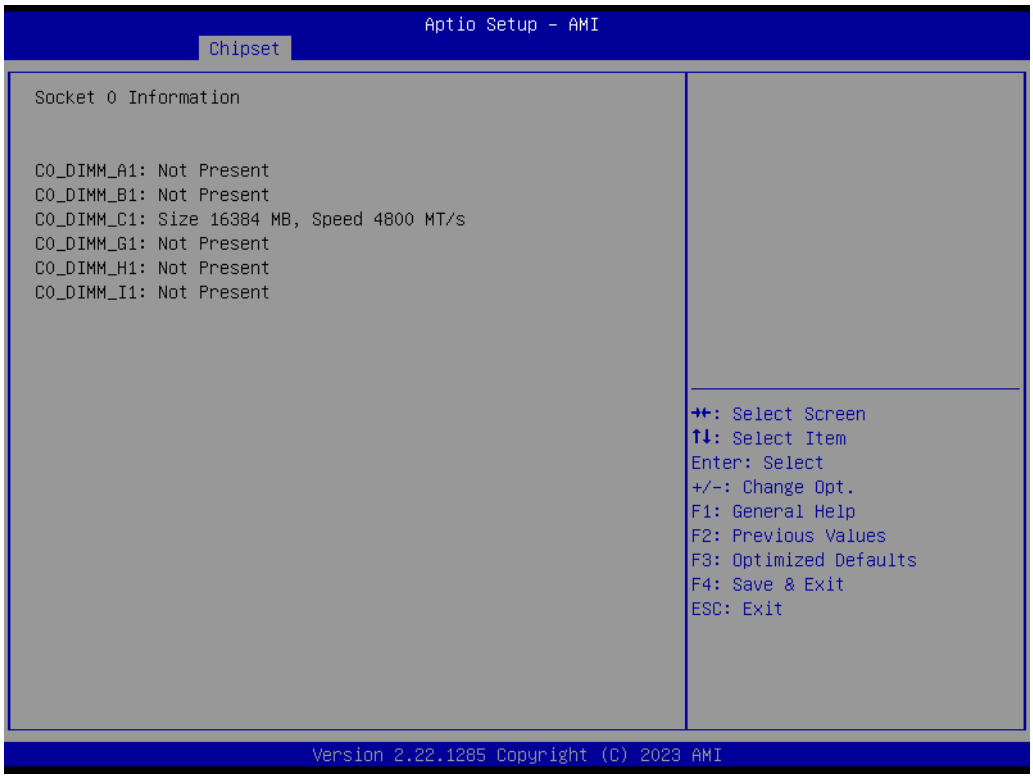


Figure 3.59 Socket 0 Information Screen

3.4.2 Network Configuration

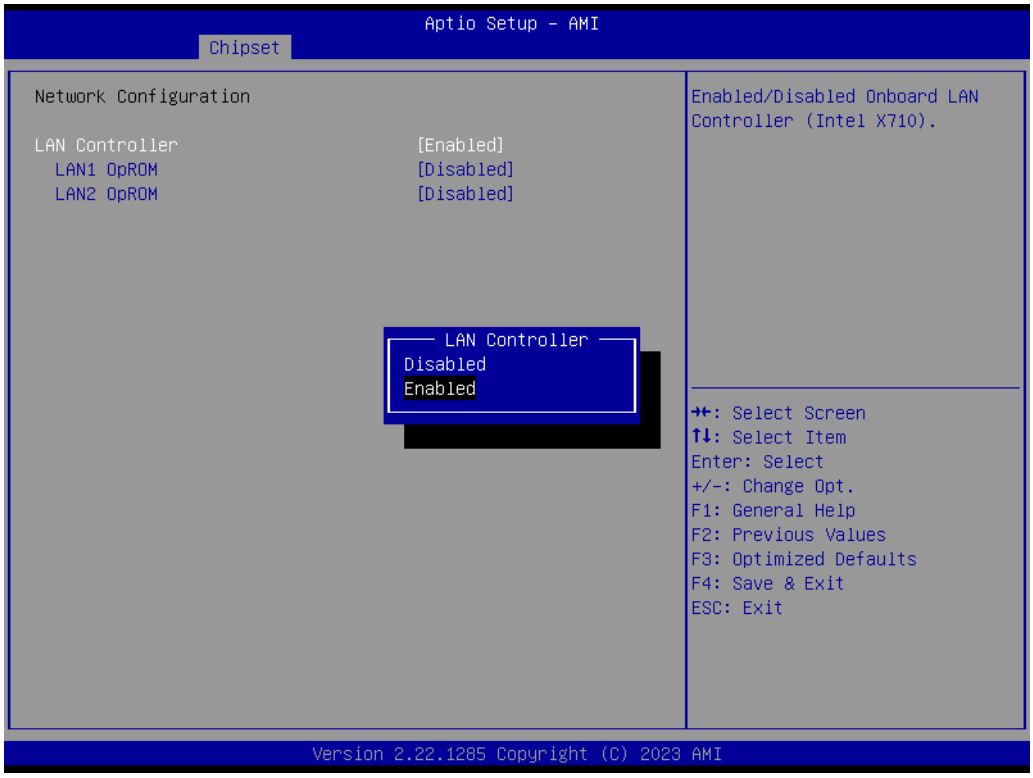


Figure 3.60 Network Configuration screen

- **LAN Controller**
  Enabled/Disabled Onboard LAN Controller (Intel X710).
- **LAN1 OpROM**
  Enabled/Disabled boot option for LAN Controller.
- **LAN2 OpROM**
  Enabled/Disabled boot option for LAN Controller.

3.4.3 PCIe Configuration

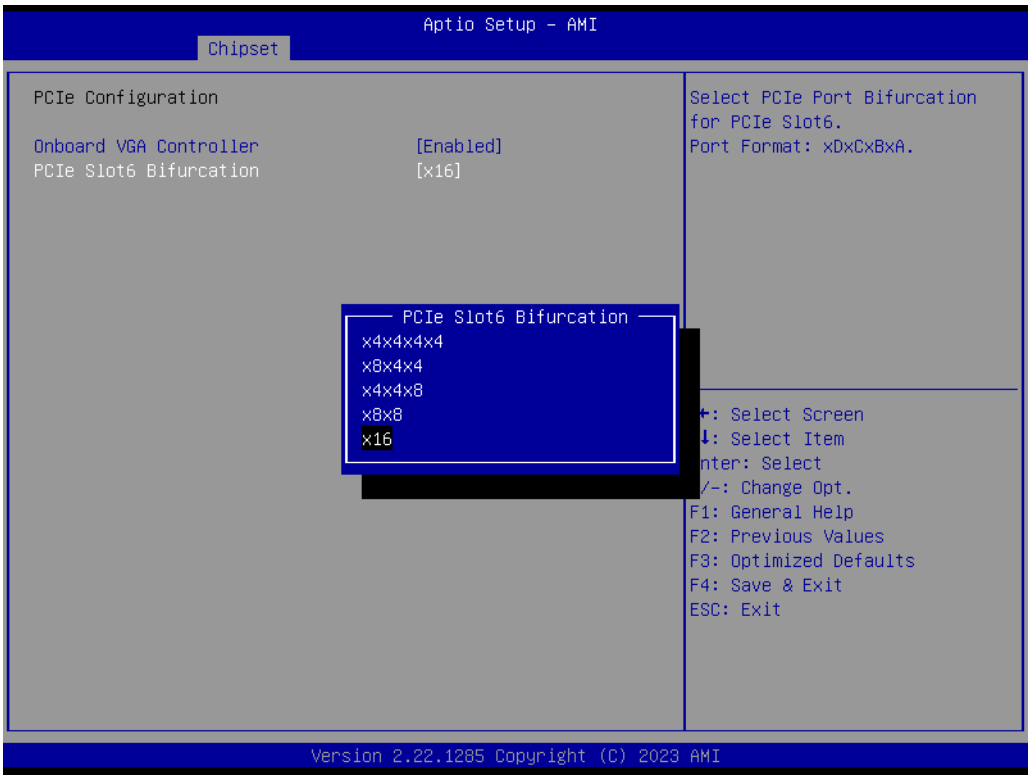


Figure 3.61 PCIe Configuration screen

- **Onboard VGA Controller**
  Enabled/Disabled Onboard VGA Controller (ASPEED AST2600).
- **PCIe Slot6 Bifurcation**
  Select PCIe Port Bifurcation for PCIe Slot6:
  X4X4X4X4; X8X4X4; X4X4X8; X8X8; X16.

Note!	*Riser card Part Number*	*PCIe Slot6 Bifurcation Setting*
	ASMB-RF28-20B1	*X8X8*
	ASMB-RF2F-10B1	*X16*
	ASMB-RF1F-10B1	*X16*

3.5 Security

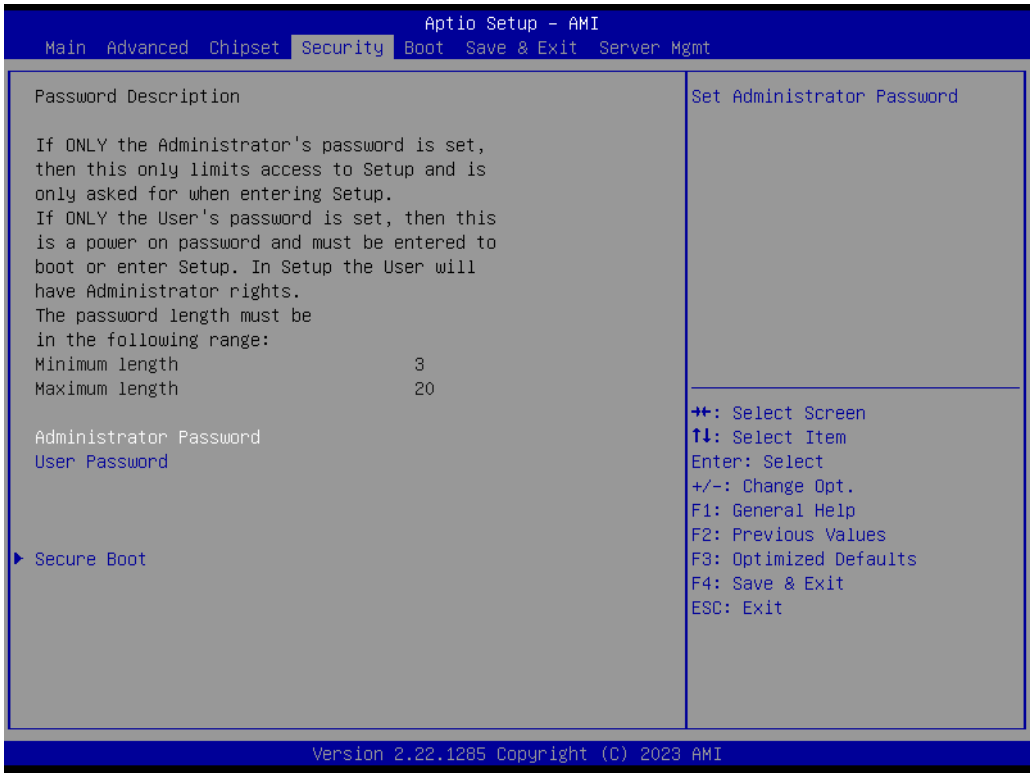


Figure 3.62 Security Screen

Note! ***With AC power & Battery. Short CMOS1 Jumper:***

Date/Time & Password: Keep

Setting: reset to default

With AC power and CMOS battery removed. Short CMOS1 Jumper:

Date/Time: reset to default

Password: keep

Setting: reset to default

Secure Boot

Figure 3.63 Secure Boot Screen

Secure Boot function

Secure Boot feature is Active if Secure Boot is Enabled, Platform Key (PK) is enrolled and the System is in User mode. The mode change requires platform reset.

Secure Boot Mode

Secure Boot mode options: Standard or Custom. In Custom mode, Secure Boot Policy variables can be configured by a physically present user without full authentication.

Restore Factory Keys

Force System to User Mode. Install factory default Secure Boot Key databases.

Key Management

Enables expert users to modify Secure Boot Policy variables without variable authentication.

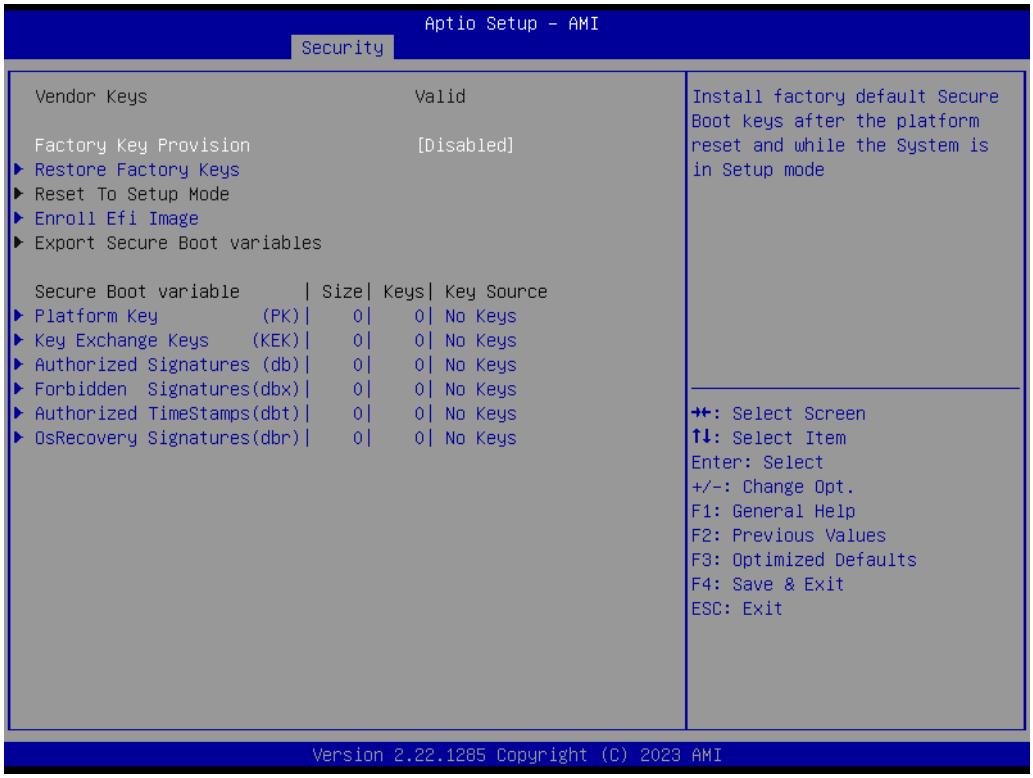


Figure 3.64 Key Management Screen

3.6 Boot

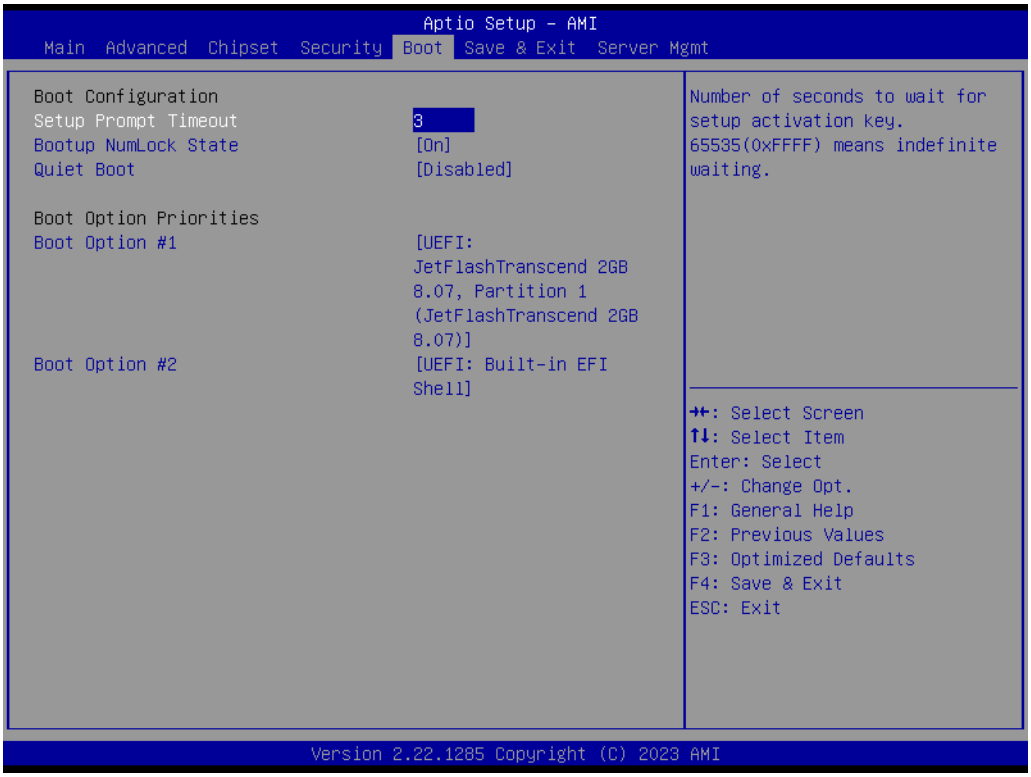


Figure 3.65 Boot Screen

- **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 the quiet boot option.
- **Boot Option Priorities**
  Sets the system boot priorities.

3.7 Save & Exit

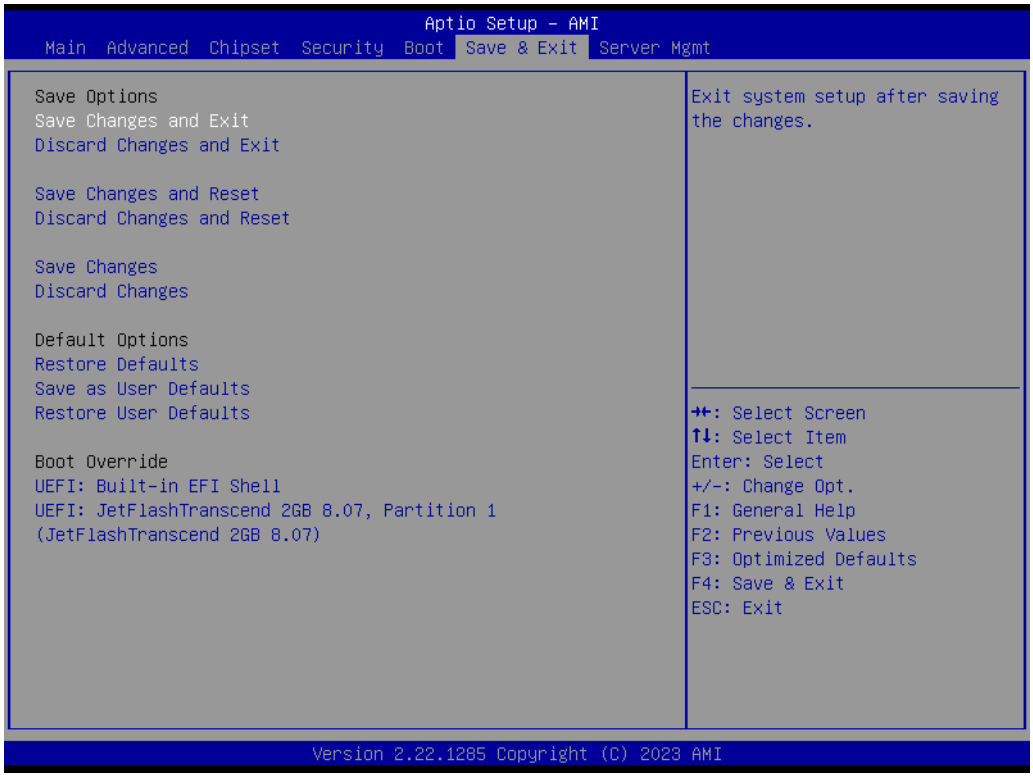


Figure 3.66 Save & Exit Screen

- **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.

3.8 Server Management

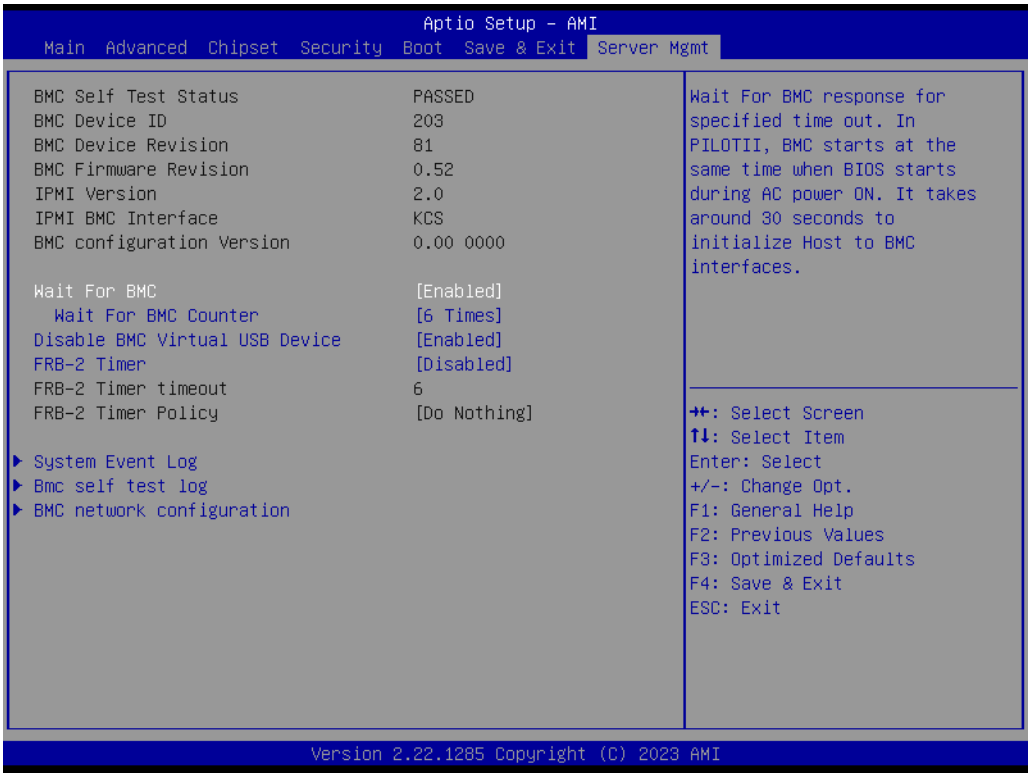


Figure 3.67 Server Management Screen

- **Wait for BMC**
  If enabled, the motherboard will wait 18 ~ 36 seconds until the BMC module boots up completely. After that, the normal BIOS post screen will be displayed. If disabled, the motherboard will not wait for the BMC module's response.
  Wait for BMC Counter:
  6 Times; 8 Times; 10 Times; 12 Times.
- **Disable BMC Virtual USB Device**
  Enable/Disable BMC internal Virtual USB Device after end of BIOS POST.
- **FRB-2 Timer**
  Enable or Disable FRB-2 timer (POST timer).

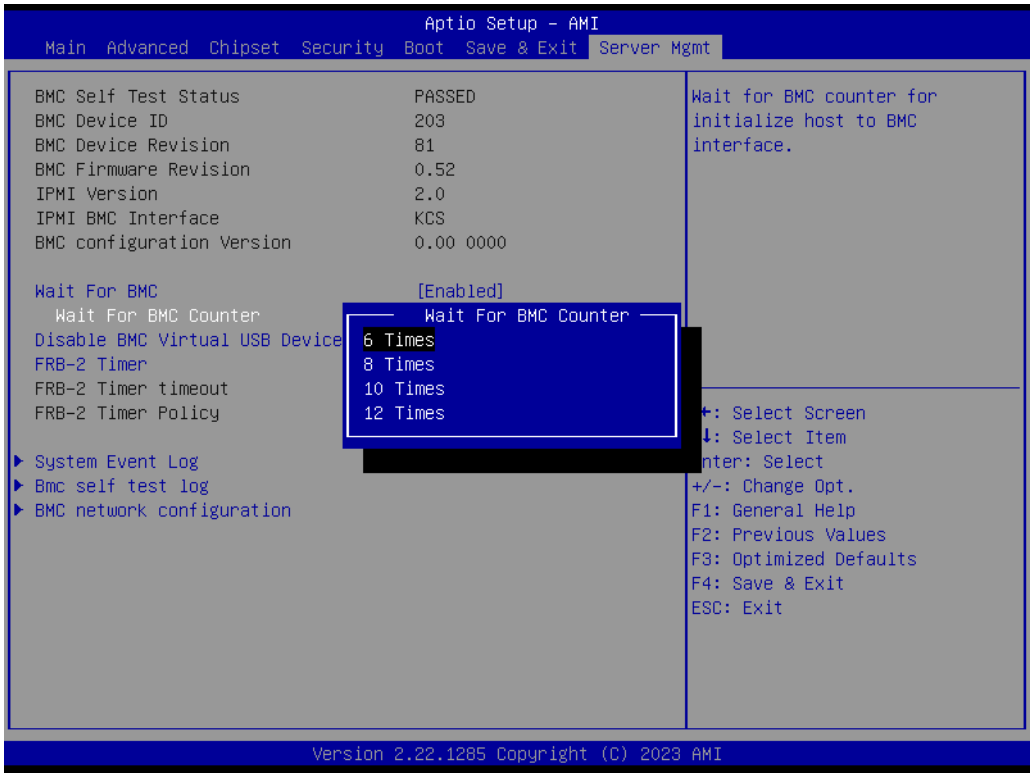


Figure 3.68 Wait for BMC screen

3.8.1 System Event Log

Press <Enter> to change the SEL event log configuration.

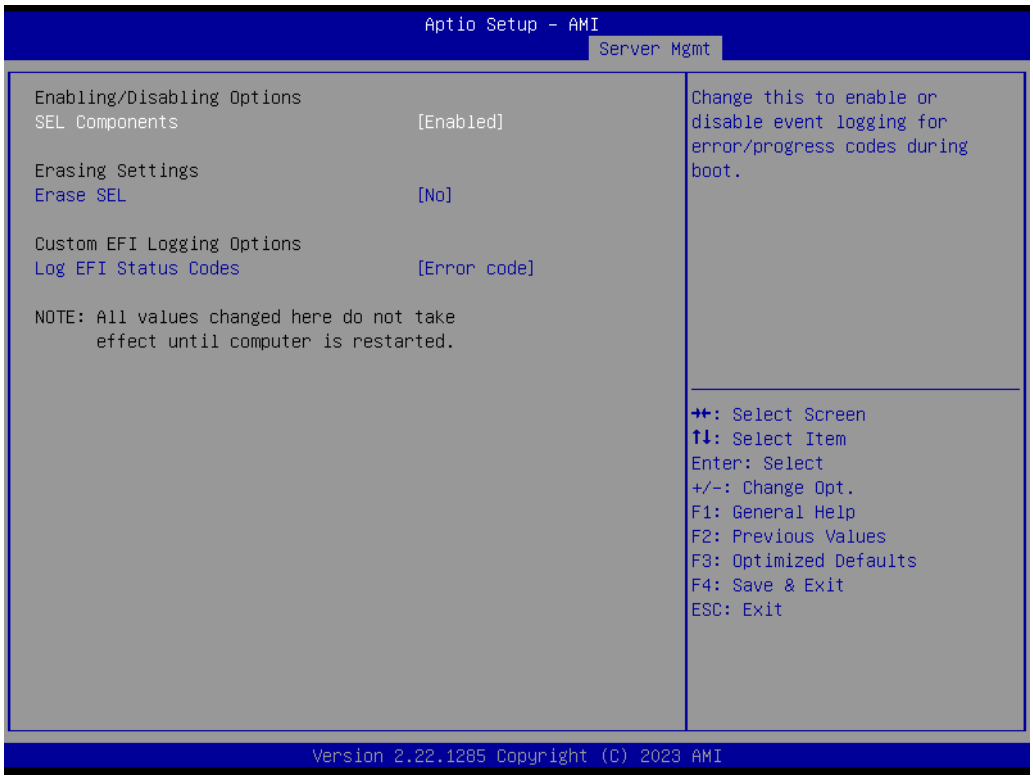


Figure 3.69 System Event Log screen

- **SEL Components**
  Change this to enable or disable event logging for error/progress codes during boot.
- **Erase SEL**
  Choose options for erasing SEL.
- **Log EFI Status Codes**
  Disable the logging od EFI Status Codes or log only error code or only progress code or both.

3.8.2 BMC Self Test Log

Logs the report returned by BMC self test command.

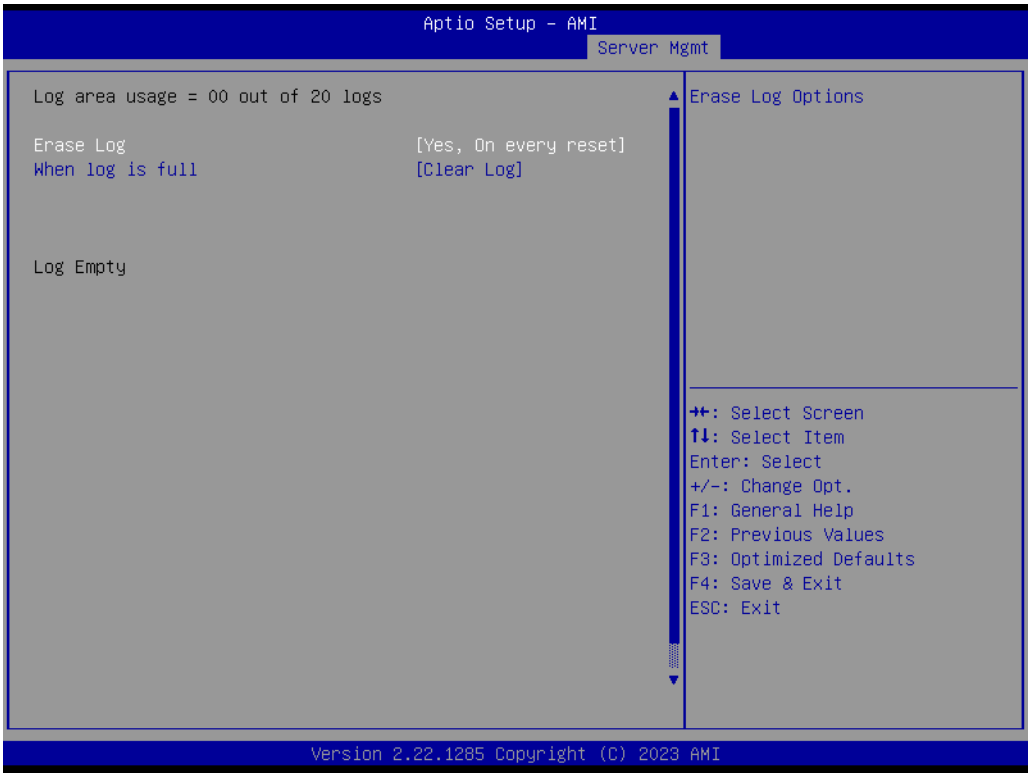


Figure 3.70 BMC Self-Test Log Screen

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

3.8.3 BMC Network Configuration

Configure BMC network parameters

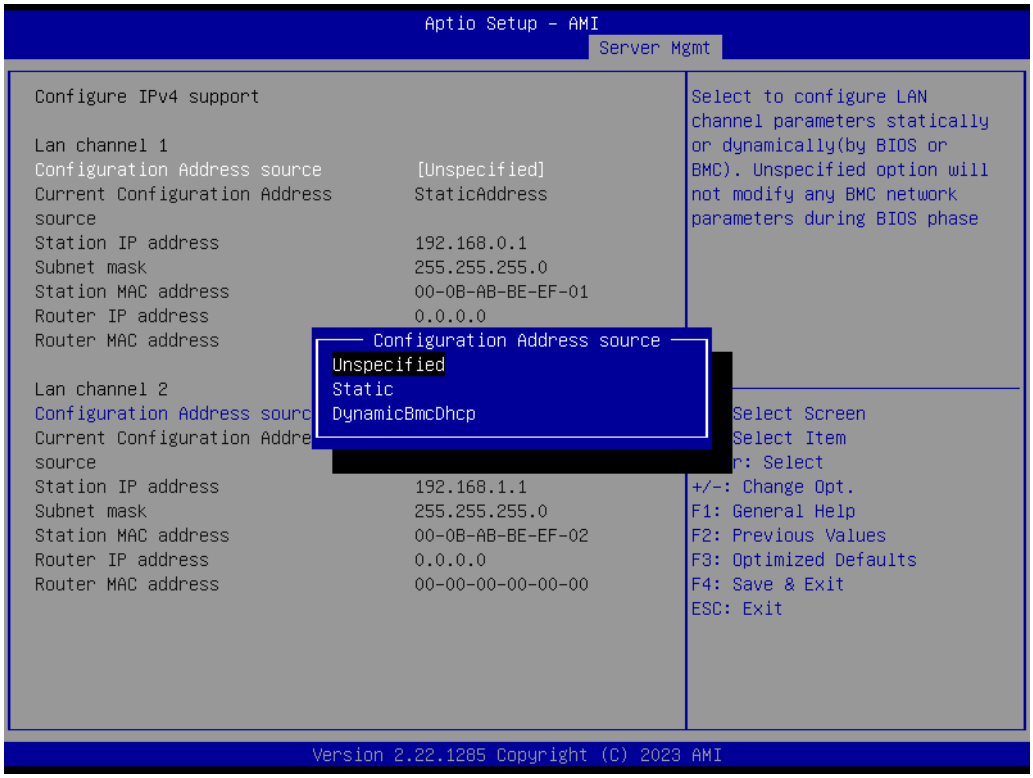


Figure 3.71 BMC Network Configuration Screen

- **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.
  Unspecified; Static; DynamicBMCDhcp.

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-831 are available online for download from the Advantech support website.

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 AMD 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 AMD 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 Server 2022 Standard	*x64*
Windows Server 2019 Standard	*x64*
Windows 11 Ultimate	*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

When the folder is displayed, navigate to the "Chipset" folder and click the executable file to complete the installation of the drivers for the OS that you need.

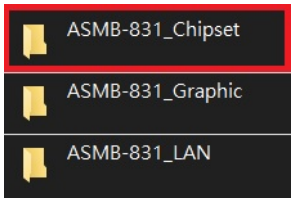


Figure 4.1 ASMB-831 Chipset Driver

Chapter 5

Graphics 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

When the folder is displayed, navigate to the “Graphic” folder and click the executable file to complete the installation of the drivers for the OS that you need.

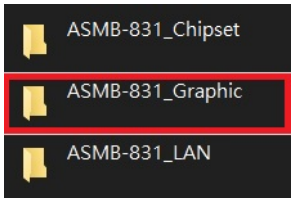


Figure 5.1 ASMB-831 Graphic Driver

Note!

1. *If ASMB-831 carries an additional graphics card for VGA output, please set this additional graphics card as "major output" under the "Display properties" of the OS.*
2. *The WDDM driver supports the following OS versions:*
   - *Windows 10 x64 version*
   - *Windows 11 x64 version*
   - *Windows Server 2012R2 version (WHQL*
   - *Windows Server 2016 version (WHQL)*
   - *Windows Server 2019 version (WHQL)*
   - *Windows Server 2022 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 for 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 Configuration

6.1 LAN Configuration

6.1.1 Introduction

The ASMB-831 has two 10G Base-T LAN connectors LAN1 and LAN2 - Intel ® X710-AT2. They eliminate the bottleneck of network data flow and incorporate Gigabit Ethernet at 10 Gbps.

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

The integrated Intel® Gigabit Ethernet controller supports all major network operating systems. However, the installation procedure varies with different operating systems. In the following sections, refer to the one that provides the driver setup procedure for the operating system you are using.

6.1.2 Windows Series Driver Setup

When the folder is displayed, navigate to the “LAN” folder and click the executable file to complete the installation of the drivers for the OS that you need.

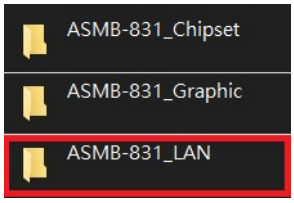


Figure 6.1 ASMB-831 LAN Driver

Appendix A

I/O Pin Assignments

A.1 USB 3.2 Gen1 Header (USB3H1)

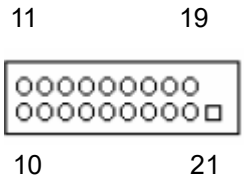


Table A.1: USB Header (USB3H1)

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	

A.2 LAN Ports (LAN1, LAN2)

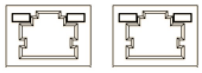


Table A.2: LAN RJ-45 Port (LAN1, LAN2)

Pin	Signal	Pin	Signal
1	MID0+	4	MID2+
2	MID0-	5	MID2-
3	MID1+	7	MID3+
6	MID1-	8	MID3-

A.3 VGA Connector (VGA1)

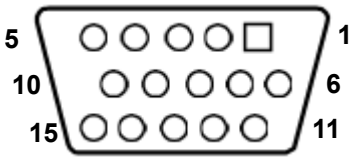


Table A.3: VGA Connector (VGA1)			
Pin	**Signal**	**Pin**	**Signal**
1	RED	9	VCC
2	GREEN	10	GND
3	BLUE	11	N/C
4	N/C	12	SDT
5	GND	13	H-SYNC
6	GND	14	V-SYNC
7	GND	15	SCK
8	GND		

A.4 RS-232 Interface (COM1)

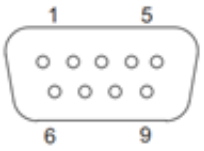


Table A.4: RS-232 Connector (COM1)	
Pin	**Signal**
1	DCD
2	DSR
3	RXD
4	RTS
5	TXD
6	CTS
7	DTR
8	RI
9	GND

A.5 System & CPU Fan Power Connector (SYSFAN0~4, CPUFAN0)

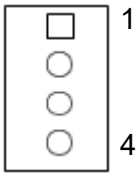


Table A.5: CPU FAN Connector (CPUFAN0)

	CPUFAN0
1	GND
2	+12V
3	CPU_FAN0_TACH
4	CPU0_PWM

Table A.6: SYS FAN Connector (SYSFAN0~4)

	SYSFAN0	SYSFAN1	SYSFAN2	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

A.6 Power LED (JFP3)

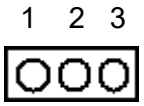


Table A.7: Power LED Connector (JFP3)

Pin	Function
1	LED power (3.3 V)
2	NC
3	Ground

A.7 External Speaker Connector (JFP1+JFP2)

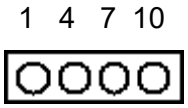


Table A.8: External Speaker Connector (JFP1+JFP2)	
Pin	**Function**
1	SPK+
4	NC
7	BZ-
10	SPK-

A.8 Reset Connector (JFP1+JFP2)

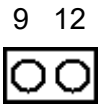


Table A.9: Reset Connector (JFP1+JFP2)	
Pin	**Signal**
9	RESET
12	GND

A.9 HDD LED Connector (JFP1+JFP2)

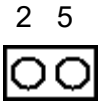


Table A.10: HDD LED Connector (JFP1+JFP2)	
Pin	**Signal**
2	HDD_LED+
5	HDD_LED-

A.10 ATX Soft Power Switch (JFP1+JFP2)

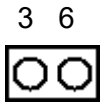


Table A.11: ATX Soft Power Switch (JFP1+JFP2)	
Pin	**Signal**
3	PWR-BTN
6	GND

A.11 ATX Soft Power Switch (JFP1)

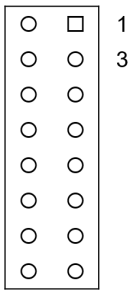


Table A.12: ATX Soft Power Switch (JFP1)	
Pin	**Signal**
1	PWR BTN
3	PWR GND

A.12 Reset Connector (JFP1)

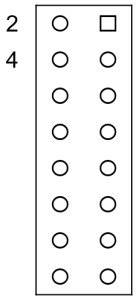


Table A.13: Reset Connector (JFP1)	
Pin	**Signal**
2	RST BTN
4	RST GND

A.13 Front Panel LAN LED Connector (JFP1)

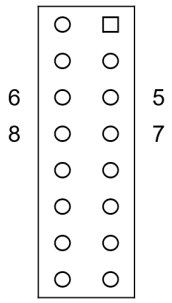


Table A.14: Front Panel LAN LED Connector (JFP1)	
Pin	**Signal**
5	LAN2_LED+
6	LAN1_LED+
7	LAN2_LED-
8	LAN1_LED-

A.14 HDD LED Connector (JFP1)

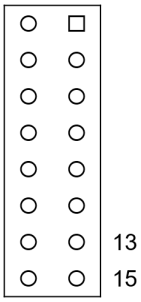


Table A.15: SNMP SMBus Connector (JFP2)	
Pin	**Signal**
13	HDD_LED+
15	HDD_LED-

A.15 Power LED (JFP1)

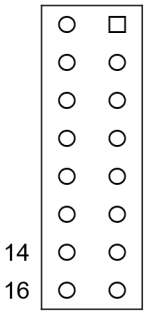


Table A.16: Power LED (JFP1)	
Pin	**Signal**
14	PWR LED+
16	PWR LED-

A.16 SMBus Connector (SMBUS1)

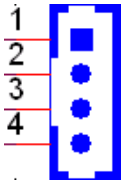


Table A.17: Front Panel SMBus Connector (SMBUS1)	
Pin	**Signal**
1	+5V
2	RESUME_SMB_CLK
3	RESUME_SMB_DATA
4	GND

A.17 USB & LAN Ports (BMC_LAN_USB3C2)

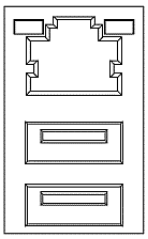


Table A.18: USB Port (BMC_LAN_USB3C2)	
Pin	**Signal**
1	VBUS
2	D-
3	D+
4	GND
5	StdA_SSRX-
6	StdA_SSRX+
7	GND_DRAIN
8	StdA_SSTX-
9	StdA_SSTX-

Table A.19: LAN RJ-45 Port (BMC_LAN_USB3C2)			
Pin	**Signal**	**Pin**	**Signal**
1	MID0+	4	MID2+
2	MID0-	5	MID2-
3	MID1+	7	MID3+
6	MID1-	8	MID3-

A.18 Case Open Connector (JCASE1)

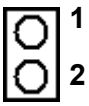


Table A.20: Case Open Connector (JCASE1)	
Pin	**Signal**
1	CASEOP
2	GND

A.19 Front Panel LAN LED Connector (LANLED1)

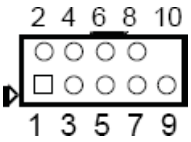


Table A.21: LAN LED Connector (LANLED1)

Pin	Signal	Pin	Signal
1	LAN1_LED1_ACT#	2	LAN2_LED1_ACT#
3	+V3.3_AUX	4	+V3.3_AUX
5	LAN3_ACT_LVC3#	6	LAN4_ACT_LVC3#
7	+V3.3_AUX	8	+V3.3_AUX
9	NC	10	NC

A.20 Clear CMOS Connector (JCMOS1)

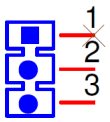


Table A.22: Clear CMOS Connector (JCMOS1)

Pin	Signal
	JCMOS1
1	NC
2	RTC_RST_PCH
3	GND

A.21 PMBUS Connector (PMBUS1)

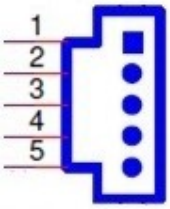


Table A.23: PMBUS Connector (PMBUS1)

Pin	Signal
1	PMBUS_SMB_CLK
2	PMBUS_SMB_DATA
3	PMBUS_SW_ALERT#
4	GND
5	+V3.3_AUX

A.22 GPIO Connector (GPIO1)

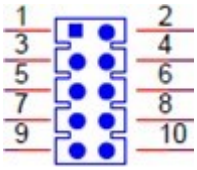


Table A.24: GPIO Connector (GPIO1)

Pin	Signal	Pin	Signal
1	GPIO0	2	GPIO4
3	GPIO1	4	GPIO5
5	GPIO2	6	GPIO6
7	GPIO3	8	GPIO7
9	VCC_GPIO	10	GND

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