an Acer Group Company

Altos BrainSphere™ T110 F6 User Manual

Revision 1.2

System setup

System notes

Thank you for purchasing your Altos Server. This user guide is intended as a reference for experienced Server technicians and helps detail many of the features available in Altos server. For more detailed information about any particular component or software solution, you may consult the technical specifications or the user manual for that application.

Note: Before opening or removing any components please contact your local certified Altos service representative

Warning: Any parts or components damaged during replacement by a non-certified technician are not covered by the warranty. For details, please consult the warranty guide from your system.

Notice：

Rated Electrical Specifications:

- 500W Power Supply(FSP500-50AAC): 100-240Vac, 7A-3A, 50-60Hz
- 450W Power Supply(FSP450-50EGN): 100-240Vac, 6A-3A, 50-60Hz

The information in this User's Manual has been carefully reviewed and is believed to be accurate. The vendor assumes no responsibility for any inaccuracies that may be contained in this document and makes no commitment to update or to keep current the information in this manual, or to notify any person or organization of the updates. Please Note: For the most up-to-date version of this manual, please see our website at https://www.altoscomputing.com.

Altos Computing Inc. (abbr. Altos) is established in 2017 and it is a subsidiary of Acer Inc. The business model of Altos is to provide the best streamlined and cost-effective integrated solutions thru in-house R&D working with ODM/IHV/ISV on servers, workstations, thin client, network and storage. In the era of demanding speed, Altos provides leading solution included, but not limited to High Performance Computing, Virtual Desktop Infrastructure, Cloud Infrastructure and Software Defined Storage, etc.

FCC Statement: This equipment has been tested and found to comply with the limits for a Class A or Class B 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 industrial environment for Class A device or in residential environment for Class B device. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the manufacturer's instruction manual, may cause harmful interference with radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case you will be required to correct the interference at your own expense.

Manual Revision 1.0

Release Date: November 15, 2023

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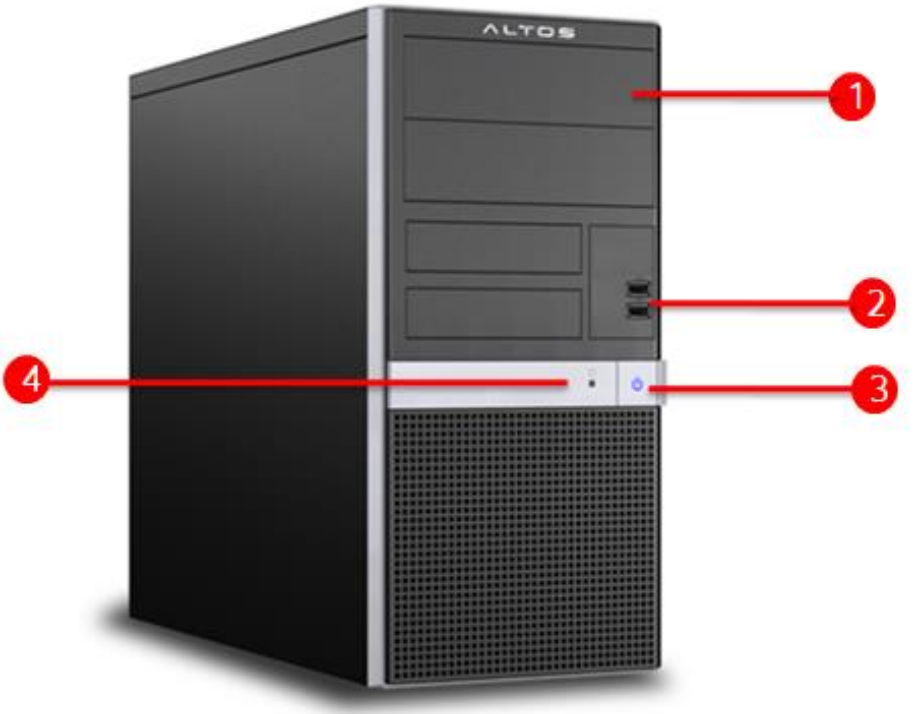
System Specification

Specification					
CPU	Processor type	Single Intel® Xeon® E-2300 Processor (LGA1200), up to 8 Core / 95W TDP			
	Number of processors	1			
On-board Devices	Chipset	Intel® C252 Chipset			
	SATA	6 SATA3 (6 Gb/s) ports			
	SATA RAID	Intel onboard software RAID 0,1,5,10 (via BIOS) (Windows Only)[1]			
	IPMI	ASPEED AST2500			
	Graphics	VGA Port (through BMC)			
	Network controller	Dual RJ45 1 Gb/s Ethernet LAN Port (Intel® i210AT, share IPMI port)			
		Single RJ45 10/100/1000 management LAN			
Memory	Memory slot	4 DIMM slots (Dual channel)			
	Memory type	Up to 128GB ECC DDR4 3200 MHz UDIMM			
Expansion slots	PCIe	•	1 PCI-E 4.0 x16 slot	•	1 PCI-E 4.0 x4 slot
	M.2	•	1 M.2 2280 PCI-E 4.0 slot		
I/O ports	Front I/O Ports	•	2 USB3.2 Gen1 Type-A Ports		
	Rear I/O Ports	•	1 VGA Port	•	1 COM Port
		•	2 USB 3.2 Gen2x1 Type-A Ports	•	4 USB 2.0 Type-A Ports
		•	2 RJ45 Ports	•	1 IPMI MLAN
		•	1 ID switch		
Commercial features		•	RAID support (via BIOS)	•	Kensington lock slot
		•	IPMI	•	Chassis intrusion
		•	TPM 2.0 Module (Optional)		
Drive Bays	Media bay	•	2x 5.25" slot：For ODD		
	Storage bay	•	4 x 3.5"/2.5" slots：For hard disks		
Power supply		•	500W Multiple output 24 pins, 80PLUS® Brown PSU		
		•	450W Multiple output 24 pins, 80PLUS® Gold PSU(optional)		
Dimensions (D x W x H)		•	386 (D) x 175 (W) x 360 (H) mm (15.2 x 6.89 x 14.17 inches)		
OS Support		•	Microsoft® Windows Server® 2022		
		•	Red Hat Linux 7.3/6.9		
		•	SUSE Linux Enterprise Server 12.2/11.2		
		•	Ubuntu 18.04.2/16.04.6		

System View

Front view

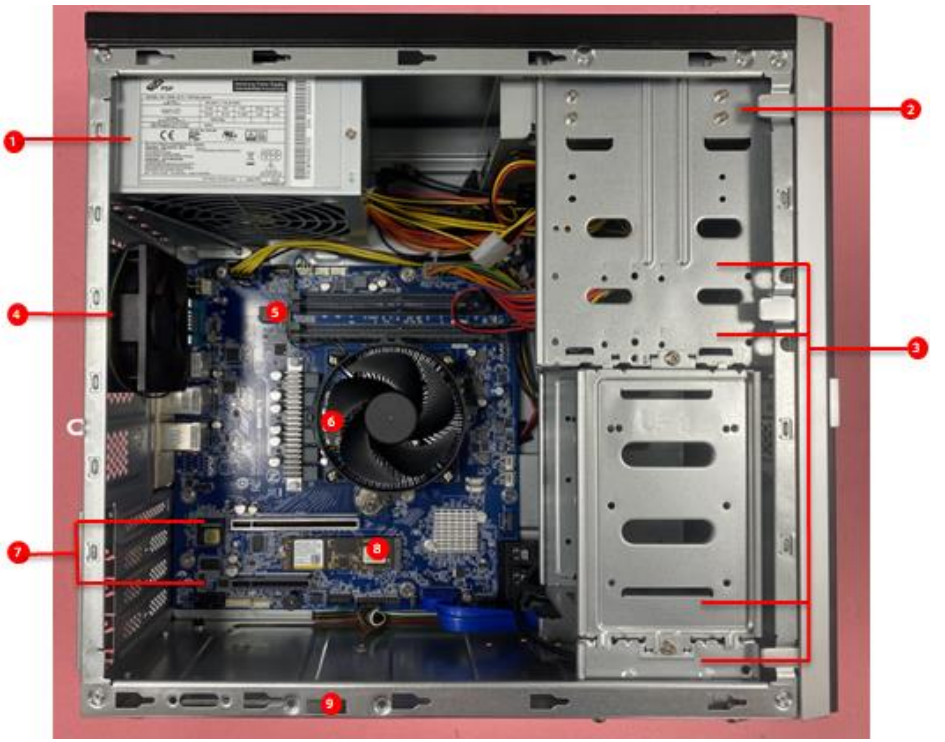


1	5.25-inch external accessible bay
2	2 USB3.2 Gen1 Type-A Ports
3	Power Button/Power LED
4	HDD Activity LED

Rear I/O view

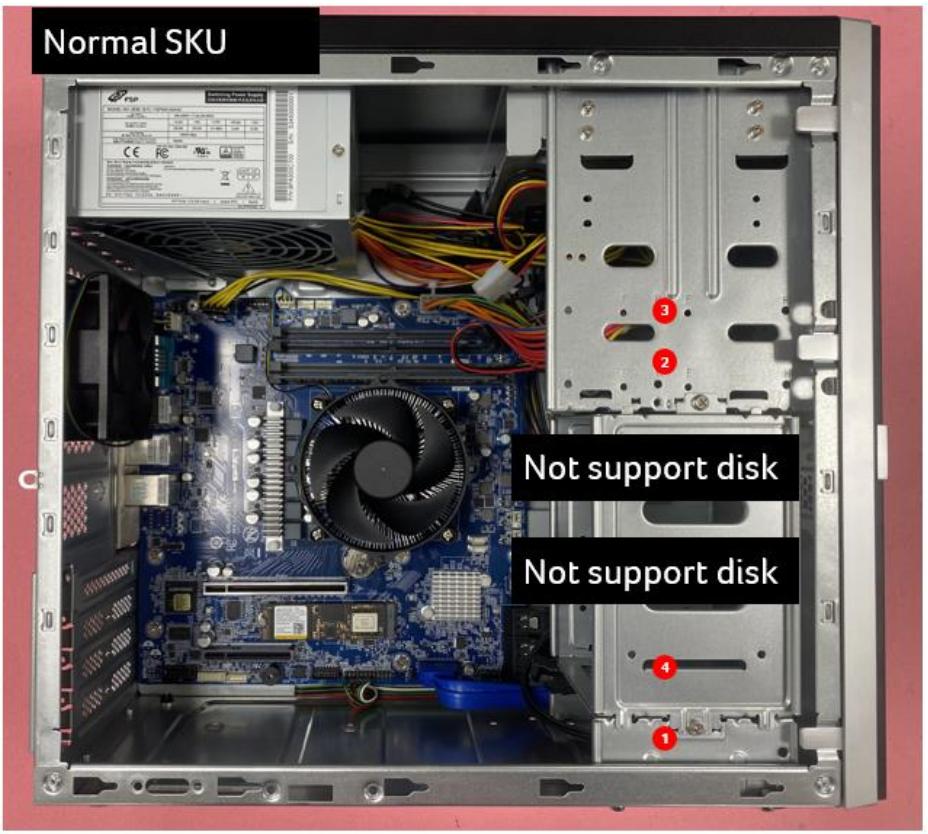
1	ID switch
2	COM Port
3	VGA Port
4	RJ45 1 Gb/s Ethernet LAN Ports
5	RJ45 10/100/1000 management LAN Port
6	USB 2.0 Type-A Ports
7	USB 3.2 Gen2x1 Type-A Ports

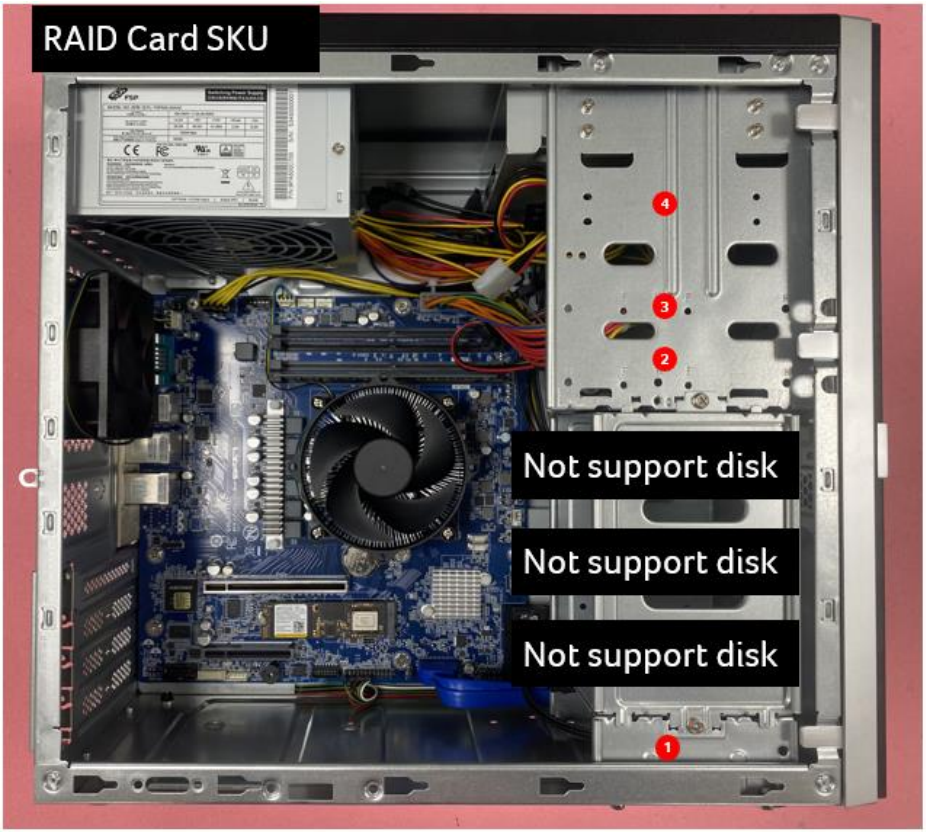
Internal View



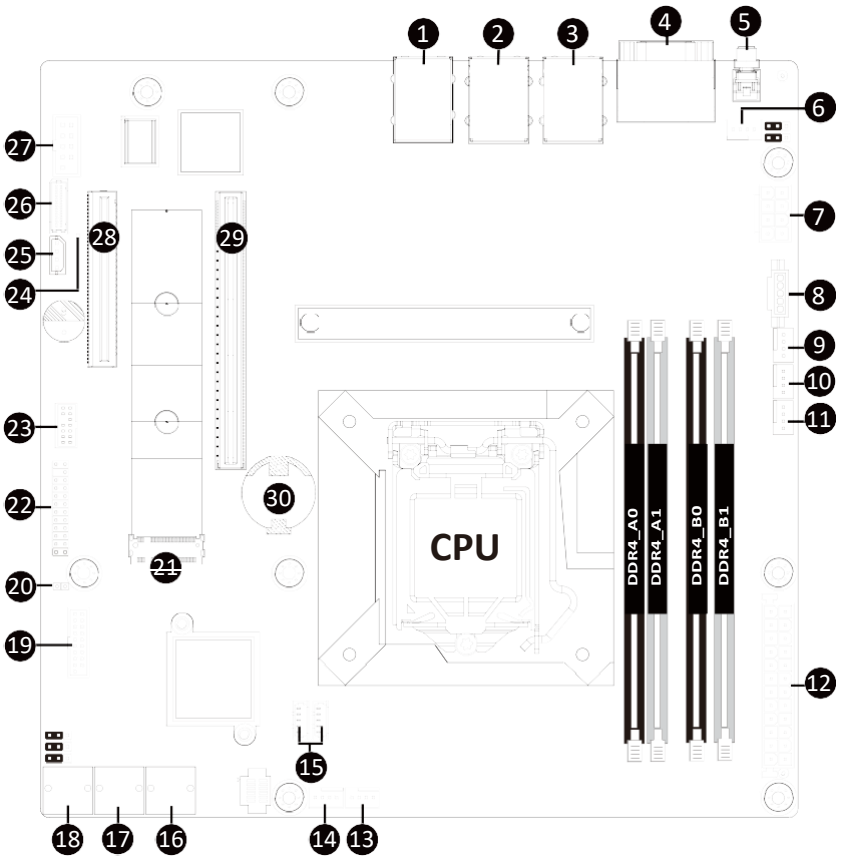
1	500W or 450W 80PLUS®PSU
2	1 5.25-inch external accessible bay
3	4 3.5-inch internal accessible bays (Optional 2.5-inch)
4	80x80x25 mm System Fan
5	4 DIMM DDR4 ECC UDIMM slots
6	Intel® Xeon® E-2400 Processor & Cooler
7	1 PCIe 4.0 x16 slot, 1 PCIe 4.0 x8 slots(x4 wires)
8	1 M.2 (2280) M-key slots, PCIe 4.0 x4
9	Chassis intrusion

HDD Sorting



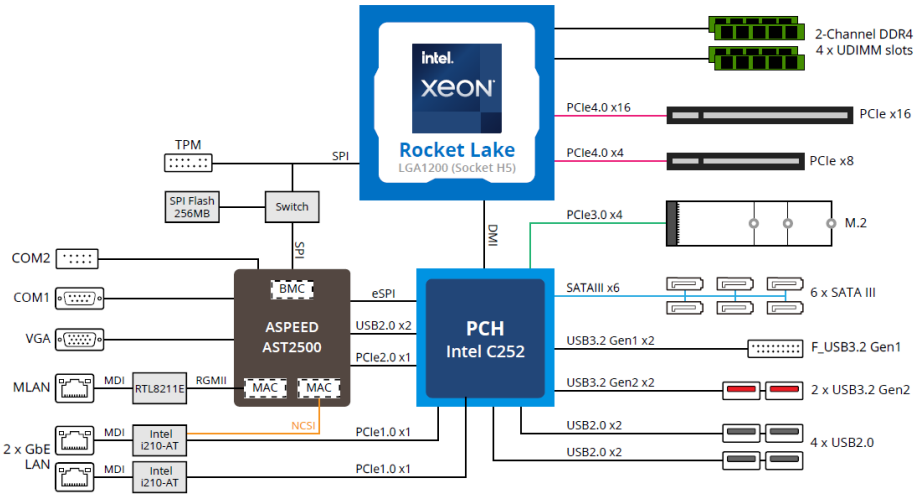

RAID Card SKU
4
3
2
Not support disk
Not support disk
Not support disk
1

Motherboard



Item	Code	Description
1	USB3_MLAN	Server Management LAN Port (Top)/USB 3.2 Ports (Bottom)
2	USB2_LAN1	GbE LAN Port #1 (Top)/USB 2.0 Ports (Bottom)
3	USB2_LAN2	GbE LAN Port #2 (Top)/USB 2.0 Ports (Bottom)
4	COM1_VGA_1	Serial Port (Top)/VGA Port (Bottom)
5	SW_ID	ID Button with LED
6	SYS_FAN1	System Fan Connector #1
7	ATX_12V	2x4 Pin 12V Power Connector
8	PMBUS	PMBus Connector
9	CPU_FAN	CPU Fan Connector
10	SYS_FAN2	System Fan Connector #2
11	SYS_FAN3	System Fan Connector #3
12	ATX	2x12 Pin Main Power Connector
13	SYS_FAN5	System Fan Connector #5
14	SYS_FAN4	System Fan Connector #4
15	SATA_SGP2/SATA_SGP1	SATA SGPIO Connectors
16	SATA3_0_1	SATA III 6Gb/s Connectors
17	SATA3_2_3	SATA III 6Gb/s Connectors
18	SATA3_4_5	SATA III 6Gb/s Connectors
19	F_U32	Front Panel USB 3.2 Connector
20	CASE_OPEN	Case Open Intrusion Alert Header
21	M2P_SB	M.2 Slot (PCIe Gen3 x4, Support NGFF-2280)
22	TPM	TPM Connector
23	FP_1	Front Panel Header
24	LED_BMC1	BMC Firmware Readiness LED
25	IPMB	IPMB Connector
26	BP_1	HDD Back Plane Board Connector
27	COM2	Serial Port Cable Connector
28	PCIEx8_1	PCIe x8 Slot (Gen3 x4)
29	PCIEx16	PCIe x16 Slot (Gen3 x16)
30	BAT1	Battery Socket

Block Diagram



Chapter 1 Hardware Installation

1-1 Installation Precautions

The motherboard contains numerous delicate electronic circuits and components which can become damaged as a result of electrostatic discharge (ESD). Prior to installation, carefully read the user's manual and follow these procedures:

- Prior to installation, do not remove or break motherboard S/N (Serial Number) sticker or warranty sticker provided by your dealer. These stickers are required for warranty validation.
- Always remove the AC power by unplugging the power cord from the power outlet before installing or removing the motherboard or other hardware components.
- When connecting hardware components to the internal connectors on the motherboard, make sure they are connected tightly and securely.
- When handling the motherboard, avoid touching any metal leads or connectors.
- It is best to wear an electrostatic discharge (ESD) wrist strap when handling electronic components such as a motherboard, CPU or memory. If you do not have an ESD wrist strap, keep your hands dry and first touch a metal object to eliminate static electricity.
- Prior to installing the motherboard, please have it on top of an antistatic pad or within an electrostatic shielding container.
- Before unplugging the power supply cable from the motherboard, make sure the power supply has been turned off.
- Before turning on the power, make sure the power supply voltage has been set according to the local voltage standard.
- Before using the product, please verify that all cables and power connectors of your hardware components are connected.
- To prevent damage to the motherboard, do not allow screws to come in contact with the motherboard circuit or its components.
- Make sure there are no leftover screws or metal components placed on the motherboard or within the computer casing.
- Do not place the computer system on an uneven surface.
- Do not place the computer system in a high-temperature environment.
- Turning on the computer power during the installation process can lead to damage to system components as well as physical harm to the user.
- If you are uncertain about any installation steps or have a problem related to the use of the product, please consult a certified computer technician.
- To avoid any potential short circuit of the DIMM slots, please remove any stand-offs from the chassis that will be located underneath the DIMM slots, before installing the motherboard into the chassis.

1-2 Motherboard Specifications

NOTE:
We reserve the right to make any changes to the product specifications and product-related information without prior notice.

Form Factor	◆ microATX ◆ 244W x 244D (mm)
CPU	◆ Intel® Xeon® E-2300 series processors ◆ 11th Gen. Intel Pentium® processors ◆ CPU TDP up to 95W ◆ 1 x LGA 1200; Socket H5
Chipset	◆ Intel® C252 Express Chipset
Memory	◆ 4 x DIMM slots ◆ Dual channel memory architecture ◆ Supports 1.2V DDR4 memory ◆ ECC UDIMM modules supported ◆ Total capacity up to 128GB ◆ Supported speeds: 3200/2666 MHz
LAN	◆ 2 x GbE LAN ports (Intel® I210-AT) ◆ 1 x 10/100/1000 management LAN
Onboard Graphics	◆ Integrated in Aspeed® AST2500 ◆ 2D Video Graphic Adapter with PCIe bus interface ◆ 1920x1200@60Hz 32bpp, DDR4 SDRAM
Audio	◆ In option
Storage Interface	◆ 6 x SATA 6Gb/s ports
RAID	◆ Intel® SATA RAID 0/1/10/5
Expansion Slots	◆ 1 x PCIe x16 (Gen4 x16 bus) slot from CPU* ◆ 1 x PCIe x8 (Gen4 x4 bus) slot from CPU** * NOTE: Gen3 x16 supported if installed Intel Pentium® Processor ** NOTE: Function not available if installed Intel Pentium® Processor ◆ 1 x M.2 slot: - M-key - PCIe Gen3 x4 per slot - Supports NGFF-2280/2242 cards

Internal I/O Connectors	◆ 1 x 24-pin ATX main power connector ◆ 1 x 8-pin ATX 12V power connector ◆ 6 x SATA III 6Gb/s ports ◆ 1 x M.2 slot ◆ 1 x CPU fan header ◆ 5 x System fan headers ◆ 1 x USB 3.2 Gen1 header ◆ 1 x COM2 header ◆ 1 x back panel connector ◆ 1 x TPM header ◆ 1 x Front panel header ◆ 1 x JTAG BMC header ◆ 1 x Case Open header ◆ 1 x BIOS recovery jumper ◆ 1 x ME recovery jumper ◆ 1 x ME update jumper ◆ 1 x Clear CMOS jumper ◆ 1 x S3 mask jumper ◆ 1 x IPMB connector ◆ 1 x PMBus connector ◆ 1 x Buzzer
Rear I/O Connectors	◆ 1 x COM ◆ 1 x VGA ◆ 2 x RJ45 ◆ 1 x MLAN ◆ 2 x USB 3.2 Gen2 ◆ 4 x USB 2.0 ◆ 1 x ID switch
TPM	◆ 1 x TPM Header with SPI Interface ◆ Optional TPM2.0 kit
Board Management	◆ Aspeed® AST2500 Management Controller
Operating Properties	◆ Operating temperature: 10°C to 40°C ◆ Operating humidity: 8-80% (non-condensing) ◆ Non-operating temperature: -40°C to 60°C ◆ Non-operating humidity: 20%-95% (non-condensing)

1-3 Installing and Removing the CPU

Read the following guidelines before you begin to install the CPU:

- Make sure that the motherboard supports the CPU.
- Always turn off the computer and unplug the power cord from the power outlet before installing the CPU to prevent hardware damage.
- Unplug all cables from the power outlets.
- Disconnect all telecommunication cables from their ports.
- Place the system unit on a flat and stable surface.
- Open the system according to the instructions.

WARNING!

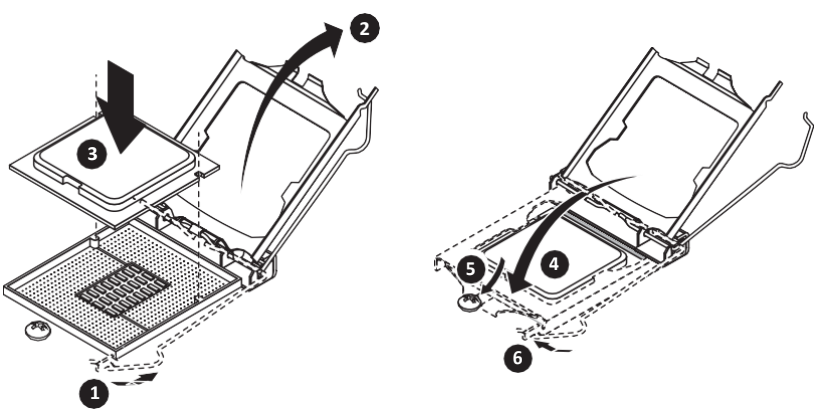
Failure to properly turn off the server before you start installing components may cause serious damage. Do not attempt the procedures described in the following sections unless you are a qualified service technician.

Follow these instructions to Install the CPU:

1. Gently press the CPU socket lever handle down to unclip it.
2. Completely lift the CPU socket lever and the metal load plate will be lifted as well.
3. Hold the CPU with your thumb and index fingers. Align the CPU pin one (triangle marking) with the pin one corner of the CPU socket (or you may align the CPU notches with the socket alignment keys). Gently insert the CPU into position.
4. Once the CPU is properly inserted, carefully replace the load plate.
5. When replacing the load plate, make sure the front end of the load plate is under the shoulder screw. Then, remove the CPU cover.

   Note: Save and replace the CPU cover if the processor is removed from its socket.

6 Secure the CPU socket lever.



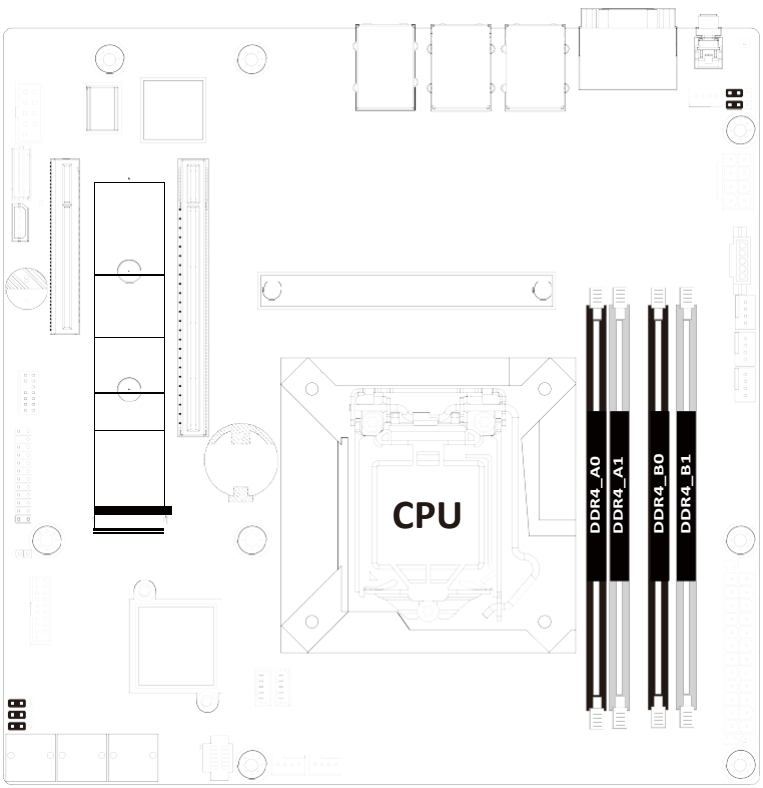
1-4 Installing and Removing Memory

Read the following guidelines before you begin to install the memory:

- Make sure that the motherboard supports the memory. It is recommended to use memory of the same capacity, brand, speed, and chips.
- Always turn off the computer and unplug the power cord from the power outlet before installing the memory to prevent hardware damage.
- Memory modules have a foolproof design. A memory module can be installed in only one direction. If you are unable to insert the memory, switch the direction.

1-4-1 2-Channel Memory Configuration

This motherboard provides 4 DDR4 memory slots and supports 2-Channel Technology. After the memory is installed, the BIOS will automatically detect the specifications and capacity of the memory.

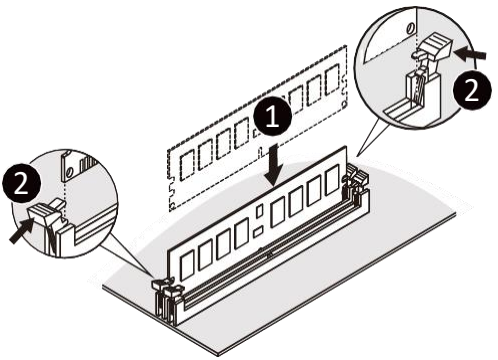


1-4-2 Installing and Removing a Memory Module

Before installing a memory module, make sure to turn off the computer and unplug thepower cord from the power outlet to prevent damage to the memory module.
Be sure to install DDR4 ECC UDIMMs on this motherboard.

Follow these instructions to install a UDIMM module:

1. Insert the UDIMM memory module vertically into the UDIMM slot and push it down.
2. Close the plastic clip at both edges of the UDIMM slots to lock the UDIMM module. Note: For dual-channel operation, UDIMMs must be installed in matched pairs.
3. Reverse the installation steps when you want to remove the UDIMM module.



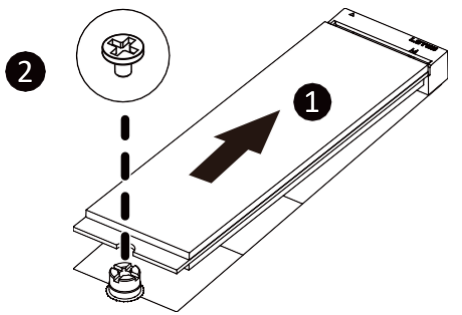
Note: DIMM must be populated in sequential alphabetic order, starting with bank A0.

Type	DIMM Slots per Channel	DIMMs populated per channel	Supported Voltage	POR Speed (MT/s)	Ranks per DIMM (1R=one rank)	Mem DIMM Device	Maximum Memory Capacity
DDR4 ECC UDIMM	2	2	1.2V	2666/ 2933/ 3200	1R1R	1Rx8	64GB
	2	2		2666/ 2933	2R2R	2Rx8	128GB
	2	1		2666/ 2933/ 3200	1R0R	1Rx8	32GB
	2	1		2666/ 2933/ 3200	2R0R	2Rx8	64GB

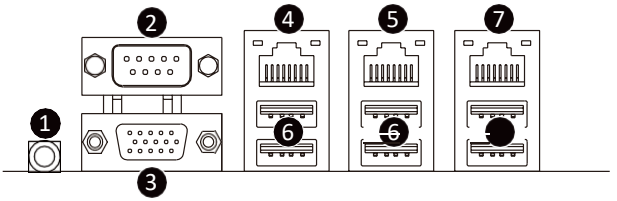
1-5 Installing the M.2 SSD Module

Follow the steps below to install a M.2 SSD module on your motherboard.

Step1. Insert the M.2 SSD module into the slot.
Step2. Secure it with the screw, tightening as necessary to fasten the M.2 SSD module in place.



1-6 Back Panel Connectors



❶ ID button with LED

When the system identification is active, the ID LED on the front/ back panel glows blue.

❷ Serial Port

Connects to serial-based mouse or data processing devices.

❸ VGA Port

Connect to a monitor device.

❹ GbE LAN Port #2

The Gigabit Ethernet LAN port provides Internet connection at up to 1 Gbps data rate. See the section. below for a description of the states of the LAN port LEDs.

❺ GbE LAN Port #1

The Gigabit Ethernet LAN port provides Internet connection at up to 1 Gbps data rate. See the section. below for a description of the states of the LAN port LEDs.

❻ USB 2.0 Ports

The USB port supports the USB 2.0 specification. Use this port for USB devices such as a USB keyboard/mouse, USB printer, USB flash drive etc.

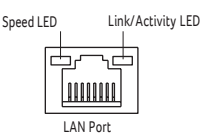
❼ Server Management LAN Port

The LAN port provides Internet connection with data transfer speeds of 10/100/1000Mbps. This port is the dedicated LAN port for Server Management.

❽ USB 3.2 Ports

The USB port supports the USB 3.2 specification. Use this port for USB devices such as a USB keyboard/mouse, USB printer, USB flash drive etc.

LAN and ID Button LEDs



10/100/1000 LAN LED:

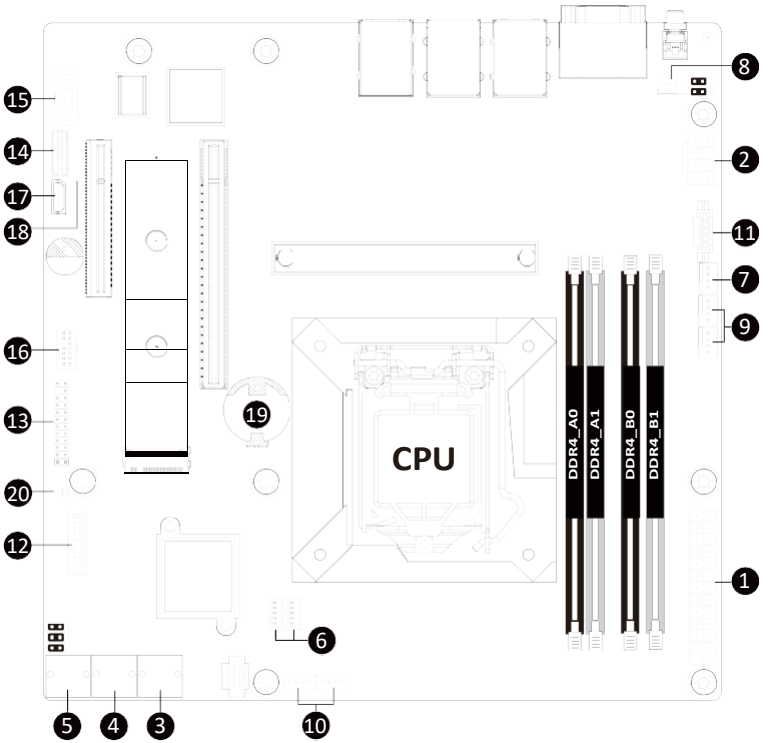
State	Description
Yellow On	1Gbps data rate
Green On	100Mbps data rate
Off	10Mbps data rate

ID button/LED:

State	Description
Blue On	System identification is active
Off	System identification is disabled

- When removing the cable connected to a back panel connector, first remove the cable from your device and then remove it from the motherboard.
- When removing the cable, pull it straight out from the connector. Do not rock it side to side to prevent an electrical short inside the cable connector.

1-7 Internal Connectors



1)	ATX	11)	PMBUS
2)	ATX_12V	12)	F_U32
3)	SATA3_0_1	13)	FP_1
4)	SATA3_2_3	14)	BP_1
5)	SATA3_4_5	15)	COM2
6)	SATA_SGP2/SATA_SGP1	16)	TPM
7)	CPU_FAN	17)	IPMB
8)	SYS_FAN1	18)	LED_BMC1
9)	SYS_FAN2/3	19)	BAT1
10)	SYS_FAN4/5	20)	CASE_OPEN

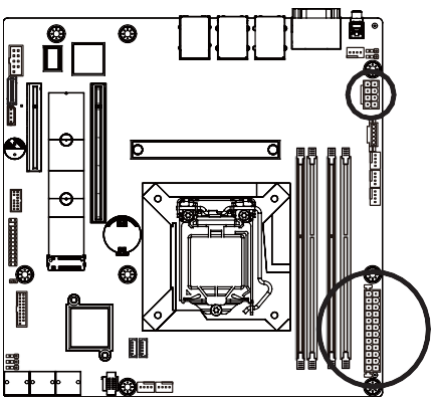
Read the following guidelines before connecting external devices:

- First make sure your devices are compliant with the connectors you wish to connect.
- Before installing the devices, be sure to turn off the devices and your computer. Unplug the power cord from the power outlet to prevent damage to the devices.
- After installing the device and before turning on the computer, make sure the device cable has been securely attached to the connector on the motherboard.

1/2) ATX/ATX_12V (2x12 Main Power Connector and 2x4 12V Power Connector)

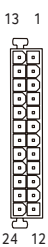
With the use of the power connector, the power supply can supply enough stable power to all the components on the motherboard. Before connecting the power connector, first make sure the power supply is turned off and all devices are properly installed. The power connector possesses a foolproof design. Connect the power supply cable to the power connector in the correct orientation. The 12V power connector mainly supplies power to the CPU. If the 12V power connector is not connected, the computer will not start.

To meet expansion requirements, it is recommended that a power supply that can withstand high power consumption be used (500W or greater). If a power supply is used that does not provide the required power, the result can lead to an unstable or unbootable system.



ATX_12V

Pin No.	Definition
1	GND
2	GND
3	GND
4	GND
5	+12V
6	+12V
7	+12V
8	+12V

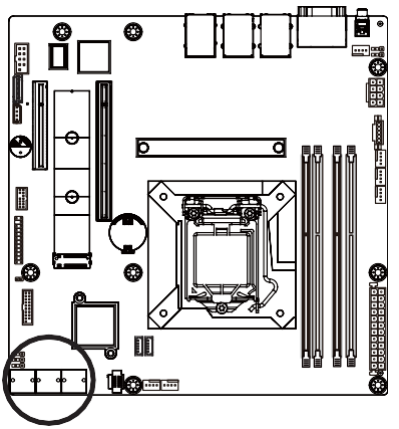


ATX

Pin No.	Definition	Pin No.	Definition
1	3.3V	13	3.3V
2	3.3V	14	-12V
3	GND	15	GND
4	+5V	16	PS_ON
5	GND	17	GND
6	+5V	18	GND
7	GND	19	GND
8	Power Good	20	-5V
9	5VSB	21	+5V
10	+12V	22	+5V
11	+12V	23	+5V
12	3.3V	24	GND

3/4/5) SATA3_0_1/SATA3_2_3/SATA3_4_5 (SATA III 6Gb/s Connectors)

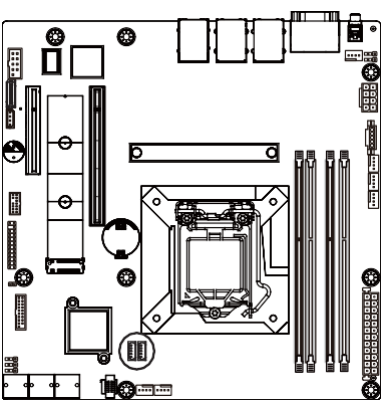
The SATA connectors conform to SATA III 6Gb/s standard and are compatible with SATA 3Gb/s standard. Each SATA connector supports a single SATA device.



Pin No.	Definition
1	GND
2	TXP
3	TXN
4	GND
5	RXN
6	RXP
7	GND

6) SATA_SGP1/SATA_SGP2 (SATA SGPIO Connector)

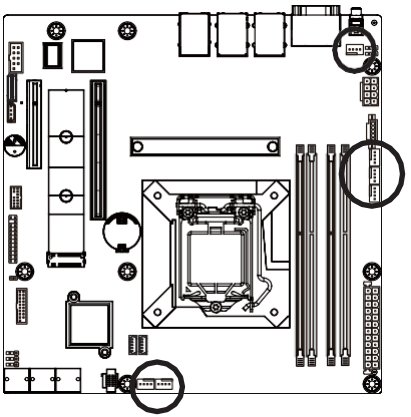
Serial General Purpose Input/Output (SGPIO) is a communication method used between a host bus adapter (HBA) and a main board.

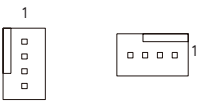


Pin No.	Definition
1	Data
2	GND
3	NC
4	Load
5	Clock

7/8/9/10) CPU_FAN/SYS_FAN1/SYS_FAN2/SYS_FAN3/SYS_FAN4/SYS_FAN5 (Fan Headers)

The motherboard has one 4-pin CPU fan header (CPU_FAN), and two 4-pin (SYS_FAN) system fan headers. Most fan headers possess a foolproof insertion design. When connecting a fan cable, be sure to connect it in the correct orientation (the black connector wire is the ground wire). The motherboard supports CPU fan speed control, which requires the use of a CPU fan with fan speed control design. For optimum heat dissipation, it is recommended that a system fan be installed inside the chassis.



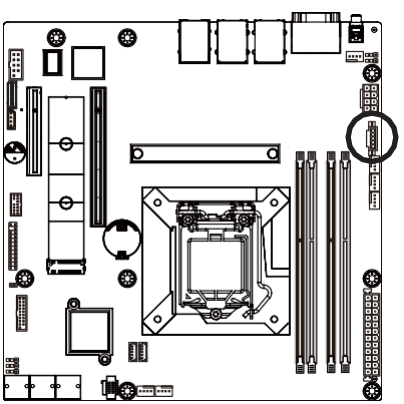


Pin No.	Definition
1	GND
2	+12V
3	Sense
4	Speed Control

- Be sure to connect fan cables to the fan headers to prevent your CPU and system from overheating. Overheating may result in damage to the CPU or the system may hang.
- These fan headers are not configuration jumper blocks. Do not place a jumper cap on the headers.

11) PMBus Connector

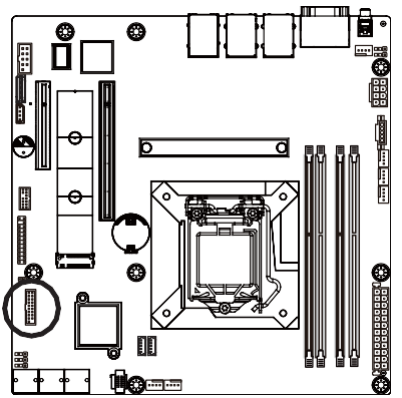
The Power Management Bus (PMBus) is a variant of the System Management Bus (SMBus) which istargeted at digital management of power supplies.

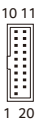


Pin No.	Definition
1	PMBus Clock
2	PMBus Data
3	PMBus Alert
4	GND
5	3.3V Sense

12) F_U32 (Front Panel USB 3.2 Connector)

The header conform to USB 3.2 specification. Each USB header can provide two USB ports via an optional USB bracket. For purchasing the optional USB bracket, please contact the local dealer.

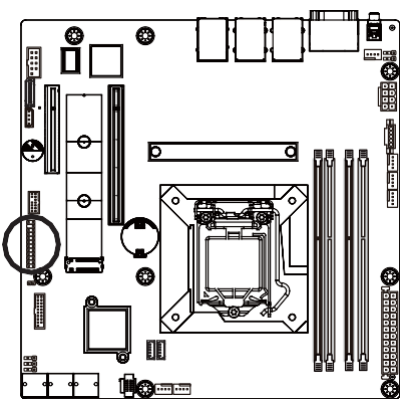




Pin No.	Definition	Pin No.	Definition
1	Power	11	IntA_P2_D+
2	IntA_P1_SSRX-	12	IntA_P2_D-
3	IntA_P1_SSRX+	13	GND
4	GND	14	IntA_P2_SSTX+
5	IntA_P1_SSTX-	15	IntA_P2_SSTX-
6	IntA_P1_SSTX+	16	GND
7	GND	17	IntA_P2_SSRX+
8	IntA_P1_D-	18	IntA_P2_SSRX-
9	IntA_P1_D+	19	Power
10	NC	20	No Pin

13) FP_1 (Front Panel Header)

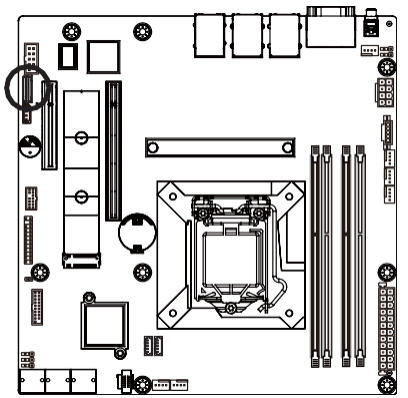
Connect the power switch, reset switch, speaker, chassis intrusion switch/sensor and system status indicator on the chassis to this header according to the pin assignments below. Note the positive and negative pins before connecting the cables.



Pin No.	Definition	Pin No.	Definition
1	Power LED+	2	5V Standby
3	No Pin	4	ID LED+
5	Power LED-	6	ID LED-
7	HDD LED+	8	System Status LED (Green)
9	HDD LED-	10	System Status LED (Yellow)
11	Power Button	12	LAN1 Active LED+
13	GND	14	LAN1 Link LED-
15	Reset Button	16	SMBus Data
17	GND	18	SMBus Clock
19	ID Button	20	Case Open
21	GND	22	LAN2 Actve LED+
23	NMI Switch	24	LAN2 Link LED-

The front panel design may differ by chassis. A front panel module mainly consists of power switch, reset switch, power LED, hard drive activity LED, speaker etc. When connecting your chassis front panel module to this header, make sure the wire assignments and the pin assignments are matched correctly.

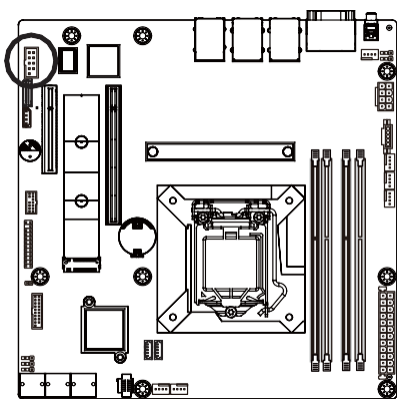
14) BP_1 (HDD Backplane Board Connector)

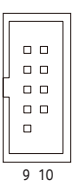


Pin No.	Definition	Pin No.	Definition
1	Reserved	2	BP_SGDIN
3	GND	4	BP_SGDOUT
5	BP_SGLD	6	GND
7	BP_SGCLK	8	PLD_Program_EN
9	GLED_AMB_N	10	GLED_GRN_N
11	FAN_IRQ_N	12	Reserved
13	BP_SCL	14	GND
15	BP_SDA	16	BP_RST_N
17	SMB_U2_TMP_SCL	18	GND
19	SMB_U2_TMP_SDA	20	12C_DEV_RST
21	Reserved	22	GND
23	Reserved	24	GND
25	Reserved	26	GND
27	Reserved	28	GND
29	P3V3_AUX	30	P3V3_AUX

15) COM2 (Serial Port Cable Connector)

The COM header can provide one serial port via an optional COM port cable. For purchasing the optional COM port cable, please contact the local dealer.

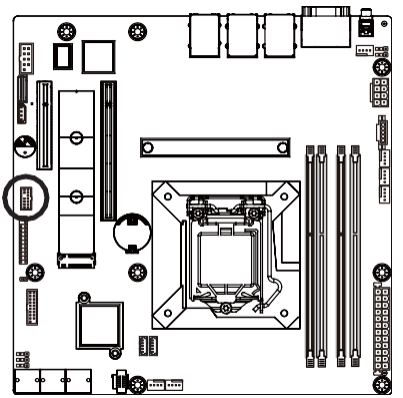


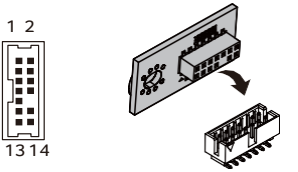


Pin No.	Definition
1	NDCDB_N
2	NSINB
3	NSOUTB
4	NDTRN
5	GND
6	NDSRB_N
7	NRTSB_N
8	NCTSB_N
9	NRIB_N
10	Key

16) TPM (Trusted Platform Module Connector)

Trusted Platform Module (TPM) is an international standard for a secure cryptoprocessor, a dedicated microcontroller designed to secure hardware through integrated cryptographic keys.

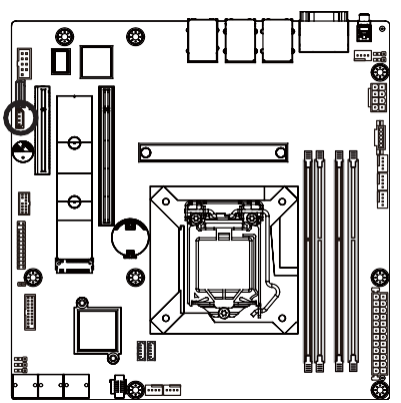




Pin No.	Definition	Pin No.	Definition
1	SPI_TPM_CLK	8	NC
2	P_3V3_AUX	9	NC
3	RST_PLTRST	10	Key
4	VCC3	11	NC
5	SPI_TPM_MISO	12	GND
6	IRQ_TPM_SPI	13	SPI_CS_TPM
7	SPI_TPM_MOSI	14	GND

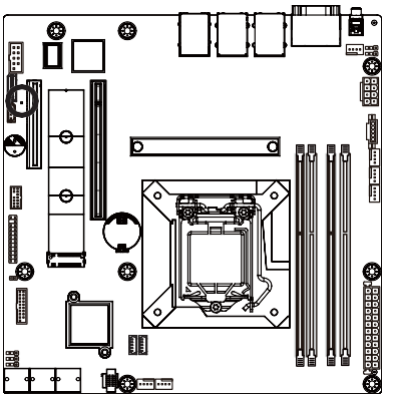
17) IPMB (Intelligent Platform Management Bus) Connector

The Intelligent Platform Management Bus Communications Protocol defines a byte-level transport for transferring Intelligent Platform Management Interface Specification (IPMI) messages between intelligent I2C devices.



Pin No.	Definition
1	Clock
2	Data
3	GND
4	VCC

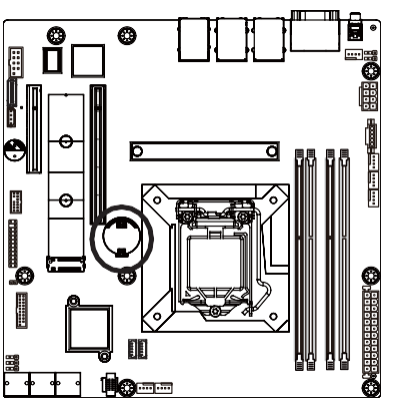
18) LED_BMC1 (BMC Firmware Readiness LED)

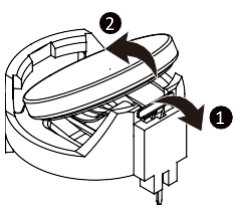


State	Description
On	BMC firmware is initial
Blink	BMC firmware is ready
Off	AC loss

19) BAT1 (Battery Socket)

The battery provides power to keep the values (such as BIOS configurations, date, and time information) in the CMOS when the computer is turned off. Replace the battery when the battery voltage drops to a low level, or the CMOS values may not be accurate or may be lost.

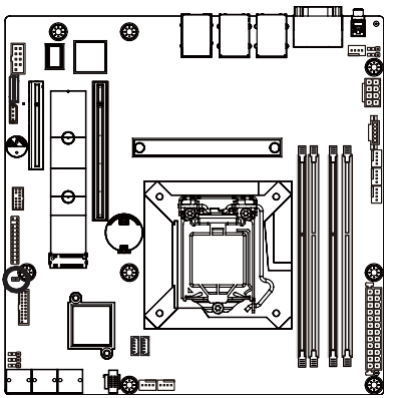




- Always turn off your computer and unplug the power cord before replacing the battery.
- Replace the battery with an equivalent one. Danger of explosion if the battery is replaced with an incorrect model.
- Contact the place of purchase or local dealer if you are not able to replace the battery by yourself or uncertain about the battery model.
- Used batteries must be handled in accordance with local environmental regulations.

20) CASE_OPEN (Case Open Intrusion Alert Header)

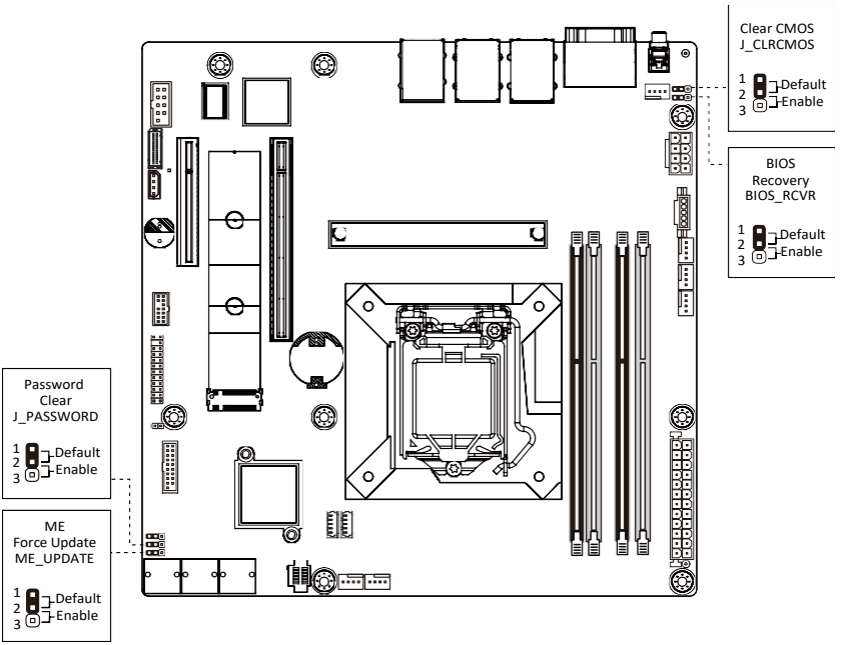
This motherboard provides a chassis detection feature that detects if the chassis cover has been removed.This function requires a chassis with chassis intrusion detection design.



Open: Normal Operation (Default)

Closed: Active Chassis Intrusion Alert

1-8 Jumper Settings



Jumper Name	Jumper Setting
ME Force Update	1-2: Normal operation (Default) 2-3: Enable ME Force Update
Password Clear	1-2: Normal operation (Default) 2-3: Clear administrator and user passwords
Clear CMOS	1-2: Normal operation (Default) 2-3: Clear CMOS data
BIOS Recovery	1-2: Normal operation (Default) 2-3: Enable BIOS Recovery

Chapter 2 BIOS Setup

BIOS (Basic Input and Output System) records hardware parameters of the system in the EFI on the motherboard. Its major functions include conducting the Power-On Self-Test (POST) during system startup, saving system parameters, loading the operating system etc. The BIOS includes a BIOS Setup program that allows the user to modify basic system configuration settings or to activate certain system features. When the power is turned off, the battery on the motherboard supplies the necessary power to the CMOS to keep the configuration values in the CMOS.

To access the BIOS Setup program, press the <DEL> key during the POST when the power is turned on.

- BIOS flashing is potentially risky, if you do not encounter any problems when using the current BIOS version, it is recommended that you don't flash the BIOS. To flash the BIOS, do it with caution. Inadequate BIOS flashing may result in system malfunction.
- It is recommended that you not alter the default settings (unless you need to) to prevent system instability or other unexpected results. Inadequately altering the settings may result in system's failure to boot. If this occurs, try to clear the CMOS values and reset the board to default values. (Refer to the **Exit** section in this chapter or introductions of the battery/clearing CMOS jumper in Chapter 1 for how to clear the CMOS values.)

BIOS Setup Program Function Keys

<□><□>	Move the selection bar to select the screen
<□><i>	Move the selection bar to select an item
<+>	Increase the numeric value or make changes
<->	Decrease the numeric value or make changes
<Enter>	Execute command or enter the submenu
<Esc>	Main Menu: Exit the BIOS Setup program Submenus: Exit current submenu
<F1>	Show descriptions of general help
<F3>	Restore the previous BIOS settings for the current submenus
<F9>	Load the Optimized BIOS default settings for the current submenus
<F10>	Save all the changes and exit the BIOS Setup program

- **Main**
  This setup page includes all the items of the standard compatible BIOS.
- **Advanced**
  This setup page includes all the items of AMI BIOS special enhanced features.
  (ex: Auto detect fan and temperature status, automatically configure hard disk parameters.)
- **Chipset**
  This setup page includes all the submenu options for configuring the functions of the Platform Controller Hub.
- **Server Management**
  Server additional features enabled/disabled setup menus.
- **Security**
  Change, set, or disable supervisor and user password. Configuration supervisor password allows you to restrict access to the system and BIOS Setup.
  A supervisor password allows you to make changes in BIOS Setup.
  A user password only allows you to view the BIOS settings but not to make changes.
- **Boot**
  This setup page provides items for configuration of the boot sequence.
- **Save & Exit**
  Save all the changes made in the BIOS Setup program to the CMOS and exit BIOS Setup. (Pressing <F10> can also carry out this task.)
  Abandon all changes and the previous settings remain in effect. Pressing <Y> to the confirmation message will exit BIOS Setup. (Pressing <Esc> can also carry out this task.)

2-1 The Main Menu

Once you enter the BIOS Setup program, the Main Menu (as shown below) appears on the screen. Use arrow keys to move among the items and press <Enter> to accept or enter other sub-menu.

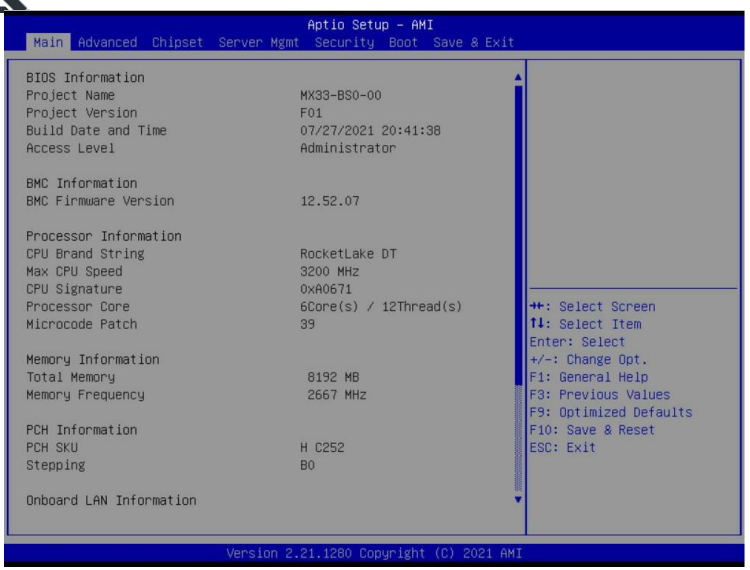
Main Menu Help

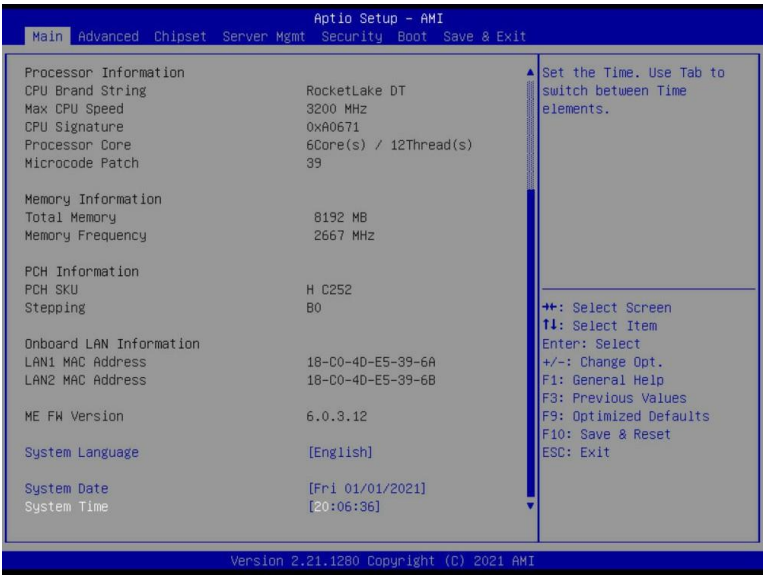
The on-screen description of a highlighted setup option is displayed on the bottom line of the Main Menu.

Submenu Help

While in a submenu, press <F1> to display a help screen (General Help) of function keys available for the menu. Press <Esc> to exit the help screen. Help for each item is in the Item Help block on the right side ofthe submenu.

- When the system is not stable as usual, select the **Restore Defaults** item to set your system to its defaults.
- The BIOS Setup menus described in this chapter are for reference only and may differ by BIOS version.





Parameter	Description
Access Level	Display the privileges level information.
Project Name	Displays the project name information.
Project Version	Displays version number of the BIOS setup utility.
Build Date and Time	Displays the date and time when the BIOS setup utility was created.
BMC Information(Note1)	
BMC Firmware Version(Note1)	Displays BMC firmware version information.
Processor Information	
CPU Brand String/ Max CPU Speed / CPU Signature / Processor Core / Microcode Patch	Displays the technical information for the installed processor(s).
Memory Information	
Total Memory(Note2)	Displays the total memory size of the installed memory.
Memory Frequency(Note2)	Displays the frequency information of the installed memory.
PCH Information	
PCH SKU	Displays the technical information for the installed PlatformController Hub (PCH).

(Note1) Functions available on selected models..

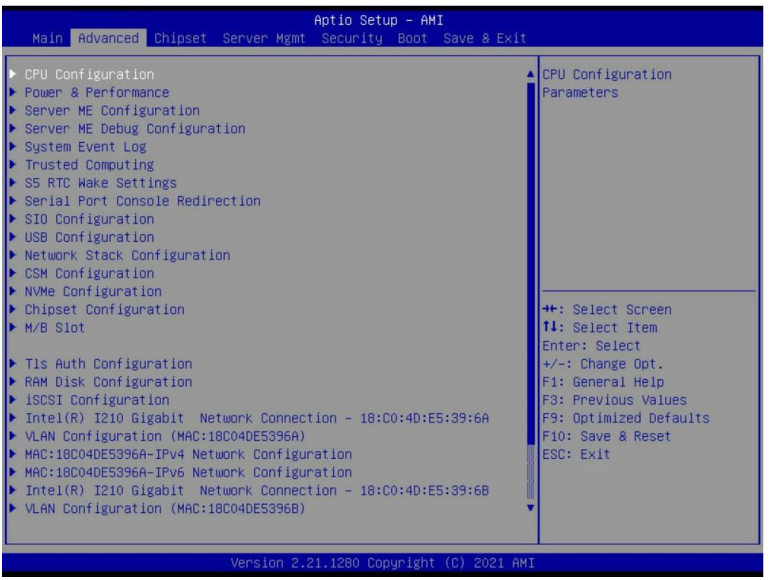
(Note2) This section will display capacity and frequency information of the memory that the customer has installed.

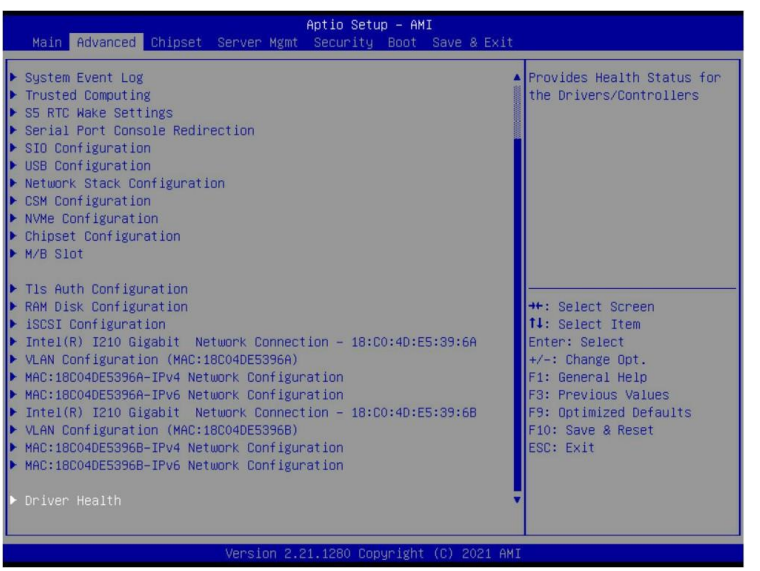
Parameter	Description
ME Firmware Information	
ME FW Version	Displays the ME firmware version information.
Onboard LAN Information	
LAN1 MAC Address(Note)	Displays LAN MAC address information.
LAN2 MAC Address (Note)	Displays LAN MAC address information.
System Date	Sets the date following the weekday-month-day-year format.
System Time	Sets the system time following the hour-minute-second format.

(Note) The number of LAN ports listed will depend on the motherboard / system model.

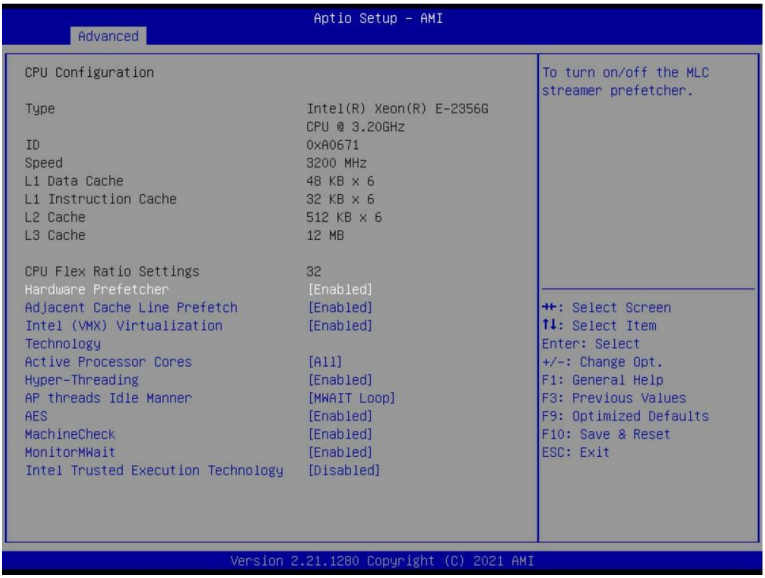
2-2 Advanced Menu

The Advanced Menu displays submenu options for configuring the function of various hardware components. Select a submenu item, then press <Enter> to access the related submenu screen.





2-2-1 CPU Configuration



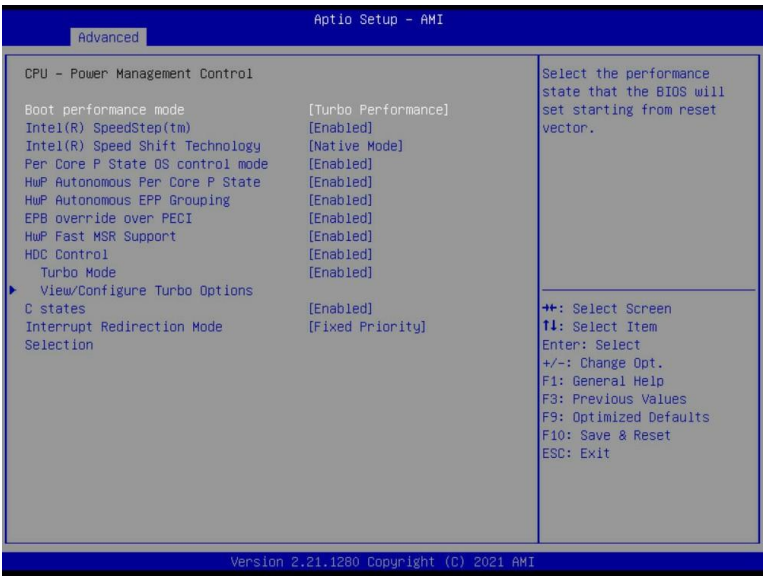
Parameter	Description
CPU Configuration	
Type/ID/Speed/L1 Data Cache/ L1 Instruction Cache/L2 Cache/L3 Cache/CPU Flex Ratio Settings	Displays the technical information for the installed processor(s).
Hardware Prefetcher	Enable/Disable this item to turn on/off the MLC streamer prefetcher.Options available: Disabled, Enabled. Default setting is **Enabled**.
Adjacent Cache Line Prefetch	When enabled, cache lines are fetched in pairs. When disabled, onlythe required cache line is fetched. Options available: Disabled, Enabled. Default setting is **Enabled**.
Intel (VMX) Virtualization Technology	When enabled, a VMM can utlilize the additional hardware capabilities provided by Vanderpool Technology. Options available: Disabled, Enabled. Default setting is **Enabled**.
Active Processor Cores	The Number of Cores to enable in each processor package.Options available: All, 1, 2, 3, 4, 5. Default setting is **All**.
Hyper-Threading	Enable/Disable the Hyper-Threading Technology. Options available: Disabled, Enabled. Default setting is **Enabled**.
AP threads Idle Manner	Options available: HALT Loop, MWAIT Loop, RUN Loop. Default setting is **MWAIT Loop**.

Parameter	Description
AES	Options available: Disabled, Enabled. Default setting is **Enabled**.
MachineCheck	Options available: Disabled, Enabled. Default setting is **Enabled**.
MonitorMWait	Options available: Disabled, Enabled. Default setting is **Enabled**.
Intel Trusted Execution Technology	Enables utilization of additional hardware capabilities provided by Intel(R) Trusted Execution Technology. Changes requires a full powercycle to take effect. Options available: Disabled, Enabled. Default setting is **Disabled**.

2-2-2 Power & Performance

Parameter	Description
Power & Performance	
CPU-Power Management Control	Press [Enter] to configure advanced items.

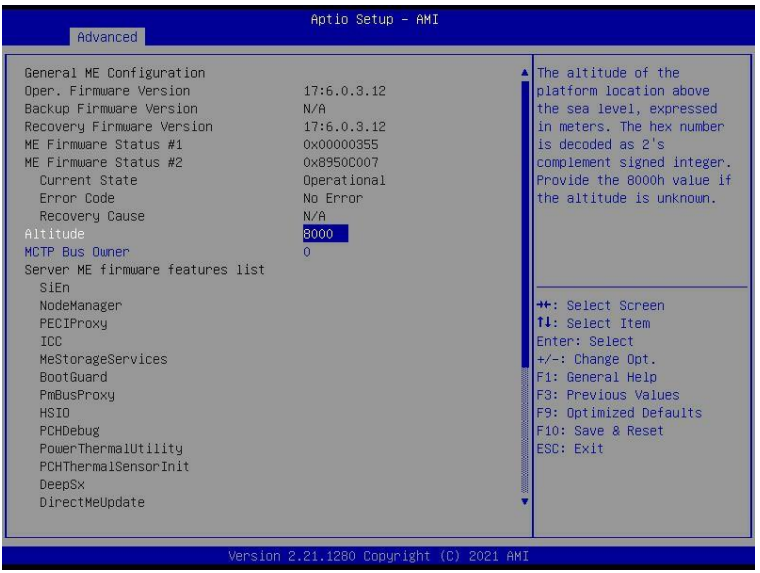
2-2-2-1 CPU-Power Management Control

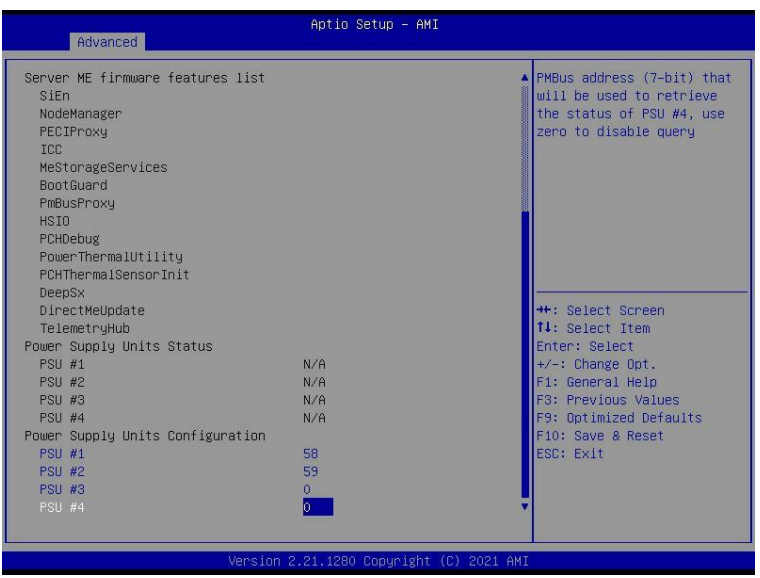


Parameter	Description
CPU-Power ManagementControl	
Boot performance mode	Selects the performance state that the BIOS will set starting from reset vector. Options available: Max Battery, Max Non-Turbo performance, Turbo Performance. Default setting is **Turbo Performance**.
Intel(R) SpeedStep(tm)	Allows more than two frequency ranges to be supported. Options available: Disabled, Enabled. Default setting is **Enabled**.
Intel(R) Speed Shift Technology	Enable/Disable Intel(R) Speed Shift Technology support. Options available: Disabled, Native Mode, Out of Band Mode. Default setting is **Native Mode**.
Per Core P State OS control mode	Enable/Disable Per Core P state OS control mode. Options available: Disabled, Enabled. Default setting is **Enabled**.
HwP Autonomous Per Core PState	Enable/Disable Autonomous Per Core P State control. Options available: Disabled, Enabled. Default setting is **Enabled**.
HwP Autonomous EPP Grouping	Enable/Disable EPP Grouping. Options available: Disabled, Enabled. Default setting is **Enabled**.
EPB override over PECI	Enable/Disable EPB override over PECI. Options available: Disabled, Enabled. Default setting is **Enabled**.

Parameter	Description
HwP Fast MSR Support	Enable/Disable HwP Fast MSR Support for IA32_HWP_REQUESTMSR. Options available: Disabled, Enabled. Default setting is **Enabled**.
HDC Control	When Enabled, it can be enabled by OS if OS native support is available. Options available: Disabled, Enabled. Default setting is **Enabled**.
Turbo Mode	Enable/Disable processor Turbo mode (requires EMTTM enabled).Options available: Disabled, Enabled. Default setting is **Enabled**.
View/Configure Turbo Options	Press [Enter] to view/configure Turbo Options. ◆ Turbo Ratio Limit Options – Press [Enter] to view/configure Turbo Ratio Limit Options. ◆ Power Limit 1 Override – Enable/Disable Power Limit 1 override. If this option is disabled, BIOS will program the default values for Power Limit 1 and Power Limit 1 Time Window. – Options available: Disabled, Enabled. Default setting is **Disabled**. ◆ Power Limit 2 Override – Enable/Disable Power Limit 2 override. If this option is disabled, BIOS will program the default values for Power Limit 2. – Options available: Disabled, Enabled. Default setting is **Enabled**. ◆ Power Limit 2 – Configures PL2 power limit in Watts. ◆ Energy Efficient Turbo – Enable/Disable Energy Efficient Turbo feature. This feature will opportunistically lower the turbo frequency to increase efficiency. Recommended only to disable in overclocking situations where turbo frequency must remain constant. Otherwise, leave enabled. – Options available: Disabled, Enabled. Default setting is **Enabled**. ◆ Turbo Configuration – To change the PL2 and Tau to mitigate the thermal throttling event storm. – Options available: Max Transient Turbo, 1.2x TDP. Default setting is **Max Transient Turbo**.
C States	Enable/Disable CPU Power Management. Options available: Disabled, Enabled. Default setting is **Enabled**.
Interrupt Redirection Mode Selection	Selects the Interrupt Redirection Mode for Logical Interrupts. Options available: Fixed Priority, Round robin, Hash Vector, No Change. Default setting is **Fixed Priority**.

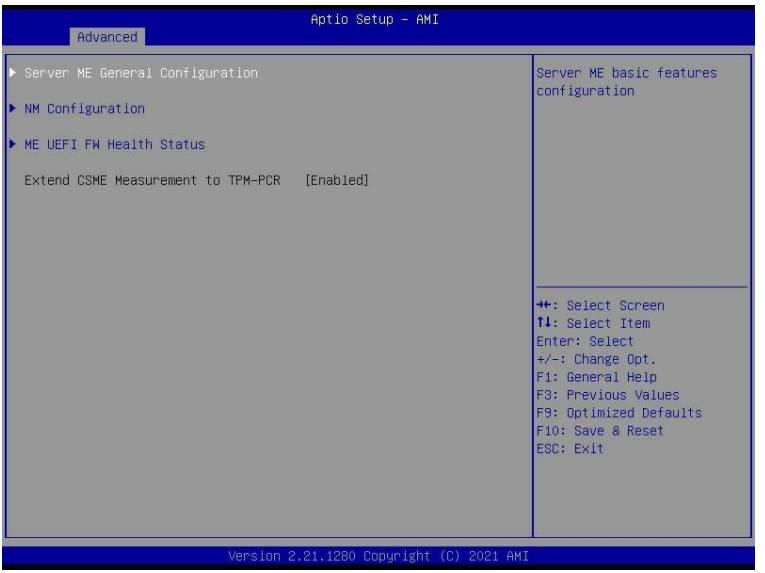
2-2-3 Server ME Configuration





Parameter	Description
General ME Configuration	
Oper./Backup/RecoveryFirmware Version	Displays the ME firmware version information.
ME Firmware Status 1/2	Displays the ME firmware status 1/2 information.
Current State/Error Code/Recovery Cause	Displays the ME firmware information of Current State/Error Code/ Recovery Cause.
Altitude	The altitude of the platform location above the sea level, expressed in meters. The hex number is decoded as 2's complement signed integer. Provide the 8000h value if the altitude is unknown.
MCTP Bus Owner	MCTP bus owner location on PCIe: [15:8] bus, [7:3] device, [2:0]function. If all zeros sending bus owner is disabled.
Server ME firmware features list	Displays the ME firmware features list.
Power Supply units Status	Displays the power supply units status information.
Power Supply Units Configuration	PMBus address (7-bit) that will be used to retrieve the status of PSU#,use zero to disable query.

2-2-4 Server ME Debug Configuration



Parameter	Description
Server ME General Configuration	Press [Enter] to configure advanced items. ◆ ME Initialization Complete Timeout – This option defines how long BIOS waits for ME to initialize. ◆ Enable HSIO Messaging – Options available: Disabled, Enabled. Default setting is **Disabled**. ◆ DRAM Init Done Enable – Options available: Disabled, Enabled. Default setting is **Enabled**. ◆ DRAM Initialization Status – Options available: Auto-true status, 0-Success, 1-No memory in Channels, 2-Memory Init Error. Default setting is **Auto-true status**. ◆ DRAM Init Done Enable – Options available: Disabled, Enabled. Default setting is **Enabled**. ◆ Host Reset Warning – Options available: Disabled, Enabled. Default setting is **Disabled**. ◆ Pre-DramInitDone ME Reset – Options available: Disabled, Enabled. Default setting is **Disabled**.

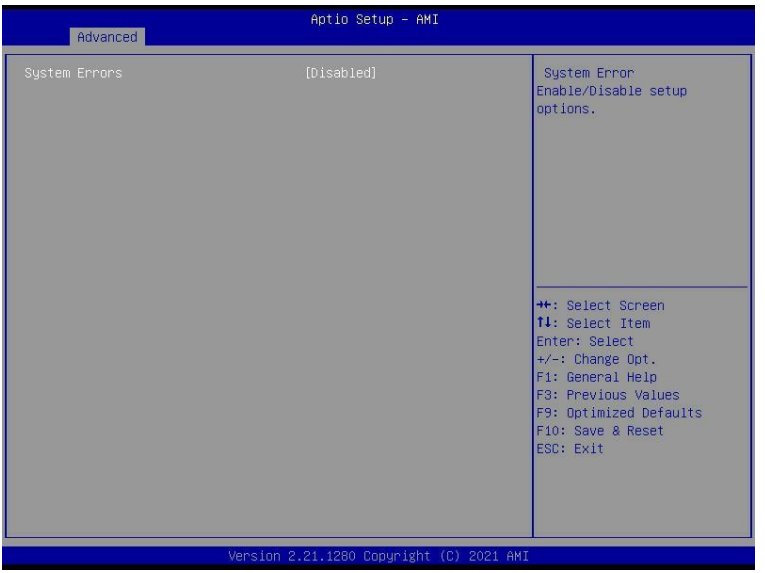
Parameter	Description
Server ME General Configuration (Continued)	◆ Override ICC Clock Settings – ICC Clock Spread Spectrum. » Options available: Disabled, Enabled. Default setting is **Enabled.** ◆ HMRFPO via HECI-3 – Options available: Disabled, Enabled. Default setting is **Disabled**. ◆ HMRFPO_LOCK Message – Options available: Disabled, Enabled. Default setting is **Enabled**. ◆ HMRFPO_ENABLE Message(Note) – Options available: Disabled, Enabled. Default setting is **Disabled**. ◆ Region selector – Options available: Intel ME region, Region 13. Default setting is **Intel ME region**. ◆ END_OF_POST Message – Options available: Disabled, Enabled. Default setting is **Enabled**. ◆ REGION_SELECT Message(Note) – Options available: Disabled, Enabled. Default setting is **Disabled**. ◆ WATCHDOG_CONTROL Message – Options available: Disabled, Enabled. Default setting is **Enabled**. ◆ Disable WATCHDOG in SPS – Options available: Disabled, Enabled. Default setting is **Disabled**. ◆ ARB SVN Commit Message – Options available: Disabled, Enabled. Default setting is **Disabled**. ◆ CF9 global reset promotion – Options available: Disabled, Enabled. Default setting is **Disabled**. ◆ Global Reset Lock – Options available: Disabled, Enabled. Default setting is **Enabled**. ◆ HECI-1/2/3/4 Enable – Options available: Disabled, Enabled, Auto. Default setting is **Auto**. ◆ IDEr Enable – Options available: Disabled, Enabled, Auto. Default setting is **Auto**.

(Note) Advanced items prompt when this item is defined.

Parameter	Description
Server ME General Configuration (Continued)	◆ HECI-1/2/3/4 Hide in ME – Options available: Off, Hide, Disabled. Default setting is **Off**. ◆ DOI3 Setting for HECI Disable – Options available: Disabled, Enabled. Default setting is **Disabled**. ◆ Break RTC Configuration – Options available: Disabled, Enabled. Default setting is **Disabled**. ◆ Core Bios Done Message – Options available: Disabled, Enabled. Default setting is **Enabled**. ◆ Delayed Authentication Mode (DAM) Override(Note) – Options available: Disabled, Enabled. Default setting is **Disabled**. ◆ Delayed Authentication Mode (DAM) – Options available: Disabled, Enabled. Default setting is **Disabled**. ◆ MCTP Broadcast Cycle – Options available: Disabled, Enabled. Default setting is **Enabled**.
NM Configuration	Press [Enter] to configure advanced items. ◆ Power Measurement Override – Options available: Disabled, Enabled. Default setting is **Disabled**. ◆ Power Measurement(Note) – Options available: Disabled, Enabled. Default setting is **Disabled**. ◆ Hardware Change Override – Options available: Disabled, Enabled. Default setting is **Disabled**. ◆ Hardware Change(Note) – Options available: No, Yes. Default setting is **No**. ◆ PTU Load Override – Options available: Disabled, Enabled. Default setting is **Disabled**.
ME UEFI FW Health Status	Press [Enter] to view the information of ME firmware status.

(Note) Advanced items prompt when this item is defined.

2-2-5 System Event Log



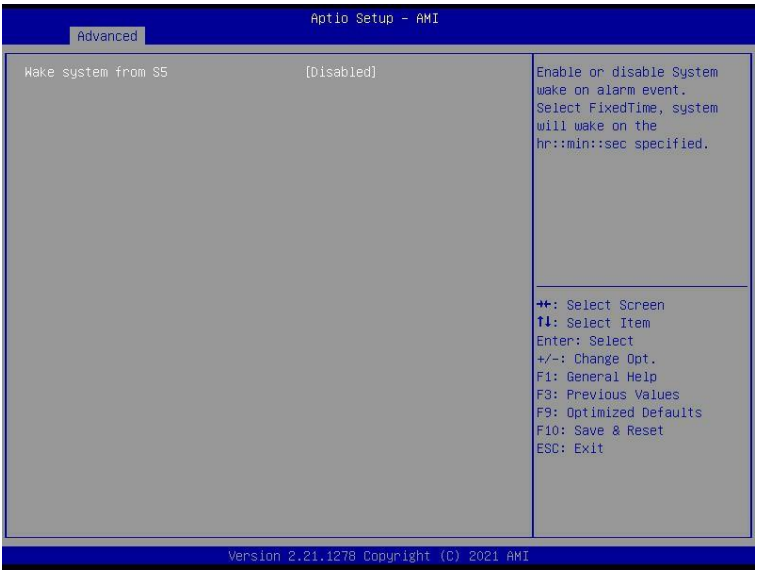
Parameter	Description
System Errors(Note)	Options available: Disabled, Enabled. Default setting is **Disabled**.
Whea Driver Support	Enable/Disable Whea Driver Support. Options available: Disabled, Enabled. Default setting is **Disabled**.
Memory Error Enabling	Press [Enter] to configure advanced items. ◆ Memory corrected Error enabling – Options available: Disabled, Enabled. Default setting is **Disabled**. ◆ Memory uncorrected Error enabling – Options available: Disabled, Enabled. Default setting is **Disabled**.
PCH Error Enable	Options available: No, Yes. Default setting is **No**.

(Note) Advanced items prompt when this item is defined.

2-2-6 Trusted Computing

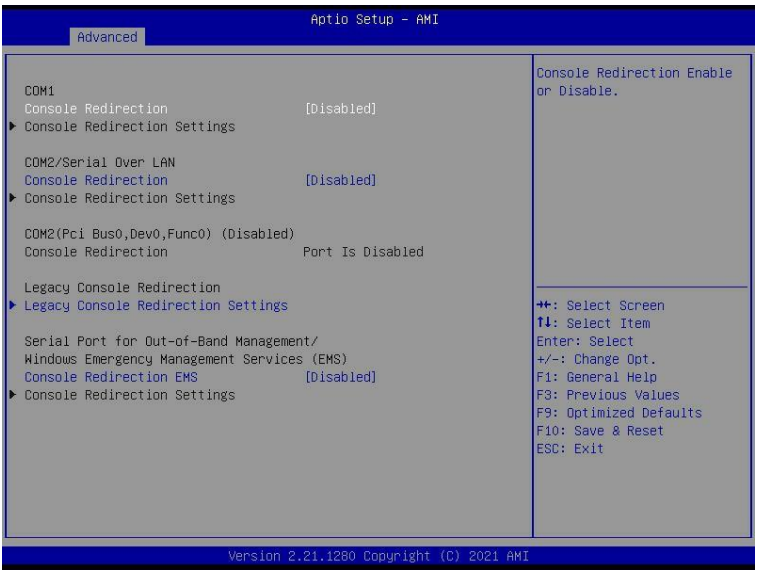
Parameter	Description
Configuration	
Security Device Support	Enable/Disable BIOS support for security device. OS will not show security device. TCG EFI protocol and INT1A interface will not be available. Options available: Enable, Disable. Default setting is **Enable**.

2-2-7 S5 RTC Wake Settings



Parameter	Description
Wake System from S5	Enable/Disable system wake on alarm event. Options available: Disabled, Fixed Time. When Fixed Time is selected, system will wake on the hr::min::sec specified. Default setting is **Disabled**.

2-2-8 Serial Port Console Redirection



Parameter	Description
COM Console Redirection[Note]	Console redirection enables the users to manage the system from aremote location. Options available: Enabled, Disabled. Default setting is **Disabled**.
COM Console Redirection Settings	Press [Enter] to configure advanced items. **Please note that this item is configurable when COM Console Redirection is set to Enabled.** ◆ Terminal Type – Selects a terminal type to be used for console redirection. – Options available: VT100, VT100+, ANSI, VT-UTF8. Default settingis **VT100+**. ◆ Bits per second – Selects the transfer rate for console redirection. – Options available: 9600, 19200, 38400, 57600, 115200. Default setting is **115200**. ◆ Data Bits – Selects the number of data bits used for console redirection. – Options available: 7, 8. Default setting is **8**.

(Note) Advanced items prompt when this item is defined.

Parameter	Description
COM Console Redirection Settings (continued)	◆ Parity – A parity bit can be sent with the data bits to detect some transmission errors. – Even: parity bit is 0 if the num of 1's in the data bits is even. – Odd: parity bit is 0 if num 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. Default setting is **None**. ◆ 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 stopbit. – Options available: 1, 2. Default setting is **1**. ◆ 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 usestwo wires to send start/stop signals. – Options available: None, Hardware RTS/CTS. Default setting is **None**. ◆ VT-UTF8 Combo Key Support – Enable/Disable the VT-UTF8 Combo Key Support. – Options available: Enabled, Disabled. Default setting is **Enabled**. ◆ Recorder Mode – When this mode enabled, only texts will be send. This is to capture Terminal data. – Options available: Enabled, Disabled. Default setting is **Disabled**. ◆ Resolution 100x31 – Enable/Disable extended terminal resolution. – Options available: Enabled, Disabled. Default setting is **Enabled**. ◆ Putty KeyPad – Selects FunctionKey and KeyPad on Putty. – Options available: VT100, LINUX, XTERMR6, SCO, ESCN, VT400. Default setting is **VT100**.

Parameter	Description
Legacy Console Redirection	
Legacy Console Redirection Settings	Press [Enter] to configure advanced items. ◆ Redirection COM Port – Selects a COM port for Legacy serial redirection. – Default setting is **COM1**. ◆ Resolution – Selects the number of rows and columns used in Console Redirection for legacy OS support. – Options available: 80x24, 80x25. Default setting is **80x24**. ◆ Redirect After POST – When Bootloader is selected, then Legacy Console Redirection is disabled before booting to legacy OS. When Always Enable is selected, then Legacy Console Redirection is enabled for legacy OS. – Options available: Always Enable, BootLoader. Default setting is **Always Enable**.
Serial Port for Out-of-Band Management / Windows Emergency Management Services (EMS) Console Redirection(Note)	EMS console redirection allows the user to configure Console Redirection Settings to support Out-of-Band Serial Port management. Options available: Enabled, Disabled. Default setting is **Disabled**.
Serial Port for Out-of-Band EMS Console Redirection Settings	Press [Enter] to configure advanced items. **Please note that this item is configurable when Serial Port for Out-of-Band Management EMS Console Redirection is set to Enabled.** ◆ Out-of-Band Mgmt Port – Microsoft Windows Emergency Management Service (EMS) allows for remote management of a Windows Server OS through a serial port. – Default setting is **COM1**. ◆ Terminal Type EMS – Selects a terminal type to be used for console redirection. – Options available: VT100, VT100+, ANSI, VT-UTF8. Default settingis **VT100+**. ◆ Bits per second EMS – Selects the transfer rate for console redirection. – Options available: 9600, 19200, 57600, 115200. Default setting is **115200**.

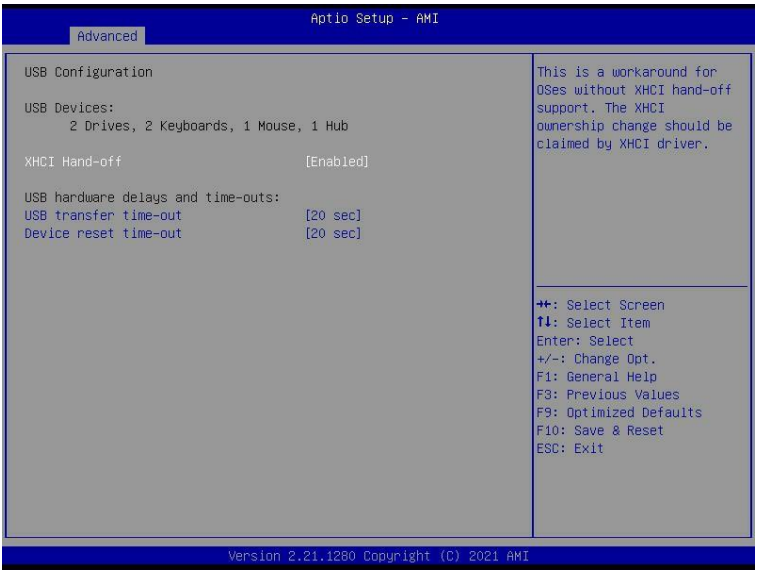
(Note) Advanced items prompt when this item is defined.

Parameter	Description
Serial Port for Out-of-Band EMS Console Redirection Settings(continued)	◆ Flow Control EMS – 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 usestwo wires to send start/stop signals. – Options available: None, Hardware RTS/CTS, Software Xon/Xoff. Default setting is **None**.

2-2-9 SIO Configuration

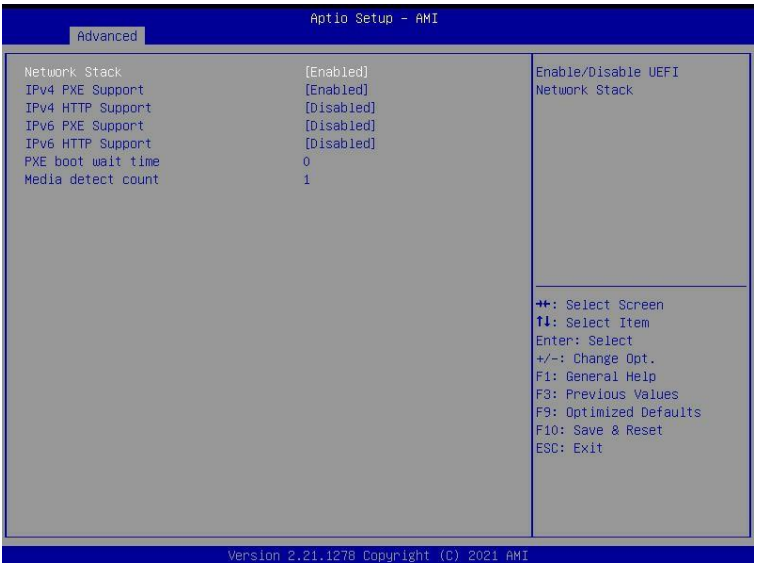
Parameter	Description
AMI SIO Driver Version	Displays the AMI SIO driver version information.
Super IO Chip Logical Device(s) Configuration	
[*Active*] Serial Port 1/2	Press [Enter] to configure advanced items. ◆ Use This Device – When set to Enabled allows you to configure the serial port settings. When set to Disabled, displays no configuration for the serial port. – Options available: Enabled, Disabled. Default setting is **Enabled**. ◆ Current: – Displays the serial port base I/O address and IRQ. ◆ Possible: – Configures the serial port base I/O address and IRQ. Use Automatic Settings IO=3F8h; IRQ=4; DMA; IO=3F8h; IRQ=4; DMA; IO=2F8h; IRQ=4; DMA; IO=3E8h; IRQ=4; DMA; IO=2E8h; IRQ=4; DMA; Default setting is **Use Automatic Settings**.

2-2-10 USB Configuration



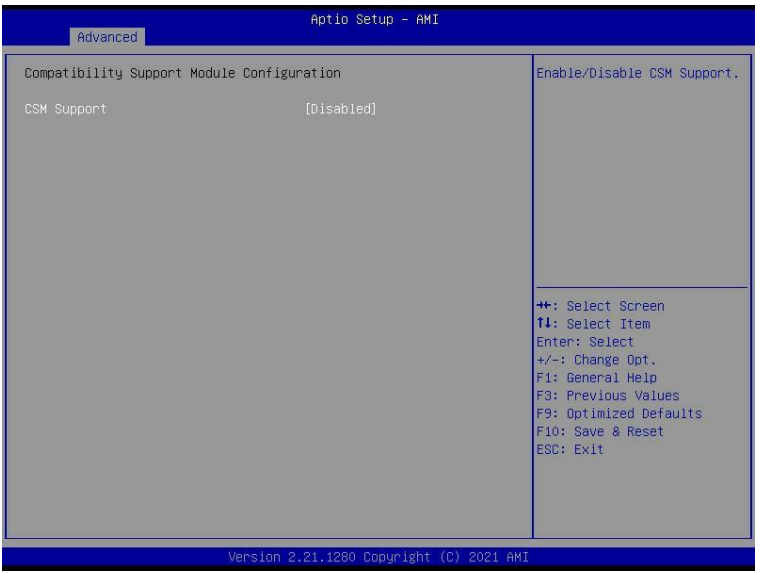
Parameter	Description
USB Configuration	
USB Devices:	Displays the USB devices connected to the system.
XHCI Hand-off	Enable/Disable the XHCI (USB 3.0) Hand-off support. Options available: Disabled, Enabled. Default setting is **Enabled**.
USB hardware delays and time-outs	
USB transfer time-out	Select the time-out value for USB Control/Bulk/Interrupt transfers. Options available: 1 sec, 5 sec, 10 sec, 20 sec. Default setting is **20 sec**.
Device reset time-out	Select the time-out value during a USB mass storage device reset. Options available: 10 sec, 20 sec, 30 sec, 40 sec. Default setting is **20 sec**.

2-2-11 Network Stack Configuration



Parameter	Description
Network Stack	Enable/Disable the UEFI network stack. Options available: Enabled, Disabled. Default setting is **Enabled**.
Ipv4 PXE Support	Enable/Disable the Ipv4 PXE feature. Options available: Enabled, Disabled. Default setting is **Enabled**.
Ipv4 HTTP Support	Enable/Disable the Ipv4 HTTP feature. Options available: Enabled, Disabled. Default setting is **Disabled**.
Ipv6 PXE Support	Enable/Disable the Ipv6 PXE feature. Options available: Enabled, Disabled. Default setting is **Enabled**.
Ipv6 HTTP Support	Enable/Disable the Ipv6 HTTP feature. Options available: Enabled, Disabled. Default setting is **Disabled**.
PXE boot wait time	Wait time in seconds to press ESC key to abort the PXE boot. Press the <+> / <-> keys to increase or decrease the desired values.
Media detect count	Number of times the presence of media will be checked. Press the <+> / <-> keys to increase or decrease the desired values.

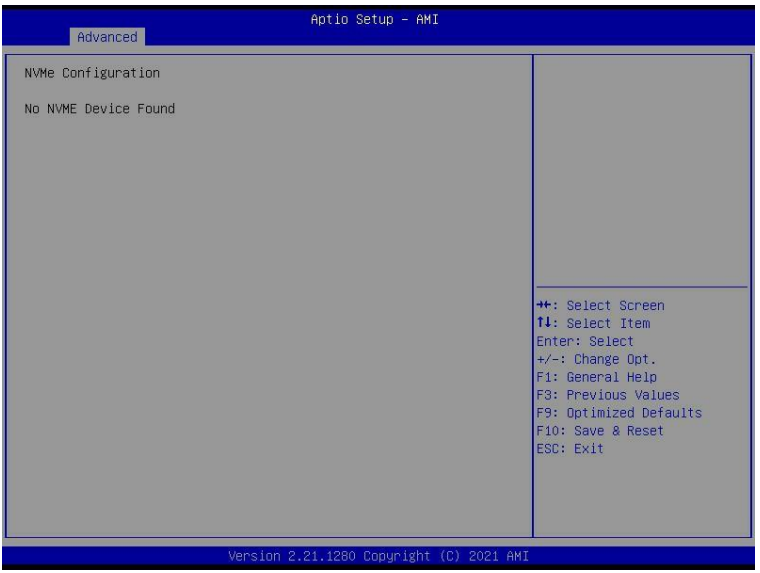
2-2-12 CSM Configuration



Parameter	Description
Compatibility Support Module Configuration	
CSM Support(Note)	Options available: Enabled, Disabled. Default setting is **Disabled**.
Boot option filter	Options available: UEFI and Legacy, Legacy only, UEFI only. Default setting is **UEFI only**.
Option ROM execution - Network/Storage/Video/ Other PCI devices	Options available: Do not launch, UEFI, Legacy. Default setting is **UEFI**.

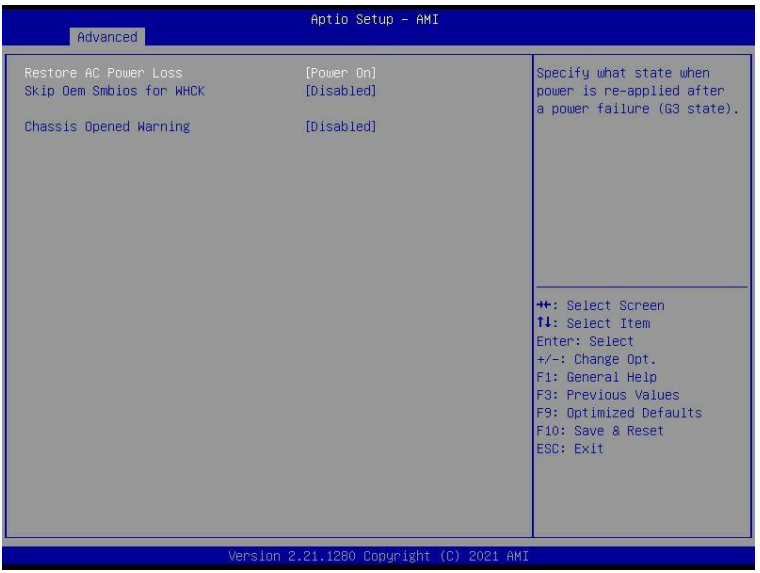
(Note) Advanced items prompt when this item is defined.

2-2-13 NVMe Configuration



Parameter	Description
NVMe Configuration	Displays the NVMe devices connected to the system.

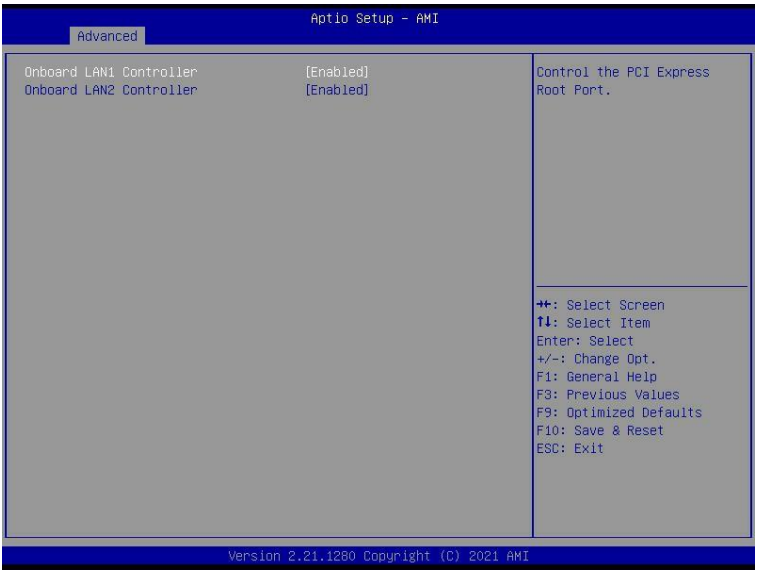
2-2-14 Chipset Configuration



Parameter	Description
Restore on AC Power Loss(Note)	Defines the power state to resume to after a system shutdown that is due to an interruption in AC power. When set to Last State, the systemwill return to the active power state prior to shutdown. When set to Power Off, the system remains off after power shutdown. Options available: Last State, Power Off, Power On, Unspecified. The default setting depends on the BMC setting.
Skip Oem smbios for WHK	Options available: Enabled, Disabled. Default setting is **Disabled**.
Chassis Opened Warning	Enable/Disable the chassis intrusion alert function. Options available: Enabled, Disabled, Clear. Default setting is **Disabled**.

(Note) When the power policy is controlled by BMC, please wait for 15-20 seconds for BMC to save the last power state.

2-2-15 M/B Slot

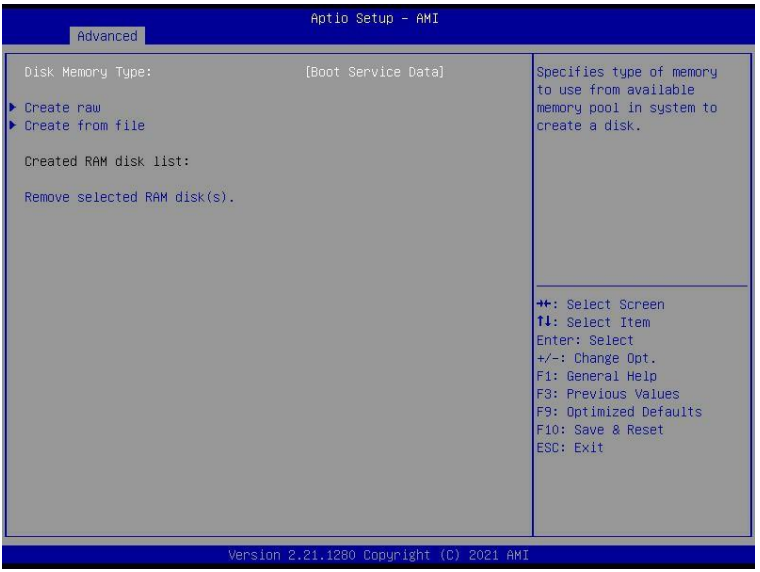


Parameter	Description
Onboard LAN 1/2 Controller	Options available: Enabled, Disabled. Default setting is **Disabled**.

2-2-16 Tls Auth Configuration

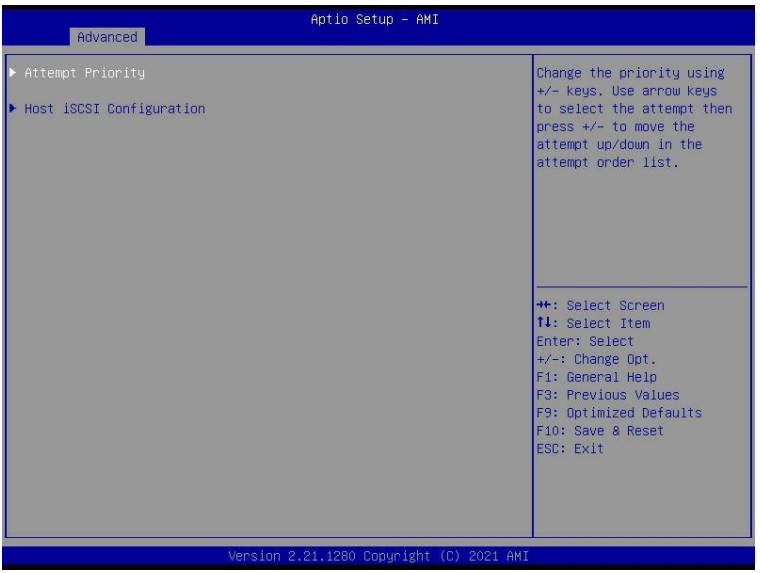
Parameter	Description
Server CA Configuration	Press [Enter] for configuration of advanced items. ◆ Enroll Cert – Press [Enter] to enroll a certificate • Enroll Cert Using File • Cert GUID Input digit character in 1111111-2222-3333-4444-1234567890ab format. – Commit Changes and Exit – Discard Changes and Exit ◆ Delete Cert
Client Cert Configuration	Press [Enter] for configuration of advanced items.

2-2-17 RAM Disk Configuration



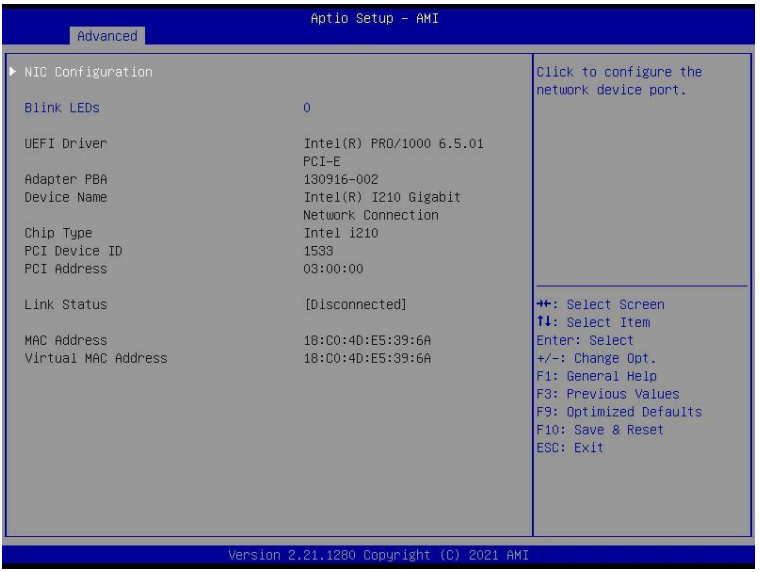
Parameter	Description
Disk Memory Type	Specifies the type of memory to use from available memory pool in system to create a disk. Options available: Boot Service Data, Reserved. Default setting is **BootService Data**.
Create raw	◆ Size (Hex) – The valid RAM disk size should be multiples of the RAM disk blocksize. Default setting is **1**. ◆ Create & Exit ◆ Discard & Exit
Create from file	To create a RAM disk from a file.
Create RAM Disk List	
Remove selected RAM disk(s)	To delete the RAM disk(s).

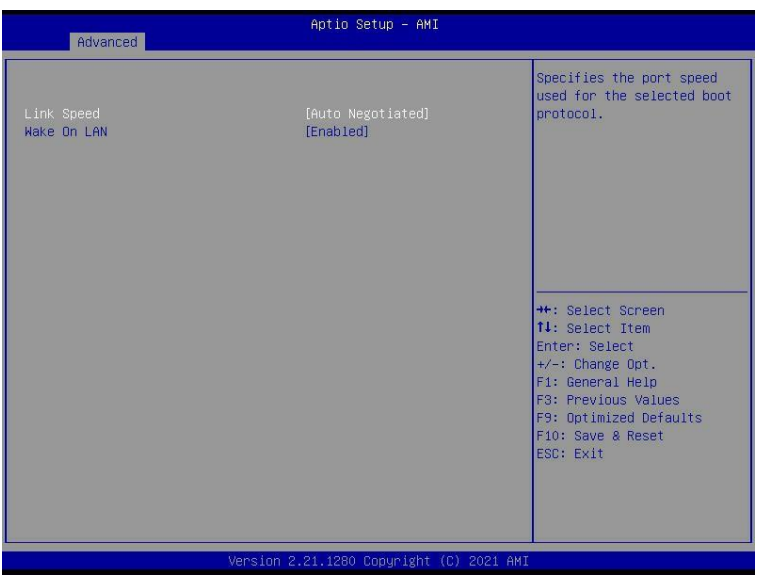
2-2-18 iSCSI Configuration



Parameter	Description
Attempt Priority	Press [Enter] configure advanced items. ◆ Attempt Priority – Options available: Host Attempt, Redfish Attempt. Default setting is **Host Attempt**. ◆ Commit Changes and Exit
Host iSCSI Configuration	Press [Enter] to configure advanced items. ◆ iSCSI Initiator Name – Only IQN format is accepted. Range: from 4 to 223 ◆ Add an Attempt ◆ Delete Attempts ◆ Change Attempt Order

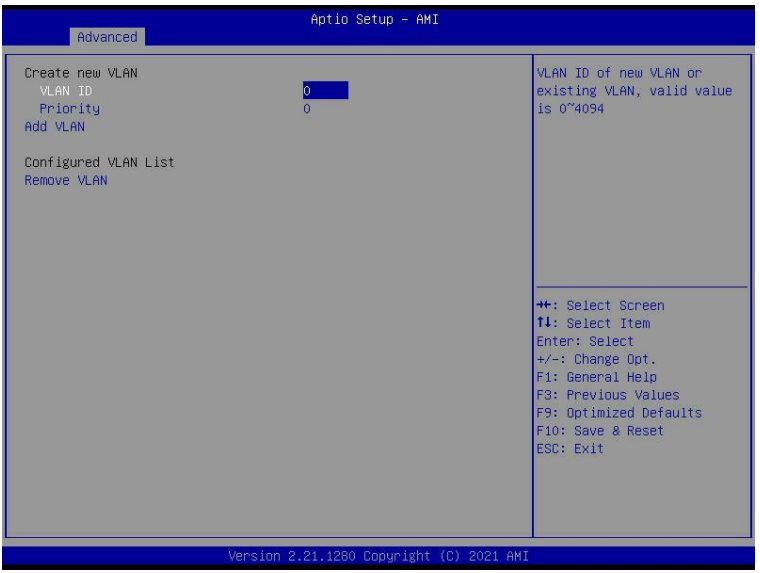
2-2-19 Intel(R) I210 Gigabit Network Connection





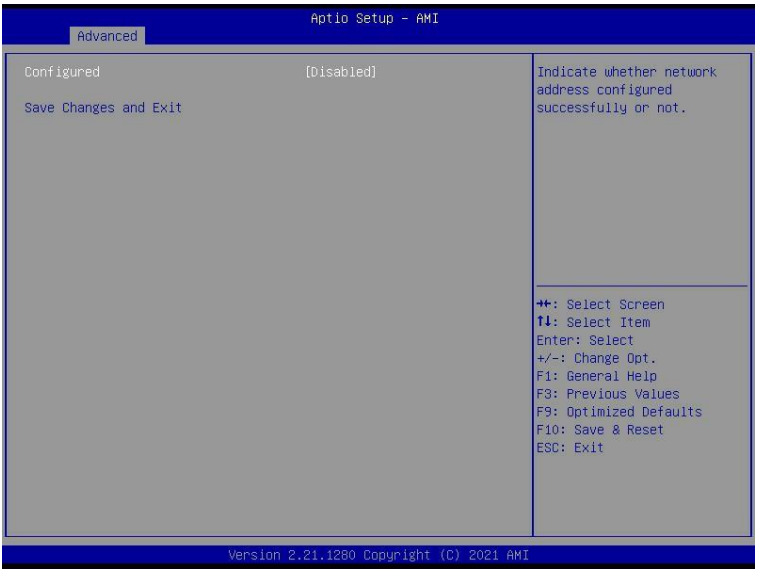
Parameter	Description
NIC Configuration	Press [Enter] to configure advanced items. ◆ Link Speed – Allows for automatic link speed adjustment. – Options available: Auto Negotiated, 10 Mbps Half, 10 Mbps Full, 100 Mbps Half, 100 Mbps Full. Default setting is **Auto Negotiated**. ◆ Wake On LAN – Enables power on of the system via LAN. Note that configuring Wake on LAN in the operating system does not change the value of this setting, but does override the behavior of Wake on LAN in OS controlled power states. – Options available: Disabled, Enabled. Default setting is **Disabled**.
Blink LEDs	Identifies the physical network port by blinking the associated LED. Press the numeric keys to adjust desired values (up to 15 seconds).
UEFI Driver	Displays the technical specifications for the Network Interface Controller.
Adapter PBA	Displays the technical specifications for the Network Interface Controller.
Device Name	Displays the technical specifications for the Network Interface Controller.
Chip Type	Displays the technical specifications for the Network Interface Controller.
PCI Device ID	Displays the technical specifications for the Network Interface Controller.
PCI Address	Displays the technical specifications for the Network Interface Controller.
Link Status	Displays the technical specifications for the Network Interface Controller.
MAC Address	Displays the technical specifications for the Network Interface Controller.
Virtual MAC Address	Displays the technical specifications for the Network Interface Controller.

2-2-20 VLAN Configuration



Parameter	Description
Enter Configuration Menu	Press [Enter] to configure advanced items. ◆ Create new VLAN ◆ VLAN ID – Sets VLAN ID for a new VLAN or an existing VLAN. – Press the <+> / <-> keys to increase or decrease the desired values. – The valid range is from 0 to 4094. ◆ Priority – Sets 802.1Q Priority for a new VLAN or an existing VLAN. – Press the <+> / <-> keys to increase or decrease the desired values. – The valid range is from 0 to 7. ◆ Add VLAN – Press [Enter] to create a new VLAN or update an existing VLAN. ◆ Configured VLAN List ◆ Remove VLAN – Press [Enter] to remove an existing VLAN.

2-2-21 IPv4 Network Configuration



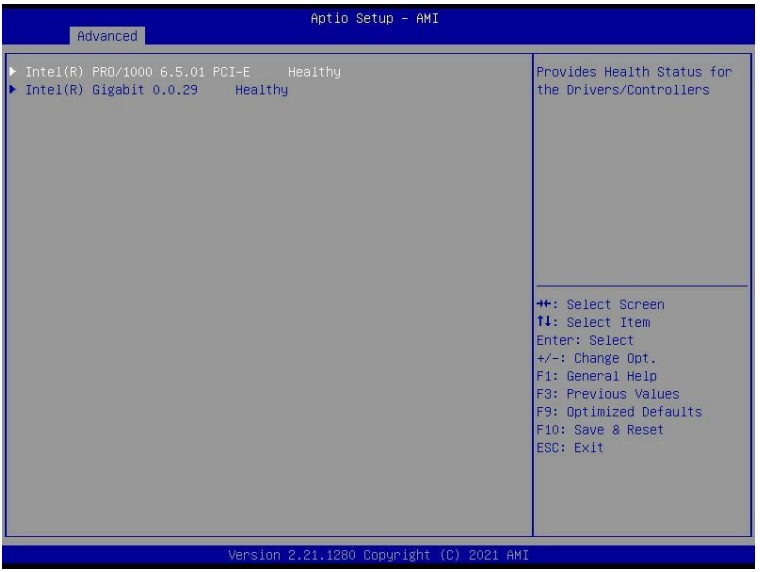
Parameter	Description
Configured	Indicates whether network address is configured successfully or not. Options available: Enabled, Disabled. Default setting is **Disabled.**
Enable DHCP(Note)	Options available: Enabled, Disabled. Default setting is **Disabled.**
Local IP Address(Note)	Press [Enter] to configure local IP address.
Local NetMask(Note)	Press [Enter] to configure local NetMask.
Local Gateway(Note)	Press [Enter] to configure local Gateway
Local DNS Servers(Note)	Press [Enter] to configure local DNS servers
Save Changes and Exit	Press [Enter] to save all configurations.

(Note) This item appears when **Configured** is set to **Enabled**.

2-2-22 MAC IPv6 Network Configuration

Parameter	Description
Enter Configuration Menu	Press [Enter] to configure advanced items. ◆ Displays the MAC Address information. ◆ Interface ID – The 64 bit alternative interface ID for the device. The string is colon separated. e.g. ff:dd:88:66:cc:1:2:3. ◆ DAD Transmit Count – The number of consecutive Neighbor solicitation messages sent while performing Duplicate Address Detection on a tentative address.A value of zero indicates that Duplicate Address Detection is not performed. ◆ Policy – Options available: automatic, manual. Default setting is **automatic**. ◆ Save Changes and Exit – Press [Enter] to save all configurations.

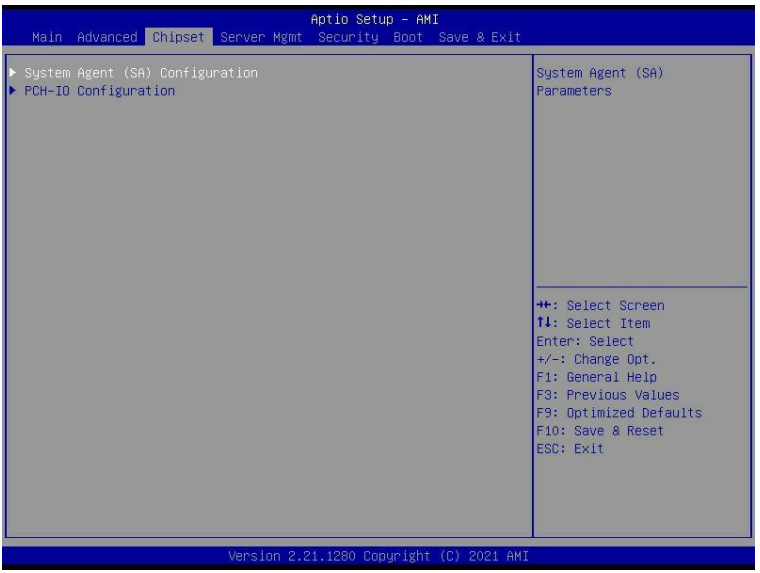
2-2-23 Driver Health



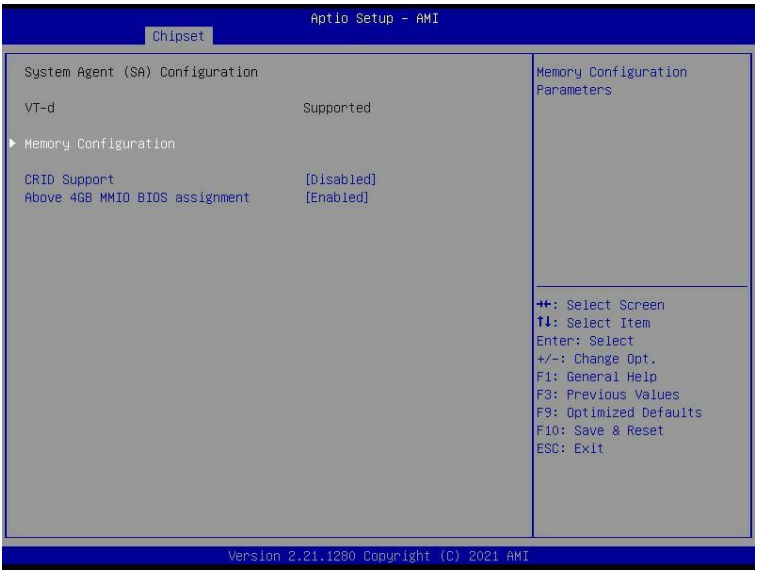
Parameter	Description
Driver Health	Displays driver health status of the devices/controllers if installed.

2-3 Chipset Menu

Chipset Setup menu displays submenu options for configuring the function of Platform Controller Hub(PCH). Select a submenu item, then press <Enter> to access the related submenu screen.



2-3-1 System Agent (SA) Configuration

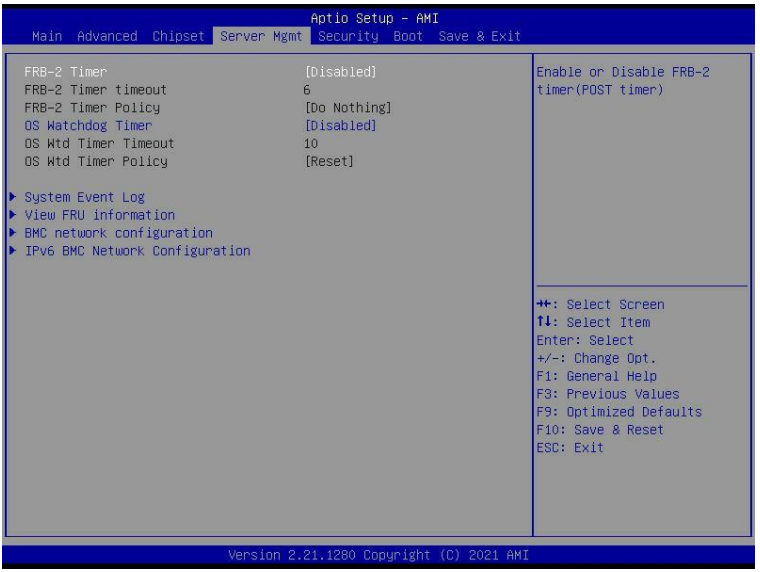


Parameter	Description
Memory Configuration	Press [Enter] to configure advanced items. ◆ Memory – Press [Enter] to view/configure memory overclocking menu. ◆ Memory Configuration ◆ Memory Frequency – Displays the frequency information of installed memory. ◆ Channel and slot information of memory DIMMs. ◆ Max TOLUD – Maximum Value of TOLUD. Dynamic assignment would adjust TOLUD automatically based on largest MMIO lengthof installed graphic controller – Default setting is **Dynamic**.
CRID Support	Enable/Disable SA CRID and TCSS CRID control for Intel SIPP. Options available: Enabled, Disabled. Default setting is **Disabled**.
Above 4GB MMIO BIOS assignment	Enable/Disable the Above 4G Memory Mapped IO BIOS Assignment.Options available: Enabled, Disabled. Default setting is **Enabled**

2-3-2 PCH-IO Configuration

Parameter	Description
PCH-IO Configuration	
SATA And RST Configuration	Press [Enter] to configure advanced items. ◆ SATA Controller – Enable/Disable SATA controller. – Options available: Enabled, Disabled. Default setting is **Enabled**. ◆ SATA Mode Selection – Configures on chip SATA type. – Options available: AHCI, Intel RST Premium with Intel Optane System Acceleration. Default setting is **AHCI**. ◆ SATA Port # – The category identifies SATA hard drives that are installed in the computer. System will automatically detect HDD type.
Security Configuration	Press [Enter] to configure advanced items. ◆ BIOS Lock – Enable/Disable the PCH BIOS Lock Enable feature. – Options available: Disabled, Enabled. Default setting is **Enabled**.

2-4 Server Management Menu

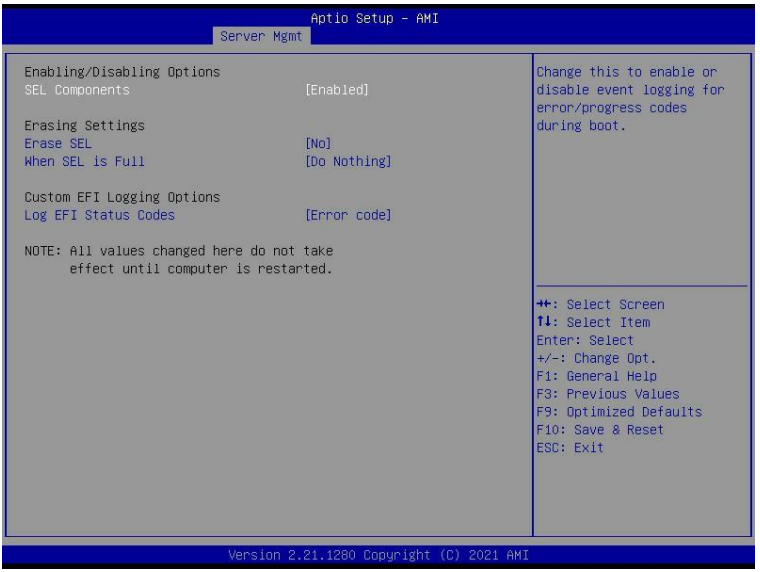


Parameter	Description
FRB-2 Timer	Enable/Disable FRB-2 timer (POST timer). Options available: Enabled, Disabled. Default setting is **Disabled**.
FRB-2 Timer timeout(Note1)	Configures the FRB2 Timer timeout. Options available: 3 minutes, 4 minutes, 5 minutes, 6 minutes. Default setting is **6 minutes**.
FRB-2 Timer Policy(Note1)	Configures the FRB2 Timer policy. Options available: Do Nothing, Reset, Power Down, Power Cycle.Default setting is **Do Nothing**.
OS Watchdog Timer	Enable/Disable OS Watchdog Timer function. Options available: Enabled, Disabled. Default setting is **Disabled**.
OS Wtd Timer Timeout(Note2)	Configures OS Watchdog Timer. Options available: 5 minutes, 10 minutes, 15 minutes, 20 minutes. Default setting is **10 minutes**.
OS Wtd Timer Policy(Note2)	Configure OS Watchdog Timer Policy. Options available: Reset, Do Nothing, Power Down, Power Cycle. Default setting is **Reset**.

(Note1) This item is configurable when **FRB-2 Timer** is set to **Enabled**. (Note2) This item is configurable when **OS Watchdog Timer** is set to **Enabled**.

Parameter	Description
System Event Log	Press [Enter] to configure advanced items.
View FRU Information	Press [Enter] to view the FRU information.
BMC network Configuration	Press [Enter] to configure advanced items.
IPv6 BMC Network Configuration	Press [Enter] to configure advanced items.

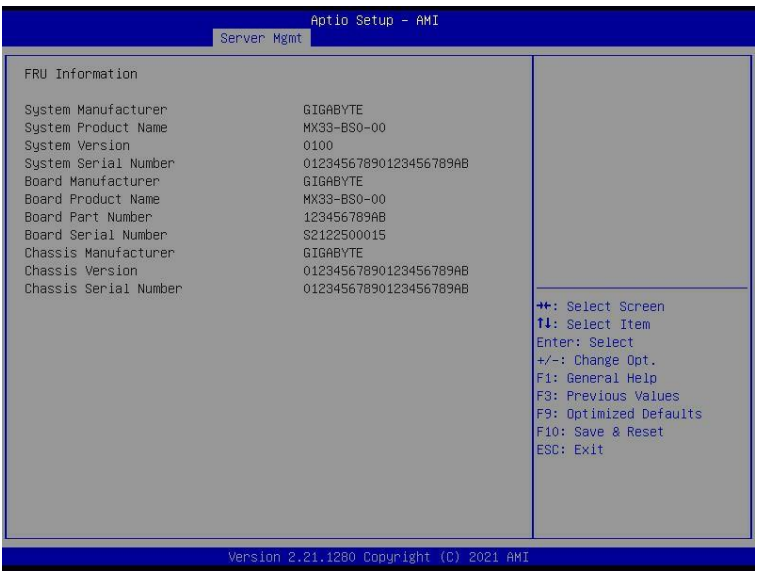
2-4-1 System Event Log



Parameter	Description
Enabling / Disabling Options	
SEL Components	Change this item to enable or disable all features of System EventLogging during boot. Options available: Enabled, Disabled. Default setting is **Enabled**.
Erasing Settings	
Erase SEL	Choose options for erasing SEL. Options available: No; Yes, On next reset; Yes, On every reset. Default setting is **No**.
When SEL is Full	Choose options for reactions to a full SEL. Options available: Do Nothing, Erase Immediately, Delete Oldest Record.Default setting is **Do Nothing**.
Custom EFI Logging Options	
Log EFI Status Codes	Enable/Disable the logging of EFI Status Codes (if not already convertedto legacy). Options available: Disabled, Both, Error code, Progress code. Default setting is **Error code**.

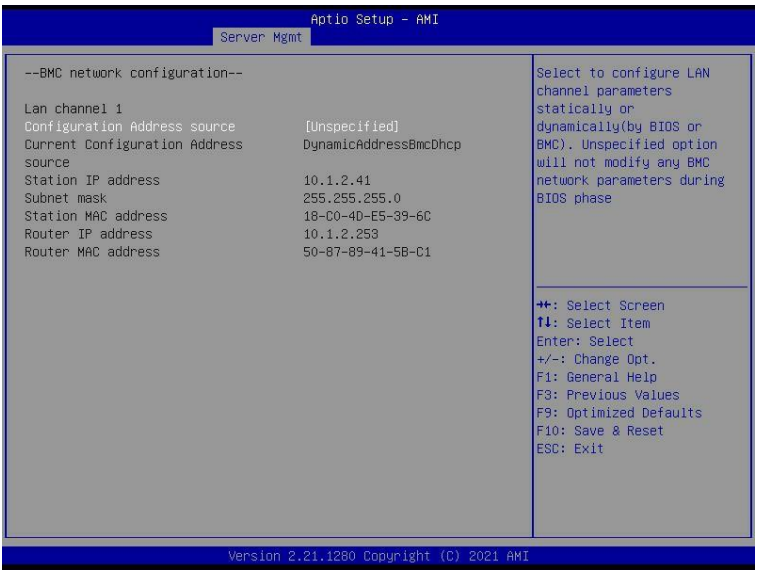
2-4-2 View FRU Information

The FRU page is a simple display page for basic system ID information, as well as System product information. Items on this window are non-configurable.



(Note) The model name will vary depends on the product you purchased

2-4-3 BMC Network Configuration



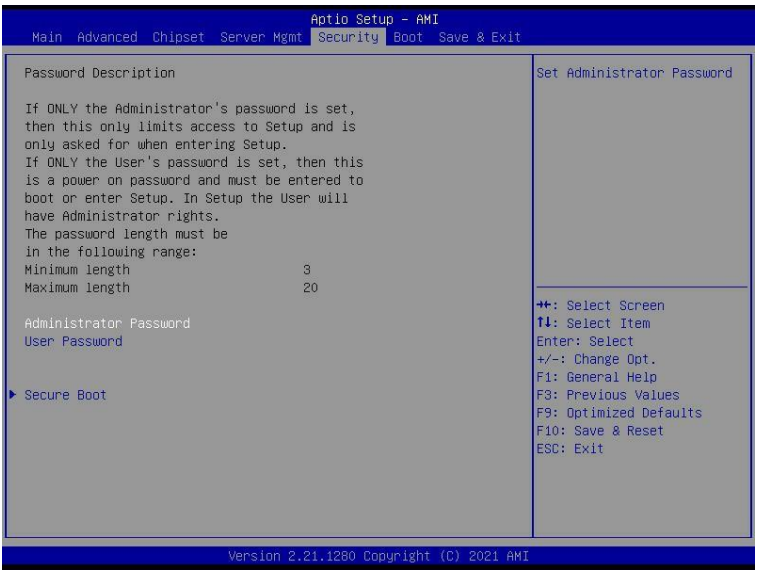
Parameter	Description
BMC network configuration	
Lan Channel 1	
Configuration Address source	Selects to configure LAN channel parameters statically or dynamically (by BIOS or BMC). Options available: Unspecified, Static, DynamicBmcDhcp, DynamicBmcNonDhcp. Default setting is **Unspecified**.
Current Configuration Address Source	Display the current configuration information.
Station IP address	Displays IP Address information.
Subnet mask	Displays Subnet Mask information.
Station MAC address	Displays the MAC Address information.
Router IP address	Displays the Router IP Address information.
Router MAC address	Displays the Router MAC Address information.

2-4-4 IPv6 BMC Network Configuration

Parameter	Description
IPv6 BMC network configuration	
IPv6 BMC Lan Channel 1	
IPv6 BMC Lan Option	Enable/Disable IPv6 BMC LAN channel function. When this item is disabled, the system will not modify any BMC network during BIOS phase. Options available: Unspecified, Disable, Enable. Default setting is **Enable**.
IPv6 BMC Lan IP AddressSource	Selects to configure LAN channel parameters statically or dynamically (by BIOS or BMC). Options available: Unspecified, Static, Dynamic-Obtained by BMC running DHCP. Default setting is **Dynamic-Obtained by BMC runningDHCP**.
IPv6 BMC Lan IP Address/ Prefix Length	Check if the IPv6 BMC LAN IP address matches those displayed on thescreen.

2-5 Security Menu

The Security menu allows you to safeguard and protect the system from unauthorized use by setting up access passwords.



There are two types of passwords that you can set:

- Administrator Password

  Entering this password will allow the user to access and change all settings in the Setup Utility.

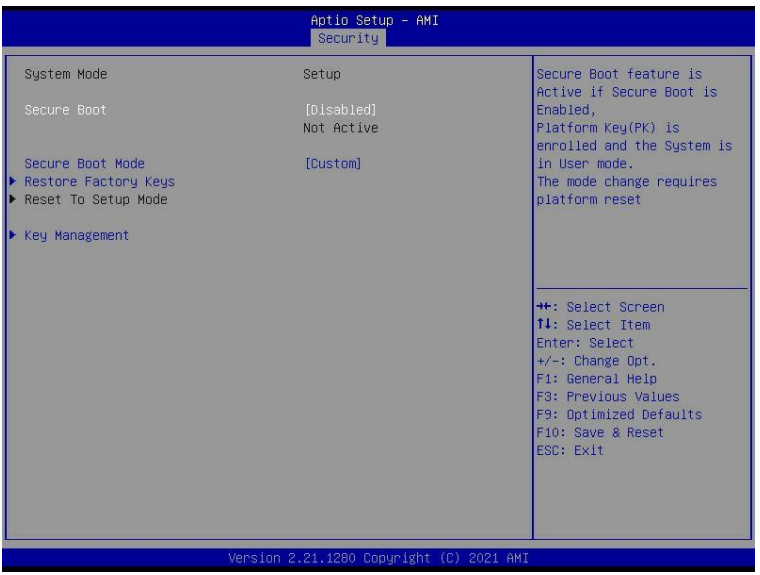
- User Password

  Entering this password will restrict a user's access to the Setup menus. To enable or disable this field, a Administrator Password must first be set. A user can only access and modify the System Time, System Date, and Set User Password fields.

Parameter	Description
Administrator Password	Press [Enter] to configure the administrator password.
User Password	Press [Enter] to configure the user password.
Secure Boot	Press [Enter] to configure advanced items.

2-5-1 Secure Boot

The Secure Boot submenu is applicable when your device is installed the Windows® 8 (or above) operating system.



Parameter	Description
System Mode	Displays if the system is in User mode or Setup mode.
Secure Boot	Enable/ Disable the Secure Boot function. Options available: Enabled, Disabled. Default setting is **Disabled**.
Secure Boot Mode(Note)	Secure Boot requires all the applications that are running during the booting process to be pre-signed with valid digital certificates. This way, the system knows all files being loaded before Windows loads to the login screen have not been tampered with. When set to Standard, it will automatically load the Secure Boot keysform the BIOS databases. When set to Custom, you can customize the Secure Boot settings and manually load its keys from the BIOS database. Options available: Standard, Custom. Default setting is **Standard**.
Restore Factory Keys	Forces the system to user mode and installs factory default Secure Boot key database.
Reset To Setup Mode	Reset the system to Setup Mode.

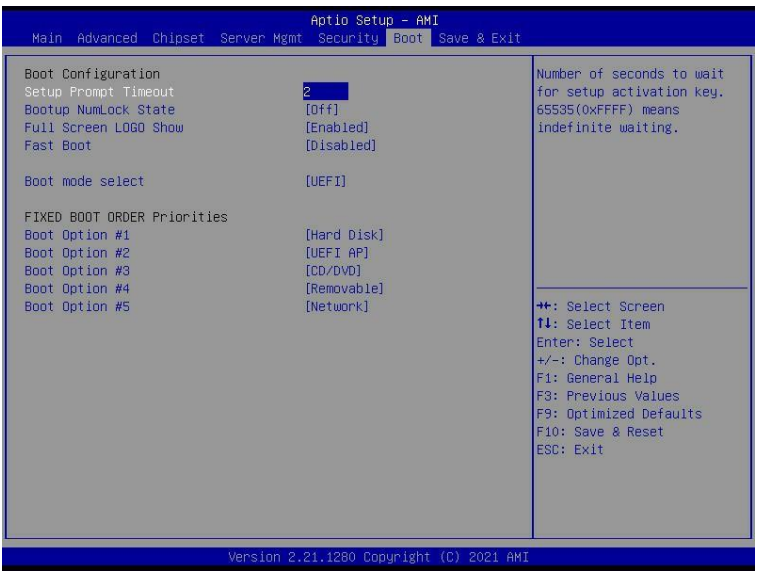
(Note) Advanced items prompt when this item is set to **Custom**.

Parameter	Description
Key Management	Press [Enter] to configure advanced items. **Please note that this item is configurable when Secure Boot Mode is set to Custom.** ◆ Factory Key Provision – Allows to provision factory default Secure Boot keys when system is in Setup Mode. – Options available: Enabled, Disabled. Default setting is **Disabled**. ◆ Restore Factory Keys – Installs all factory default keys. It will force the system in User Mode. – Options available: Yes, No. ◆ Reset To Setup Mode – Reset the system to Setup Mode. – Options available: Yes, No. ◆ Export Secure Boot variables – Copy NVRAM content of Secure Boot variables to files in a root folderon a file system device. ◆ Enroll Efi Image – Press [Enter] to enroll SHA256 hash of the binary into Authorized Signature Database (db). ◆ Device Guard Ready ◆ Remove 'UEFI CA' from DB – Press [Enter] to remove Microsoft UEFI CA from Secure Boot DB. ◆ Restore DB defaults – Restore DB variable to factory defaults. ◆ Secure Boot variable – Displays the current status of the variables used for secure boot. ◆ Platform Key (PK) – Displays the current status of the Platform Key (PK). – Press [Enter] to configure a new PK. – Options available: Update. ◆ Key Exchange Keys (KEK) – Displays the current status of the Key Exchange Key Database (KEK). – Press [Enter] to configure a new KEK or load additional KEK from storage devices. – Options available: Update, Append. ◆ Authorized Signatures (DB) – Displays the current status of the Authorized Signature Database. – Press [Enter] to configure a new DB or load additional DB from storage devices. – Options available: Update, Append. ◆ Forbidden Signatures (DBX) – Displays the current status of the Forbidden Signature Database. – Press [Enter] to configure a new dbx or load additional dbx from storage devices. – Options available: Update, Append.

Parameter	Description
Key Management (continued)	◆ Authorized TimeStamps (DBT) – Displays the current status of the Authorized TimeStamps Database. – Press [Enter] to configure a new DBT or load additional DBT from storage devices. – Options available: Update, Append. ◆ OsRecovery Signatures – Displays the current status of the OsRecovery Signature Database. – Press [Enter] to configure a new OsRecovery Signature or load additional OsRecovery Signature from storage devices. – Options available: Update, Append.

2-6 Boot Menu

The Boot menu allows you to set the drive priority during system boot-up. BIOS setup will display an error message if the legacy drive(s) specified is not bootable.

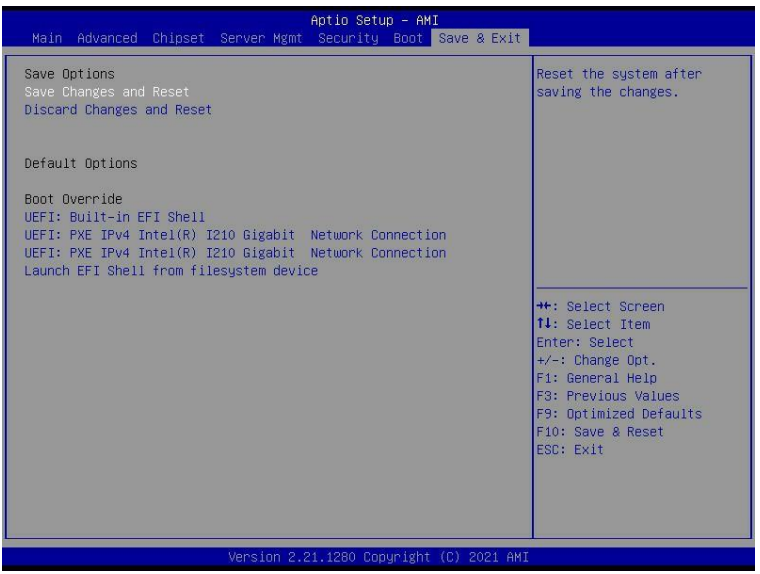


Parameter	Description
Boot Configuration	
Setup Prompt Timeout	Number of seconds to wait for setup activation key. 65535 (0xFFFF) means indefinite waiting. Press the numeric keys to input the desired values.
Bootup NumLock State	Enable/Disable the Bootup NumLock function. Options available: On, Off. Default setting is **Off**.
Full Screen LOGO Show	Enable/Disable showing the logo during POST. Options available: Enabled, Disabled. Default setting is **Enabled**.
Fast Boot	Enable/Disable Fast Boot to shorten the OS boot process. Options available: Enabled, Disabled. Default setting is **Disabled**.
Boot mode select	Selects the boot mode. Options available: LEGACY, UEFI. Default setting is **UEFI**.

Parameter	Description
FIXED BOOT ORDER Priorities	
Boot Option #1 / #2 / #3 / #4 / #5	Press [Enter] to configure the boot priority. By default, the server searches for boot devices in the following sequence: 1. Hard drive. 2. CD-COM/DVD drive. 3. USB device. 4. Network. 5. UEFI.

2-7 Save & Exit Menu

The Save & Exit menu displays the various options to quit from the BIOS setup. Highlight any of the exit options then press <Enter>.



Parameter	Description
Save Options	
Save Changes and Reset	Restarts the system after saving the changes made. Options available: Yes, No.
Discard Changes and Reset	Restarts the system without saving any changes.Options available: Yes, No.
Default Options	
Boot Override	Press [Enter] to configure the device as the boot-up drive.
Launch EFI Shell from filesystem device	Attempts to Launch EFI Shell application (Shell.efi) from one of theavailable file system devices.

2-8 BIOS POST Beep code (AMI standard)

2-8-1 PEI Beep Codes

# of Beeps	Description
1	Memory not Installed.
1	Memory was installed twice (InstallPeiMemory routine in PEI Core called twice)
2	Recovery started
3	DXEIPL was not found
3	DXE Core Firmware Volume was not found
4	Recovery failed
4	S3 Resume failed
7	Reset PPI is not available

2-8-2 DXE Beep Codes

# of Beeps	Description
1	Invalid password
4	Some of the Architectural Protocols are not available
5	No Console Output Devices are found
5	No Console Input Devices are found
6	Flash update is failed
7	Reset protocol is not available
8	Platform PCI resource requirements cannot be met

Setting up the system
Pre-installation requirements

Selecting a site

Before unpacking and installing the system, select a suitable site for the system for maximum efficiency. Consider the following factors when choosing a site for the system:

- Near a grounded power outlet.
- Clean and dust-free
- Stable surface free from vibration.
- Well-ventilated and away from sources of heat.
- Secluded from electromagnetic fields produced by electrical devices such as air conditioners, radio and TV transmitters, etc.

Checking the package contents

Check the following items from the package:

- System unit
- Accessory box

If any of the above items is damaged or missing, contact your dealer immediately.

Save the boxes and packing materials for future use.

Turning on the system

After making sure that you have properly set up the system, applied power and connected all the necessary peripherals, you can now power on the system. Follow the procedure below.

Press the power button ⏻ ◦

The system starts up and displays a welcome message on the monitor. After that, a series of power-on self-test (POST) messages appears. The POST messages indicate if the system is running well or not.

Note: If the system does not turn on or boot after pressing the power button, go to the next section for the possible causes of the boot failure

Aside from the POST messages, you can determine if the system is in good condition by checking if the following occurred.

- The power status indicator on the front panel lights up blue.
- The Num Lock, Caps Lock and Scroll Lock indicators on the keyboard light up.

Power-on problems

If the system fails to boot after you have applied power, check the following factors that might have caused the boot failure.

- The external power cord may be loosely connected.
- Check the power cord connection from the power outlet to the power cord socket on the rear panel. Make sure that the cord is properly connected to the power outlet and to the power cord socket.
  No power comes from the grounded power outlet. Have an electrician check your power outlet.
- Loose or improperly connected internal power cables.

  Check the internal cable connections. If you are not confident to perform this step, ask a qualified technician to assist you.

Warning! Make sure all power cords are

disconnected from the electrical outlet before performing this task.

Note: If you have gone through the preceding actions and the system still fails to boot, ask your dealer or a qualified technician for assistance.

Turning off the system

There are two ways to turn off the Server—via software or via hardware. The software procedure below applies to a system running on a Windows OS. For other shutdown procedures, refer to the related user documentation.

To turn off the system via software:

1. Press **<Ctrl>** + **<Alt>** + **<Delete>** on the attached keyboard or click **Start** on the Windows taskbar.
2. Select **Shut Down**.
3. Select Shut Down from the drop-down menu, then click **OK**.

To turn off the system via hardware

If you cannot shut down the Server via software, press the power button for at least four seconds. Quickly pressing the button may put the Server in a Suspend mode only.

Initial system startup problems

Problems that occur at initial system startup are usually caused by an incorrect installation or configuration. Hardware failure is a less possible cause. If the problem you are experiencing is with a specific application.

Initial troubleshooting checklist

- AC power is available at the wall outlet?
- Is the power supply module properly installed?
- Is the system power cord properly plugged into the power supply module socket? and connected to a NEMA 5-15R outlet for 100-120 V or a NEMA 6-15R outlet for 200-240 V?
- Are all peripheral cables correctly connected and secured?
- Did you press the system power button to turn the Server on (power on indicator should be lit green)?
- Are all device drivers properly installed?
- Are hard disk drive(s) properly formatted and configured?
- Are the BIOS configuration settings in the BIOS Setup Utility correct?
- Is the operating system properly loaded?
  Refer to the operating system documentation.
- Are all hardware components compliant with the tested components
- lists?
- Are all internal cables correctly connected and secured?
- Is the processor properly seated in its mainboard socket?
- Are all standoffs in the proper location and not touching any components, causing a potential short?
- Are all add-in expansion cards fully seated in their mainboard slots?
- Are all system jumpers correctly set?
- Are all switch settings on add-in boards and peripheral devices correct?

To check these settings, refer to the manufacturer's documentation that comes with them. If applicable, ensure that there are no conflicts (e.g., two add-in boards sharing the same interrupt).

Hardware diagnostic testing

This section provides a detailed approach to identifying a hardware problem and its cause.

Checking the boot-up status

Caution: Before disconnecting any peripheral cables from the Server, turn off the system and any peripheral devices. Failure to do so can cause permanent damage to the system and/or the peripheral device.

1. Turn off the system and all external peripheral devices.
2. Disconnect all peripheral devices from the system, except for the keyboard and the display monitor.
3. Make sure the system power cord is plugged into a properly grounded AC outlet and in the power supply module cord socket.
4. Make sure the display monitor and keyboard are correctly connected to the system.
5. Turn on the display monitor.
6. Set the display brightness and contrast controls to at least two thirds of their maximum range.
   Refer the documentation that came with your display monitor.
7. If the operating system normally loads from the hard drive, make sure there is no diskette in floppy drive and no disc in the optical drive.
8. If the power indicator is lit, attempt to boot from a disc.
9. Turn on the system.

Verifying the condition of the storage devices

As POST determines the system configuration, it tests for the presence of each mass storage device installed in the system. As each device is checked, its activity indicator should turn blue briefly. Check the activity indicators for the hard drive(s), and any other 5.25" device you may have installed.

If any of these indicators fail to light up, refer to related problems listed in the Specific problems and corrective actions section.

Specific problems and corrective actions

Listed below are specific problems that may arise during the use of your Server and their possible solutions

Confirming loading of the operating system

Once the system boots up, the operating system prompt appears on the screen. The prompt varies according to the operating system. If the operating system prompt does not appear.

Specific problems and corrective actions

Listed below are specific problems that may arise during the use of your Server and their possible solutions

Specific problems and corrective actions

Listed below are specific problems that may arise during the use of your Server and their possible solutions.

Power indicator does not light.

Do the following:

- Make sure the power supply module is properly installed.
- Make sure the power cord is connected correctly.
- Make sure that the wall outlet has power. Test it by plugging in another device.
- Make sure the power indicator on the front panel is lit up.
- Remove all add-in cards and see if the system boots.
  If reboot is successful, install the cards back in one at a time with a reboot between each addition to determine if one of them is causing the problem.
- Make sure that you have properly installed system compliant memory modules, and that they are populated according to the system guidelines.
- Make sure that you have installed system compliant processors, and that they are populated according to the system guidelines.

Optical drive activity indicator does not light

Do the following:

- Make sure the SATA and power cables are properly connected.
- Check that relevant switches and jumpers on the drive are set correctly.
- Check that the drive is properly configured.

Optical drive tray cannot be ejected
Insert the tip of a paperclip into the small hole on the optical drive. Slowly pull the tray out from the drive until the tray is fully extended.

Optical drive cannot read a disc

Do the following:

- Make sure you are using the correct type of disc.
- Make sure the disc is properly seated in the drive.
- Make sure the disc is unscratched.
- Make sure the drive's cables are properly connected.

Newly installed memory modules are not detected.

Do the following:

- Make sure the memory modules specifications comply with the system requirements.
- Make sure the memory modules have been populated according to the system guidelines.
- Make sure the memory modules are properly installed on their mainboard slots.

Network activity indicators do not light.

Do the following:

- Make sure the correct network drivers are loaded on the system.
- Network might be idle.

Peripheral device connected to a USB port does not work.

Do the following:

- Reduce the number of external devices connected to a USB hub.
- Refer to the documentation that came with the device

There is problem with the software program.

Do the following:

- Verify that the software is properly configured for the system.
- Refer to the software installation and operation documentation for instructions on setting up and using the software. Try a different version of the software to see if the problem is with the copy you are using. If the other version runs correctly on the system, contact your vendor about the defective software.

No characters appear on the display monitor.

Do the following:

- Is the keyboard functioning? Test it by turning the Num Lock function on and off to check if the Num Lock indicator lights up.
- Is the display monitor plugged in and turned on? If you are using a switch box, is it switched to the correct system?
- Are the brightness and contrast controls on the video monitor properly adjusted?
- Is the display monitor signal cable properly connected?
- Does this display monitor work correctly if plugged into a different system?
- Remove all add-in cards and see if the system boots.
  If reboot is successful, install the cards back in one at a time with a reboot between each addition to determine if one of them is causing the problem.
- Make sure that you have properly installed system-compliant memory modules, and that they are populated according to the system guidelines.
- Make sure that you have installed system compliant processors, and that they are populated according to the system guidelines.

If you are using an add-in video controller card, do the following:

1. Verify that the display monitor works using the onboard video

controller.

2. Verify that the add-in video controller card is fully seated in its slot.
3. Reboot the system for the changes to take effect.
4. If there are still no characters on the screen after you reboot the system, reboot it again.
   Take note of the beep codes emitted during POST. This information may be required if you seek technical assistance.
   If POST does not emit any beep code and characters still do not appear, the display monitor or the video controller may be defective. Contact your local Altos representative or authorized dealer for technical assistance.

Note: If POST does not emit any beep code and characters still do not appear, the display monitor or the video controller may be defective. Contact your local Altos representative or authorized dealer for technical assistance.

Notices
Information for your safety and comfort

Safety instructions

Read these instructions carefully. Keep this document for future reference. Follow all warnings and instructions marked on the product.

Turning the product off before cleaning

Unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.

CAUTION for plug as disconnecting device

Observe the following guidelines when connecting and disconnecting power to the power supply unit:

- Install the power supply unit before connecting the power cord to the AC power outlet.
- Unplug the power cord before removing the power supply unit from the computer.
- If the system has multiple sources of power, disconnect power from the system by unplugging all power cords from the power supplies.

CAUTION for accessibility

Be sure that the power outlet you plug the power cord into is easily accessible and located as close to the equipment operator as possible. When you need to disconnect power to the equipment, be sure to unplug the power cord from the electrical outlet.

Warnings

- Do not use this product near water.
- Do not place this product on an unstable cart, stand or table. If the product falls, it could be seriously damaged.
- Slots and openings are provided for ventilation to ensure reliable operation of the product and to protect it from overheating. These

openings must not be blocked or covered. The openings should never be blocked by placing the product on a bed, sofa, rug or other similar surface. This product should never be placed near or over a radiator or heat register, or in a built-in installation unless proper ventilation is provided.

- Never push objects of any kind into this product through cabinet slots as they may touch dangerous voltage points or short-out parts that could result in a fire or electric shock. Never spill liquid of any kind onto or into the product.
- To avoid damage of internal components and to prevent battery leakage, do not place the product on a vibrating surface.
- Never use it under sporting, exercising, or any vibrating environment which will probably cause unexpected short current or damage rotor devices, HDD, Optical drive, and even exposure risk from lithium battery pack.
- This product is not suitable for use with visual display workplace devices according to §2 of the German Ordinance for Work with Visual Display Units.

Using electrical power

- This product should be operated from the type of power indicated on the marking label. If you are not sure of the type of power available, consult your dealer or local power company.
- Do not allow anything to rest on the power cord. Do not locate this product where people will walk on the cord.
- If an extension cord is used with this product, make sure that the total ampere rating of the equipment plugged into the extension cord does not exceed the extension cord ampere rating. Also, make sure that the total rating of all products plugged into the wall outlet does not exceed the fuse rating.
- Do not overload a power outlet, strip or receptacle by plugging in too many devices. The overall system load must not exceed 80% of the branch circuit rating. If power strips are used, the load should not exceed 80% of the power strip's input rating.
- This product's power supply is equipped with a three-wire grounded plug. The plug only fits in a grounded power outlet. Make sure the power outlet is properly grounded before inserting the power supply plug. Do not insert the plug into a non-grounded power outlet. Contact your electrician for details.

Warning！ The grounding pin is a safety feature. Using a power outlet that is not properly grounded may result in electric shock and/or injury.

Note: The grounding pin also provides good protection from unexpected noise produced by other nearby electrical devices that may interfere with the performance of this product.

- Use the product only with the supplied power supply cord set. If you need to replace the power cord set, make sure that the new power cord meets the following requirements: detachable type, UL listed/CSA certified, VDE approved or its equivalent, 4.6 meters (15 feet) maximum length.

Product servicing

Do not attempt to service this product yourself, as opening or removing covers may expose you to dangerous voltage points or other risks. Refer all servicing to qualified service personnel.

Unplug this product from the wall outlet and refer servicing to qualified service personnel when:

- the power cord or plug is damaged, cut or frayed
- liquid was spilled into the product
- the product was exposed to rain or water
- the product has been dropped or the case has been damaged
- the product exhibits a distinct change in performance, indicating a need for service
- the product does not operate normally after following the operating instructions

Notes：Adjust only those controls that are covered by the operating instructions, since improper adjustment of other controls may result in damage and will often require extensive work by a qualified

technician to restore the product to normal condition.

This Server should be located in a restricted access location or an area with similar instruction.

Caution: Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

Disposal instructions

Do not throw this electronic device into the trash when discarding. To minimize pollution and ensure utmost protection of the global environment, please recycle.

Declaration of Conformity for EU countries

Hereby, Altos, declares that this system is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.

List of applicable countries

This device must be used in strict accordance with the regulations and constraints in the country of use. For further information, please contact local office in the country of use. Please see http://ec.europa.eu/enterprise/rtte/implem.htm or the latest country list.

Note: The following sections are applicable only to Class A systems

FCC notice Class A

This device 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 in a residential installation. This device generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this device does cause harmful interference to radio or television reception, which can be determined by turning the device 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 device and receiver.
- Connect the device into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/television technician for help

Notice: Shielded cables
All connections to other computing devices must be made using shielded cables to maintain compliance with FCC regulations. In compliance with FCC regulations, use shielded cables to connect to other computing devices.

Notice: Peripheral devices
Only peripherals (input/output devices, terminals, printers, etc.) certified to

comply with the Class A limits may be attached to this equipment. Operation with non- certified peripherals is likely to result in interference to radio and TV reception.

Caution
Changes or modifications not expressly approved by the manufacture could void the user's authority, which is granted by the Federal Communications Commission, to operate this computer.

Operation conditions
This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

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