ES1002

Edge AI Server with AMD EPYC™ Embedded 8004 Series Processors

User Manual

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CE

This product has passed CE compliance testing and conforms to applicable EU directives. In a domestic environment, it may cause radio interference, requiring users to take appropriate measures.

FC

This product complies with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. It generates, uses, and can radiate radio frequency energy. If not installed and used according to the manufacturer's instructions, it may cause harmful interference to radio communications.

WEEE



This product must not be disposed of as normal household waste, in accordance with the EU directive on Waste Electrical and Electronic Equipment (WEEE - 2012/19/EU). Instead, it should be disposed of by returning it to a municipal recycling collection point. Check local regulations for disposal of electronic products.

RoHS Compliance



This product complies with RoHS 2 restrictions, which prohibit the use of certain hazardous substances in electrical and electronic equipment. The following substances must not exceed the specified concentrations:

- Hexavalent chromium: 1,000 ppm
- Polybrominated biphenyls (PBBs): 1,000 ppm
- Polybrominated diphenyl ethers (PBDEs): 1,000 ppm
- Cadmium: 100 ppm
- Mercury: 1,000 ppm
- Lead: 1,000 ppm
- Bis(2-ethylhexyl) phthalate (DEHP): 1,000 ppm
- Butyl benzyl phthalate (BBP): 1,000 ppm
- Dibutyl phthalate (DBP): 1,000 ppm
- Diisobutyl phthalate (DIBP): 1,000 ppm

Important Safety Information

Carefully read the precautions before using the board.

Care and Handling Guidelines:

- Before cleaning the PCB, ensure the device is unplugged and powered off.
- If cleaning is required, use approved electronic circuit board cleaner and ensure the board is completely dry before reconnecting power.
- Use a computer-grade vacuum cleaner designed for electronic equipment to remove dust.



Warning

Attention during use:

- Do not use this product near water.
- Do not spill water or any other liquids on this product.
- Do not place heavy objects on the product, as this may damage internal components or affect performance.

Anti-static precautions

- Wear an anti-static wrist strap to avoid electrostatic discharge.
- Place the board on an anti-static mat.
- Handle the board by its edges and avoid touching components or circuitry.
- Ground yourself by touching a grounded metal object, such as a metal pipe or grounded equipment, to discharge static.



CAUTION

Danger of explosion if internal lithium-ion battery is replaced by an incorrect type. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

Warranty Policy

- **Industrial standard products:**

  24-month (2-year) warranty from the date of shipment. If the date of shipment cannot be ascertained, the product serial numbers can be used to determine the approximate shipping date.

- **3rd-party parts:**

  12-month (1-year) warranty from delivery for the 3rd-party parts that are not manufactured by us, such as CPU, memory, storage device, power adapter, panel and touchscreen.

* PRODUCTS, HOWEVER, THAT FAIL DUE TO MISUSE, ACCIDENT, IMPROPER INSTALLATION OR UNAUTHORIZED REPAIR SHALL BE TREATED AS OUT OF WARRANTY AND CUSTOMERS SHALL BE BILLED FOR REPAIR AND SHIPPING CHARGES.

Technical Support, Services & Documentions

1. Visit IBT website at www.ibt.ca to find the latest information about the product, including drivers, faq, user manual and documentation, or contact your local dealer.

2. If you encounter any technical problems and require assistance from your local dealer or distributor or sales representative, please prepare and send the following information (you may fill-up the form on the website):

   - Product model name
   - Product serial number
   - Detailed description of the problem
   - The error messages in text or in screenshots if there is any
   - The arrangement of the peripherals
   - Software in use (such as OS and application software, including the version numbers)

   and send this or send to support@ibt.ca with your question

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Chapter 1
General Information

The information provided in this chapter includes:

- Features
- Packing List
- Specifications
- Product View
- Dimensions

1.1 Introduction

ES1002 is a 4U rackmount Edge AI Server built on the MBB1002 eATX platform and powered by AMD EPYC™ Siena 8004 Series processors. Designed for high-density edge computing and data center workloads, it delivers scalable performance with up to 64 cores and 128 threads based on Zen 4c architecture. The system supports up to 576GB DDR5 ECC memory, five PCIe Gen5 x16 expansion slots with CXL capability, high-speed NVMe and SATA storage options, and dual 10GbE networking. With a robust aluminum and steel chassis, 1200W power supply, and extended operating temperature range, ES1002 provides reliable, high-performance AI inference and industrial computing for demanding enterprise and edge deployments.

1.2 Features

- AMD EPYC™ Siena 8004 Series
- 6x DDR5 4800 up to 576GB (Supports ECC)
- 5x PCIe (x16) slots
- 2x USB 3.2 Gen1 with PDPC support
- 4x SATA 6Gb/s
- 1x PCIe Gen5 22110/2280, 2x MCIO (x4)
- 2x Intel® X710-AT2 (Dual 10GbE port)

1.3 Packing List

Your ES1002 package should include the items listed below.

Part Number	Description	Qty
ES1002	4U Edge AI Server Barebone System	1
D2MANUAL--0000100P	Manual & Driver Download Instruction Card	1
AC-CORD-REGION	AC Power Cord (Region-Specific)	1

1.4 Optional Accessories

The following accessories are available upon request:

- 19" Rack Mount Rail Kit
- NVMe MCIO Cable Kit

1.5 Specifications

Model	
ES1002	Chassis with eATX motherboard w/o CPU, memory, storage, support AMD EPYC™ Siena 8004 Series processors
System	
Mainboard	MBB1002 with AMD EPYC™ Siena 8004 Series CPU
CPU Type	AMD EPYC™ Siena 8000 Series CPU (225W cTDP)
System Speed	Up to 3.1GHz
Memory	6x DDR5 4800 RDIMM slots, Max. up to 576GB, Supports ECC 3600/4000/4400/4800 MHz (16GB, 32GB, 64GB, 96GB)
AI Inference Computing Power	AMD EPYC™ 8004 Series (Siena) processor with Zen 4c architecture / scalable performance up to 64 cores and 128 threads / supports 5x Gen5 PCIe (x16)
Front Panel External I/O	• 3x LED (Power, HDD, Status) • 2x USB 3.2 Gen1 with PDPC support • 4x SATA 6Gb/s • 1x PCIe Gen5 22110/2280, 2x MCIO (x4)
Expansion Slot	• 5x PCIe (x16) slots • PCIe (x16)_SLOT2 (Gen5 x16 link, from CPU) • PCIe (x16)_SLOT3 (Gen5 x16 link, from CPU) • PCIe (x16)_SLOT5 (Gen5 x16 link, from CPU, CXL support) • PCIe (x16)_SLOT6 (Gen5 x16 link, from CPU, CXL support) • PCIe (x16)_SLOT7 (Gen5 x16 link, from CPU, CXL support)
Storage	• 4x SATA 6Gb/s • 1x NVMe 22110/2280 (PCIe Gen5) • 2x NVMe MCIO (x4)
Power Requirement	1x 24-pin SSI power connector, 3x 8-pin SSI 12V power connector
Power Supply	1x ATX standard 1200W PSU
Construction	Aluminum & steel
Chassis Color	Black
Mounting Type	N/A
Dimensions	• 483 mm (W) x 510 mm (D) x 177 mm (H) • 19" (W) x 20.1" (D) x 7" (H)
Weight	TBD

Environmental	
Operating Temperature	• -10°C to 60°C (14°F~140°F) with air flow • -10°C to 50°C (14°F~122°F) without air flow
Storage Temperature	-20°C to 80°C (-4°F~176°F)
Relative Humidity	0%~90% (non-condensing)
Vibration (Non-operating)	1.0 grms / 5~500Hz / random operation
Vibration (Operating)	0.25 grms / 5~500Hz / random operation
Shock (Operating)	20g / 11ms
Shock (Non-operating)	40g / 11ms
Certification	CE / LVD / FCC Class B
Operating System	• Windows Server 2022 • Windows Server 2025 • Ubuntu 22.04

All specifications are subject to change without prior notice.

1.6 System View

Front View and Rear View



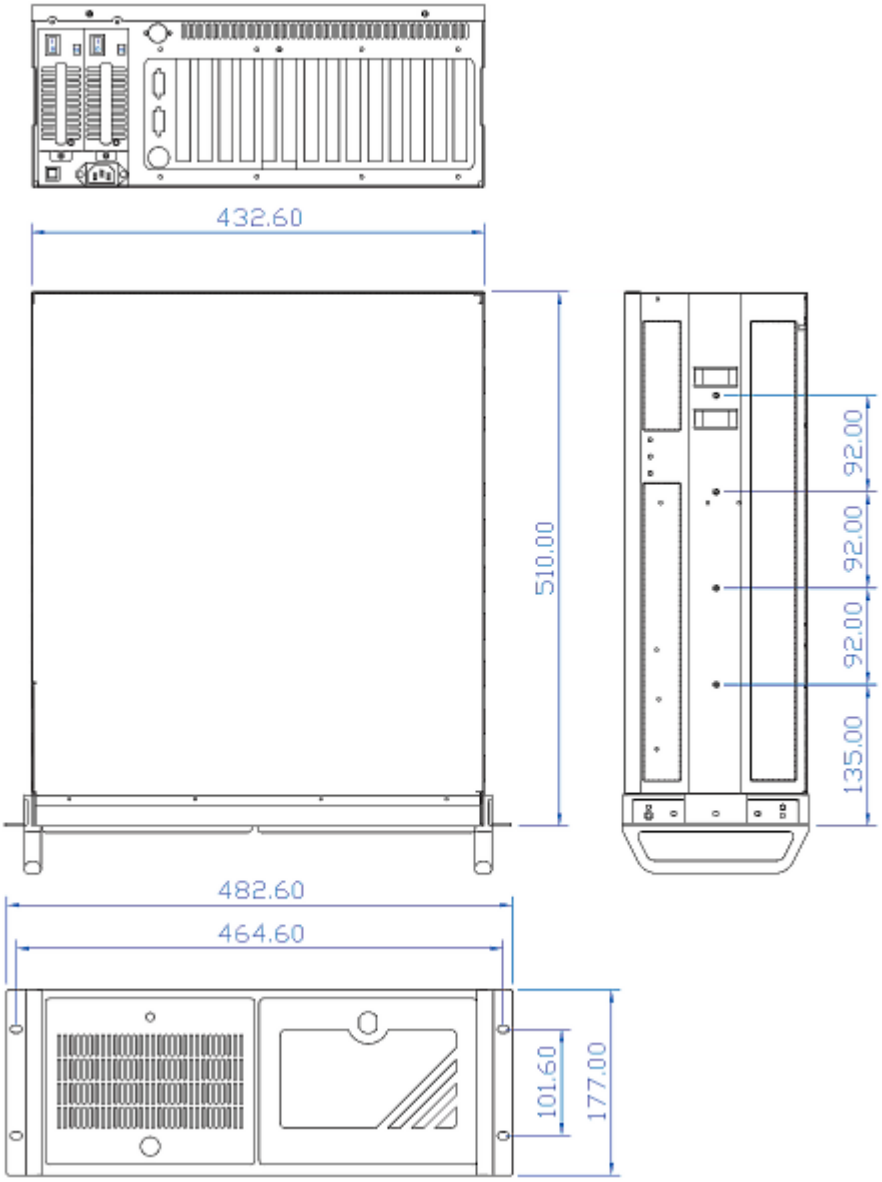


Rear I/O View



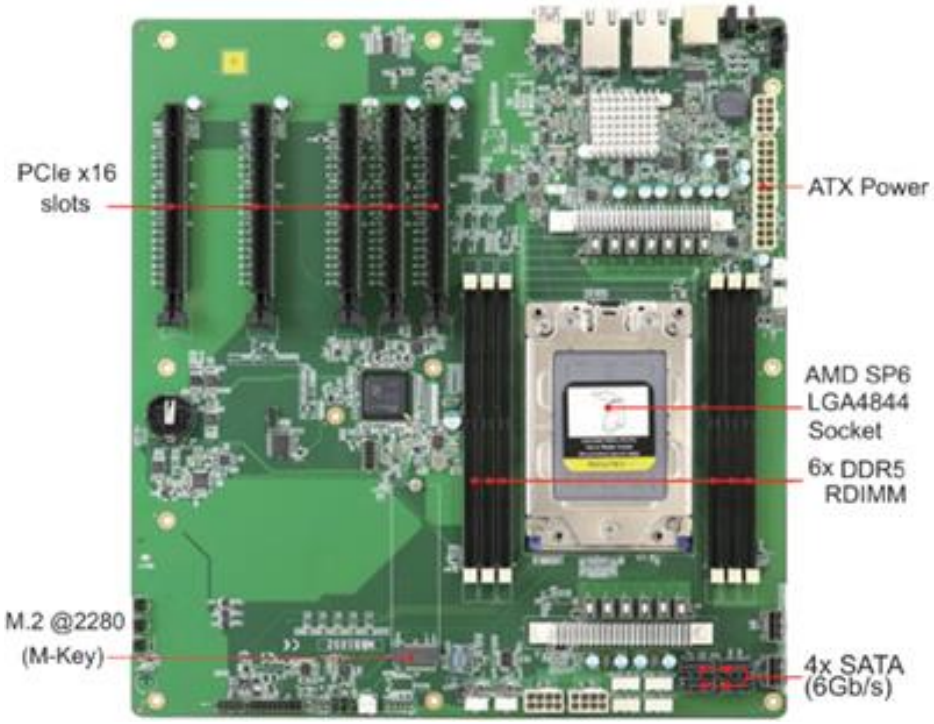
1.7 System Dimensions

Unit: mm



1.8 MBB1002 Board View

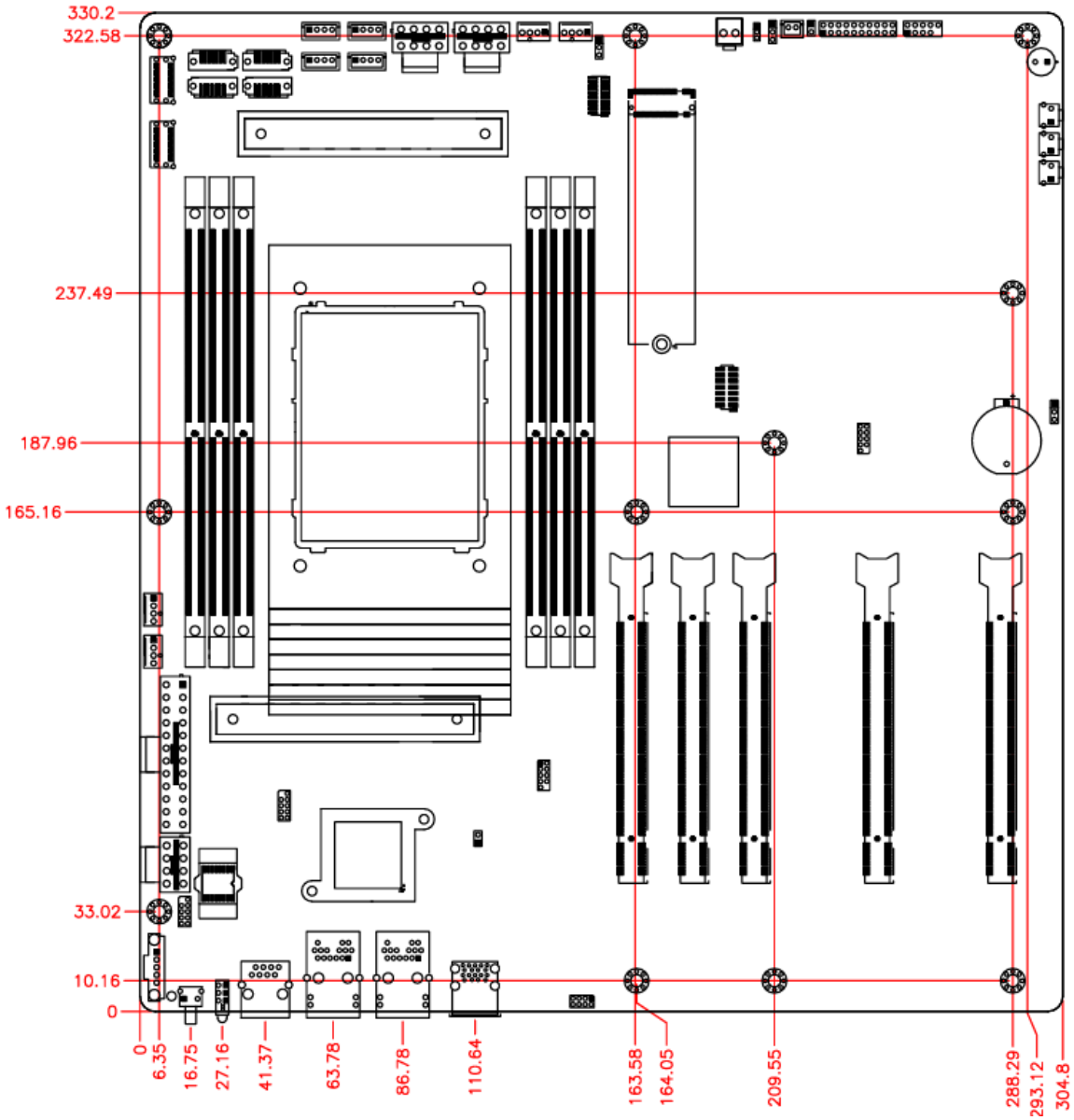






1.9 MBB1002 Board Dimensions

Unit: mm



Chapter 2
Hardware Configuration

The information provided in this chapter includes:

- Hardware Installation
- Connector Information and Locations

2.1 Removing the Top Cover

To access internal components such as memory modules, PCIe cards, or storage devices, the chassis top cover must be removed.

1. Power off the system and disconnect the AC power cord.
2. Remove the screws securing the top cover at the rear of the chassis.
3. Slide the top cover toward the rear.
4. Lift the cover upward to remove it.

After installation, reattach the cover and secure it with the original screws.



When the bottom cover is removed the memory and expansion cards can be installed or uninstalled. Below is the system with its cover removed.

Power Note

The ES1002 system is equipped with a 1200W power supply.
Ensure that all internal power connectors remain properly connected before powering on the system.

Do not operate the system if any power connector is loose or disconnected.

2.2 Memory Installation

The ES1002 system supports six (6) DDR5 ECC RDIMM sockets.

Memory Installation Guidelines

- Install DDR5 ECC RDIMM modules only.
- Do NOT install LRDIMM modules.
- Do NOT mix RDIMM and LRDIMM memory types.
- Use identical capacity and speed modules.
- When installing multiple modules, distribute them evenly across the available sockets to maintain balanced memory performance.

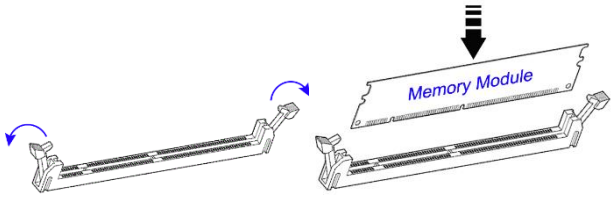
Installing a Memory Module



1. Locate an available DIMM socket.
2. Open the retaining clips at both ends of the socket.
3. Align the notch on the memory module with the key in the socket.
4. Insert the module vertically and press firmly until both retaining clips lock into place.

Removing a Memory Module

1. Press the retaining clips outward.
2. Carefully lift the module from the socket.



2.3 PCIe Expansion Card Installation

The ES1002 provides five PCIe Gen5 x16 expansion slots.



1. Power off the system and disconnect the AC power cord.
2. Remove the chassis top cover.
3. Remove the corresponding rear slot bracket screw and metal slot cover.
4. Insert the PCIe card firmly into the selected slot.
5. Secure the card bracket with the screw.
6. Connect auxiliary PCIe power cables if required.
7. Reinstall the top cover.

Ensure the card is fully seated and cables do not obstruct airflow.

2.4 Storage Installation

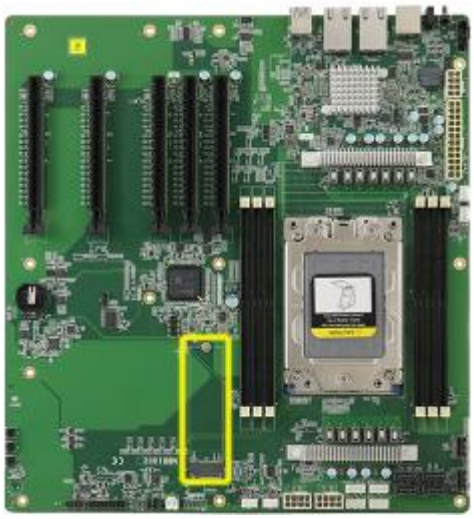
The ES1002 supports:

- 4 x SATA 6Gb/s
- 1 x PCIe Gen5 NVMe M.2 (22110/2280)
- 2 x NVMe MCIO (x4) interfaces

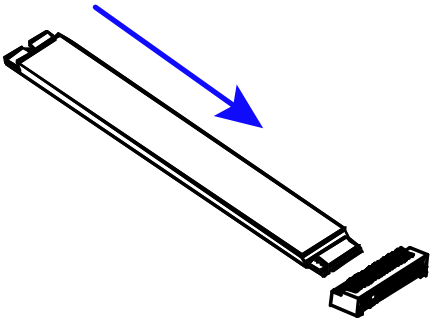
SATA Drive Installation

1. Power off the system and remove the top cover.
2. Mount the SATA drive into the drive tray or bracket (if applicable).
3. Secure the drive with screws.
4. Connect the SATA data and power cables.

NVMe M.2 Installation



1. Locate the M.2 M-Key slot.
2. Insert the NVMe module at an angle.
3. Press the module down and secure it with the mounting screw.

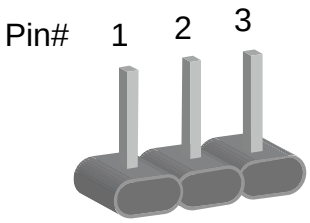


Note:
MCIO connectors are designed for high-speed storage expansion and may be factory-configured depending on system configuration. Refer to your system integrator or distributor for supported MCIO storage options.

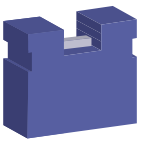
2.5 Setting the Jumpers

Set up and configure your device by using jumpers for various settings and features according to your needs and applications. Contact your supplier if you have doubts about the best configuration for your use.

Jumpers are short-length conductors consisting of several metal pins with a non-conductive base mounted on the circuit board. Jumper caps are used to have the functions and features enabled or disabled. If a jumper has 3 pins, you can connect either PIN1 to PIN2 or PIN2 to PIN3 by shorting.

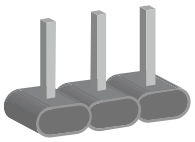
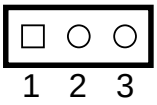
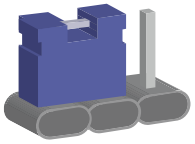
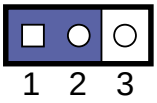
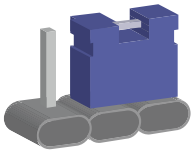
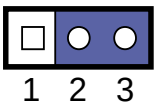


A 3-pin jumper



A jumper cap

Refer to the illustration below to set jumpers.

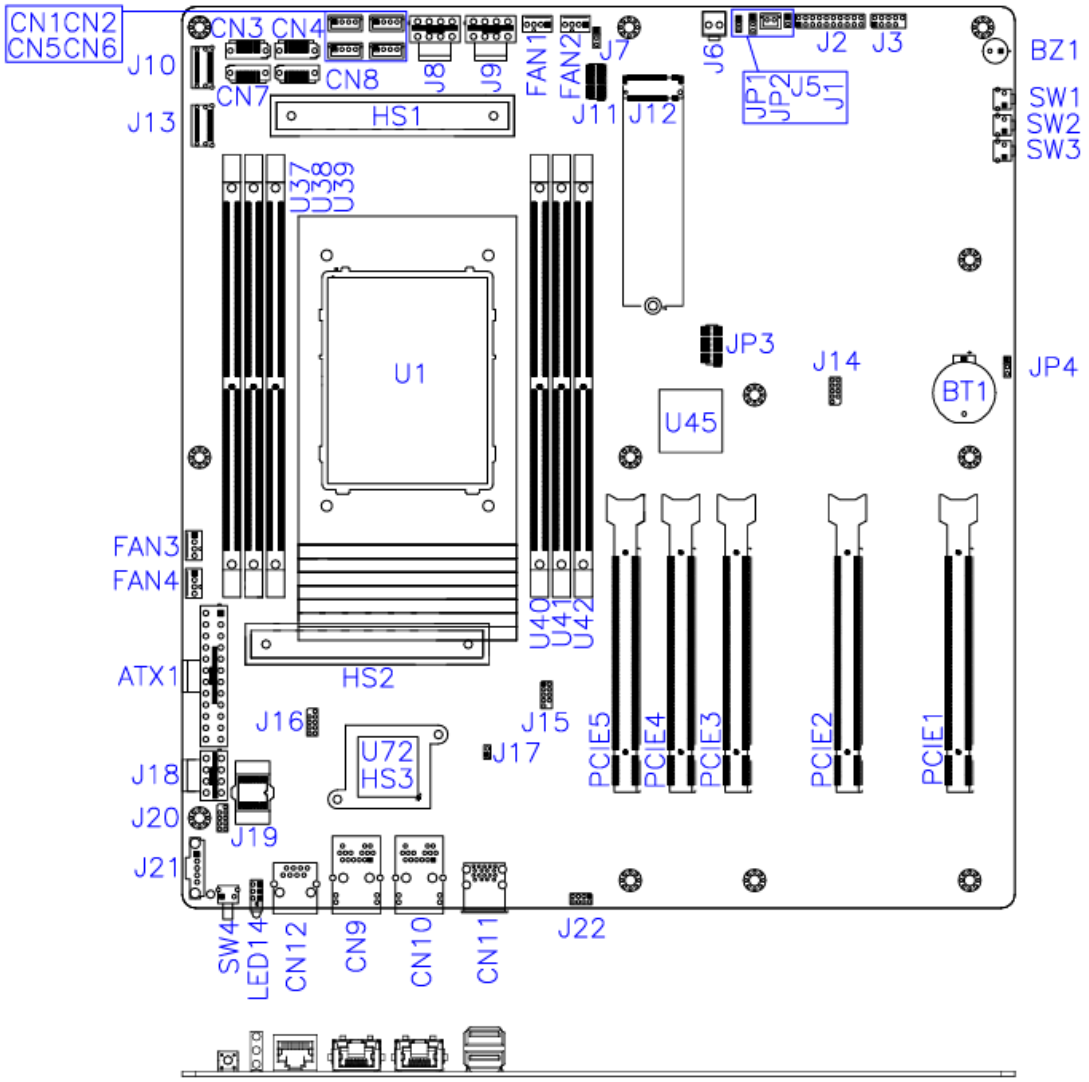
Pin closed	Oblique view	illustration
Open		
1-2		
2-3		

When two pins of a jumper are encased in a jumper cap, this jumper is **closed**, i.e. turned **On**.

When a jumper cap is removed from two jumper pins, this jumper is **open**, i.e. turned **Off**.

2.6 Jumper & Connector Locations on Motherboard

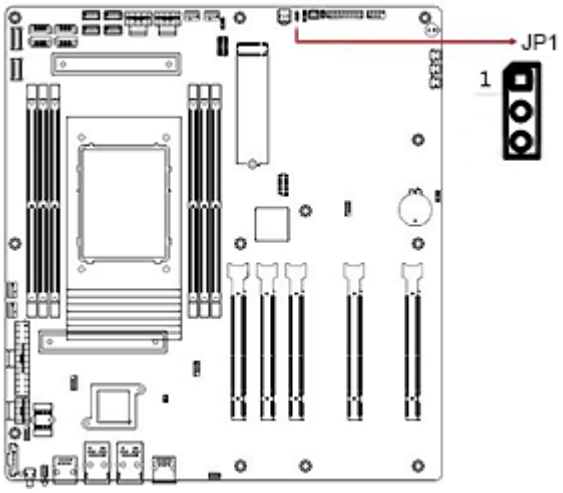
Motherboard: MBB1002

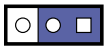
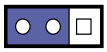


2.7 Jumpers Quick Reference

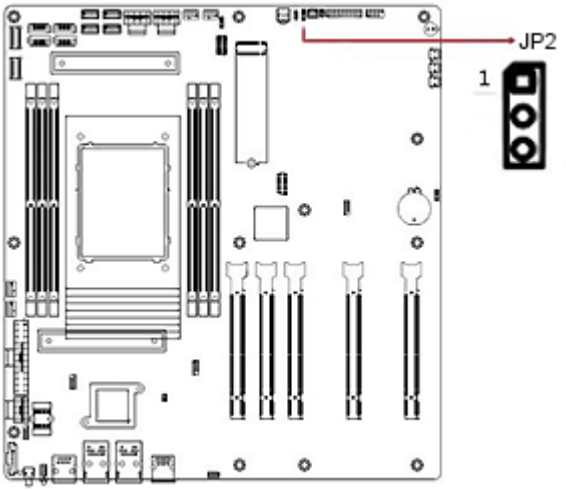
Jumper	Function
JP1	Clear CMOS Contents
JP2	ATX/AT Mode Setting

2.7.1 JP1: Clear CMOS Contents



Function	Pin closed	Illustration
Normal (default)	1-2	
Clear CMOS	2-3	

2.7.2 JP2: ATX/AT Mode Setting (Debug use)

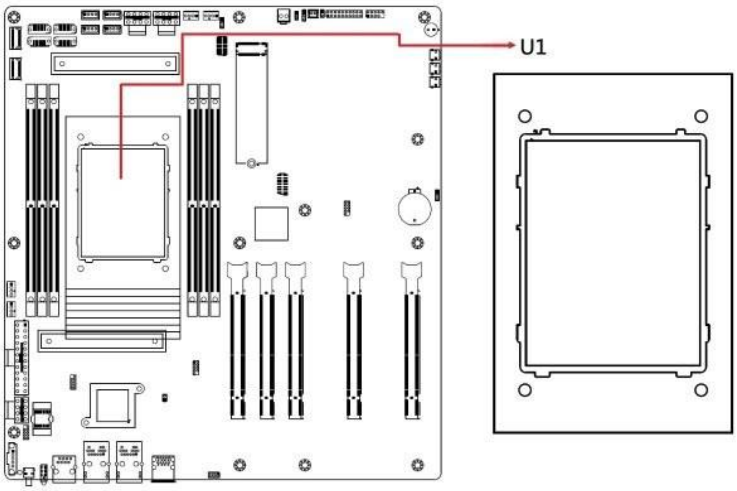


Mode	Pin closed	Illustration
AT(Default)	1-2	
ATX	2-3	

2.8 Connectors on MBB1002

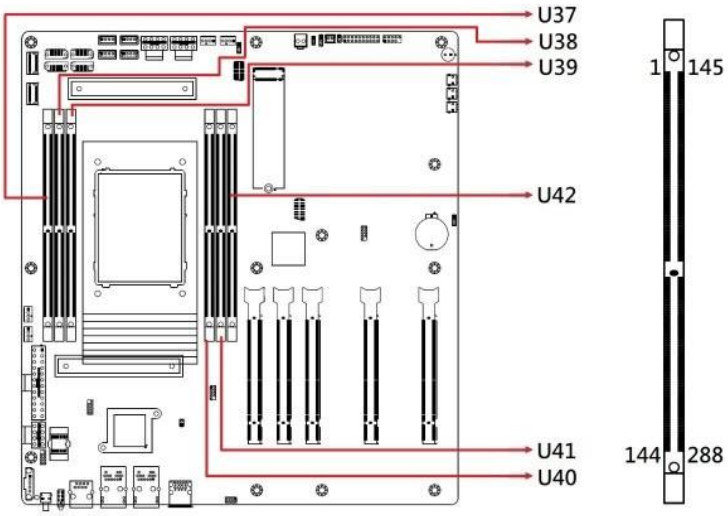
Connector	Function
U1	CPU Socket
U37, U38, U39, U40, U41, U42	RDIMM Socket
PCIE1, PCIE2, PCIE3, PCIE4, PCIE5	PCIe x16 Slot
J2	Front Panel Header
J3	Dual Ports USB 2.0 Header
J8, J9, J18	ATX Power Connector
J10, J13	MCIO Connector
J12	M.2 M-Key 2280 Slot
CN3, CN4, CN7, CN8	SATA Connector
FAN1	CPU Fan Connector
FAN2, FAN3, FAN4	System Fan Connector
BT1	RTC Battery Socket
ATX1	ATX 24-pin Power Connector
SW4	Power Button
LED14	Status / HDD / Power LED
CN9	Single Port 10 Gigabit LAN (Intel X710-AT2)
CN10	Single Port 10 Gigabit LAN (Intel X710-AT2)
CN11	Dual Ports USB 3.2 Gen1 Connector
CN12	Console
J6	IDA101 PWR Connector (Debug use)
J7	VR Debug Header (Debug use)
SW1	Reset Button (Debug use)
SW2	Power Button (Debug use)
J11	CPU Debug Header (Debug use)
JP3	FPGA JTAG Header (Debug use)
J14	FPGA SPI Flash Connector (Debug use)
J15	eSPI 80 Port Debug Connector (Debug use)
J16	X710-AT2 SPI Flash Connector (Debug use)
J17	X710-AT2 Debug Mode (Debug use)
J20	BIOS SPI Flash Connector (Debug use)

2.8.1 U1: CPU Socket

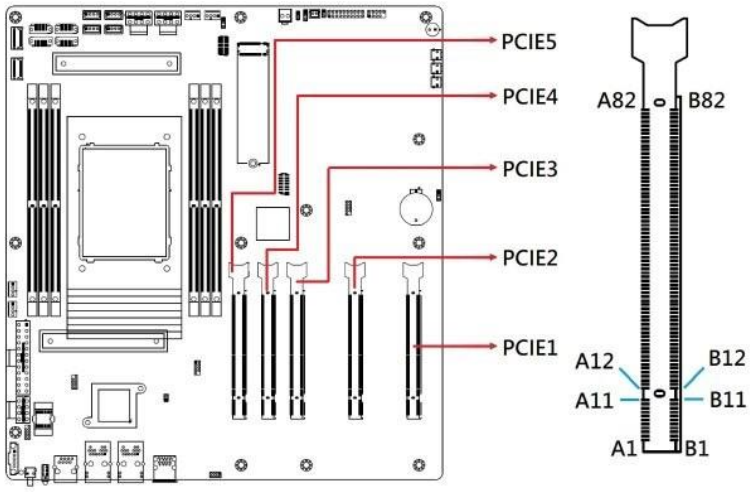


- **CPU Type**
- **AMD SP6 LGA 4844 (EPYC SP6 Processor)**
- **8534P (TDP 200W, 64 Cores, 2.3GHz~3.1GHz, 128MB L3 cache)**
- **8434P (TDP 200W, 48 Cores, 2.5GHz~3.1GHz, 128MB L3 cache)**
- **8324P (TDP 180W, 32 Cores, 2.65GHz~3.0GHz, 128MB L3 cache)**
- **8224P (TDP 160W, 24 Cores, 2.55Ghz~3.0Ghz, 64MB L3 cache)**
- **8124P (TDP 125W, 16 Cores, 2.45Ghz~3.0Ghz, 64MB L3 cache)**
- **8C24P (TDP 100W, 12 Cores, 2.45Ghz~3.0Ghz, 32MB L3 cache)**

2.8.2 U37, U38, U39, U40, U41, U42: RDIMM Socket

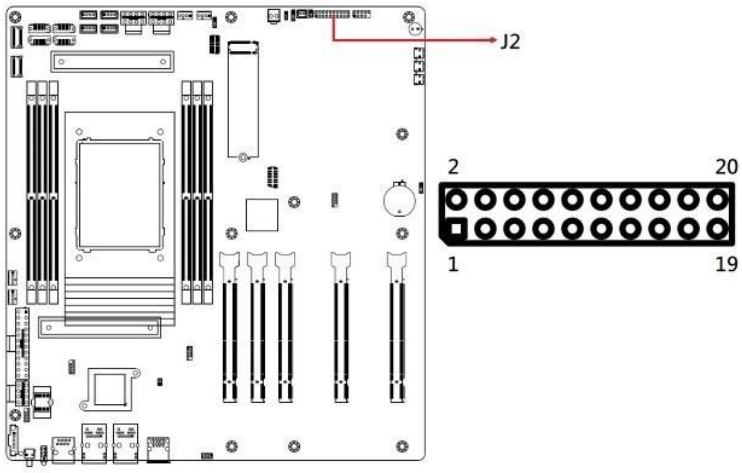


2.8.3 PCIE1, PCIE2, PCIE3, PCIE4, PCIE5: PCIE x16 slot



Note: Supports PCIE x16 GEN5

2.8.4 J2: Front Panel Header



Signal Name	Pin	Pin	Signal Name
PU P5V	1	2	NC
GND	3	4	NC
GND	5	6	GND
NC	7	8	P5V
GND	9	10	NC
GND	11	12	NC
PW	13	14	FPW_OUT
SLED+(PU 5VDUAL)	15	16	SLED-
GND	17	18	FRST_OUT
HD+(PU P3V3)	19	20	-HDLED

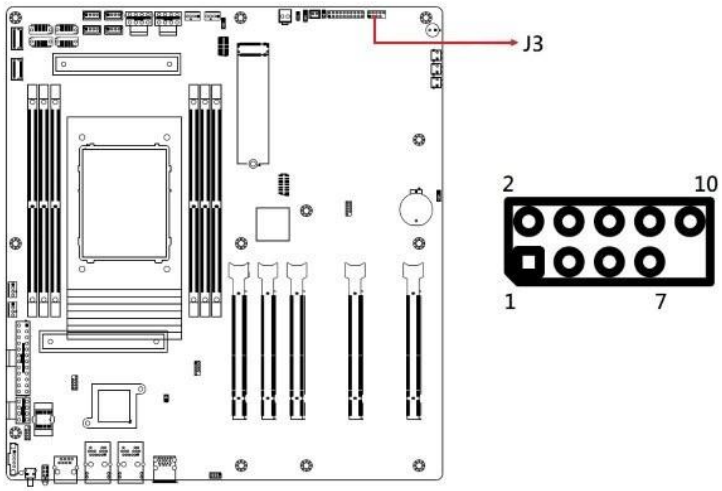
Note1: 1-3 OR 1-5 Power LED

Note2: 13-14 Power Button

Note3: 17-18 Reset Button

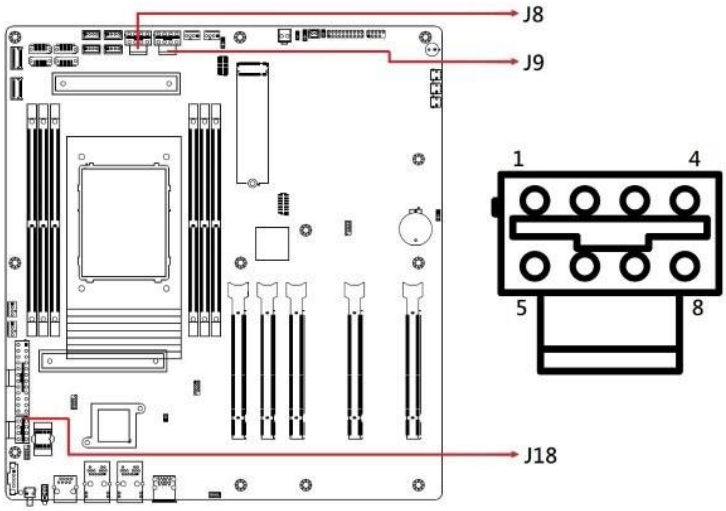
Note4: 19-20 HDD LED

2.8.5 J3: Dual-port USB 2.0 Header



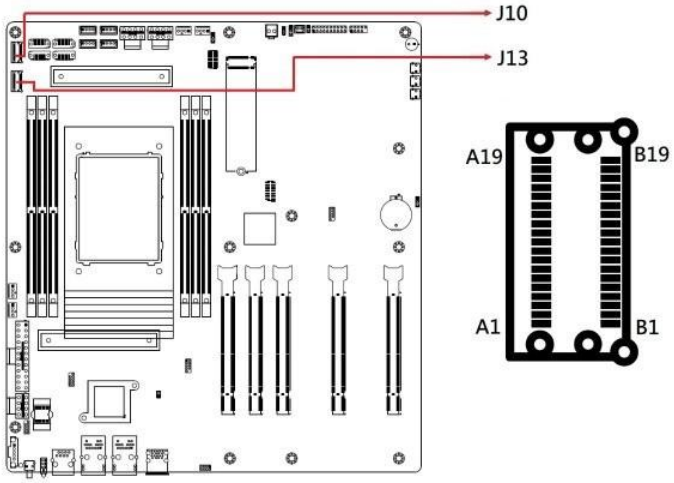
Signal Name	Pin	Pin	Signal Name
VCCCH3(5V)	1	2	VCCCH3(5V)
USB00_DATA_N	3	4	USB01_DATA_N
USB00_DATA_P	5	6	USB01_DATA_P
GND	7	8	GND
none	9	10	NC

2.8.6 J8, J9, J18: ATX Power Connector

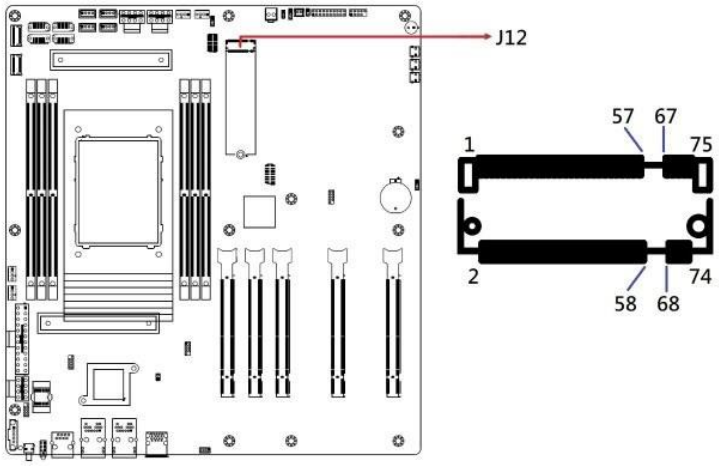


Pin	Signal Name
1	GND
2	GND
3	GND
4	GND
5	P12V
6	P12V
7	P12V
8	P12V

2.8.7 J10, J13: MCIO Connector

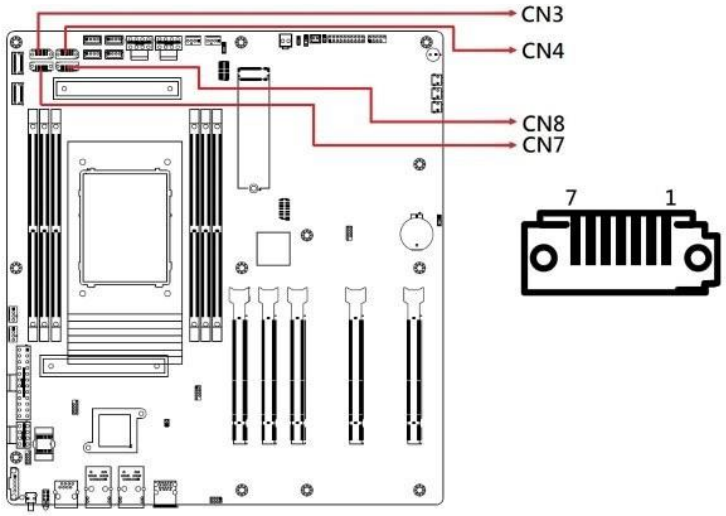


2.8.8 J12: M.2 M-Key 2280 Slot

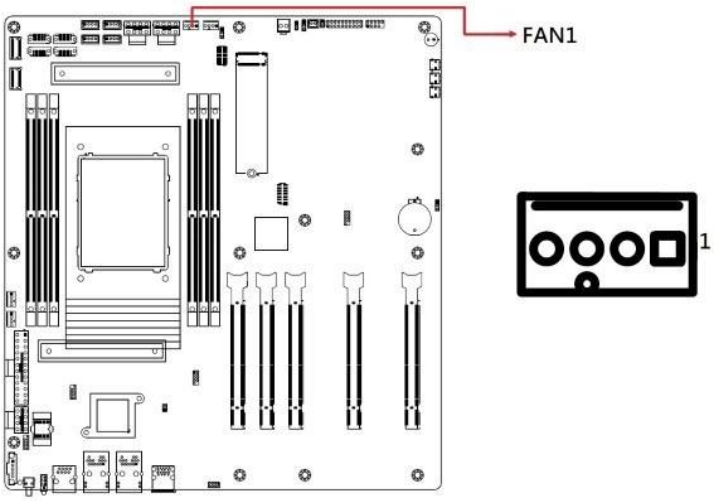


Note: Supports PCIE x4 GEN5

2.8.9 CN3, CN4, CN7, CN8: SATA Connector

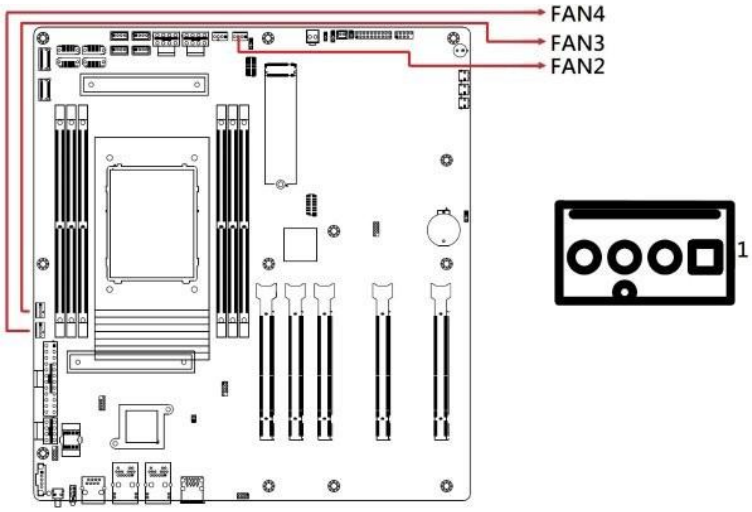


2.8.10 FAN1: CPU FAN Connector



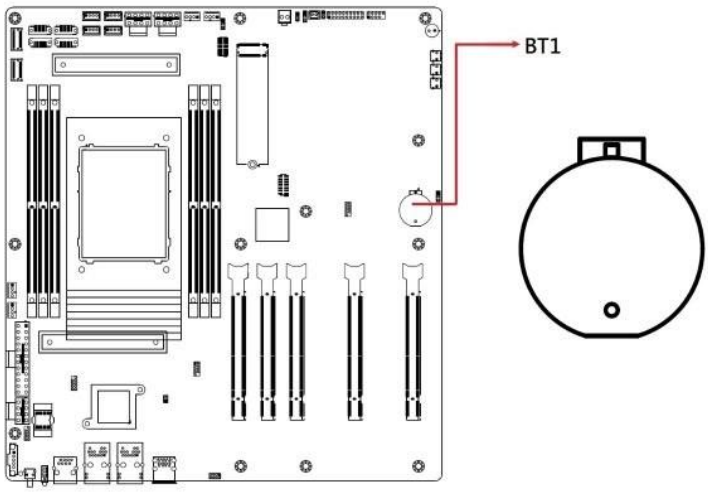
Pin	Signal Name
1	GND
2	12V
3	RPM
4	PWM

2.8.11 FAN2, FAN3, FAN4: System Fan Connector

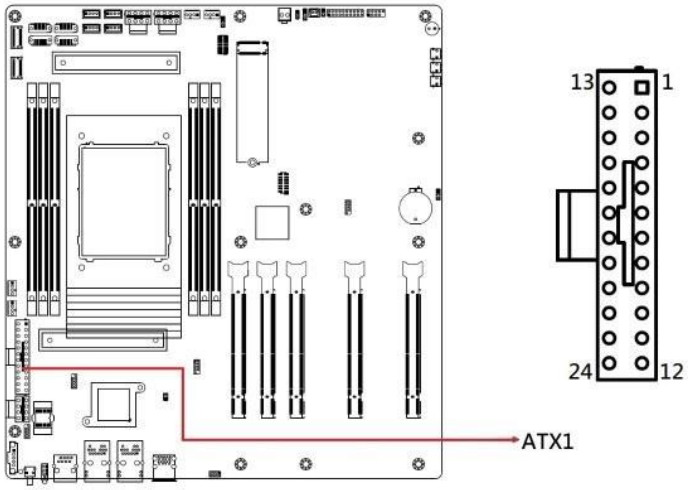


Pin	Signal Name
1	GND
2	12V
3	RPM
4	PWM

2.8.12 BT1: RTC Battery Socket

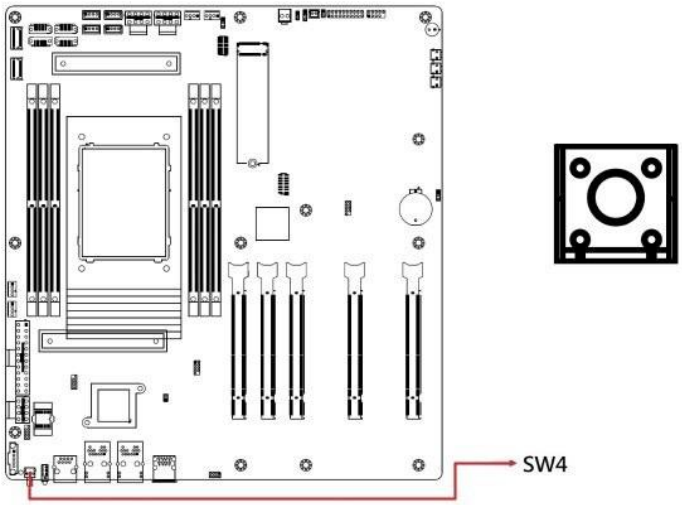


2.8.13 ATX1: ATX 24-pin Power Connector

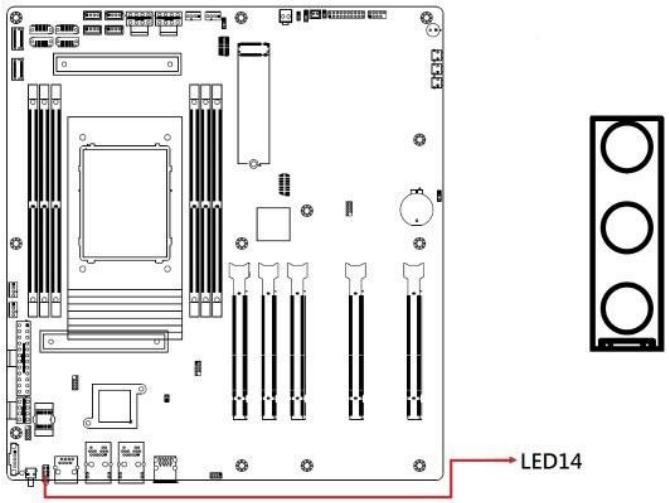


Signal Name	Pin	Pin	Signal Name
P3V3	1	13	P3V3
P3V3	2	14	-12V
GND	3	15	GND
P5V	4	16	PS_ON
GND	5	17	GND
P5V	6	18	GND
GND	7	19	GND
PW_OK	8	20	NC
5VSB_PS	9	21	P5V
P12V	10	22	P5V
P12V	11	23	P5V
P3V3	12	24	GND

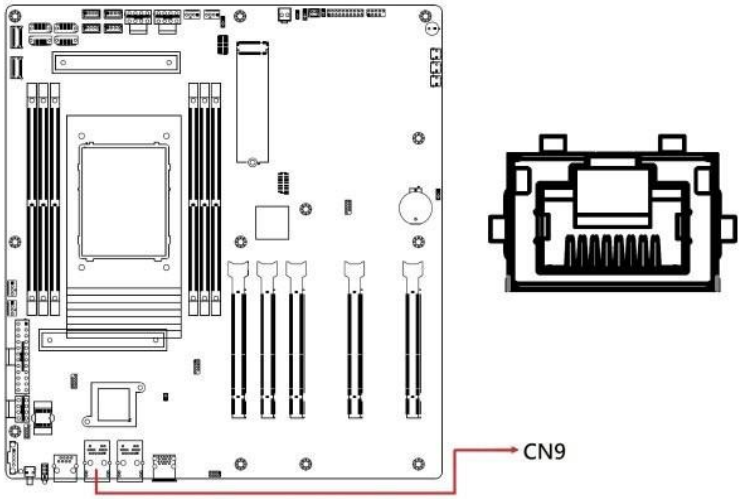
2.8.14 SW4: Power Button



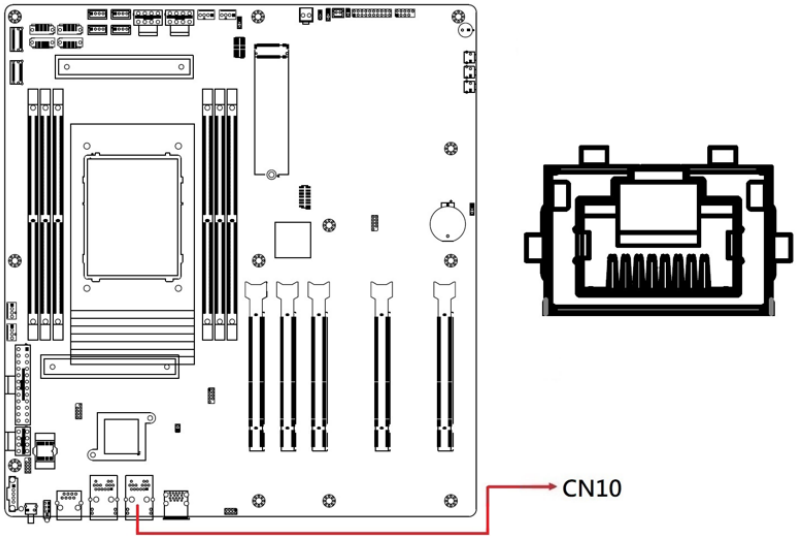
2.8.15 LED14 : Status/HDD/Power LED



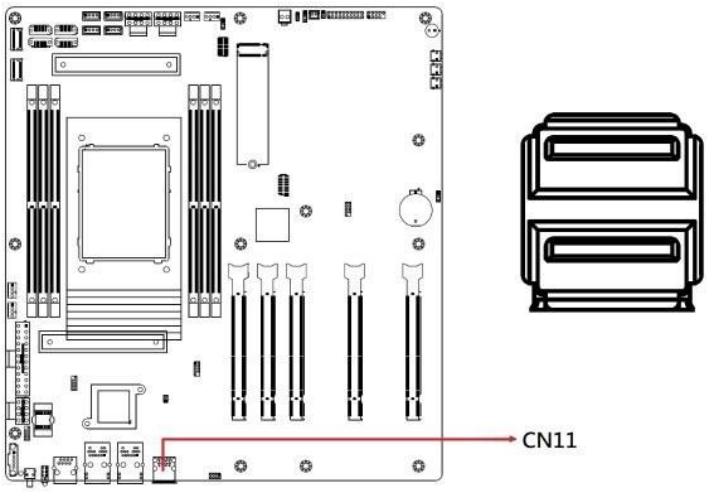
2.8.16 CN9: Single Port 10 Gigabit LAN (Intel X710-AT2)



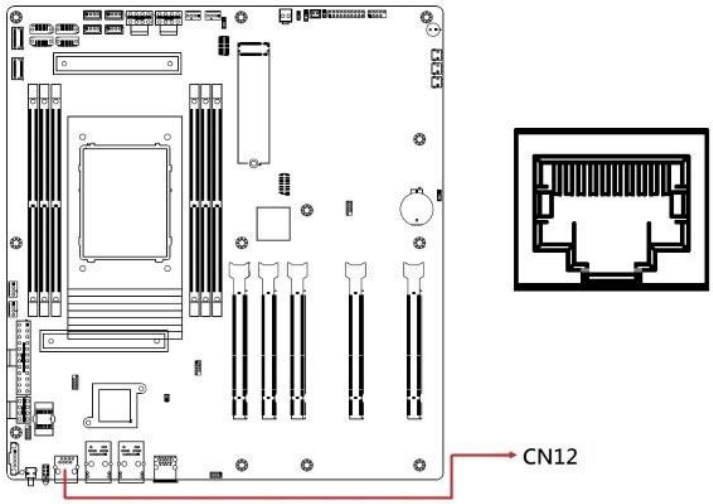
2.8.17 CN10: Single Port 10 Gigabit LAN (Intel X710-AT2)



2.8.18 CN11: Dual Ports USB 3.2 Gen1 Connector

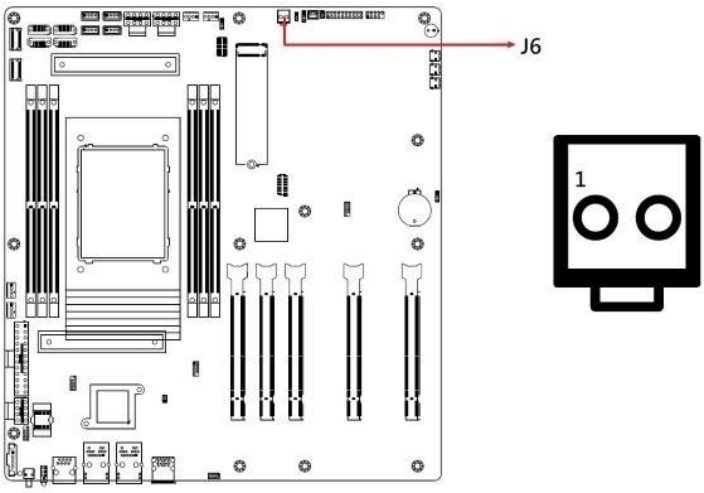


2.8.19 CN12: Console



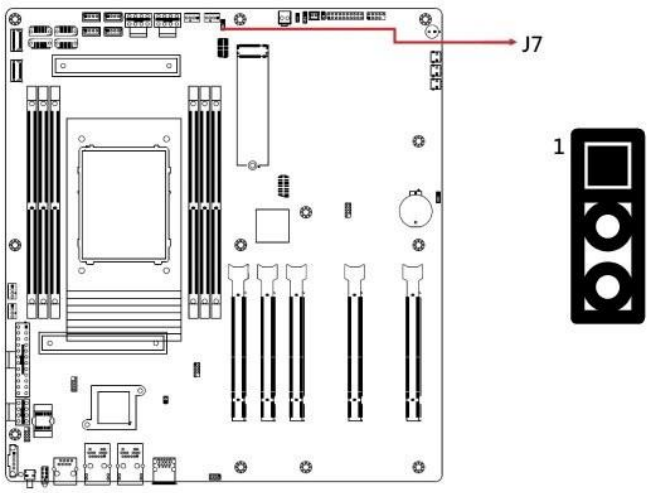
Pin	Signal Name
1	RTS
2	DTR
3	TXD
4	GND
5	GND
6	RXD
7	DSR
8	CTS

2.8.20 J6: IDA101 PWR Connector (Debug use)



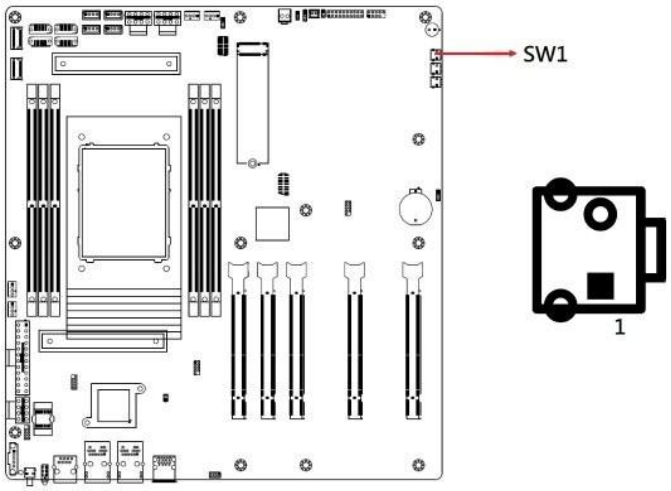
Pin	Signal Name
1	GND
2	P12V

2.8.21 J7: VR Debug Header (Debug use)

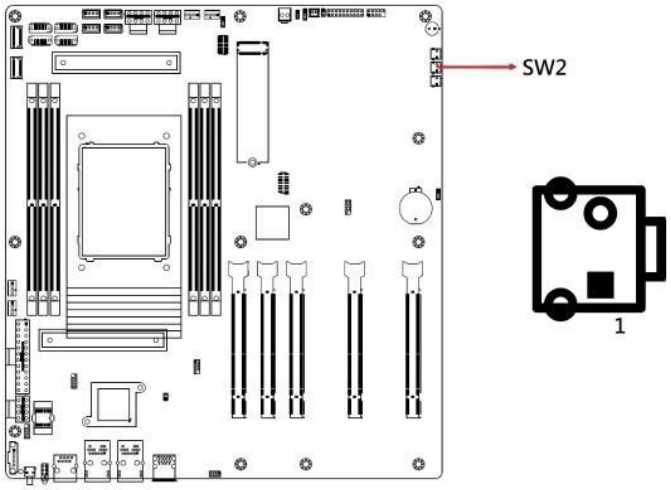


Pin	Signal Name
1	SDA
2	SCL
3	GND

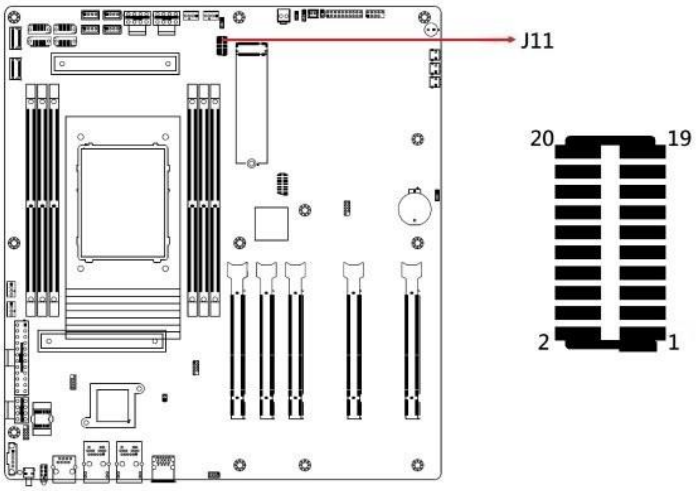
2.8.22 SW1: Reset Button (Debug use)



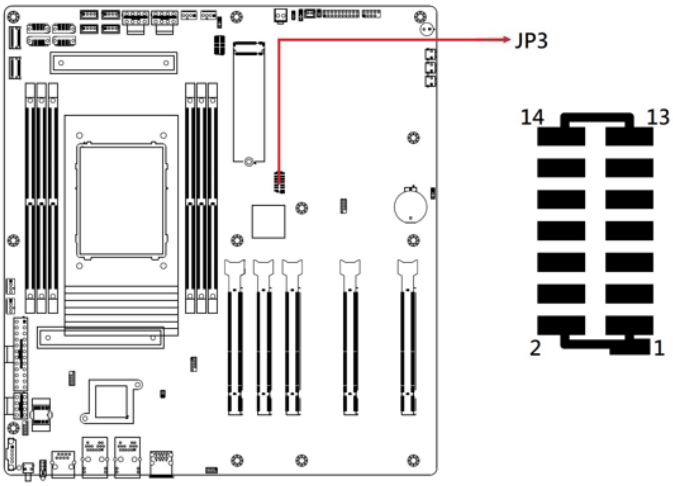
2.8.23 SW2: Power Button (Debug use)



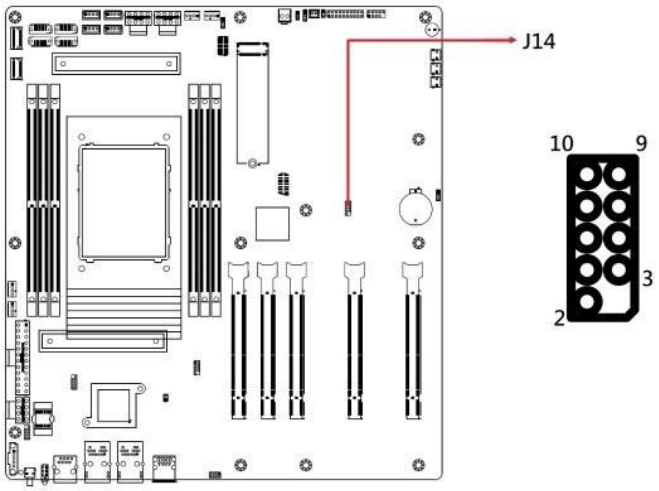
2.8.24 J11: CPU Debug Header (Debug use)



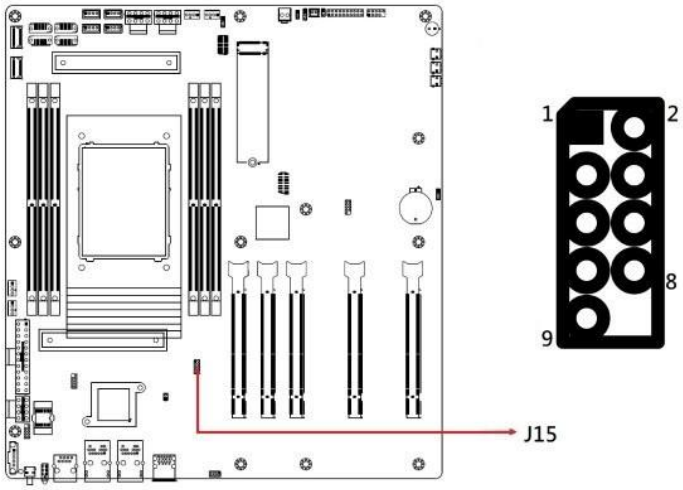
2.8.25 JP3: FPGA JTAG Header (Debug use)



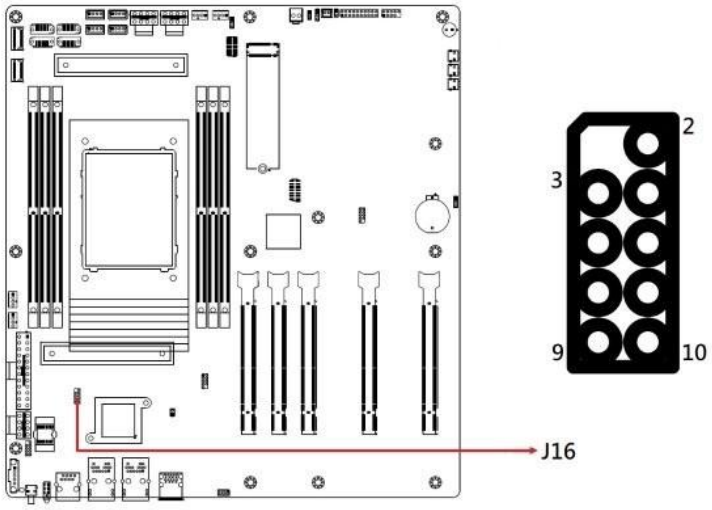
2.8.26 J14: FPGA SPI Flash Connector (Debug use)



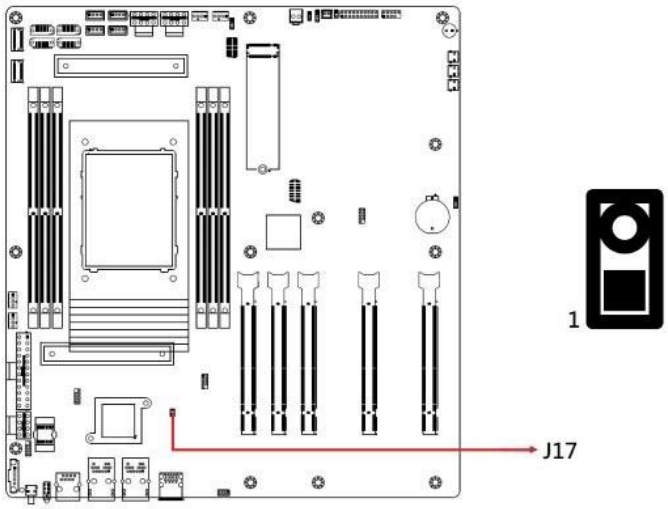
2.8.27 J15: eSPI 80 Port Debug connector (Debug use)



2.8.28 J16: X710-AT2 SPI Flash Connector (Debug use)

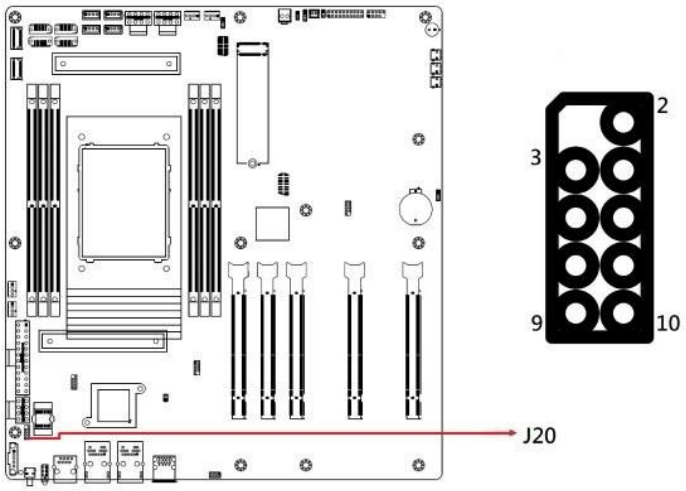


2.8.29 J17: X710-AT2 Debug Mode (Debug use)



Mode	Pin closed	Illustration
Normal	None	
Debug	1-2	

2.8.30 J20: BIOS SPI Flash Connector (Debug use)



Chapter 3
BIOS Setup

This chapter describes the different settings available in the AMI BIOS that comes with the board. The topics covered in this chapter are as follows:

- Main Settings
- Advanced Settings
- Security Settings
- Boot Settings
- Save & Exit

3.1 Introduction

The BIOS (Basic Input/Output System) installed in the ROM of your computer system provides critical low-level support for standard devices such as disk drives, and serial ports. It also provides password protection as well as special support for detailed fine-tuning of the chipset controlling the entire system.

3.2 BIOS Setup

The BIOS provides a Setup utility program for specifying the system configurations and settings. The BIOS ROM of the system stores the Setup utility. When you turn on the computer, the BIOS is immediately activated. Pressing the <Del> key immediately allows you to enter the Setup utility. If you press the <Del> key too late, POST (Power On Self Test) will continue with its test routines, thus preventing you from invoking the Setup.

If you still need to enter Setup, restart the system by pressing the ”Reset” button or simultaneously pressing the <Ctrl>, <Alt> and <Delete> keys. You can also restart by turning the system Off and back On again.

The following message will appear on the screen:

```
Press <DEL> to Enter Setup
```

In general, press the arrow keys to highlight items, <Enter> to select, the <PgUp> and <PgDn> keys to change entries, <F1> for help, and <Esc> to quit.

When you enter the BIOS Setup utility, the *Main Menu* screen will appear on the screen. The Main Menu allows you to select from various setup functions and exit choices.

Warning: It is strongly recommended that you avoid making any changes to the chipset defaults.

These defaults have been carefully chosen by both AMI and your system manufacturer to provide the absolute maximum performance and reliability. Changing the defaults could make the system unstable and crash in some cases.

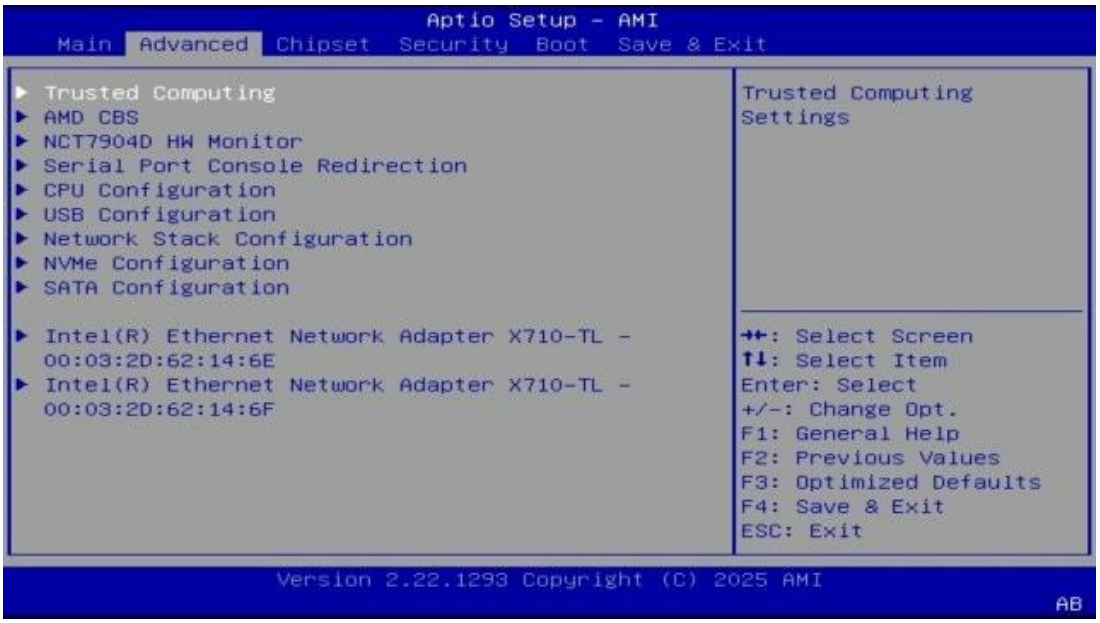
3.3 Main Settings



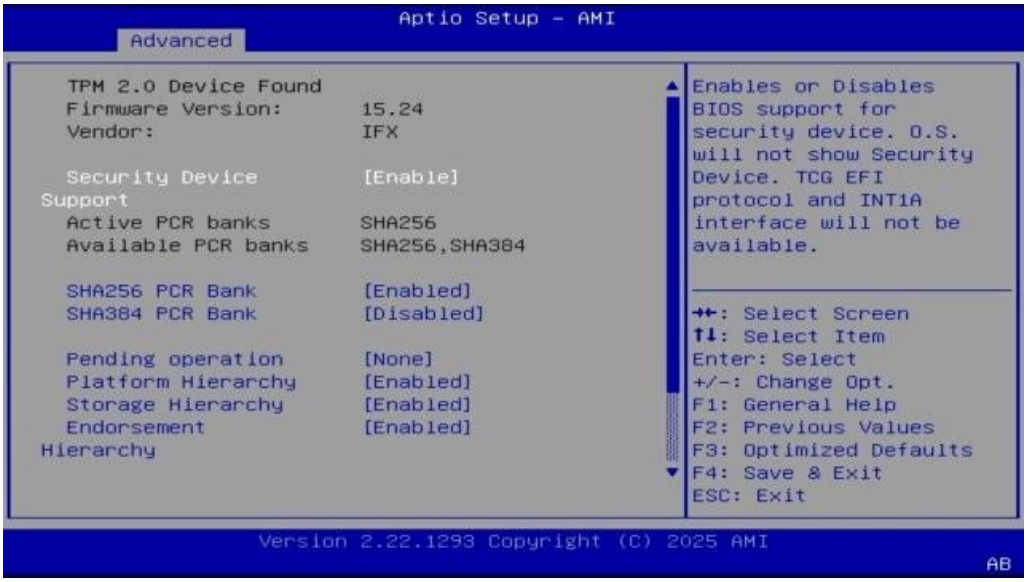
BIOS Setting	Description
System Date	Sets the date. Use the <Tab> key to switch between the data elements.
System Time	Set the time. Use the <Tab> key to switch between the data elements.

3.4 Advanced Settings

This section allows you to configure, improve your system and set up some system features according to your preference.



Trusted Computing



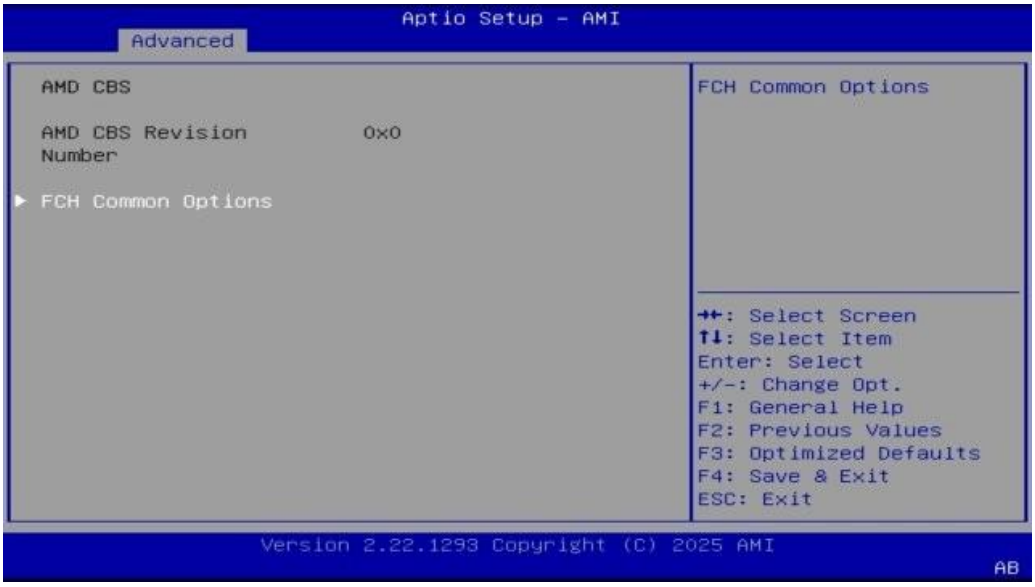
BIOS Setting	Description
Security Device Support	Enables / Disables BIOS support for security device. OS will not show security device. TCG EFI protocol and INTIA interface will not be available.
SHA256 PCR Bank	Enables / Disables SHA256 PCR Bank.
SHA384 PCR Bank	Enables / Disables SHA384 PCR Bank.
Pending operation	Schedule an operation for the security device. Note: Your computer will reboot during restart in order to change state of security device.
Platform / Storage/ Endorsement Hierarchy	Enables / Disables the hierarchy.
Physical Presence Spec Version	Selects to show the PPI Spec Version (1.2 or 1.3) that the OS supports. **Note:** Some HCK tests might not support 1.3.
PH Randomization	This option is intended for internal development and validation purposes only. **Do not enable this setting on production systems.**
Device Select	• **TPM 1.2** will restrict support to TPM 1.2 devices only. • **TPM 2.0** will restrict support to TPM 2.0 devices only. • **Auto** will support both with the default being set to TPM 2.0 devices if not found, and TPM 1.2 device will be enumerated.

ACPI Settings



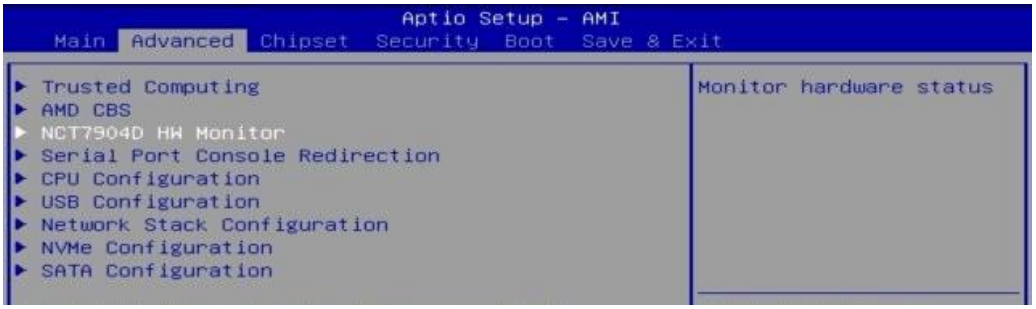
BIOS Setting	Description
Enable ACPI Auto Configuration	Enables or Disables BIOS ACPI Auto Configuration
Enable Hibernation	Enables / Disables the system ability to hibernate (OS/S4 Sleep State). This option may be not effective with some OS.

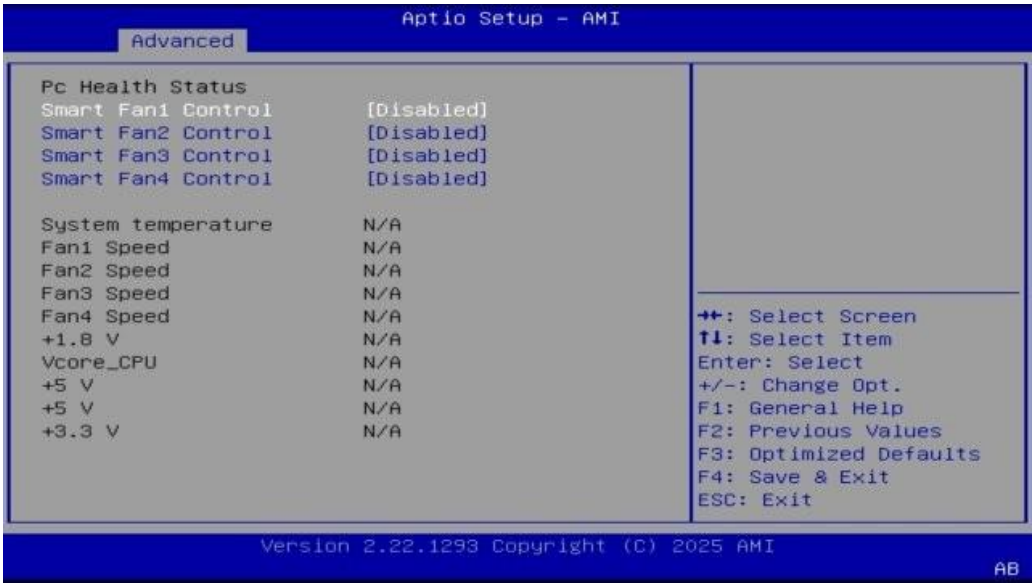
AMD CBS



BIOS Setting	Description
FCH Common Options	FCH Common Options
AC Power Loss Options	AC Power Loss Options
Schedule Slot 1	Setup the hour/minute for system power on

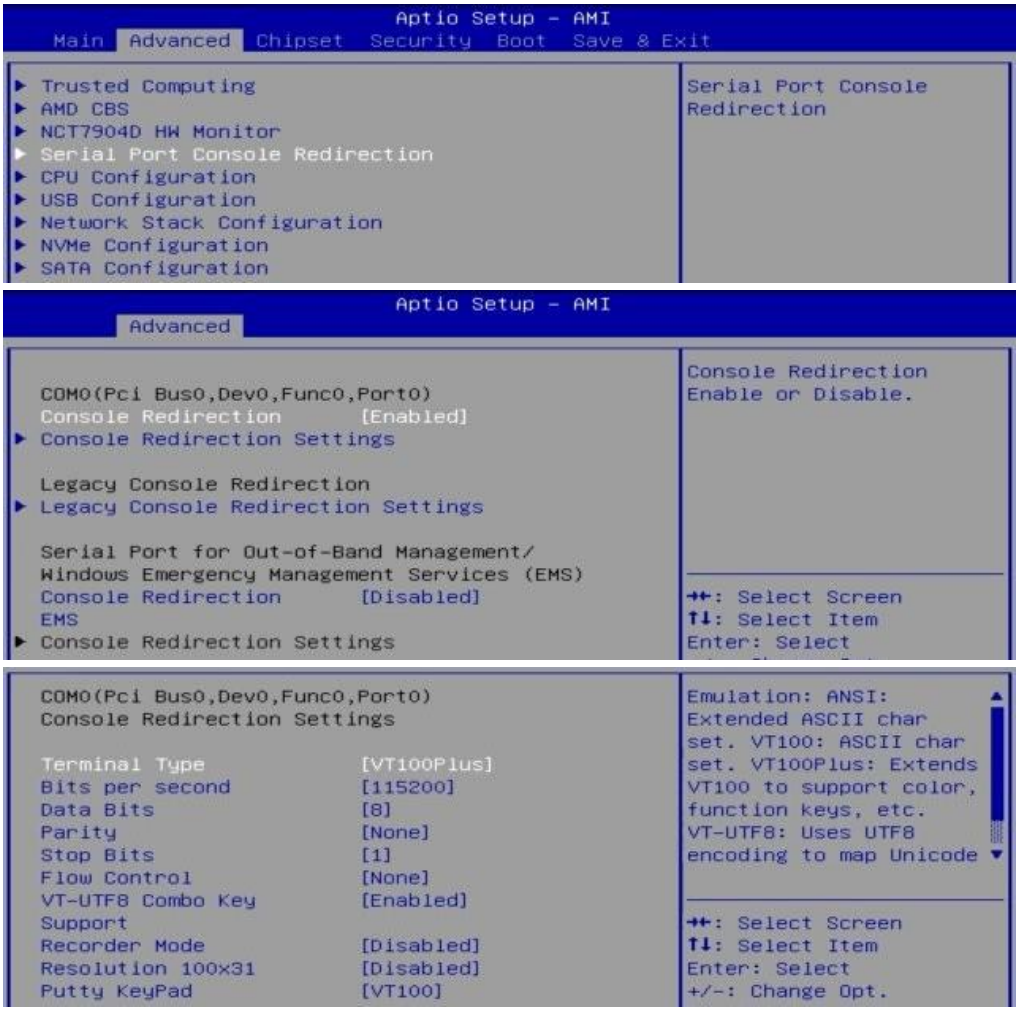
NCT7904D HW Monitor





BIOS Setting	Description
Smart Fan Control	Enables / Disables the CPU Fan Control. Options: Disabled / 50 °C / 60 °C / 70 °C / 80 °C
Temperatures / Voltages	These fields are the parameters of the hardware monitoring function feature of the motherboard. The values are read-only values as monitored by the system and show the PC health status.

Serial Port Console Redirection



BIOS Setting	Description
Console Redirection	Console Redirection. Enable or Disable.
Terminal Type	Emulation: ANSI: Extended ASCII character set. VT100: ASCII character set. VT100Plus: Extends VT100 to support color, function keys, etc. VT-UTF8: uses UTF8 encoding to map Unicode chars onto 1 or more bytes.
Bits per second	Selects serial port transmission speed. The speed must be matched on the other side. Long or noisy lines may require lower speeds.
Data Bits	(AMI BIOS often leaves this description minimal or blank; this is normal.)

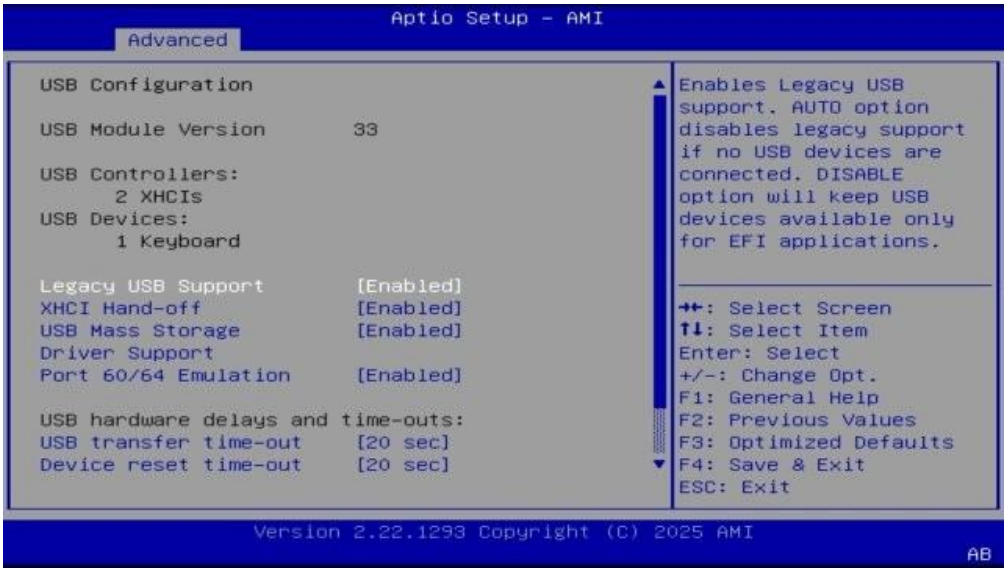
Parity	A parity bit can be sent with the data bits to detect some transmission errors. Even: parity bit is 0 if the number of 1's in the data bits is even. Odd: parity bit is 0 if the number of 1's in the data bits is odd. Mark: parity bit is always 1. Space: parity bit is always 0. Mark and Space parity do not allow for error detection. They can be used as an additional bit.
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 stop bits.
Flow Control	prevent data loss from buffer overflow when sending data, if the receiving buffers are full, a 'stop' signal can be sent to stop the data flow. Once the buffers are empty, a 'start' signal can be sent to re-start the flow. Hardware flow control uses two wires to send start/stop signals.
VT-UTF8 Combo Key Support	Enable VT-UTF8 Combination Key Support for ANSI/VT100 terminals.
Recorder Mode	With this mode enabled only text will be sent. This is to capture Terminal data.
Resolution 100x31	Enables or disables extended terminal resolution.
Putty KeyPad	Select FunctionKey and KeyPad on Putty.
Console Redirection Settings	The settings specify how the host computer and the remote computer exchange data.
Legacy Console Redirection Settings	Configure legacy console redirection behavior.
Redirection COM Port	Select a COM port to display redirection of Legacy OS and Legacy OPROM messages.
Resolution	On Legacy OS, the number of rows and columns supported for console redirection.
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. Default setting for this option is set to Always Enable.
Console Redirection EMS	Console Redirection Enable or Disable

CPU Configuration



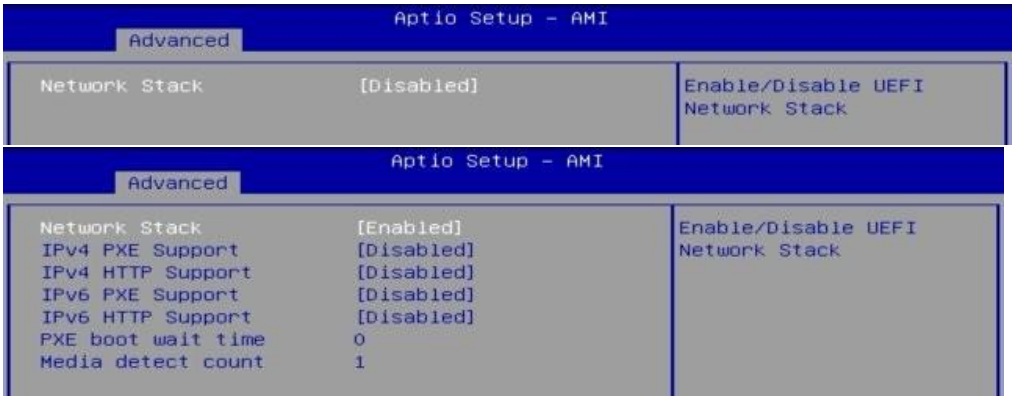
BIOS Setting	Description
CPU Configuration	View Memory Information related to Node 0
SVM Mode	Enable/disable CPU virtualization
Node 0 Information	View detailed CPU and cache information for Node 0

USB Configuration



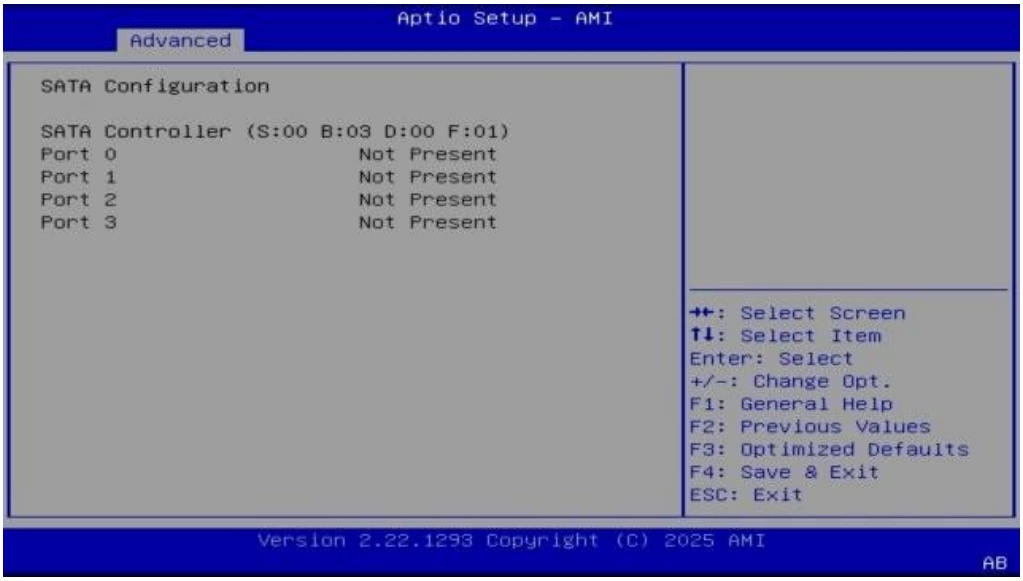
BIOS Setting	Description
Legacy USB Support	• **Enabled** enables Legacy USB support. • **Auto** disables legacy support if there is no USB device connected. • **Disabled** keeps USB devices available only for EFI applications.
XHCI Hand-off	This is a workaround for OSes without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver.
USB Mass Storage Driver Support	Enables / Disables the support for USB mass storage driver.
Port 60/64 EmulationDriver Support	Enables I/O port 60h/64h emulation for the complete USB keyboard legacy support for non-USB aware OSes.
USB Transfer time-out	The time-out value (1 / 5 10 / 20 secs) for Control, Bulk, and Interrupt transfers.
Device reset time-out	Gives seconds (10 / 20 / 30 / 40 secs) to delay execution of Start Unit command to USB mass storage device.
Device power-up delay	The maximum time the device will take before it properly reports itself to the Host Controller. **Auto** uses default value for a Root port it is 100ms. But for a Hub port, the delay is taken from Hub descriptor.

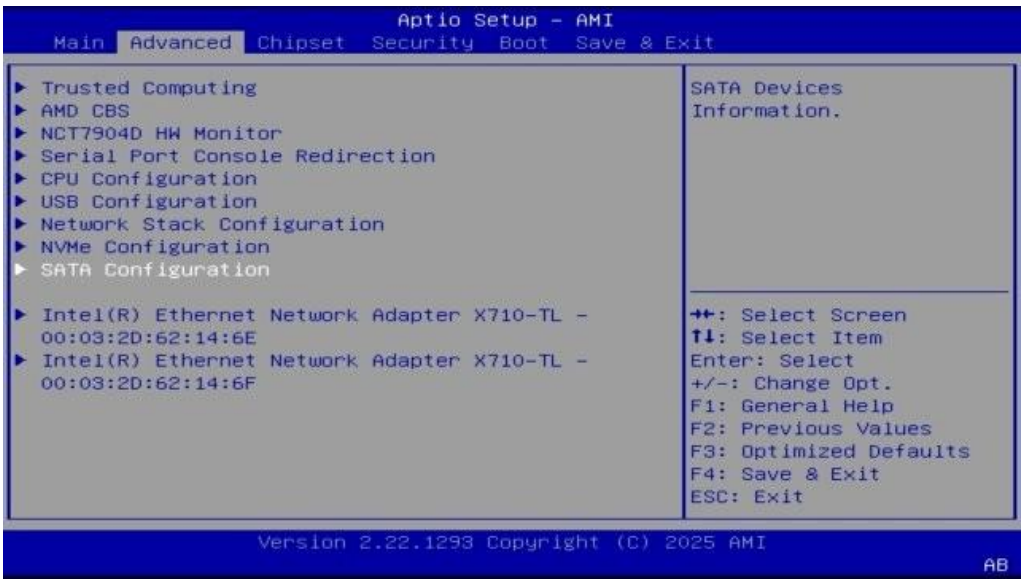
Network Stack Configuration



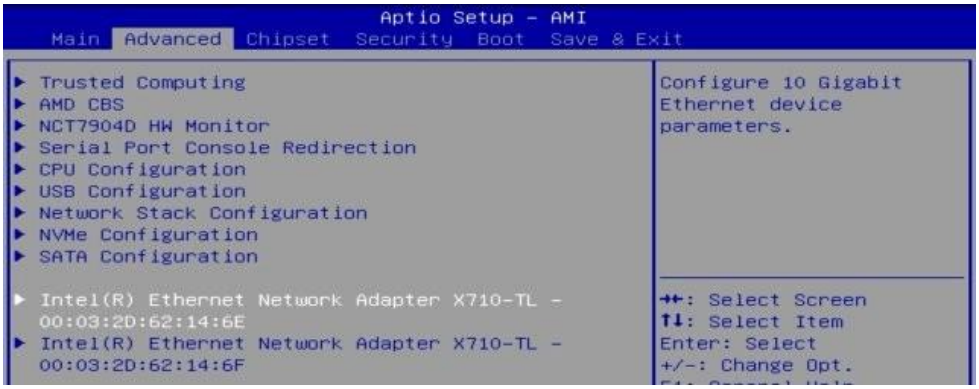
BIOS Setting	Description
Network Stack	Enables / Disables UEFI Network Stack.
IPv4 PXE Support	Enables / Disables IPv4 PXE Boot Support. If disabled, IPv4 PXE boot option will not be created.
IPv4 HTTP Support	Enables / Disables IPv4 HTTP Boot Support. If disabled, IPv4 HTTP boot option will not be created.
IPv6 PXE Support	Enables / Disables IPv6 PXE Boot Support. If disabled, Ipv6 PXE boot option will not be created.
IPv6 HTTP Support	Enables / Disables IPv6 HTTP Boot Support. If disabled, Ipv6 HTTP boot option will not be created.
PXE boot wait time	Assigns a period of time to press ESC key to abort the PXE boot.
Media detect count	Assigns a number of times to check the presence of media.

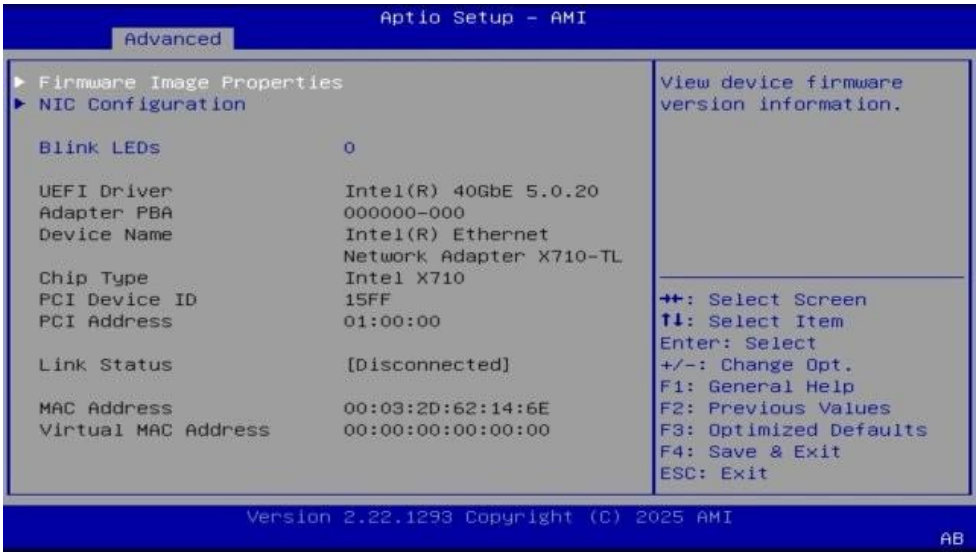
SATA Configuration

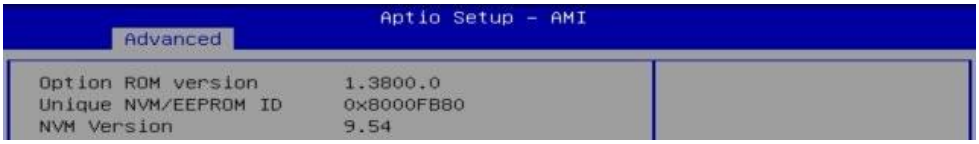


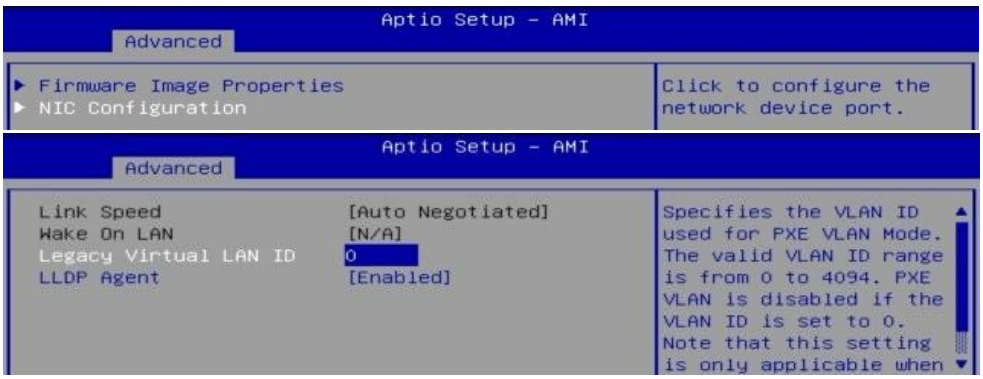


Intel(R) Ethernet Network Adapter

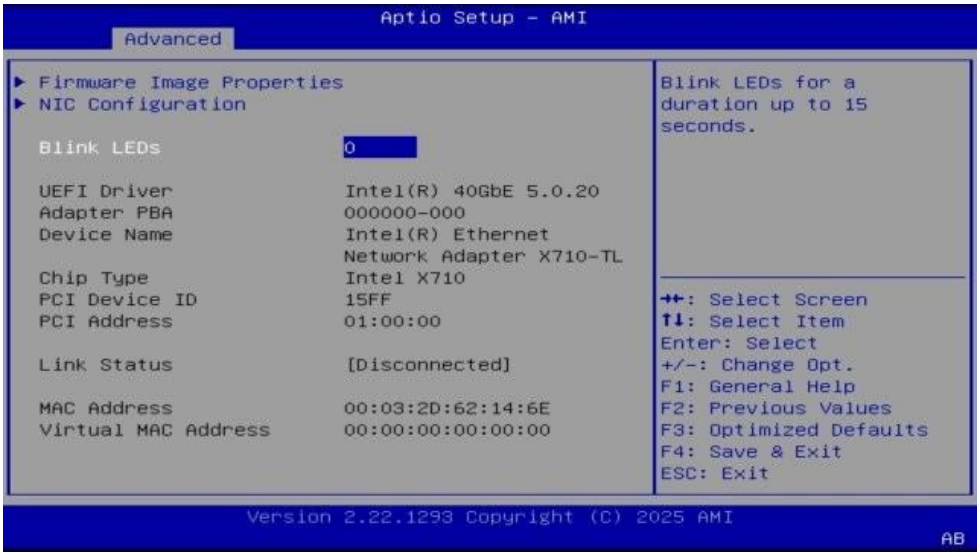






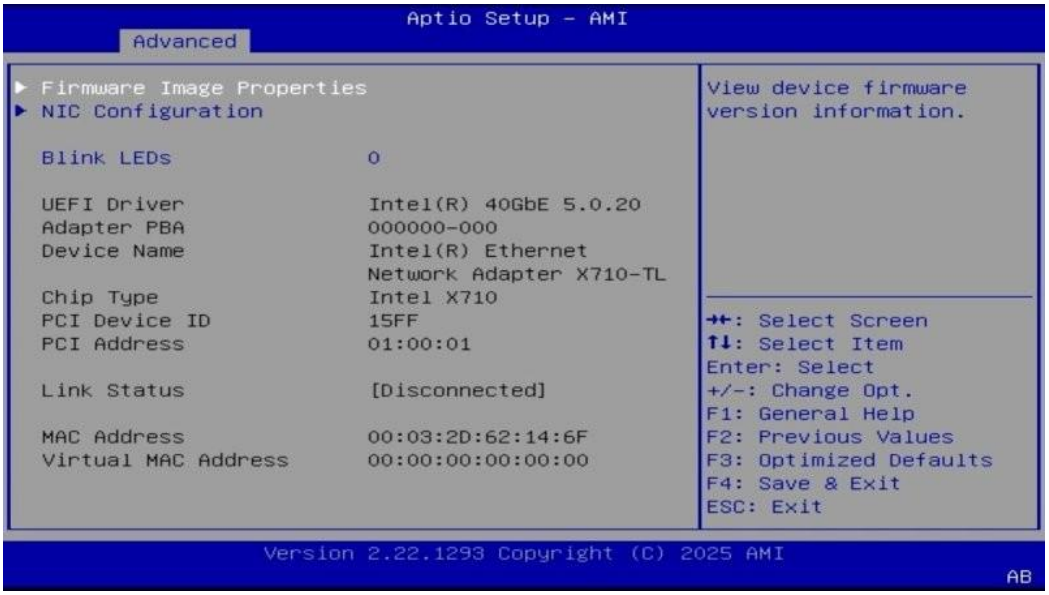






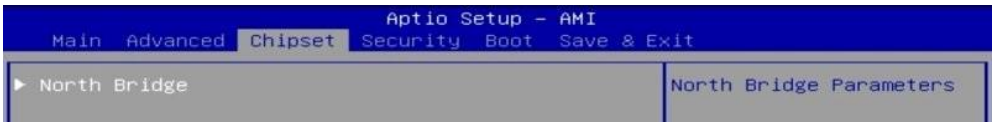
BIOS Setting	Description
Intel(R) Ethernet Network Adapter X710-TL - 00:03:2D:62:14:6E	Configure 10 Gigabit Ethernet device parameters.
Link Speed	Specifies the link speed. Auto Negotiated allows the adapter and link partner to determine the optimal speed automatically.
Firmware Image Properties	View device firmware version information.
NIC Configuration	Click to configure the network device port.
Legacy Virtual LAN ID	Specifies the VLAN ID used for PXE VLAN Mode. The valid VLAN ID range is from 0 to 4094. PXE VLAN is disabled if the VLAN ID is set to 0. Note that this setting is only applicable when PXE is enabled.
LLDP Agent	Persistently enables or disables firmware's LLDP Agent. Note that disabling firmware's LLDP Agent also disables DCB functionality.
Blink LEDs	Blink LEDs for a duration up to 15 seconds.

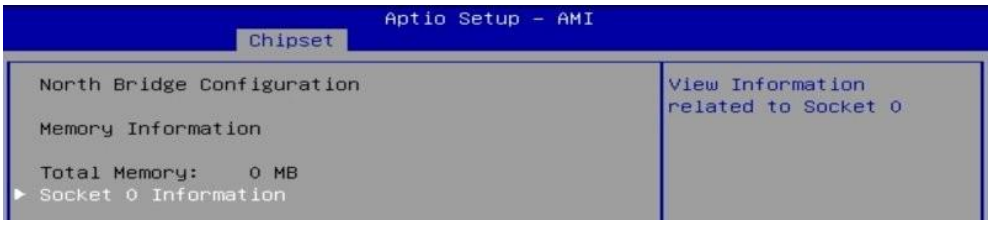
Intel(R) Ethernet Network Adapter X710-TL - 00:03:2D:62:14:6F	Identifies the Intel® Ethernet Network Adapter X710-TL and displays its MAC address.
Link Speed	Specifies the link speed. Auto Negotiated allows the adapter and link partner to determine the optimal speed automatically.
Firmware Image Properties	View device firmware version information.
NIC Configuration	Click to configure the network device port.
Legacy Virtual LAN ID	LLDP Agent also disables DCB functionality. Disabling firmware Agent allows LLDP packets from the switch to pass unobstructed to the OS. Some OS layer LLDP agents and software defined network layer LLDP agents need these packets to function.
LLDP Agent	Persistently enables or disables firmware's LLDP Agent. Disabling the LLDP Agent also disables DCB functionality.
Blink LEDs	Blink LEDs for a duration up to 15 seconds.



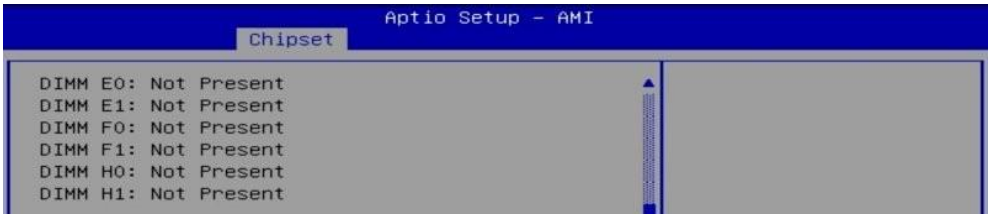

Aptio Setup – AMI
Main Advanced Chipset Security Boot Save & Exit
Trusted Computing
AMD CBS
NCT7904D HW Monitor
Serial Port Console Redirection
CPU Configuration
USB Configuration
Network Stack Configuration
NVMe Configuration
SATA Configuration
Intel(R) Ethernet Network Adapter X710-TL - 00:03:2D:62:14:6E
Intel(R) Ethernet Network Adapter X710-TL - 00:03:2D:62:14:6F
Configure 10 Gigabit Ethernet device parameters.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.22.1293 Copyright (C) 2025 AMI
AB
Aptio Setup – AMI
Advanced
Option ROM version 1.3800.0
Unique NVM/EEPROM ID 0x8000FB80
NVM Version 9.54
Aptio Setup – AMI
Advanced
Firmware Image Properties
NIC Configuration
Click to configure the network device port.
Aptio Setup – AMI
Advanced
Link Speed [Auto Negotiated]
Wake On LAN [N/A]
Legacy Virtual LAN ID 0
LLDP Agent [Enabled]
Specifies the VLAN ID used for PXE VLAN Mode. The valid VLAN ID range is from 0 to 4094. PXE
Aptio Setup – AMI
Advanced
Link Speed [Auto Negotiated]
Wake On LAN [N/A]
Legacy Virtual LAN ID 0
LLDP Agent [Enabled]
LLDP Agent. Note that disabling firmware's LLDP Agent also disables DCB
Aptio Setup – AMI
Advanced
Firmware Image Properties
NIC Configuration
Blink LEDs 0
UEFI Driver Intel(R) 40GbE 5.0.20
Adapter PBA 000000-000
Device Name Intel(R) Ethernet Network Adapter X710-TL
Chip Type Intel X710
PCI Device ID 15FF
PCI Address 01:00:01
Link Status [Disconnected]
MAC Address 00:03:2D:62:14:6F
Virtual MAC Address 00:00:00:00:00:00
Blink LEDs for a duration up to 15 seconds.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults

3.5 Chipset Settings







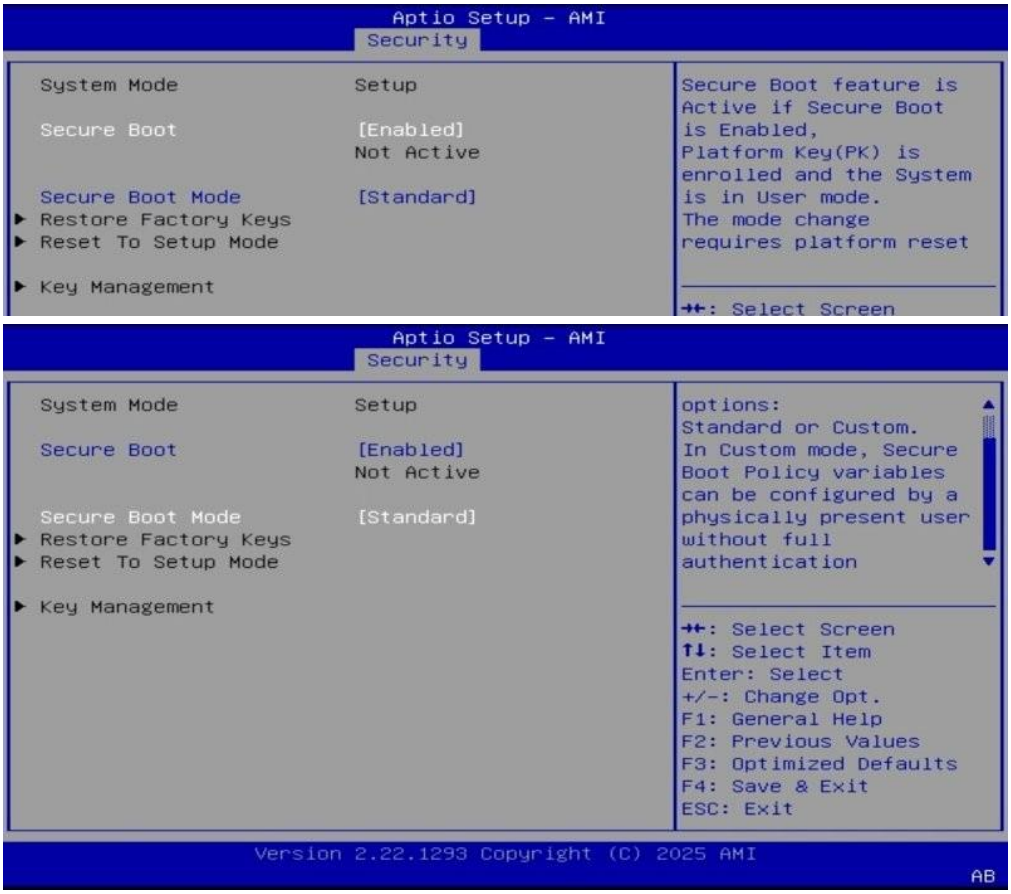


3.6 Security Settings



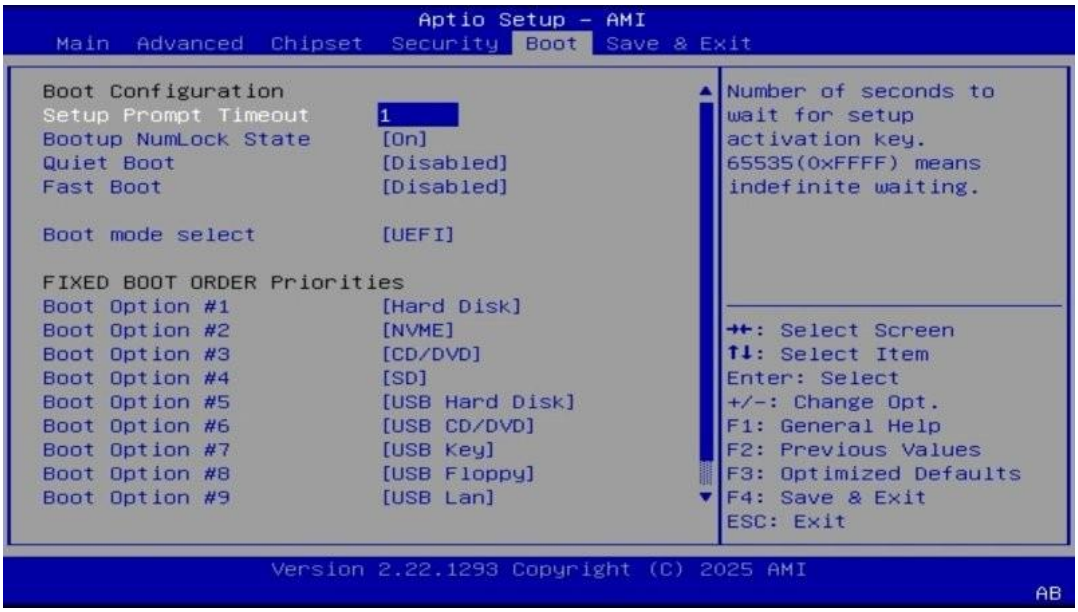


BIOS Setting	Description
Administrator Password	Set administrator password.
User Password	Set user password.
Secure Boot	Configures Secure Boot.



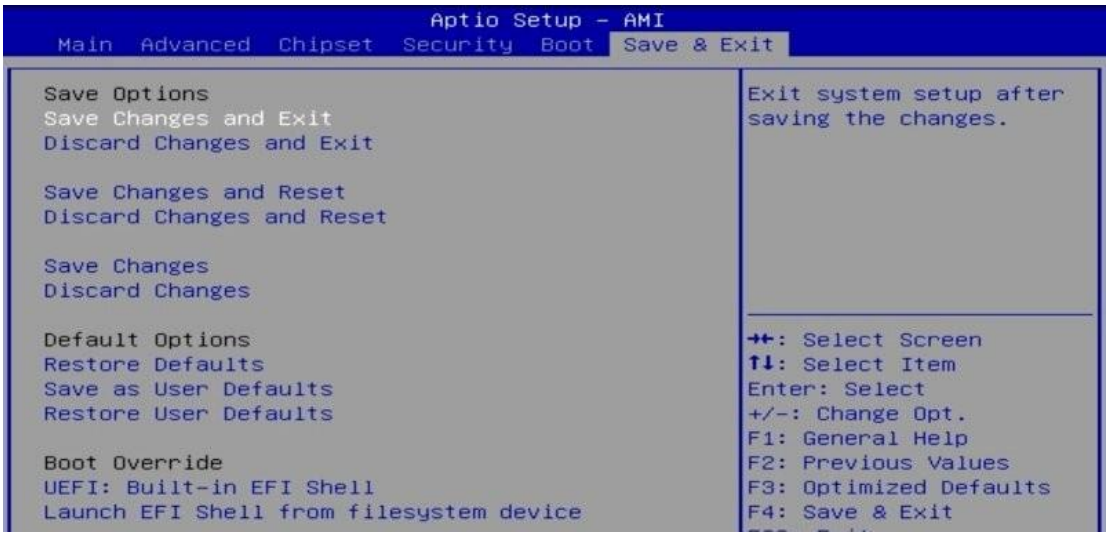
BIOS Setting	Description
Secure Boot	Secure Boot feature is Active if Secure Boot is enabled. Platform Key (PK) Is enrolled and the system is in User mode. The mode change requires platform reset.
Secure Boot Mode	Secure Boot mode options: Standard or Custom. In Custom mode, Secure Boot policy variables can be configured by a physically present user without full authentication.
Restore Factory Keys	Restores the default Secure Boot keys provided by the system manufacturer.
Reset to Setup Mode	Clears all Secure Boot keys and places the system into Setup Mode.
Key Management	Allows viewing, adding, or deleting Secure Boot keys and certificates.

3.7 Boot Settings



BIOS Setting	Description
Setup Prompt Timeout	Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting.
Bootup NumLock State	Selects the keyboard NumLock state.
Quiet Boot	Enables / Disables Quiet Boot option.
Fast Boot	Enables / Disables boot with initialization of a minimal set of devices required to launch active boot option. Has no effect for BBS boot options.
Boot mode select	Selects a Boot mode, Legacy / UEFI.
Boot Option Priorities	Sets the system boot order.

3.8 Save & Exit Settings



BIOS Setting	Description
Save Changes and Exit	Exits system setup after saving the changes.
Discard Changes and Exit	Exits system setup without saving any changes.
Save Changes and Reset	Resets the system after saving the changes.
Discard Changes and Reset	Resets system setup without saving any changes.
Save Changes	Saves changes done so far to any of the setup options.
Discard Changes	Discards changes done so far to any of the setup options.
Restore Defaults	Restores / Loads defaults values for all the setup options.
Save as User Defaults	Saves the changes done so far as User Defaults.
Restore User Defaults	Restores the user defaults to all the setup options.
Launch EFI Shell from filesystem device	Launches the EFI Shell from a filesystem device.

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