HPS-ERSU4A/ HPS-ERSUTA

19” 4U rackmount workstation, single Intel 4th/5th Xeon SP processor, HPM-ERSUA motherboard, Intel C741 Chipset, 1300W PSU

Quick Reference Guide

2nd Ed –06 January 2025

Part No. E201744S2A1R

Document Amendment History

Revision	Date	By	Comment
1st	May 2024	Avalue	Initial Release
2nd	January 2025	Avalue	Update 1.5 System Specifications

Declaration of Conformity

This device complies with part 15 fcc rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference.

(2) This device must accept any interference received including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a class "a" digital device, pursuant to part 15 of the fcc rules.

These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

CE statement

The product(s) described in this manual complies with all application European Union (CE) directives if it has a CE marking. For computer systems to remain CE compliant, only CE-compliant parts may be used. Maintaining CE compliance also requires proper cable and cabling techniques.

Notice

This guide is designed for experienced users to setup the system within the shortest time. For detailed information, please always refer to the electronic user's manual.

Copyright Notice

Acknowledgements

Intel and Pentium are trademarks of Intel Corporation.

Microsoft Windows is registered trademark of Microsoft Corp.

All other product names or trademarks are properties of their respective owners.

Disclaimer

This manual is intended to be used as a practical and informative guide only and is subject to change without notice. It does not represent a commitment on the part of Avalue. This

product might include unintentional technical or typographical errors. Changes are periodically made to the information herein to correct such errors, and these changes are incorporated into new editions of the publication.

A Message to the Customer

Avalue Customer Services

Each and every Avalue's product is built to the most exacting specifications to ensure reliable performance in the harsh and demanding conditions typical of industrial environments. Whether your new Avalue device is destined for the laboratory or the factory floor, you can be assured that your product will provide the reliability and ease of operation for which the name Avalue has come to be known.

Your satisfaction is our primary concern. Here is a guide to Avalue's customer services. To ensure you get the full benefit of our services, please follow the instructions below carefully.

Technical Support and Assistance

1. Visit the Avalue website at https://www.avalue.com/ where you can find the latest information about the product.
2. Contact your distributor or our technical support team or sales representative for technical support if you need additional assistance. Please have following information ready before you call:

- Product name and serial number
- Description of your peripheral attachments
- Description of your software (operating system, version, application software, etc.)
- A complete description of the problem
- The exact wording of any error messages

To receive the latest version of the user's manual; please visit our Web site at:
www.avalue.com

Product Warranty (Returns & Warranties policy)

1. Purpose

Avalue establishes the following maintenance specifications and operation procedures for providing the best quality of service and shortened repair time to our customers.

2. Warranty

2.1 Warranty Period

Avalue endeavors to offer customers the most comprehensive post-sales services and protection; besides offering a 2-year warranty for standard Avalue products, an extended warranty service can also be provided based on additional request from the customer. Within the warranty period, customers are entitled to receive comprehensive and prompt repair and warranty.

Standard products manufactured by Avalue are offered a 2-year warranty, from the date of delivery from Avalue. For ODM/OEM products manufactured by Avalue or PCBA with conformal coating, will follow up the define warranty of the agreement, otherwise will be offered 1-year warranty for ODM/OEM products but non-warranty for PCBA with conformal coating. For outsourcing parts kit by Avalue (ex: Motherboard, LCD touch panel, CPU, RAM, HDD) are offered a 6-month warranty, and Mobile/Tablet PC battery are offered a warranty of the half year, from the date of delivery by Avalue. Products before the mass production stage, i.e. engineering samples are not applied in this warranty or service policy. For extended warranty and cross-territory services, product defects resulting from design, production process or material are covered by the pre-set warranty period after the date of delivery from Avalue. For non-Avalue products, the product warranty and repair time shall be based on the service standards provided by the original manufacturer; in principle Avalue will provide these products a warranty service for no more than one year.

2.2 Maintenance services within the warranty period

In the case of Avalue product DOA (Defect-on-Arrival) when the customer finds any defect within 1 month after the delivery, Avalue will replace it with a new product in a soonest way. Except for custom products, once the customer is approved of a Cross-Shipment Agreement, which allows for delivery a new product to the customer before receiving the defective one, Avalue will immediately proceed with new product replacement for the said DOA case. On validation of the confirmed defect, Avalue is entitled to reserve the right whether to provide a new product for replacement. For the returned defective new product, it is necessary to verify that there shall be no bruise, alteration, scratch or marking to the appearance, and that none of the delivered accessories missing; otherwise, the customer will be requested to pay a processing fee. On the other hand, if the new product defect is resulting from incorrect configuration or erroneous use by the user instead of any problem of the hardware itself, the customer will also be requested to pay for relevant handling fees.

As for other conditions, Avalue will handle defects by way of repair. The customer will be requested to send the defective product to an Avalue authorized service center, and Avalue will return the repaired product back to the customer as soon as possible.

2.3 Ruling of an out-of-warranty defect

The following situations are not included in the warranty:

- The warranty period has expired.
- Product has been altered or its label of the serial number has been torn off.
- Product functionality issues resulting from improper use by the user, unauthorized dismantle or alteration, unfit operation environment, improper maintenance, accident or other causes. Avalue reserves the right for the ruling of the aforementioned situations.
- Product damage resulting from lightning, flood, earthquake or other calamities.
- The warranty rules of non-Avalue products and accessories shall be in accordance with standards set up by the original manufacturer. These products and accessories include RAM, HDD, FDD, CD-ROM, CPU, FAN, etc.
- Product upgrade request or test request submitted by the customer after expiration of the warranty.
- PCBA with conformal coating.
- Avalue semi-product and outsourced products without Avalue serial number.
- Products before the mass production stage, i.e. engineering samples.

3. Procedure for sending for repair

3.1 Attain a RMA number

A customer’s rejected product returned for repair shall have a RMA (Return Merchandise Authorization) number. Without a RMA number, Avalue will not provide any repair service for the rejected product, and the product will be returned to the customer at customer’s cost. Avalue will not issue any notice for the return of the product.

Each returned product for repair shall have a RMA number, which is simply the authorization of the return for repair; it is not a guarantee that the returned goods can be repaired or replaced. For applying for a RMA number, the customer may enter the eRMA webpage of Avalue https://www.avalue.com/en/member and log-in with an account number and a password authorized by Avalue. The system will then automatically issue a RMA number.

When applying for the RMA number, it is essential to fill in basic information of the customer and the product, together with detailed description of the problem encountered. If possible, avoid using ambiguous words such as “does not work” or “problematic”. Without a substantial description of the problem, it is hard to start the repair and will cause prolonged repair time. Lacking detailed statement of fault steps also makes the problem hard to be identified, sometimes resulting in second-time repairs.

In case the customer can't define the cause of problem, please contact Avalue application engineers. Sometimes when the problem can be resolved even before the customer sends back the product.
On the other hand, if the customer only returns the key parts to Avalue for repair, it is necessary that the serial number of the entire unit is given in the "Problem Description" field, so that warranty period can be ruled accordingly; or Avalue will handle the case as an Out-of- warranty case.

3.2 Return of faulty product for repair

It is recommended that the customer not to return the accessories (manual, connection cables, etc.) with the products for repair, devices such as CPU, DRAM, CF memory card, etc., shall also be removed from the faulty goods before return for repair. If these devices are relevant to described repair problems and necessary to be returned with the goods; please clearly indicate the items included in the eRMA application form. Avalue shall not be responsible for any item that is not itemized. Moreover, make sure the problem(s) are detailed in the "Problem Description" field.
In the list of delivery, the customer may fill-in a value which is lower than the actual value, to prevent customs levying a higher tax over the excessive value of the return goods. The customer shall be held responsible for extra fees caused by this. We strongly recommend that "Invoice for customs purpose only with no commercial value" be indicated on the delivery note. Also for the purpose of expedited handling, please printout the RMA number and put it in the carton, also indicate the number outside of the carton, with the recipient addressing to Avalue RMA Department.
When returning the defective product, please use an anti-static bag or ESD material to pack it properly. In case of improper packing resulting in damages in the transportation process, Avalue reserves the right to reject the un-repaired faulty good at the customer's costs. Furthermore, it is suggested that the faulty goods shall be sent via a door-to-door courier service. The customer shall be held responsible for any customs clearance fee or extra expenses if Air-Cargo is used for the delivery.
In case of a DOA situation of a new product, Avalue will be responsible for the product and the freight. If the faulty goods are within the warranty period, the sender will take responsibility for the freight. For an out-of-warranty case, the customer shall be responsible for the freight of both trips.

3.3 Maintenance Charge

Avalue will charge a moderate repair fee for the following conditions:

- The warranty period has expired.
- Product has been altered or its label of the serial number has been torn off.
- Product functionality issues resulting from improper use by the user, unauthorized dismantle or alteration, unfit operation environment, improper maintenance, accident

or other causes. Avalue reserves the right for the ruling of the aforementioned situations.

- Product damage resulting from lightning, flood, earthquake or other calamities.
- The warranty rules for non-Avalue products and accessories shall be in accordance with standards set up by the original supplier. These products and accessories include RAM, HDD, FDD, CD-ROM, CPU, FAN, etc.
- Product upgrade request or test request submitted by the customer after expiry of the warranty.
- PCBA with conformal coating.
- Avalue semi-product and outsourced products without Avalue serial number
- Products before the mass production stage, i.e. engineering samples.
- In case the products received are examined as NPF (No Problem Found) within the warranty period, the customer shall be responsible for the freight of both trips.
- Please contact your local distributor to examine in advance to prevent unnecessary freight cost.

For system failure of out-of-warranty products, Avalue will provide a quotation prior to repair service. When the customer applies for the cost, please refer to the Quotation number. In case the customer does not return the DOA product that has already been replaced by a new one, or the customer does not sign back the quotation of the out-of-warranty maintenance, Avalue reserves the right of whether or not to provide the repair service. In case the customer does not reply in 3 months, Avalue shall directly scrap or return the product back to customer at customer's cost without further notice to the customer.

3.4 Maintenance service of phased-out products

For servicing phased-out products, Avalue provides an extended period, starting the date of phase-out, as a guaranteed maintenance period of such products, for continuance of the maintenance service to meet customer's requirements. In case of unexpected factors causing Avalue to be unable to repair/replace a warranted but phased-out product, Avalue will, depending on the availability, upgrade the product (free of charge with continued warranty period as of the original product), or, give partial refund (based on the length of the remaining warranty period) to solve this kind of problem.

3.5 Maintenance Report

On completion of repair of a defective product, a Maintenance Report indicating the maintenance result and part(s) replaced (if any) will be sent to the customer together with the product. If the customer demands an additional maintenance analysis report, a service fee of various level will be charged depending on the warranty status. In case the analysis result shows that the defect attributes to Avalue's faulty design or process, the analysis fee will be exempted.

4. Service Products

Avalue provides service products to manage with different customer needs. Should you have any need, please consult to Avalue Sales Department.

Defect Analysis Report (DAR)

Avalue provides DAR (Defect Analysis Report) services aiming to elevating customer satisfaction. A DAR includes defect cause identification/verification/suggestion and improvement precautions, with instructions on correct usage for the avoidance of any reoccurrence.

Upgrade Service

Avalue is capable to provide system upgrade service for customization requirements. This upgrade service is applicable for main parts, such as CPU, memory, HDD, SSD, storage devices; also replacements motherboards of systems. Please contact Avalue sales for details to evaluate the possibility of system upgrade service and obtain information of lead time and price.

Safety Instructions

Safety Precautions

Before installing and using this device, please note the following precautions.

1. Read these safety instructions carefully.
2. Keep this User's Manual for future reference.
3. Disconnected this equipment from any AC outlet before cleaning.
4. For plug-in equipment, the power outlet socket must be located near the equipment and must be easily accessible.
5. Keep this equipment away from humidity.
6. Put this equipment on a reliable surface during installation. Dropping it or letting it fall may cause damage.
7. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.
8. Use a power cord that has been approved for using with the product and that it matches the voltage and current marked on the product's electrical range label. The voltage and current rating of the cord must be greater than the voltage and current rating marked on the product.
9. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
10. All cautions and warnings on the equipment should be noted.
11. If the equipment is not used for a long time, disconnect it from the power source to

avoid damage by transient overvoltage.

12. Never pour any liquid into an opening. This may cause fire or electrical shock.

13. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel. If one of the following situations arises, get the equipment checked by service personnel:

- The power cord or plug is damaged.
- Liquid has penetrated into the equipment.
- The equipment has been exposed to moisture.
- The equipment does not work well, or you cannot get it work according to the user's manual.
- The equipment has been dropped and damaged.
- The equipment has obvious signs of breakage.

14. CAUTION: Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer.

15. Equipment intended only for use in a RESTRICTED ACCESS AREA.

Explanation of Graphical Symbols

	Warning	A WARNING statement provides important information about a potentially hazardous situation which, if not avoided, could result in death or serious injury.
	Caution	A CAUTION statement provides important information about a potentially hazardous situation which, if not avoided, may result in minor or moderate injury to the user or patient or in damage to the equipment or other property.
	Note	A NOTE provides additional information intended to avoid inconveniences during operation.
		Direct current.
		Alternating current
		Stand-by, Power on
		FCC Certification
		CE Certification
		Follow the national requirements for disposal of equipment.
		Stacking layer limit
		This side up

		Fragile Packaging
		Beware of water damage, moisture-proof
		Carton recyclable
		Handle with care
		Follow operating instructions of consult instructions for use.

Disposing of your old product

WARNING:
There is danger of explosion if the battery is mishandled or incorrectly replaced. Replace only with the same type of battery. Do not disassemble it or attempt to recharge it outside the system. Do not crush, puncture, dispose of in fire, short the external contacts, or expose to water or other liquids. Dispose of the battery in accordance with local regulations and instructions from your service provider.

CAUTION:
- Lithium Battery Caution: Danger of explosion if battery is incorrectly replaced. Replace only with same or equivalent type. Dispose batteries according to manufacturer's instructions.
- Disposal of a BATTERY into fire or a hot oven, or mechanically crushing or cutting of a BATTERY, that can result in an EXPLOSION
- Leaving a BATTERY in an extremely high temperature surrounding environment that can result in an EXPLOSION or the leakage of flammable liquid or gas.
- A BATTERY subjected to extremely low air pressure that may result in an EXPLOSION or the leakage of flammable liquid or gas.

Mise en garde!
AVERTISSEMENT : Il existe un risque d'explosion si la batterie est mal manipulée ou remplacée de manière incorrecte. Remplacez uniquement par le même type de batterie. Ne le démontez pas et ne tentez pas de le recharger en dehors du système. Ne pas écraser, percer, jeter au feu, court-circuiter les contacts externes ou exposer à l'eau ou à d'autres liquides. Jetez la batterie conformément aux réglementations locales et aux instructions de votre fournisseur de services.

MISE EN GARDE:
- Pile au lithium Attention : Danger d'explosion si la pile n'est pas remplacée correctement. Remplacer uniquement par un type identique ou équivalent. Jetez les piles conformément aux instructions du fabricant.
- L'élimination d'une BATTERIE dans le feu ou dans un four chaud, ou l'écrasement ou le découpage mécanique d'une BATTERIE, pouvant entraîner une EXPLOSION
- Laisser une BATTERIE dans un environnement à température extrêmement élevée pouvant entraîner une EXPLOSION ou une fuite de liquide ou de gaz inflammable.
- UNE BATTERIE soumise à une pression d'air extrêmement basse pouvant entraîner une EXPLOSION ou une fuite de liquide ou de gaz inflammable.

Content

1. Getting Started

1.1 Safety Precautions

Warning!

Always completely disconnect the power cord from your chassis whenever you work with the hardware. Do not make connections while the power is on. Sensitive electronic components can be damaged by sudden power surges. Only experienced electronics personnel should open the PC chassis.

Caution!

Always ground yourself to remove any static charge before touching the CPU card. Modern electronic devices are very sensitive to static electric charges. As a safety precaution, use a grounding wrist strap at all times. Place all electronic components in a static-dissipative surface or static-shielded bag when they are not in the chassis.
Risk of Explosion if Battery is replaced by an Incorrect Type. Dispose of Used Batteries According to the Instructions.

Français:

Attention!

Débranchez le câble d'alimentation de votre châssis chaque fois que vous travaillez avec le matériel. Ne faites pas de connexion lorsque le système est allumé. Les composants électroniques sensibles peuvent être endommagés par les surtensions soudaines. Seule les personnels expérimentés de l'électronique peuvent ouvrir le châssis du PC.

Précaution!

Il faut toujours mettre à la masse pour éliminer l'électricité statique avant de toucher la carte CPU. Les appareils électroniques modernes sont très sensibles aux électricité statique. Pour des raisons de sécurité, utilisez un bracelet électrostatique. Placez tous les composants électroniques sur une surface antistatique ou dans un sac antistatique quand ils ne sont pas dans le châssis.
Risque d'explosion si la batterie est remplacée par un type incorrect. Jetez les piles usagées selon les instructions

Warning!

Class I Equipment. This equipment must be earthed. The power plug must be connected to a properly wired earth ground socket outlet. An improperly wired socket outlet could place hazardous voltages on accessible metal parts.

Warning!

IT Room

Suitable for installation in Information Technology Rooms in accordance with Article 645 of the National Electrical Code and NFPA 75.

Warning!

RAL

The device can only be used in a fixed location such as a lab or a machine room. When you install the device, ensure that the protective earthing connection of the socket-outlet is verified by a skilled person.

Warning!

For RTC battery, current statement in the manual is acceptable.

There is danger of explosion if the battery is mishandled or incorrectly replaced. Replace only with the same type of battery. Do not disassemble it or attempt to recharge it outside the system. Do not crush, puncture, dispose of in fire, short the external contacts, or expose to water or other liquids. Dispose of the battery in accordance with local regulations and instructions from your service provider.

1.2 Packing List

Before installation, please ensure all the items listed in the following table are included in the package.

Item	Description	Q'ty
1	HPS-ERSU4A/HPS-ERSUTA barebone system - HPM-ERSUA motherboard - 1300W PSU	1
2	Front door key	2
3	LGA4677 CPU carrier-E1B	1

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

Unpacking

Note:

If any of the components listed in the checklist below are missing, do not proceed with the installation. Contact the Avalue reseller or vendor the product was purchased from or contact an Avalue sales representative directly by sending an email to sales@avalue.com.

To unpack the flat bezel panel PC, follow the steps below.

WARNING!

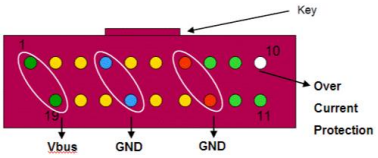
The front side LCD screen has a protective plastic cover stuck to the screen. Only remove the plastic cover after the fiat bezel panel PC has been properly installed. This ensures the screen is protected during the installation process.

Step 1: Carefully cut the tape sealing the box. Only cut deep enough to break the tape.
Step 2: Open the outside box.
Step 3: Carefully cut the tape sealing the box. Only cut deep enough to break the tape.
Step 4: Open the inside box.
Step 5: Lift the panel PC out of the boxes.
Step 6: Remove the peripheral parts box from the main box.

1.3 System Specifications

HPS-ERSU4A	
System Information	
Processor	Single 4th & 5th Gen. Intel® Xeon® Scalable Processors / Intel® Xeon® Scalable Processors up to 270W TDP L10 system: 1 x Intel® Xeon® Gold 6530 Processor MPN: PK8072205512500, Intel (P/N:BCC-CPU-6530R)
Platform Controller Hub	Intel C741 Chipset
System Memory	6 x DDR5 5600MT/s RDIMM up to 1.5TB L10 system: 2 x DDR5 5600 16GB 288PIN 0~85C TE16GFREV2MH, Team Group, RDIMM at DIMM3, DIMM4.
I/O Chipset	Intel C741 chipset
BIOS Information	AMI UEFI BIOS
Watchdog Timer	System reset event 0.1~6553.5 second. (IPMI command)
H/W Status Monitor	Temperature. Fan. Voltage. Case open. (1 x 2.5mm pitch Box Wafer, Pinrex 753-71-02TW07 or equivalent) Please refer to note 1 for more information.
RAID	Intel VMD and Virtual RAID on CPU(VROC) 1 x Intel VROC header
TPM	TPM 2.0 NuvoTon NPCT750AADYX or equivalent TCM Nationz Z32H330TC or equivalent (Optional)
BMC	IPMI 2.0 with AST 2600 BMC controller onboard.
Other	1 x Inlet sensor board 1 x Outlet sensor board 1 x Case open sensor
Expansion	
PCIe (Gen X)	4x PCIe Gen5 x16 slots, 3 x PCIe Gen5 x4 slots Slot 1, PCIe 5.0 x16 Slot 2, PCIe 5.0 x4 Slot 3, PCIe 5.0 x16 Slot 4, PCIe 5.0 x4 Slot 5, PCIe 5.0 x16 (Computing GPU – RTX 6000 Ada for L10 system) Slot 6, PCIe 5.0 x4 Slot 7, PCIe 5.0 x16 (Display GPU – T400 for L10 system) (Slot 7 is the slot closest to CPU)

Storage	
M.2 (Signal)	1 x M.2 M-Key Slot to support 1 x SATA or 1 x PCIe 3.0 x4 NVMe SSD 2242/2260/2280/22110 form factor
2.5” Drive Bay (Height)	3 x 2.5” Drive Bay L10 system: 1 x 2.5" SATA3 SSD 240GB TLC 0~70C (non-IPS) TS240GSSD452K-PHX1, Transcend, 1.02 DWPD (BCC-2S3S-240G-03R)
Front I/O	
USB Port	2 x USB 3.2 Gen1 Ports
Power Button	1 x Power button
Reset Button	1 x Reset button
LED Indicator	1 x Power state 1 x Disk drive activity 1 x Network activity (LAN1)
System Fan	1 x Front FAN 4P/12V/30cm 120x120x25mm 2200rpm
Rear I/O	
USB Port	4 x USB 3.2 Gen1 Ports 2 x USB 2.0 type A Ports
COM Port	1 x RS232 Port
VGA	Display Priority: VGA 1 x VGA Port
Audio	For L10 system: 1 x 3.5mm mono microphone input jack 1 x 3.5mm stereo line out jack 1 x 3.5mm stereo line in jack
LAN Port	5 x RJ-45 (LAN 1 port shared with IPMI 2.0) MGMT port: Dedicated IPMI function access LAN 1: 1GbE Ethernet port, LAN1 shared with IPMI function access LAN 2: 2.5GbE Ethernet port LAN 3 and 4: 2 x 10GbE Ethernet ports
AC/DC Input	1 x AC-In power connector from Power Supply ATX 1300W Delta GPS-1300CBA A36
System Fan	2 x Rear PWM FAN 4P/12V/18cm 80x80x38mm 8300rpm
Onboard I/O	
SATA Signal	5 x SATA III Supports up to 6.0 Gb/s
USB Port	4 x USB 3.1 Gen1 ports (2 x USB 3.1 Gen1 2.0mm pitch Box Header (Pinrex 52X-8020GB52 or equivalent) Pin definition:



Pin No.	Signal	Description
1	Vbus	Power
2	IntA_P1_SSRX-	USB3 ICC Port1 SuperSpeed Rx-
3	IntA_P1_SSRX+	USB3 ICC Port1 SuperSpeed Rx+
4	GND	GND
5	IntA_P1_SSTX-	USB3 ICC Port1 SuperSpeed Tx-
6	IntA_P1_SSTX+	USB3 ICC Port1 SuperSpeed Tx+
7	GND	GND
8	IntA_P1_D-	USB3 ICC Port1 D- (USB2 Signal D-)
9	IntA_P1_D+	USB3 ICC Port1 D+ (USB2 Signal D+)
10	ID	Over Current Protection
11	IntA_P2_D+	USB3 ICC Port2 D+ (USB2 Signal D+)
12	IntA_P2_D-	USB3 ICC Port2 D- (USB2 Signal D-)
13	GND	GND
14	IntA_P2_SSTX+	USB3 ICC Port2 SuperSpeed Tx+
15	IntA_P2_SSTX-	USB3 ICC Port2 Super Speed Tx-
16	GND	GND
17	IntA_P2_SSRX+	USB3 ICC Port2 SuperSpeed Rx+
18	IntA_P2_SSRX-	USB3 ICC Port2 SuperSpeed Rx-
19	Vbus	Power

COM Port

1 x RS232 port (1 x 2.0mm pitch Box Header)

Pin definition: Follow Avalue standard.

RTC Battery

1 x Horizontal Socket Type CMOS Battery Holder with CR2450

Front Panel

1 x front panel connector (2.54 mm Pitch)

Pin	Function	Pin	Function
1-3	HDD LED	2-4	POWER LED
5-7	RESET BUTTON	6-8	POWER BUTTON
9-11	STATUS LED	10-12	LAN1 ACT LED
13-15	UID LED	14-16	STBY POWER LED
17-19	UID BUTTON	18-20	LAN2-X ACT LED

Notes: LAN2-X ACT LED, “X” means the max number of Ethernet ports.

Audio

1 x Avalue HD audio interface (1 x 6x2 2.0mm pitch wafer connector)

Signal	Pin	Pin	Signal
ACZ_VCC3	1	2	GND
ACZ_SYNC	3	4	ACZ_BITCLK
ACZ_SDOUT	5	6	ACZ_SDIN0
ACZ_SDIN1	7	8	ACZ_RST#
ACZ_5VSB	9	10	GND-Chassis
GND	11	12	NC

Buzzer

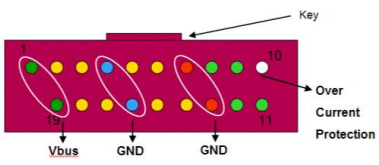
1 x onboard Buzzer

<table>
<tr><td>CPU/System FAN</td><td>1 x 4 Pin CPU Fan Header (4 Pin PWM)
6 x 4 Pin Chassis Fan Header (4 Pin PWM, 2 for front fans and 4 for rear fans)</td></tr>
<tr><td colspan="2">Display</td></tr>
<tr><td>Graphic Chipset</td><td>AST2600 BMC controller</td></tr>
<tr><td>Resolution</td><td>1920x1200@60Hz 32bpp</td></tr>
<tr><td colspan="2">Audio</td></tr>
<tr><td>Audio Codec</td><td>RealTek ALC888S-VD2 (AUX-HPS-AU-A1R)(Bracket at Slot 0 for L10 system)</td></tr>
<tr><td colspan="2">Ethernet</td></tr>
<tr><td>LAN Chipset</td><td>1 x Intel I210AT
1 x Intel I226-LM
1 x Intel X550-AT2</td></tr>
<tr><td>Data Rate Per Port</td><td>1 x 1G Base-T Ethernet controller
1 x 2.5G Base-T Ethernet controller
1 x Dual 10G Base-T Ethernet controller</td></tr>
<tr><td>LED Indicator</td><td>1G LAN:
<table>
<tr><th rowspan="2">WOL</th><th rowspan="2">Status</th><th>Right</th><th colspan="2">Left</th></tr>
<tr><th>Yellow</th><th>Green</th><th>Orange</th></tr>
<tr><td>Don't care</td><td>No Link</td><td></td><td></td><td></td></tr>
<tr><td>Off</td><td>S3/S4/S5</td><td></td><td></td><td></td></tr>
<tr><td>On</td><td>10Mb Inactive</td><td></td><td></td><td></td></tr>
<tr><td>On</td><td>10Mb Active</td><td>B</td><td></td><td></td></tr>
<tr><td>On</td><td>100Mb Inactive</td><td></td><td></td><td></td></tr>
<tr><td>On</td><td>100Mb Active</td><td>B</td><td></td><td></td></tr>
<tr><td>On</td><td>1Gb Inactive</td><td></td><td></td><td></td></tr>
<tr><td>On</td><td>1Gb Active</td><td>B</td><td></td><td></td></tr>
</table>
2.5G LAN:
<table>
<tr><th rowspan="2">WOL</th><th rowspan="2">Status</th><th>Right</th><th colspan="2">Left</th></tr>
<tr><th>Yellow</th><th>Green</th><th>Orange</th></tr>
<tr><td>Don't care</td><td>No Link</td><td></td><td></td><td></td></tr>
<tr><td>Off</td><td>S3/S4/S5</td><td></td><td></td><td></td></tr>
<tr><td>On</td><td>10Mb Inactive</td><td></td><td></td><td></td></tr>
<tr><td>On</td><td>10Mb Active</td><td>B</td><td></td><td></td></tr>
<tr><td>On</td><td>1G/100Mb Inactive</td><td></td><td></td><td></td></tr>
<tr><td>On</td><td>1G/100Mb Active</td><td>B</td><td></td><td></td></tr>
<tr><td>On</td><td>2.5Gb Inactive</td><td></td><td></td><td></td></tr>
<tr><td>On</td><td>2.5Gb Active</td><td>B</td><td></td><td></td></tr>
</table>
10G LAN:
<table>
<tr><th rowspan="2">WOL</th><th rowspan="2">Status</th><th>Right</th><th colspan="2">Left</th></tr>
<tr><th>Yellow</th><th>Green</th><th>Orange</th></tr>
<tr><td>Don't care</td><td>No Link</td><td></td><td></td><td></td></tr>
<tr><td>Off</td><td>S3/S4/S5</td><td></td><td></td><td></td></tr>
<tr><td>On</td><td>100Mb Inactive</td><td></td><td></td><td></td></tr>
<tr><td>On</td><td>100Mb Active</td><td>B</td><td></td><td></td></tr>
<tr><td>On</td><td>1Gb Inactive</td><td></td><td></td><td></td></tr>
<tr><td>On</td><td>1Gb Active</td><td>B</td><td></td><td></td></tr>
<tr><td>On</td><td>10Gb Inactive</td><td></td><td></td><td></td></tr>
<tr><td>On</td><td>10Gb Active</td><td>B</td><td></td><td></td></tr>
</table>
</td></tr>
</table>

Power Requirement	
ACPI	Yes, S0 and S5
Power Mode	H/W: ATX power well design only. BMC: AT (Default)
Power Supply Unit	Delta 1300W PSU
Mechanical & Environment	
Operating Temp.	Condition 1: Temperature: 0 to 35°C (L6) Condition 2: Temperature: 0 to 35°C (L10, GPU RTX 6000 Ada+T400) Condition 3: Temperature: 0 to TBC °C (L10 system, depends on added card spec.)
Storage Temp.	-40°C 24hrs IEC60068-2-1 Cold test Test: Ab 70°C/ RH95% 24hrs IEC 60068-2-3 Test: CA
Operating Humidity	35°C /RH95%/24hrs IEC 60068-2-56 Test: Cb
Dimension (W*L*H)	430mm x 528mm x 174.8mm
Weight	HPS-ERSU4A: 19.5Kg
Vibration Test	Operational: 1. 0.25 Grms Random 2. Operation mode 3. Test Frequency: 5-500Hz 4. Test Axis: X, Y and Z axis 5. 30 min. per each axis 6. IEC 60068-2-64 Test: Fh Non-operational: 1. Test Acceleration: 0.5G 2. Test frequency: 5~500 Hz 3. Sweep: 1 Oct/ per one minute. (logarithmic) 4. Test Axis: X, Y and Z axis 5. Test time: 30 min. each axis 6. System condition: Non-Operating mode 7. Reference IEC 60068-2-6 Testing procedures Package Vibration Test: 1. PSD: 0.026G²/Hz, 2.16 Grms 2. Non-operation mode 3. Test Frequency: 5-500Hz 4. Test Axis: X, Y and Z axis 5. 30 min. per each axis 6. IEC 60068-2-64 Test: Fh
Shock Test	Operational:

	1. Wave form: Half Sine wave 2. Acceleration Rate: 5.0G for operation mode 3. Duration Time: 11ms 4. No. of Shock: Z axis 300 times 5. Test Axis: Z axis 6. Operation mode 7. Reference IEC 60068-2-27 Testing procedures
Drop Test	Package drop test: 1. One corner, three edges, six faces 2. ISTA 2A, IEC-60068-2-32 Test: Ed
Software Support	
OS Information	Windows: Windows 10 IoT Enterprise LTSC 2021. Windows 11 Windows Server IoT 2019 with VT-d disabled Windows Server IoT 2022 Linux: Ubuntu 21.10, 22.04 LTS or later Red Hat Enterprise Linux (RHEL) 8.2 and later
In-Box Accessory	
Accessory	2 x Front door key. 1 x LGA4677 CPU carrier-E1B

HPS-ERSUTA	
System Information	
Processor	Single 4th & 5th Gen. Intel® Xeon® Scalable Processor supports up to 270W TDP. L10 system: 1 x Intel® Xeon® Gold 6530 Processor PK8072205512500, Intel(P/N:BCC-CPU-6530R)
Platform Controller Hub	Intel C741 Chipset
System Memory	6 x DDR5 5600MT/s RDIMM up to 1.5TB L10 system: 2 x DDR5 5600 16GB 288PIN 0~95C TS2GAR80V6E, Transcend, RDIMM at DIMM1, DIMM5
BIOS Information	AMI UEFI BIOS
Watchdog Timer	System reset event 0.1~6553.5 second. (IPMI command)
H/W Status Monitor	Temperature. Fan. Voltage. Case open. (1 x 2.5mm pitch Box Wafer, Pinrex 753-71-02TW07 or equivalent)
RAID	Intel VMD and Virtual RAID on CPU(VROC)
TPM	TPM 2.0 NuvoTon NPCT750AADYX or equivalent TCM Nationz Z32H330TC or equivalent (Optional)
SBC	HPM-ERSUA
BMC	IPMI 2.0 with AST 2600 BMC controller onboard.
Other	1 x Inlet sensor board 1 x Outlet sensor board 1 x Case open sensor
Expansion	
PCIe (Gen X)	4x PCIe Gen5 x16 slots, 3 x PCIe Gen5 x4 slots Slot 1, PCIe 5.0 x16 Slot 2, PCIe 5.0 x4 Slot 3, PCIe 5.0 x16 Slot 4, PCIe 5.0 x4 Slot 5, PCIe 5.0 x16 (Computing GPU – RTX 6000 Ada for L10 system) Slot 6, PCIe 5.0 x4 Slot 7, PCIe 5.0 x16 (Display GPU – T400 for L10 system) (Slot 7 is the slot closest to CPU)
Storage	
M.2 (Signal)	1 x M.2 M-Key Slot to support 1 x SATA or 1 x PCIe 3.0 x4 NVMe SSD

	2242/2260/2280/22110 form factor
2.5” Drive Bay (Height)	3 x 2.5” Drive Bay L10 system: 1 x 2.5" SATA3 SSD 240GB TLC 0~70C (non-IPS) TS240GSSD452K-PHX1, Transcend, 1.02 DWPD (BCC-2S3S-240G-03R)
Front I/O	
USB Port	2 x USB 3.2 Gen1 Ports
Power Button	1 x Power button
Reset Button	1 x Reset button
LED Indicator	1 x Power state 1 x Disk drive activity 1 x Network activity (LAN1)
System Fan	1 x Front FAN 4P/12V/30cm 120x120x25mm 2200rpm
Rear I/O	
USB Port	4 x USB 3.2 Gen1 Ports 2 x USB 2.0 type A Ports
COM Port	1 x RS232 Port
VGA	Display Priority: VGA 1 x VGA Port
Audio	For L10 system: 1 x 3.5mm mono microphone input jack 1 x 3.5mm stereo line out jack 1 x 3.5mm stereo line in jack
LAN Port	5 x RJ-45 (LAN 1 port shared with IPMI 2.0) MGMT port: Dedicated IPMI function access LAN 1: 1GbE Ethernet port, LAN1 shares with IPMI function access LAN 2: 2.5GbE Ethernet port LAN 3 and 4: 2 x 10GbE Ethernet ports
AC/DC Input	1 x AC-In power connector from Power Supply ATX 1300W Delta GPS-1300CBA A36
System Fan	2 x Rear PWM FAN 4P/12V/18cm 80x80x38mm 8300rpm
Onboard I/O	
SATA Signal	5 x SATA III Supports up to 6.0 Gb/s
USB Port	4 x USB 3.1 Gen1 ports (2 x USB 3.1 Gen1 2.0mm pitch Box Header (Pinrex 52X-8020GB52 or equivalent) Pin definition : 

Pin No.	Signal	Description
1	Vbus	Power
2	IntA_P1_SSRX-	USB3 ICC Port1 SuperSpeed Rx-
3	IntA_P1_SSRX+	USB3 ICC Port1 SuperSpeed Rx+
4	GND	GND
5	IntA_P1_SSTX-	USB3 ICC Port1 SuperSpeed Tx-
6	IntA_P1_SSTX+	USB3 ICC Port1 SuperSpeed Tx+
7	GND	GND
8	IntA_P1_D-	USB3 ICC Port1 D- (USB2 Signal D-)
9	IntA_P1_D+	USB3 ICC Port1 D+ (USB2 Signal D+)
10	ID	Over Current Protection
11	IntA_P2_D+	USB3 ICC Port2 D+ (USB2 Signal D+)
12	IntA_P2_D-	USB3 ICC Port2 D- (USB2 Signal D-)
13	GND	GND
14	IntA_P2_SSTX+	USB3 ICC Port2 SuperSpeed Tx+
15	IntA_P2_SSTX-	USB3 ICC Port2 Super Speed Tx-
16	GND	GND
17	IntA_P2_SSRX+	USB3 ICC Port2 SuperSpeed Rx+
18	IntA_P2_SSRX-	USB3 ICC Port2 SuperSpeed Rx-
19	Vbus	Power

COM Port

1 x RS232 ports (1 x 2.0mm pitch Box Header)

Pin definition: Follow Avalue standard.

RTC Battery

1 x Horizontal Socket Type CMOS Battery Holder with CR2450

Front Panel

1 x front panel connector (2.54 mm Pitch)

Pin	Function	Pin	Function
1-3	HDD LED	2-4	POWER LED
5-7	RESET BUTTON	6-8	POWER BUTTON
9-11	STATUS LED	10-12	LAN1 ACT LED
13-15	UID LED	14-16	STBY POWER LED
17-19	UID BUTTON	18-20	LAN2-X ACT LED

Notes: LAN2-X ACT LED, “X” means the max number of Ethernet ports.

Audio

1 x Avalue HD audio interface (1 x 6x2 2.0mm pitch wafer connector)

Signal	Pin	Pin	Signal
ACZ_VCC3	1	2	GND
ACZ_SYNC	3	4	ACZ_BITCLK
ACZ_SDOUT	5	6	ACZ_SDIN0
ACZ_SDIN1	7	8	ACZ_RST#
ACZ_5VSB	9	10	GND-Chassis
GND	11	12	NC

Buzzer

1 x onboard buzzer

CPU/System FAN

1 x 4 Pin CPU Fan Header (4 Pin PWM)

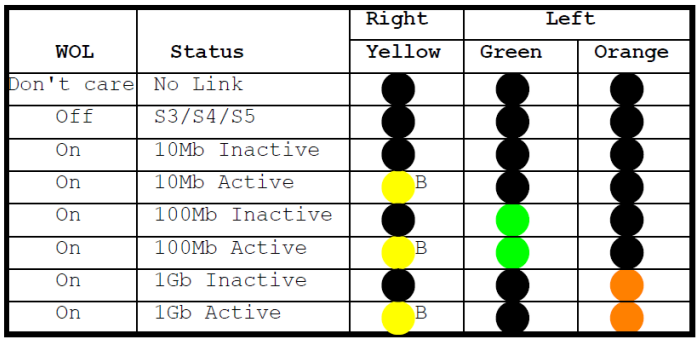
6 x 4 Pin Chassis Fan Header (4 Pin PWM, 2 for front fans and 4 for rear fans)

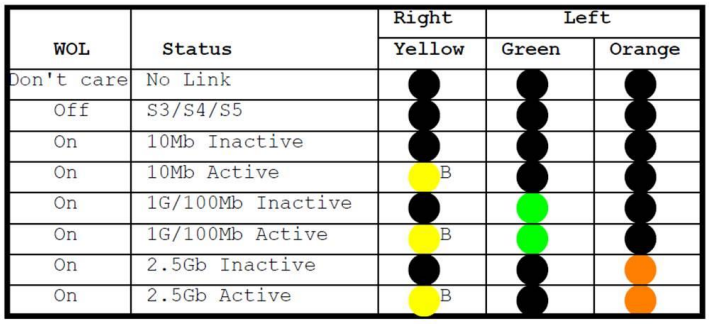
Display

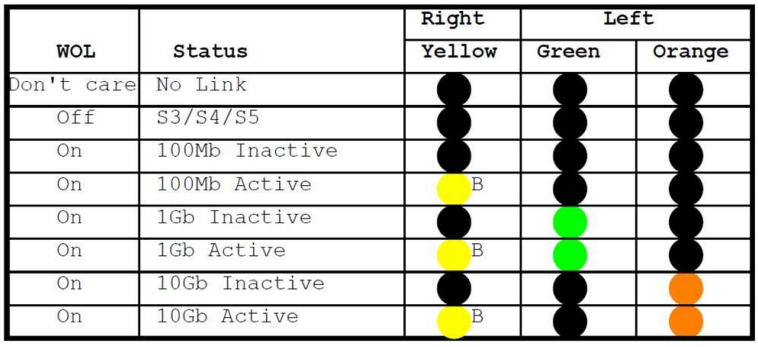
Graphic Chipset

1 x VGA port (DB15 on edge I/O)

AST2600 BMC controller

<table>
<tr><td>Resolution</td><td>1920x1200@60Hz 32bpp</td></tr>
<tr><td colspan="2">Audio</td></tr>
<tr><td>Audio Codec</td><td>RealTek ALC888S-VD2 (AUX-HPS-AU-A1R)(Bracket at Slot 0 for L10 system)</td></tr>
<tr><td colspan="2">Ethernet</td></tr>
<tr><td>LAN Chipset</td><td>1 x Intel I210AT
1 x Intel I226-LM
1 x Intel X550-AT2</td></tr>
<tr><td>Data Rate Per Port</td><td>1 x 1G Base-T Ethernet Controller
1 x 2.5G Base-T Ethernet controller
1 x Dual 10G Base-T Ethernet controller</td></tr>
<tr><td>LED Indicator</td><td>1G LAN:
 

2.5G LAN:
 

10G LAN:
 
</td></tr>
<tr><td colspan="2">Power Requirement</td></tr>
<tr><td>ACPI</td><td>Yes, S0 and S5</td></tr>
</table>

Power Mode	H/W: ATX power well design only. BMC: AT (Default)
Power Supply Unit	Delta 1300W PSU
Mechanical & Environment	
Operating Temp.	Condition 1: Temperature: 0 to 35°C (L6) Condition 2: Temperature: 0 to 35°C (L10, GPU RTX 6000 Ada+T400) Condition 3: Temperature: 0 to TBC °C (L10 system, depends on added card spec.)
Storage Temp.	-40°C 24hrs IEC60068-2-1 Cold test Test: Ab 70°C/ RH95％ 24hrs IEC 60068-2-3 Test: CA
Operating Humidity	35°C /RH95%/24hrs IEC 60068-2-56 Test: Cb
Dimension (W*L*H)	430mm x 528mm x 174.8mm
Weight	19.7kg
Vibration Test	Operational: 1. 0.25 Grms Random 2. Operation mode 3. Test Frequency: 5-500Hz 4. Test Axis: X, Y and Z axis 5. 30 min. per each axis 6. IEC 60068-2-64 Test: Fh Non-operational: 1. Test Acceleration: 0.5G 2. Test frequency: 5~500 Hz 3. Sweep: 1 Oct/ per one minute. (logarithmic) 4. Test Axis: X, Y and Z axis 5. Test time: 30 min. each axis 6. System condition: Non-Operating mode 7. Reference IEC 60068-2-6 Testing procedures Package Vibration Test: 1. PSD: 0.026G²/Hz, 2.16 Grms 2. Non-operation mode 3. Test Frequency: 5-500Hz 4. Test Axis: X, Y and Z axis 5. 30 min. per each axis 6. IEC 60068-2-64 Test: Fh
Shock Test	Operational: 1. Wave form: Half Sine wave 2. Acceleration Rate: 5.0G for operation mode

	3. Duration Time: 11ms 4. No. of Shock: Z axis 300 times 5. Test Axis: Z axis 6. Operation mode 7. Reference IEC 60068-2-27 Testing procedures
Drop Test	Package drop test: 1. One corner, three edges, six faces 2. ISTA 2A, IEC-60068-2-32 Test: Ed
Software Support	
OS Information	Windows : Windows 10 IoT Enterprise LTSC 2021 Windows 11 Windows Server IoT 2019 with VT-d disabled Windows Server IoT 2022 Linux : Ubuntu 21.10, 22.04 LTS or later Red Hat Enterprise Linux (RHEL) 8.2 and later
In-Box Accessory	
Items	2 x Front door key 1 x LGA4677 CPU carrier-E1B

Note: Specifications are subject to change without notice.

***Install 1/2/4/6 RAM**

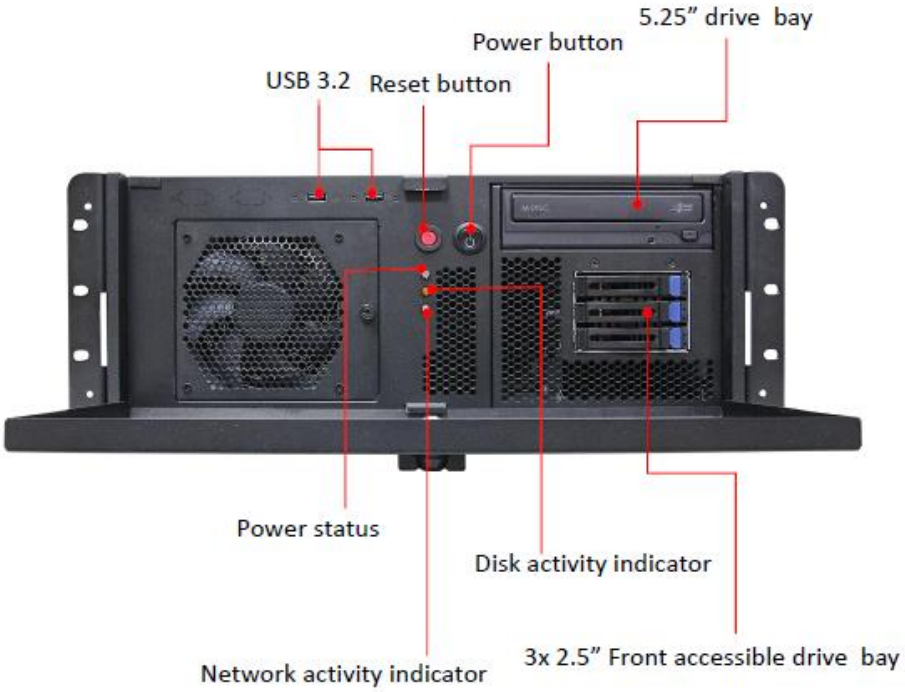
DIMM Quantity	HPM-SRSUA/HPM-ERSUA DIMM Sockets					
	DIMM1	DIMM2	DIMM3	DIMM4	DIMM5	DIMM6
1 DIMM	V					
1 DIMM		V				
1 DIMM				V		
2 DIMMs	V				V	
2 DIMMs			V	V		
4 DIMMs	V		V	V	V	
6 DIMMs	V	V	V	V	V	V

Intel 4th & 5th Xeon SP platform DDR5 DIMM configurations Diagram

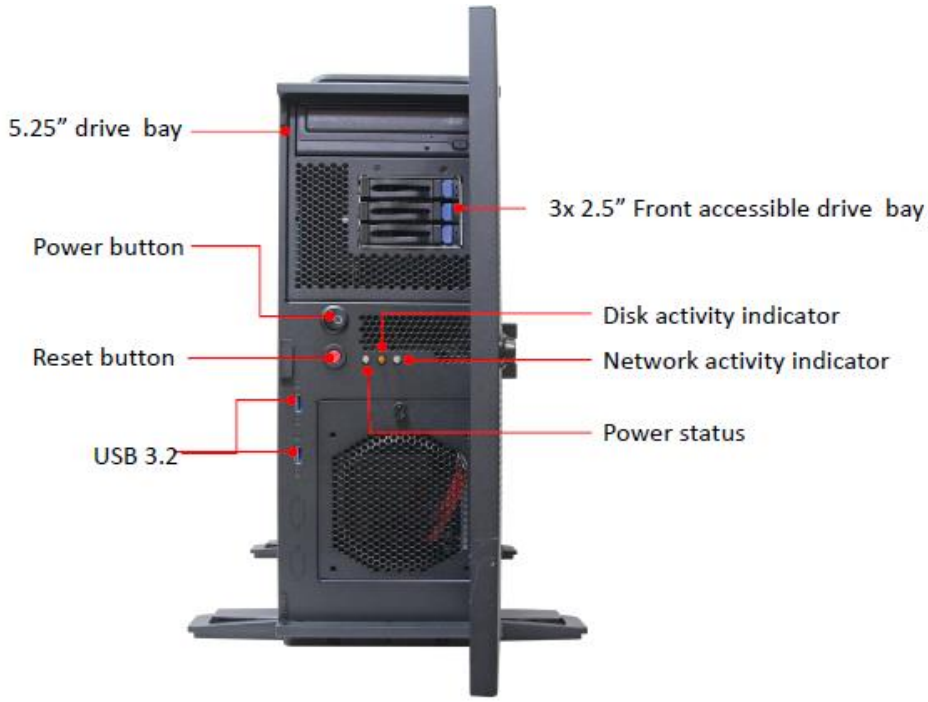
1.4 System Overview

1.4.1 Front View

HPS-ERSU4A

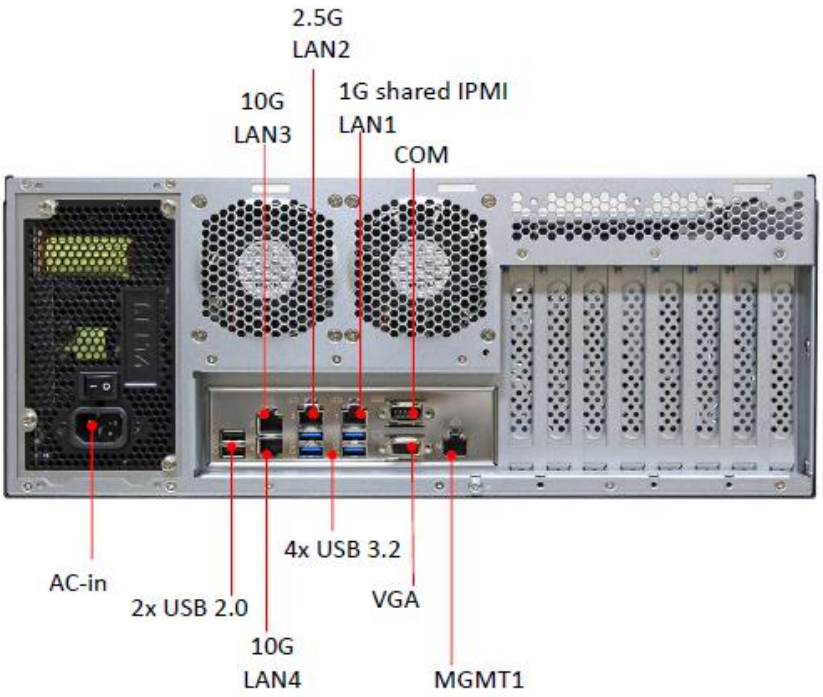


HPS-ERSUTA

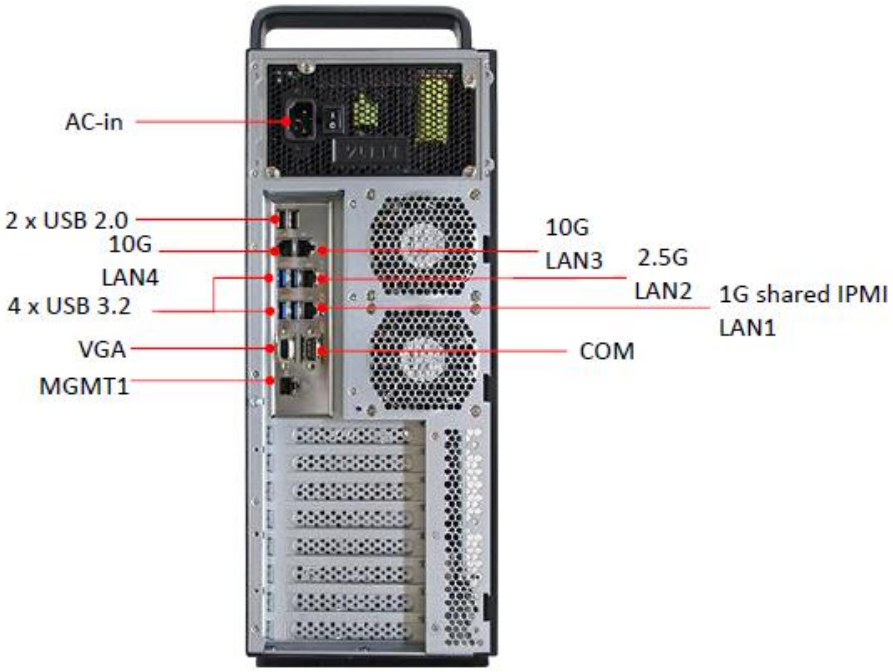


1.4.2 Rear View

HPS-ERSU4A



HPS-ERSUTA

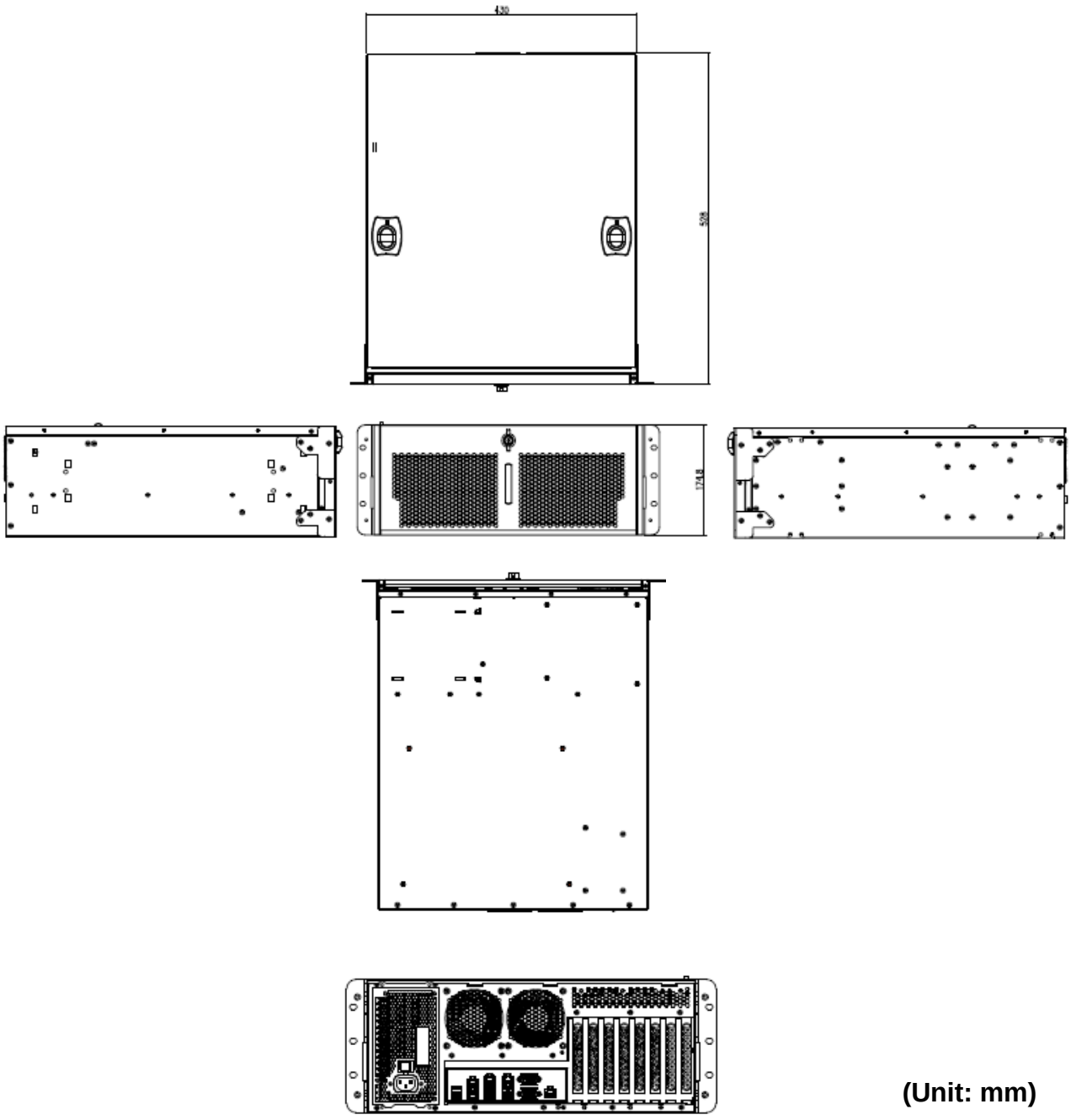


Connectors

Label	Function	Note
5.25” Drive bay	5.25” Drive bay	
2.5” Front accessible 2.5” drive bay	3 x 2.5” Front accessible 2.5” drive bay	
Network activity indicator	Network activity indicator	
Disk activity indicator	Disk activity indicator	
Power State	Power State	
Reset button	Reset button	
Power button	Power button	
USB3.2	6 x USB3.2 Gen1 connector	
USB2.0	2 x USB2.0 connector	
COM	Serial port connector	D-sub 9-pin, male
VGA	VGA connector	
LAN1~4	4 x RJ-45 Ethernet connector	
MGMT1	MGMT port	
AC-IN	AC power-in connector	

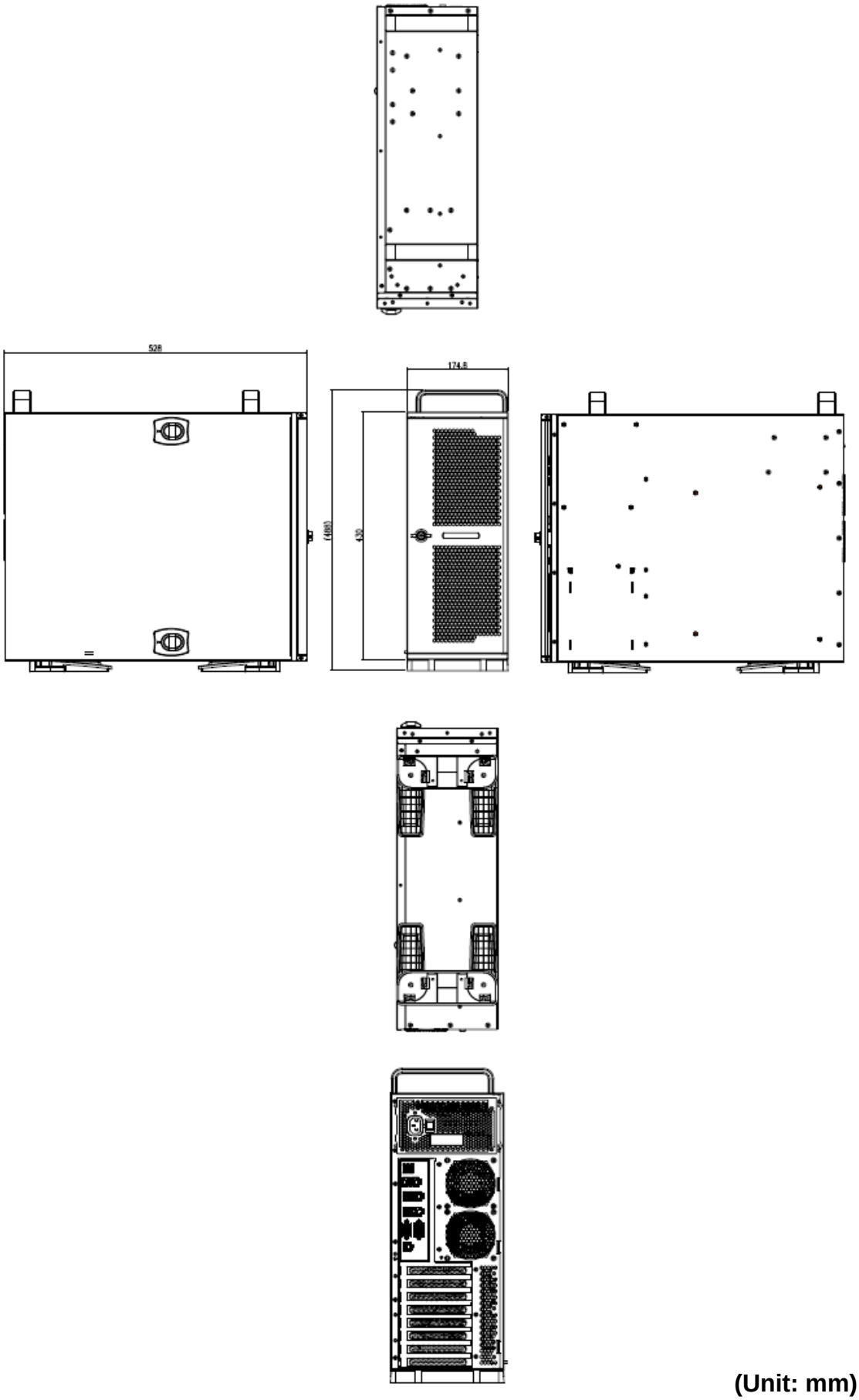
1.5 System Dimensions

1.5.1 HPS-ERSU4A



(Unit: mm)

1.5.2 HPS-ERSUTA



(Unit: mm)

1.6 Operating Principle

(a) Installation:

- Take the device and accessories from package and put in the suitable place.
- Check the packing list (accessories).
- Connect the power cord to the device.
- Put the plug of power cord into receptacle of power source.
- Press power button “Power Icon” on the device to start the device.

(b) Installation for monitor:

- Plug in the monitor cable (HDMI or DP).

(c) Installation keyboard and mouse.

- Plug in mouse and keyboard.

(d) Operation for Turn ON the system

- Turn ON the system.
- Press the power ON/OFF icon firmly to turn power ON/OFF.
- The power ON/OFF LED will turn blue to indicate power is on.
- Check with the Icon behavior for power status.

2. Hardware Configuration

Jumper and Connector Setting

For advanced information, please refer to:

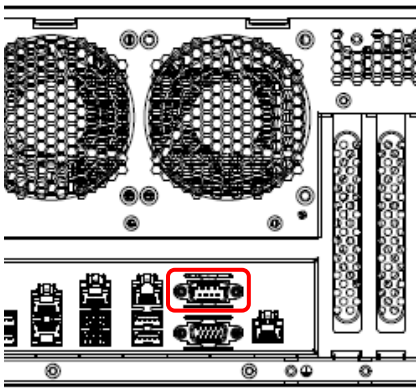
1- HPM-ERSUA included in this manual.

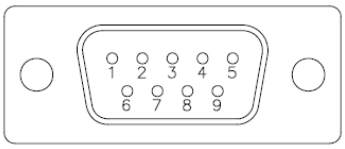
Note: If you need more information, please visit our website:

www.avalue.com

2.1 HPS-ERSU4A/HPS-ERSUTA connector mapping

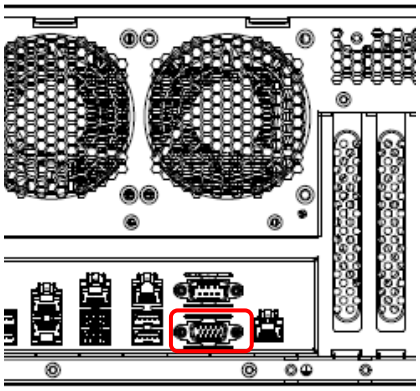
2.1.1 Serial Port connector (COM)

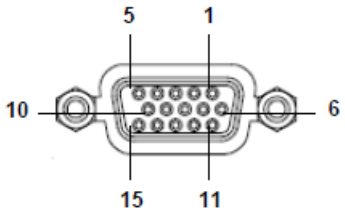




Signal	PIN	PIN	Signal
DCD#	1	6	DSR#
RXD	2	7	RTS#
TXD	3	8	CTS#
DTR#	4	9	RI#
GND	5		

2.1.2 VGA connector (VGA)





PIN	Signal	PIN	Signal	PIN	Signal
1	RED	6	GND	11	NC
2	GREEN	7	GND	12	DDCDAT
3	BLUE	8	GND	13	HSYNC
4	NC	9	+5V	14	VSYNS
5	GND	10	GND	15	DDCCLK

2.2 Powering On the System

WARNING:

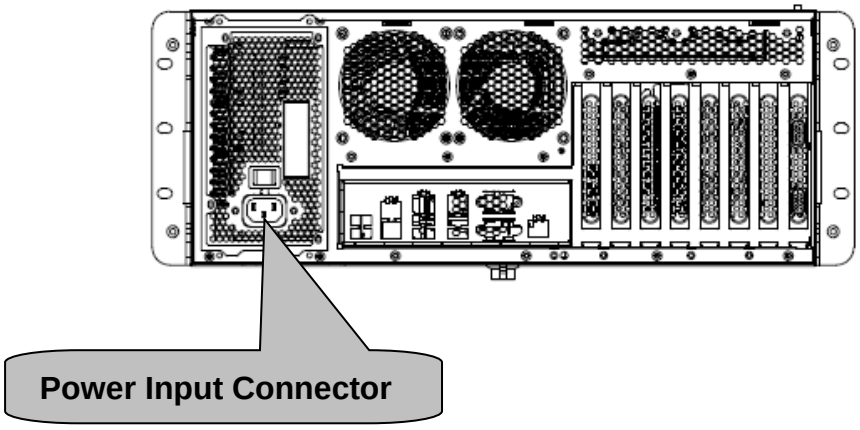
Make sure a power supply with the correct input voltage is being fed into the system. Incorrect voltages applied to the system may cause damage to the internal electronic components and may also cause injury to the user.

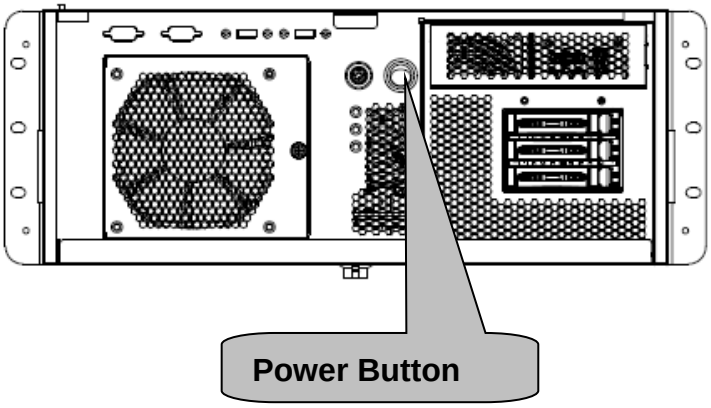
- Power on the system: press the power button for 3 seconds.
- Power off the system: press the power button for 6 seconds.
- The power of this system can be less than 250w 20A.

2.3 Connecting to Power Supply

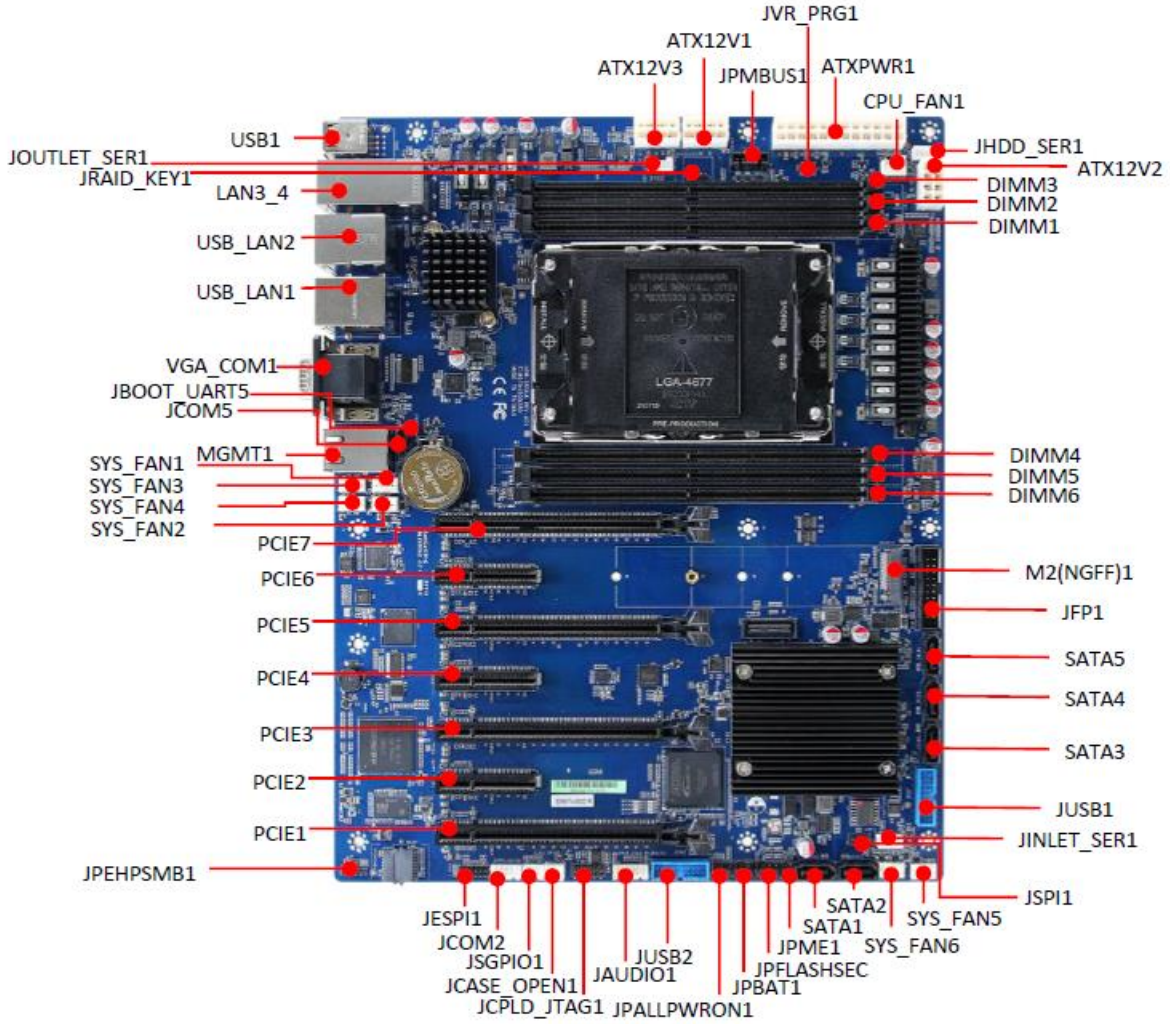
There are two power connectors on the rear panel. Power 1 connector is a DIN connector block that supports ACC On signal. Power 2 connector is a 2-pin terminal that can directly connect to a power adapter. The supported power input voltages are:

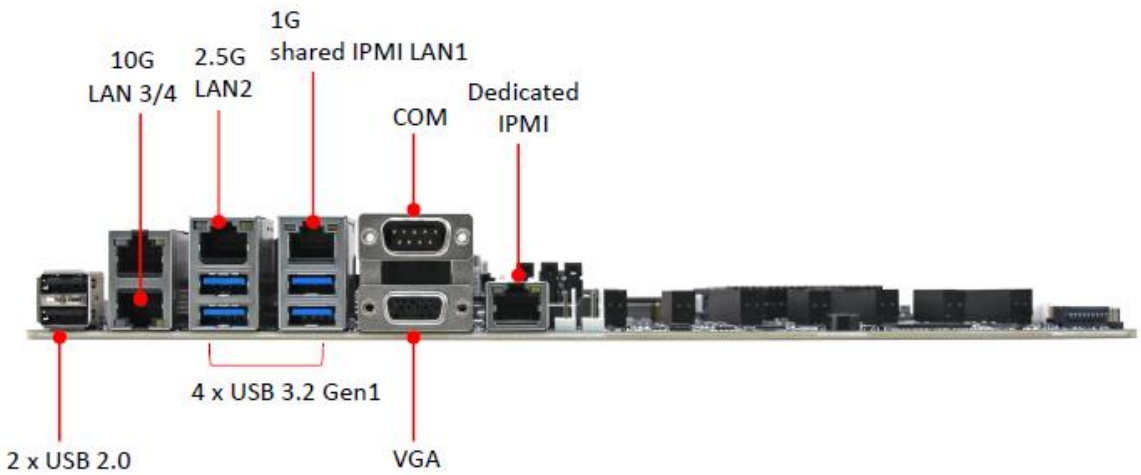
- Power 1 (DIN connector)): 12 V ~ 28 V
- Power 2 (terminal block)): 12 V ~ 28 V





2.4 HPM-ERSUA Overviews





2.5 HPM-ERSUA Jumper & Connector list

Jumpers

Label	Function	Note
JPFLASHSEC	Flash Security Override	3 x 1 header, pitch 2.00mm
JPME1	ME FW update	3 x 1 header, pitch 2.00mm
JPALLPWRON1	Force PWRON setting	3 x 1 header, pitch 2.00mm
JPBAT1	Clear CMOS	3 x 1 header, pitch 2.00mm
JPBOOT_UART5	Boot UART5 setting	3 x 1 header, pitch 2.00mm

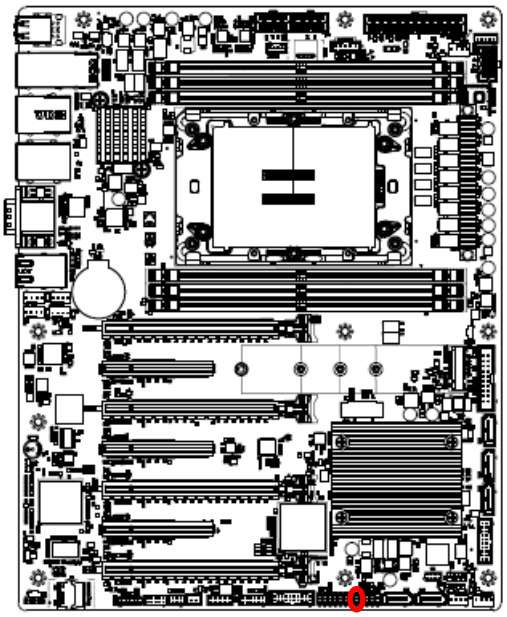
Connectors

Label	Function	Note
SYS_FAN1	System fan connector 1	4 x 1 wafer, pitch 2.54mm
SYS_FAN2	System fan connector 2	4 x 1 wafer, pitch 2.54mm
SYS_FAN3	System fan connector 3	4 x 1 wafer, pitch 2.54mm
SYS_FAN4	System fan connector 4	4 x 1 wafer, pitch 2.54mm
SYS_FAN5	System fan connector 5	4 x 1 wafer, pitch 2.54mm
SYS_FAN6	System fan connector 6	4 x 1 wafer, pitch 2.54mm
CPU_FAN1	CPU fan connector	4 x 1 wafer, pitch 2.54mm
VGA_COM1	Serial port 1 connector VGA connector	
JCOM2	Serial port 2 connector	5 x 2 wafer, pitch 2.00mm
JCOM5	BMC_UART5 debug connector	4 x 1 header, pitch 2.54mm
MGMT1	MGMT port	
JSGPIO1	Serial General Purpose I/O connector	3 x 2 wafer, pitch 2.00mm
PCIE1	PCIe Gen5 x16	
PCIE2	PCIe Gen5 x4	
PCIE3	PCIe Gen5 x16	
PCIE4	PCIe Gen5 x4	
PCIE5	PCIe Gen5 x16	
PCIE6	PCIe Gen5 x4	
PCIE7	PCIe Gen5 x16 (The slot closest to CPU)	
JFP1	Front Panel connector	10 x 2 wafer, pitch 2.54mm
USB_LAN1	2 x USB3.1 Gen1 connector 1 x RJ-45 Ethernet (LAN1 Share	

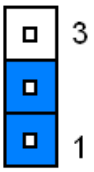
	IPMI Port)	
USB_LAN2	2 x USB3.1 Gen1 connector 1 x RJ-45 Ethernet	
LAN3_4	2 x RJ-45 Ethernet	
USB1	2 x USB2.0 connector	
JUSB1	USB3.1 Gen1 connector 1	10 x 2 wafer, pitch 2.00mm
JUSB2	USB3.1 Gen1 connector 2	10 x 2 wafer, pitch 2.00mm
JSPI1	SPI connector	4 x 2 header, pitch 2.00mm
JESPI1	ESPI connector	6 x 2 header, pitch 2.00mm
SATA1-5	5 x Serial ATA connector	
JRAID_KEY1	SATA RAID KEY connector	4 x 1 header, pitch 2.00mm
DIMM1-6	6 x DDR5 RDIMM socket	
JVR_PRG1	SMBUS VR connector	3 x 1 header, pitch 2.54mm
JCASE_OPEN1	CASE OPEN connector	2 x 1 wafer, pitch 2.50mm
ATX12V1	ATX 12V power connector 1	4 x 2 wafer, pitch 4.20mm
ATX12V2	ATX 12V power connector 2	4 x 2 wafer, pitch 4.20mm
ATX12V3	ATX 12V power connector 3	4 x 2 wafer, pitch 4.20mm
ATXPWR1	ATX power connector	12 x 2 wafer, pitch 4.20mm
JPMBUS1	Power supply PMBus connector	5 x 1 wafer, pitch 2.54mm
JINLET_SER1	Inlet Thermal Sensor	4 x 1 wafer, pitch 2.00mm
JOUTLET_SER1	Outlet Thermal Sensor	4 x 1 wafer, pitch 2.00mm
JHDD_SER1	HDD Backplane thermal Sensor	5 x 1 wafer, pitch 2.00mm
JPEHPSMB1	CPU PCIE HP SMB connector	5 x 1 header, pitch 2.00mm
JAUDIO1	AZALIA connector	6 x 2 wafer, pitch 2.00mm
M2(NGFF)1	M.2 M-Key PCIe 3.0 x4 NVMe SSD	
JCPLD_JTAG1	CPLD JTAG header	5 x 2 header, pitch 2.54mm

2.6 HPM-SRSUA Jumpers & Connectors settings

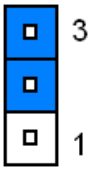
2.6.1 Flash Security Override (JPFLASHSEC)



Disable*

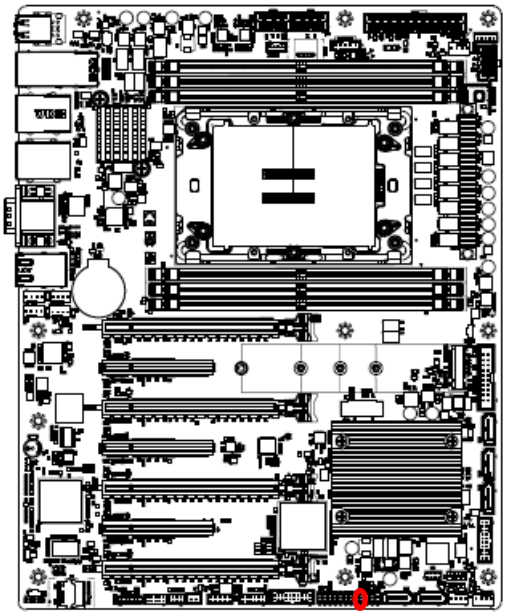


Enable

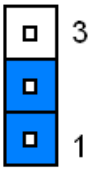


*** Default**

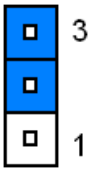
2.6.2 ME FW update (JPME1)



Normal*

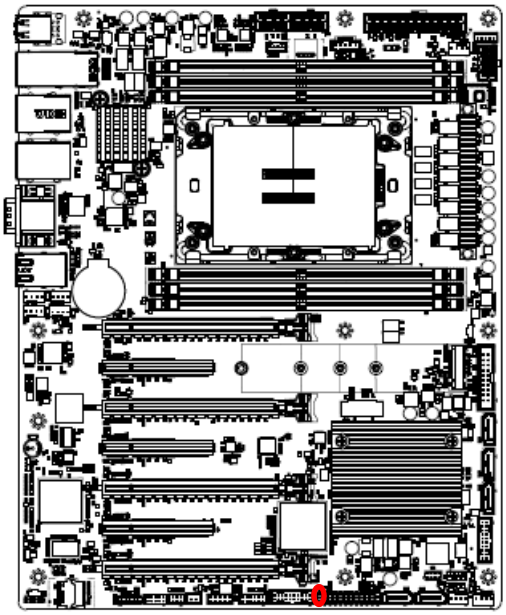


ME Force Update

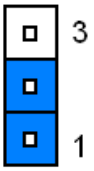


*** Default**

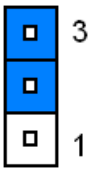
2.6.3 Force PWRON setting (JPALLPWRON1)



Normal Operation*

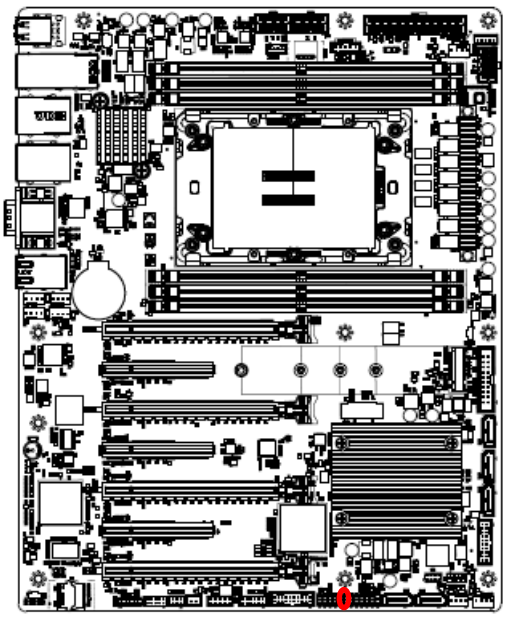


Enable Force PWR-ON

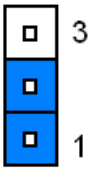


*** Default**

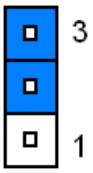
2.6.4 Clear CMOS (JPBAT1)



Normal Operation*

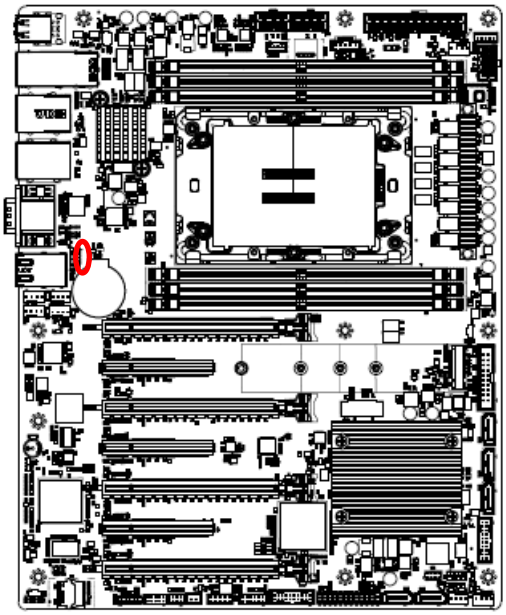


Clear RTC REGISTERS

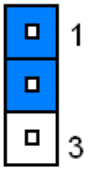


*** Default**

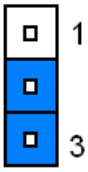
2.6.5 Boot UART5 setting (JPBOOT_UART5)



Disable*

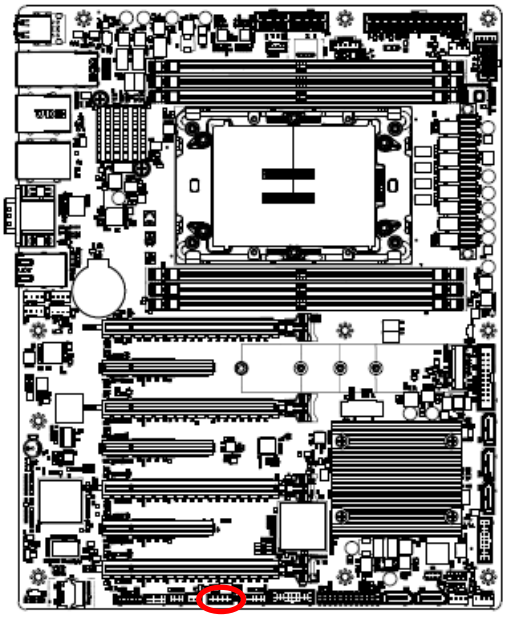


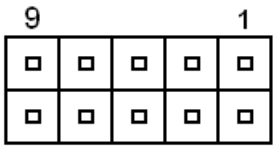
Enable BOOT FROM UART5



*** Default**

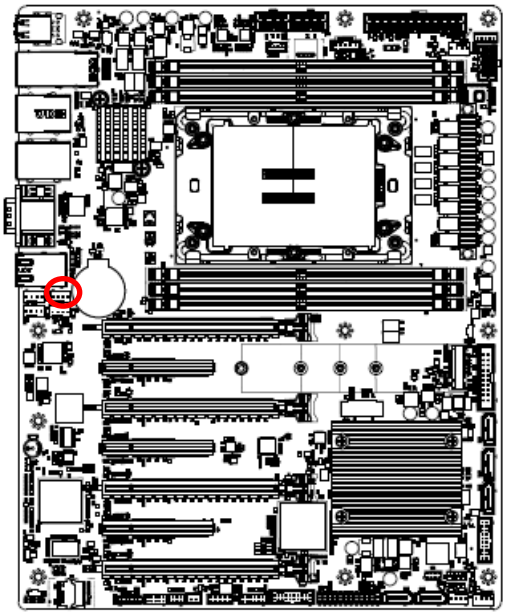
2.6.6 CPLD JTAG header (JCPLD_JTAG1)

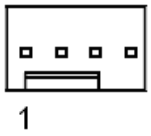




Signal	PIN	PIN	Signal
JTAG_TCK	1	2	GND
JTAG_TDO	3	4	+3.3VSB
JTAG_TMS	5	6	NC
NC	7	8	NC
JTAG_TDI	9	10	GND

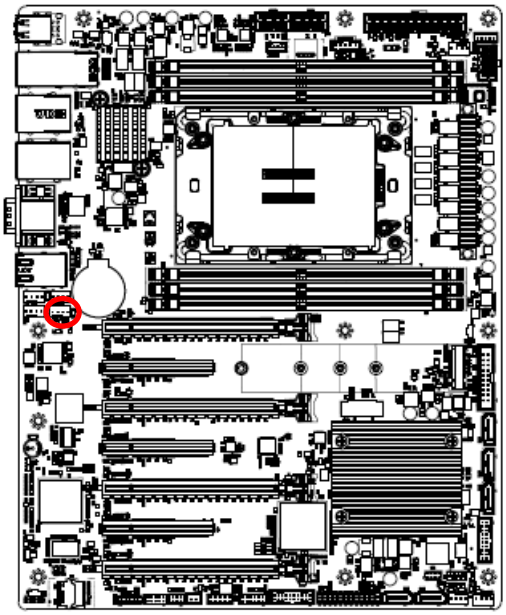
2.6.7 System fan connector 1 (SYS_FAN1)

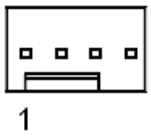




Signal	PIN
GND	1
+12V	2
FAN_TACH1	3
SYS_PWM1	4

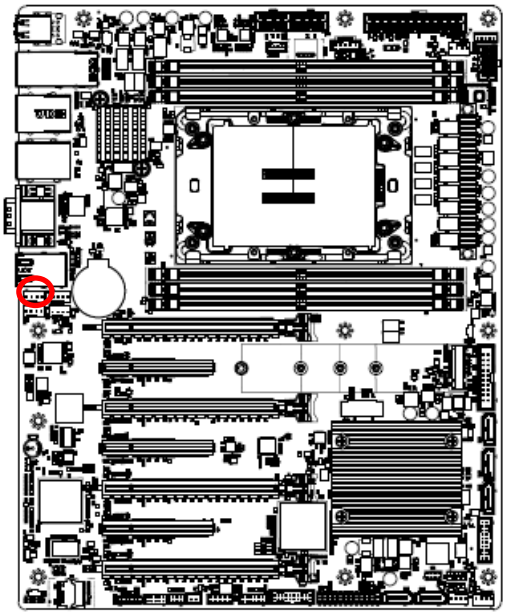
2.6.8 System fan connector 2 (SYS_FAN2)

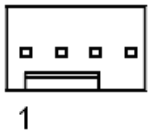




Signal	PIN
GND	1
+12V	2
FAN_TACH2	3
SYS_PWM2	4

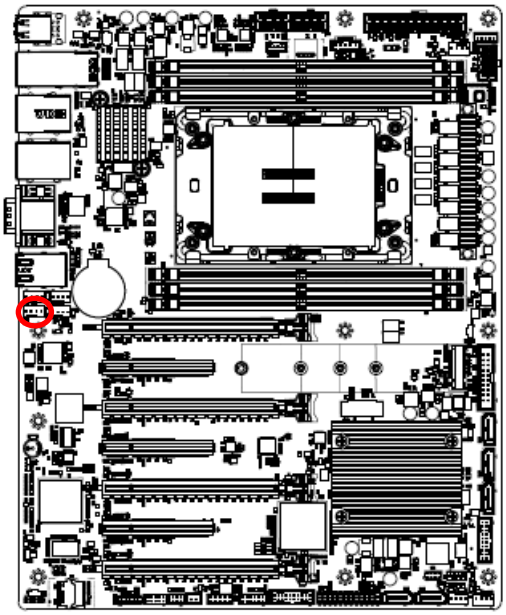
2.6.9 System fan connector 3 (SYS_FAN3)

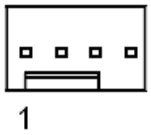




Signal	PIN
GND	1
+12V	2
FAN_TACH3	3
SYS_PWM3	4

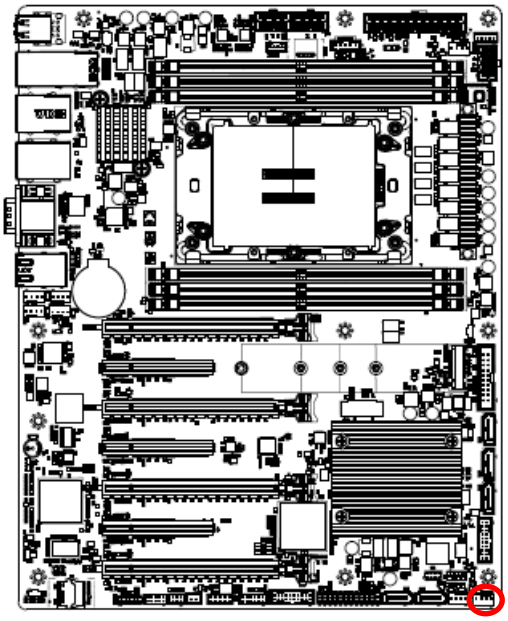
2.6.10 System fan connector 4 (SYS_FAN4)

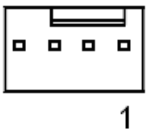




Signal	PIN
GND	1
+12V	2
FAN_TACH4	3
SYS_PWM4	4

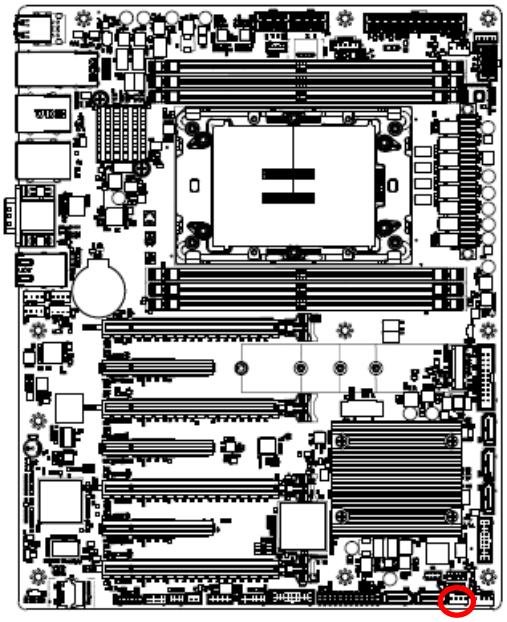
2.6.11 System fan connector 5 (SYS_FAN5)

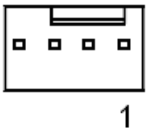




Signal	PIN
GND	1
+12V	2
FAN_TACH5	3
SYS_PWM5	4

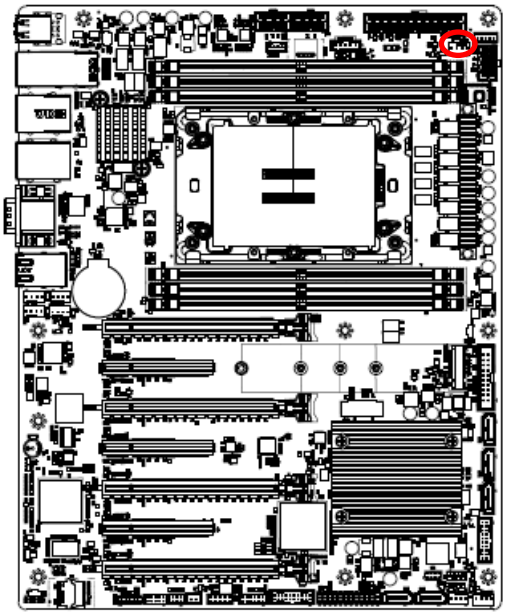
2.6.12 System fan connector 6 (SYS_FAN6)

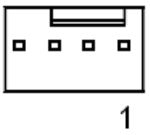




Signal	PIN
GND	1
+12V	2
FAN_TACH6	3
SYS_PWM6	4

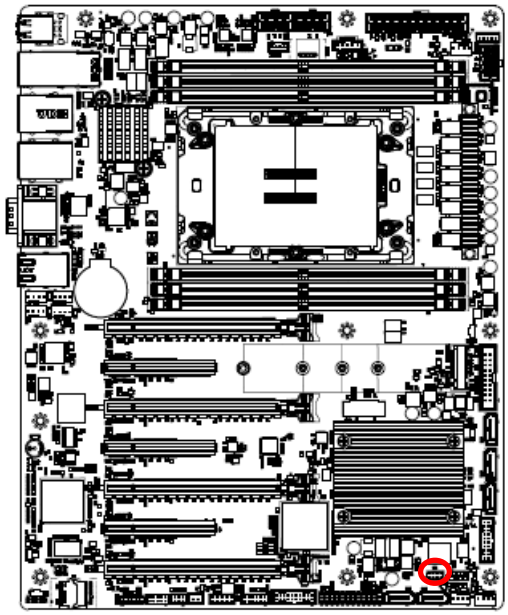
2.6.13 CPU fan connector (CPU_FAN1)

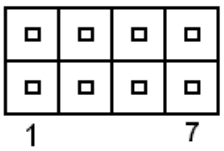




Signal	PIN
GND	1
+12V	2
FAN_TACH0	3
CPU0_PWM	4

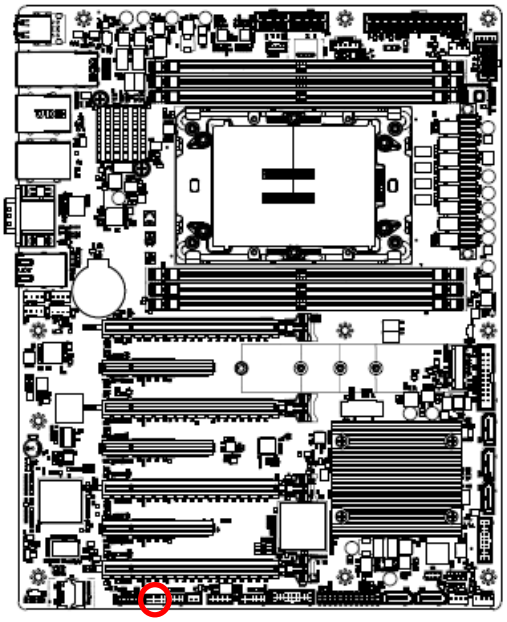
2.6.14 SPI connector (JSPI1)

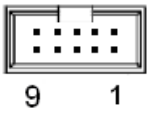




Signal	PIN	PIN	Signal
+3.3VSB	1	2	GND
SPI_CS#	3	4	SPI_CLK
SPI_MISO	5	6	SPI_MOSI
SPI_IO3	7	8	SPI_IO2

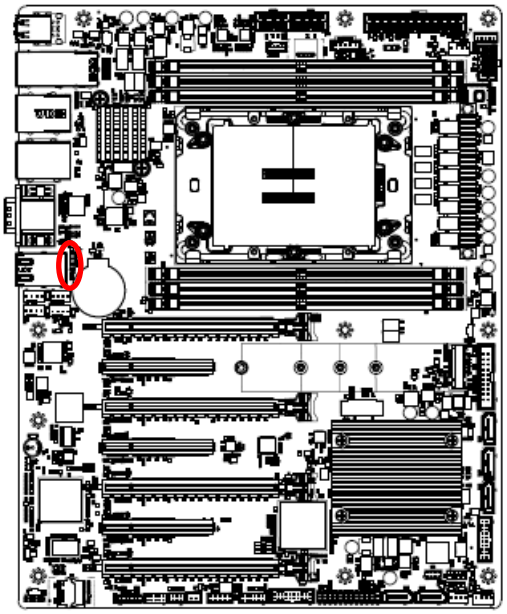
2.6.15 Serial port 2 connector (JCOM2)





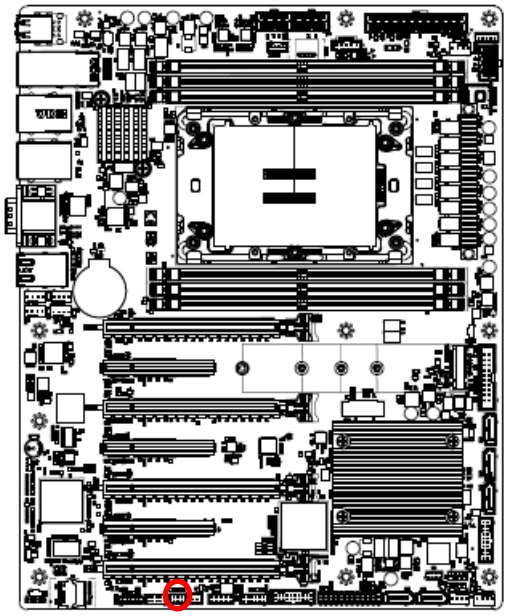
Signal	PIN	PIN	Signal
COM_DCD#2	1	2	COM_RXD2
COM_TXD2	3	4	COM_DTR#2
GND	5	6	COM_DSR#2
COM_RTS#2	7	8	COM_CTS#2
COM_RI#2	9	10	NC

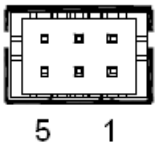
2.6.16 BMC_UART5 debug connector (JCOM5)



Signal	PIN
+3.3VSB	4
GND	3
UART5_RX	2
UART5_TX	1

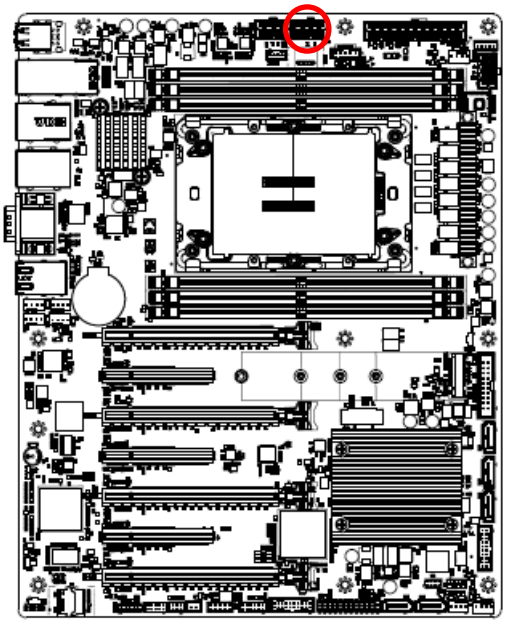
2.6.17 Serial General Purpose I/O connector (JSGPIO1)

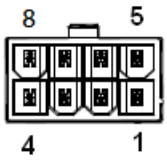




Signal	PIN	PIN	Signal
GND	2	1	GND
SGPIO_SATA0_DATA0	4	3	SGPIO_SATA0_LOAD
NC	6	5	SGPIO_SATA0_CLOCK

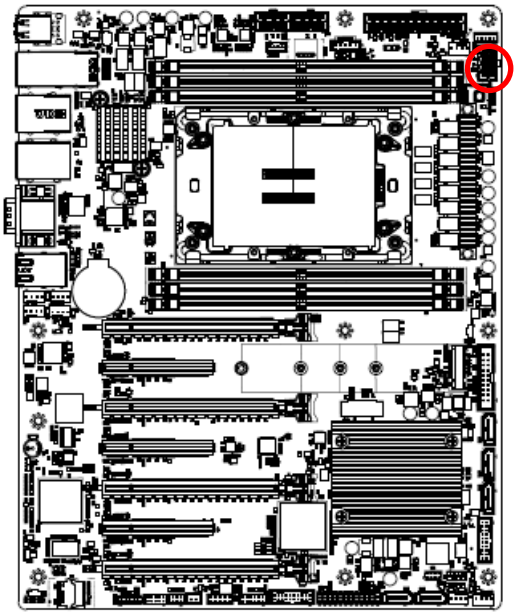
2.6.18 ATX 12V power connector 1 (ATX12V1)

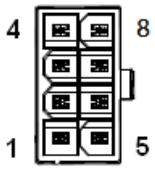




Signal	PIN	PIN	Signal
GND	1	5	+12V
GND	2	6	+12V
GND	3	7	+12V
GND	4	8	+12V

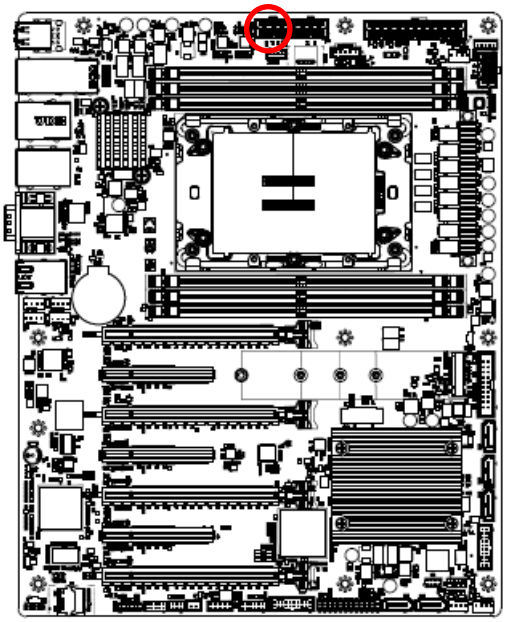
2.6.19 ATX 12V power connector 2 (ATX12V2)

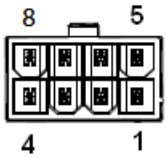




Signal	PIN	PIN	Signal
GND	1	5	+12V
GND	2	6	+12V
GND	3	7	+12V
GND	4	8	+12V

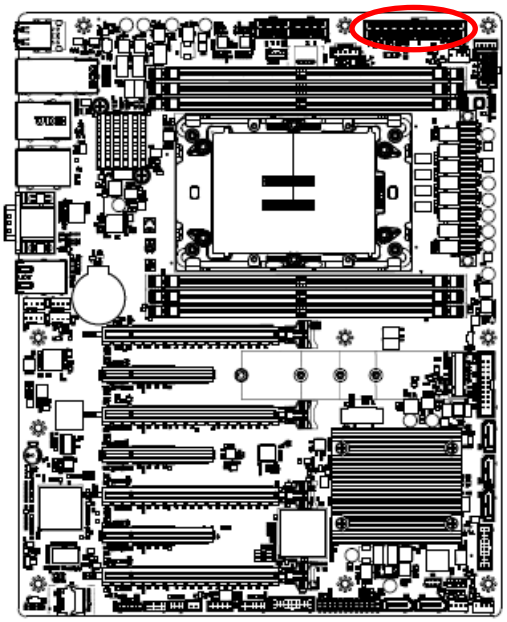
2.6.20 ATX 12V power connector 3 (ATX12V3)

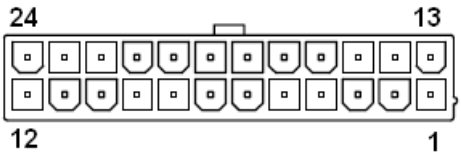




Signal	PIN	PIN	Signal
GND	1	5	+12V
GND	2	6	+12V
GND	3	7	+12V
GND	4	8	+12V

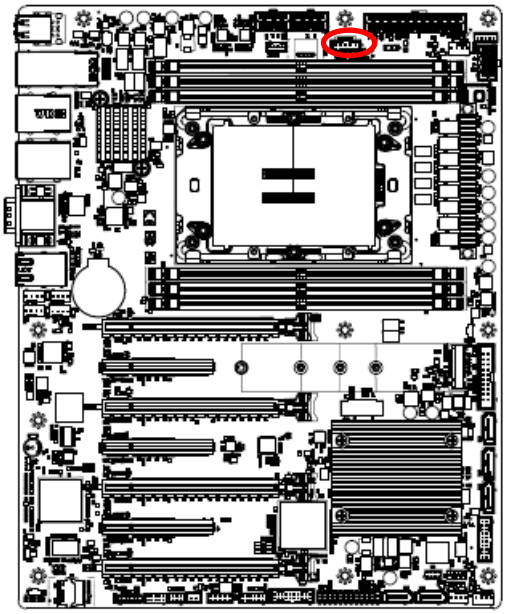
2.6.21 ATX power connector (ATXPWR1)

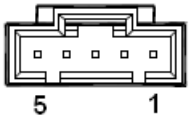




Signal	PIN	PIN	Signal
+3.3V	1	13	+3.3V
+3.3V	2	14	-12V
GND	3	15	GND
+5V	4	16	PSON#
GND	5	17	GND
+5V	6	18	GND
GND	7	19	GND
PSU_PWRGD	8	20	NC
+V5SB	9	21	+5V
+12V	10	22	+5V
+12V	11	23	+5V
+3.3V	12	24	GND

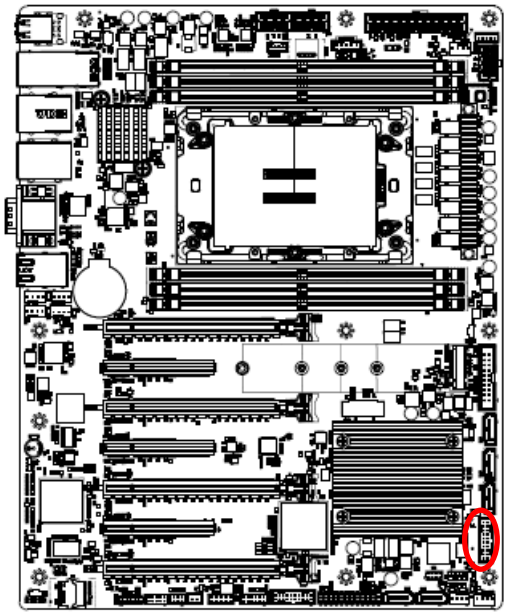
2.6.22 Power supply PMBus connector (JPMBUS1)

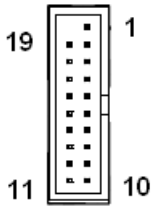




Signal	PIN
SMB_PSU_SCL	1
SMB_PSU_SDA	2
SMB_PSU_ALERT#	3
GND	4
NC	5

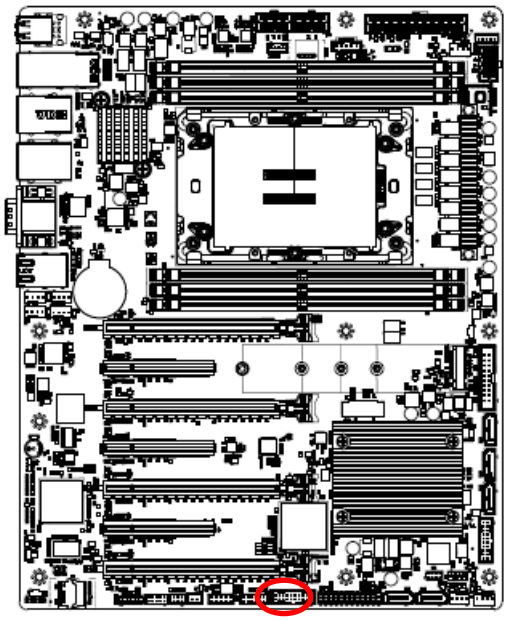
2.6.23 USB3.1 Gen1 connector 1 (JUSB1)

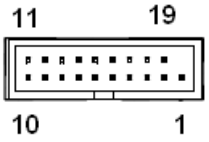




Signal	PIN	PIN	Signal
		1	+5V
+5V	19	2	USB3_RN4
USB3_RN5	18	3	USB3_RP4
USB3_RP5	17	4	GND
GND	16	5	USB3_TN4
USB3_TN5	15	6	USB3_TP4
USB3_TP5	14	7	GND
GND	13	8	USB3_PN8
USB3_PN9	12	9	USB3_PP8
USB3_PP9	11	10	USB_OC1#

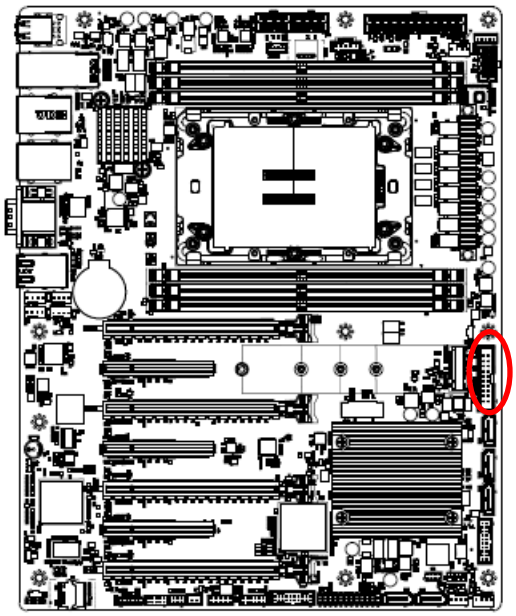
2.6.24 USB3.1 Gen1 connector 2 (JUSB2)

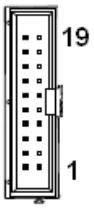




Signal	PIN	PIN	Signal
		1	+5V
+5V	19	2	USB3_RN6
USB3_RN7	18	3	USB3_RP6
USB3_RP7	17	4	GND
GND	16	5	USB3_TN6
USB3_TN7	15	6	USB3_TP6
USB3_TP7	14	7	GND
GND	13	8	USB3_PN11
USB3_PN13	12	9	USB3_PP11
USB3_PP13	11	10	USB_OC2#

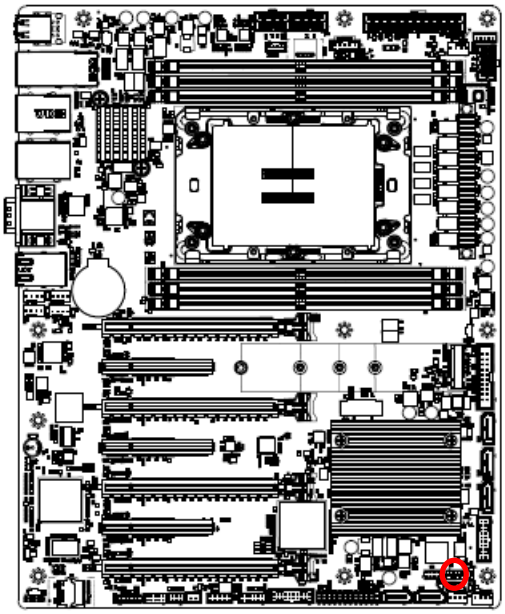
2.6.25 Front Panel connector (JFP1)

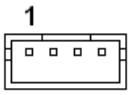




Signal	PIN	PIN	Signal
LAN2-X_LED#	20	19	GND
LAN2-X_LED_P	18	17	UID_BUTTON#
GND	16	15	UID_LED_P
SBPWRLED_P	14	13	UID_LED#
LAN1_LED#	12	11	STATUS_LED#
LAN1_LED_P	10	9	STATUS_LED_P
GND	8	7	GND
PWRON_BUTTON#	6	5	RESET_BUTTON#
PWR_LED#	4	3	HDD_LED#
+3.3VSB	2	1	HDD_LED_P

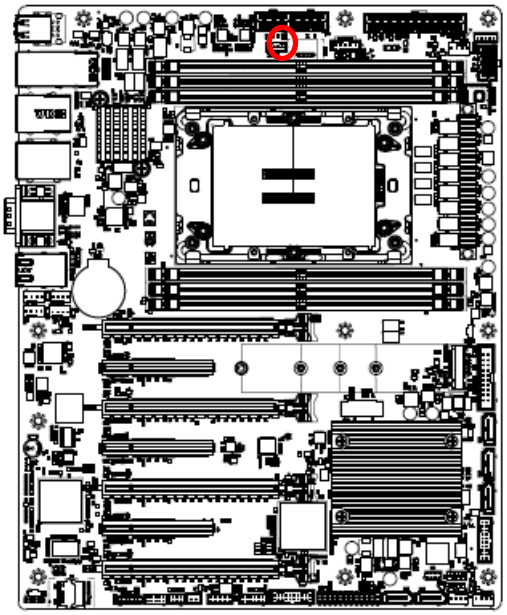
2.6.26 Inlet Thermal Sensor (JINLET_SER1)

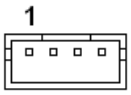




Signal	PIN
+3.3VSB	1
SMB_INLET_TEMPSENSOR_SDA	2
SMB_INLET_TEMPSENSOR_SCL	3
GND	4

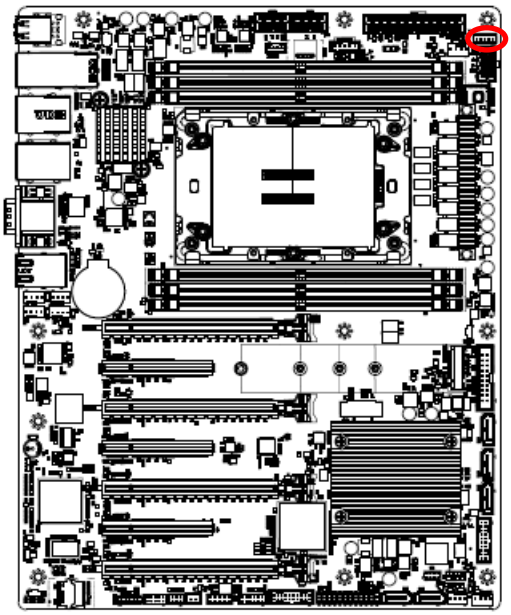
2.6.27 Outlet Thermal Sensor (JOUTLET_SER1)

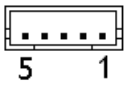




Signal	PIN
+3.3VSB	1
SMB_OUTLET_TEMPSENSOR_SDA	2
SMB_OUTLET_TEMPSENSOR_SCL	3
GND	4

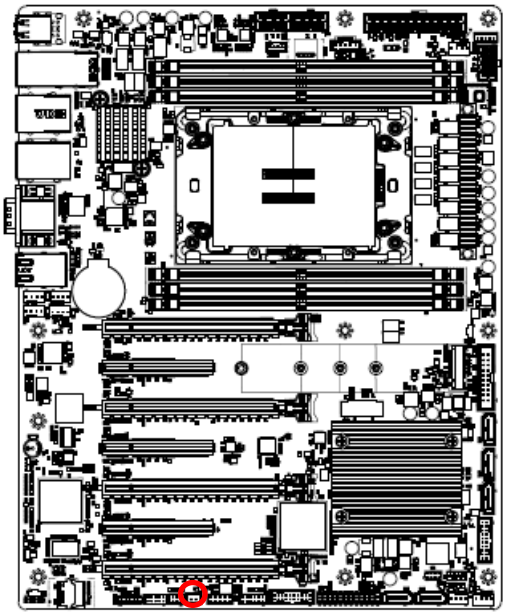
2.6.28 HDD Backplane thermal Sensor (JHDD_SER1)





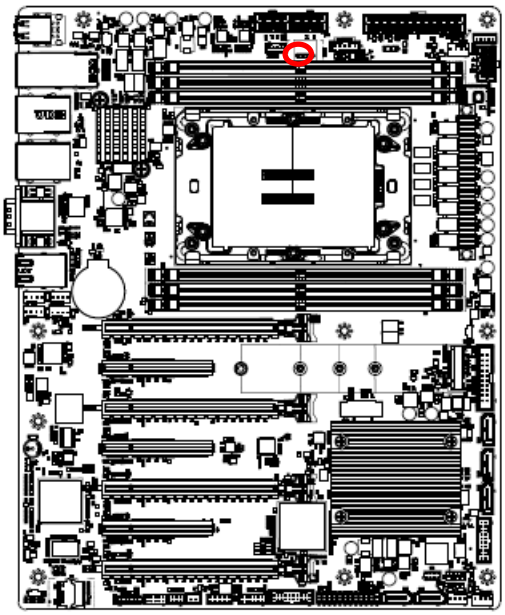
Signal	PIN
+3.3VSB	1
SMB_HDBP_TEMPSENSOR_SDA	2
SMB_HDBP_TEMPSENSOR_SCL	3
GND	4
SSD_LED_N	5

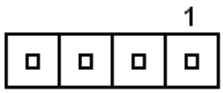
2.6.29 CASE OPEN connector (JCASE_OPEN1)



Signal	PIN
CHASSIS_INTRUSION	1
GND	2

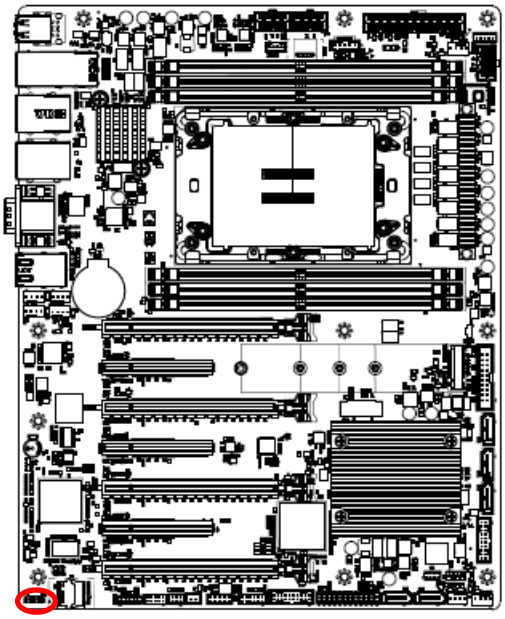
2.6.30 SATA RAID KEY connector (JRAID_KEY1)





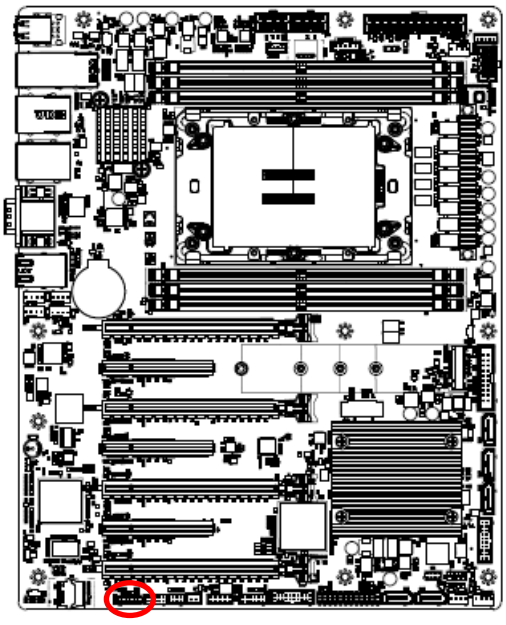
Signal	PIN
GND	1
PU_KEY_CONN	2
GND	3
PCH_SATA_RAIDKEY	4

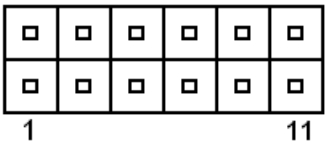
2.6.31 CPU PCIE HP SMB connector (JPEHPSMB1)



Signal	PIN
SMB_CPUHP_SCL	1
GND	2
SMB_CPUHP_SDA	3
GND	4
SMB_CPUHP_ALERT#	5

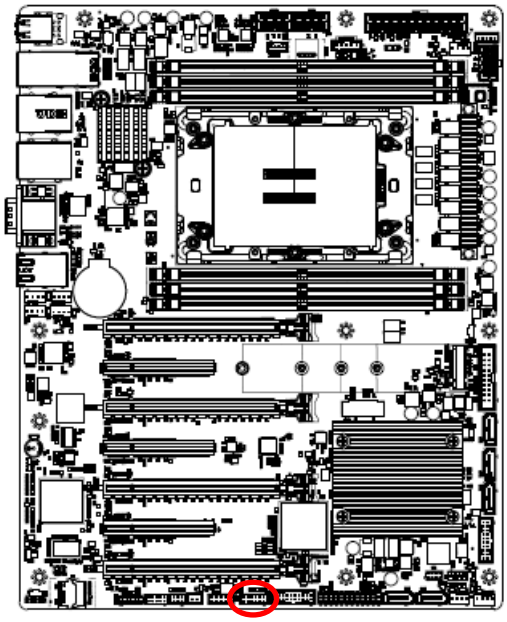
2.6.32 ESPI connector (JESPI1)

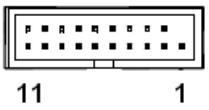




Signal	PIN	PIN	Signal
ESPI_D0	1	2	+3.3VSB
ESPI_D1	3	4	PLTRST#
ESPI_D2	5	6	ESPI_CS#
ESPI_D3	7	8	ESPI_CLK
NC	9	10	GND
ESPI_RESET#	11	12	ESPI_ALERT#

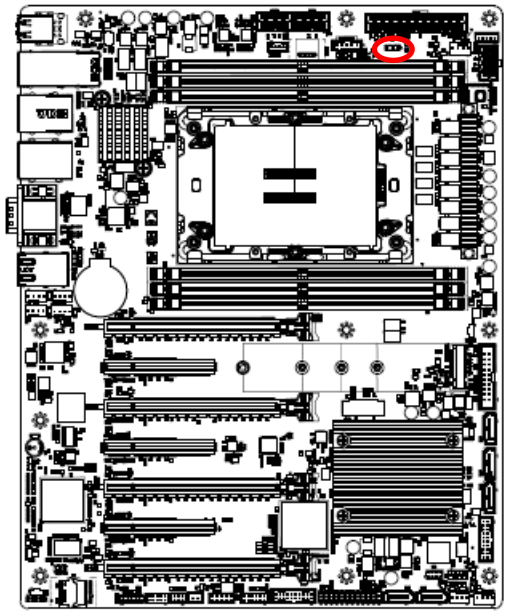
2.6.33 AZALIA connector (JAUDIO1)

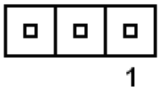




Signal	PIN	PIN	Signal
+3.3V	1	2	GND
AUD_AZA_SYNC	3	4	AUD_AZA_BCLK
AUD_AZA_SDO	5	6	AUD_AZA_SDI0
AUD_AZA_SDI1	7	8	AUD_AZA_RST_N
+5VSB	9	10	GND
GND	11	12	NC

2.6.34 SMBUS VR connector (JVR_PRG1)





Signal	PIN
SMB_VR_SDA	1
GND	2
SMB_VR_SCL	3

2.7 Processor Installation SOP

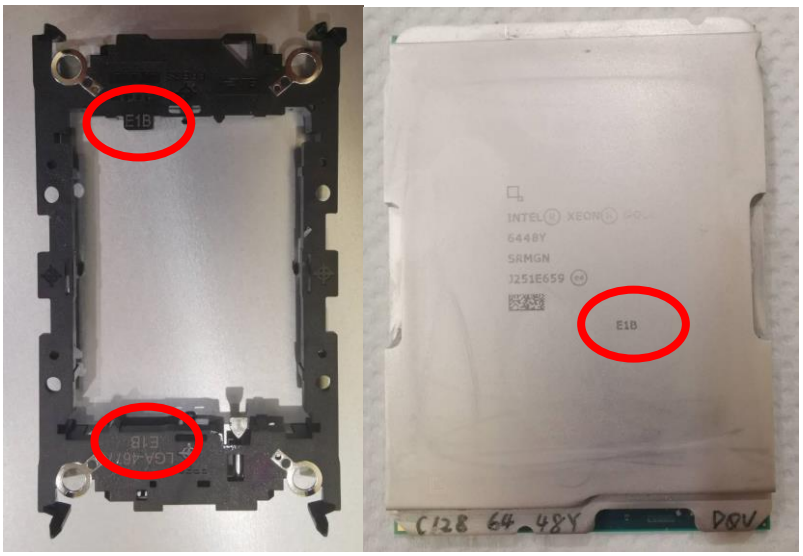
Overview of the Processor Assembly installation procedure

Note: Suggest installing the memory first, then installing the CPU cooler module to lower the memory installation difficulty.

The processor assembly contains the Intel Xeon SP with carrier and CPU cooler.

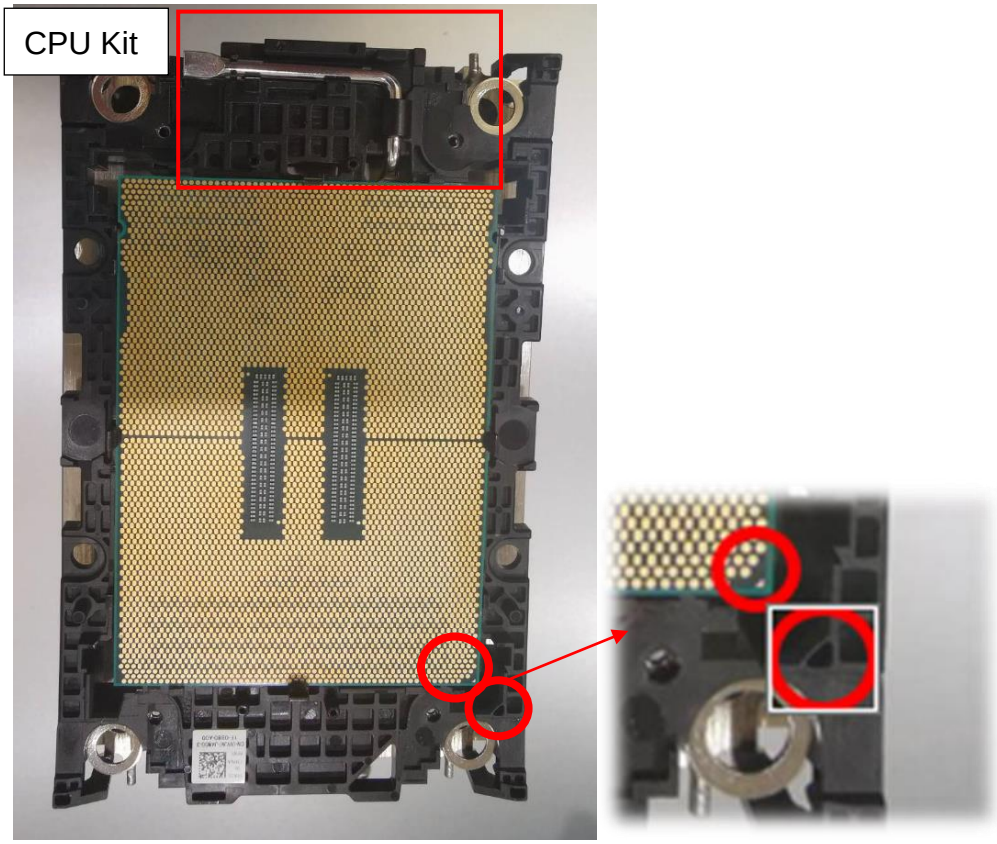
- 1 x Intel 4th/5th Xeon SP(MCC SKU)
- 1 x E1B CPU Carrier (In the HPM-ERSUA package)
- 1 x Cooler module (Avalue P/N:BCC-FAN-467-01R)

1. Please ensure the carrier model on the CPU is consistent with the carrier silkscreen.

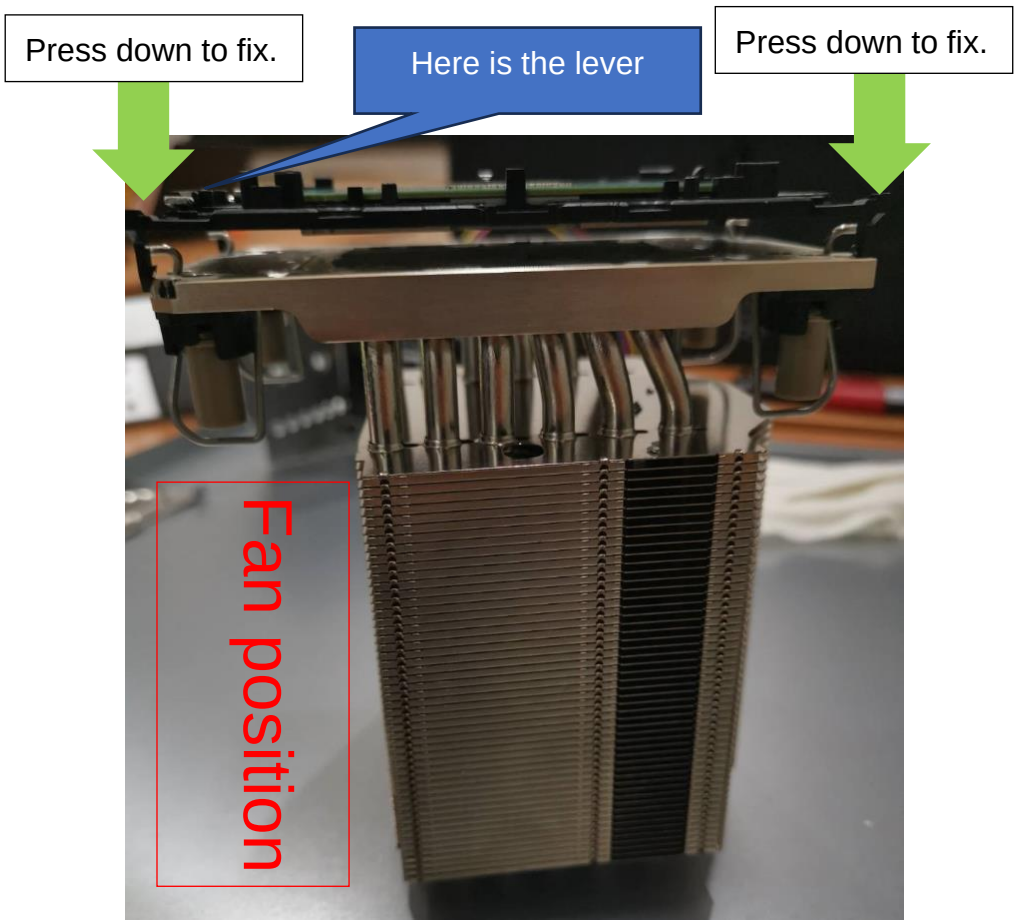


2. Install the CPU on the carrier and align the triangle marks (Pin 1).

Look at the below red frame, please make sure the lever is pressed down.



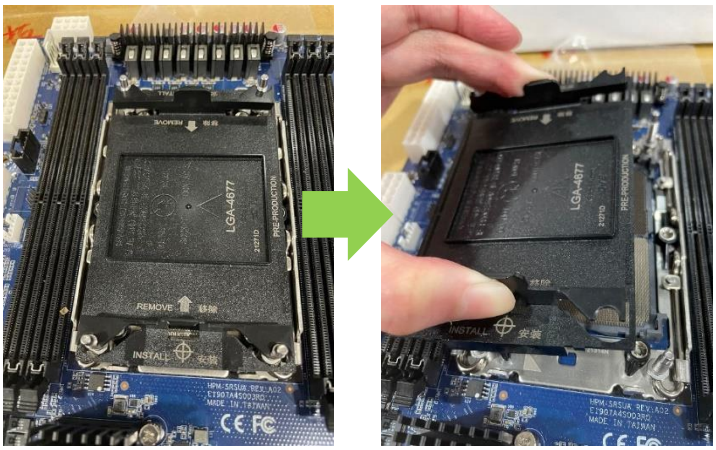
3. Install the CPU kit assembly on the cooler module, please press down the CPU kit to fixate it.
   Note: Make sure the lever on the carrier is on the same side as the fan. (Only applicable to HPM-SRSUA/HPM-ERSUA and Avalue Cooler BCC-FAN-467-01R.)
   Note: The Thermal grease must be pre-applied on the heatsink before installation.
   Note: Please ensure the direction of the fan before installing the CPU kit on the Cooler module.



4. The CPU socket is protected by a plastic protective cover.

a. Hold finger grips on socket cover and squeeze in on the grip tabs.

b. Then pull the cover up and off vertically to remove.



5. Cooler module with CPU kit installed on the motherboard.

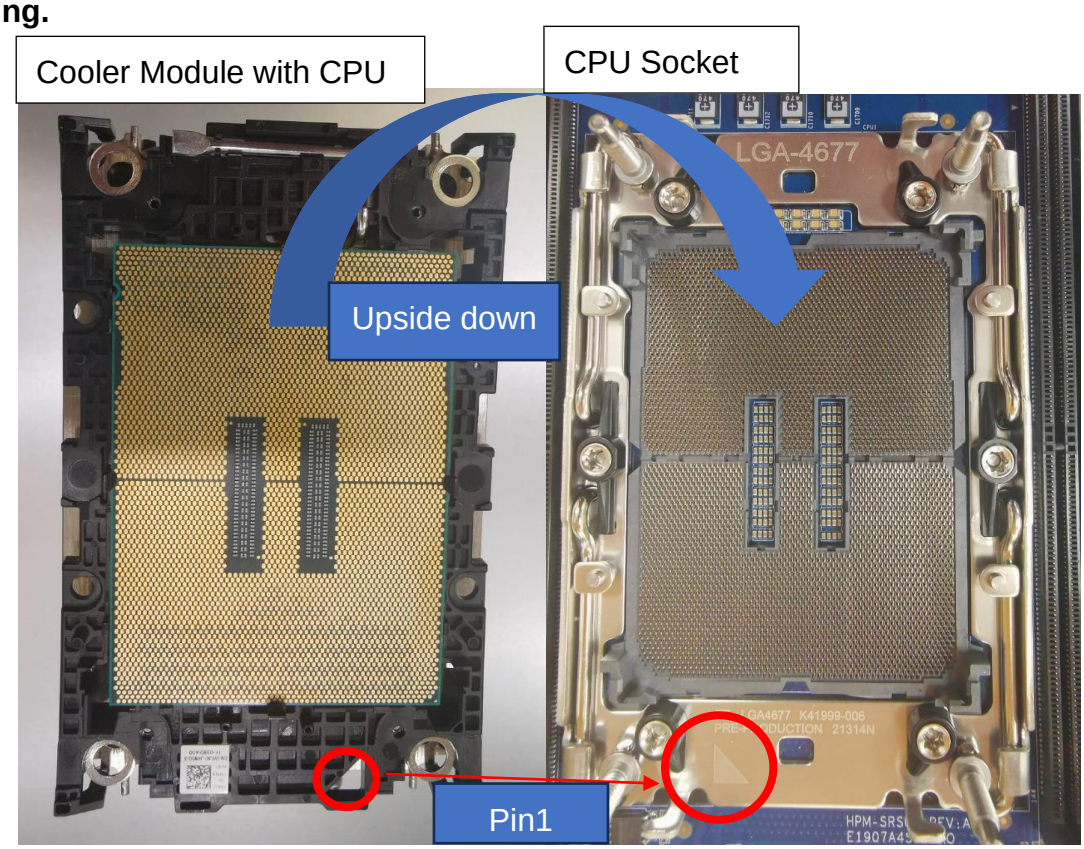
a. Please align the triangle mark between the Cooler module and CPU socket and install it. (Figure A)

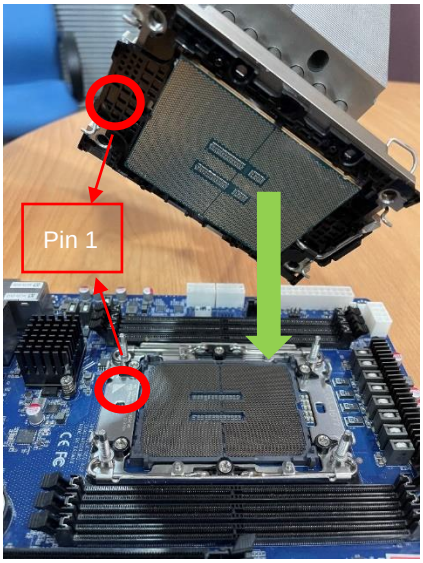
b. Hold the Cooler module with the CPU and align the holes with the CPU socket. Press the Cooler module down to the CPU socket until it snaps into place.

c. Press down the fixing tenons on the four sides to fixate. (Figure B)

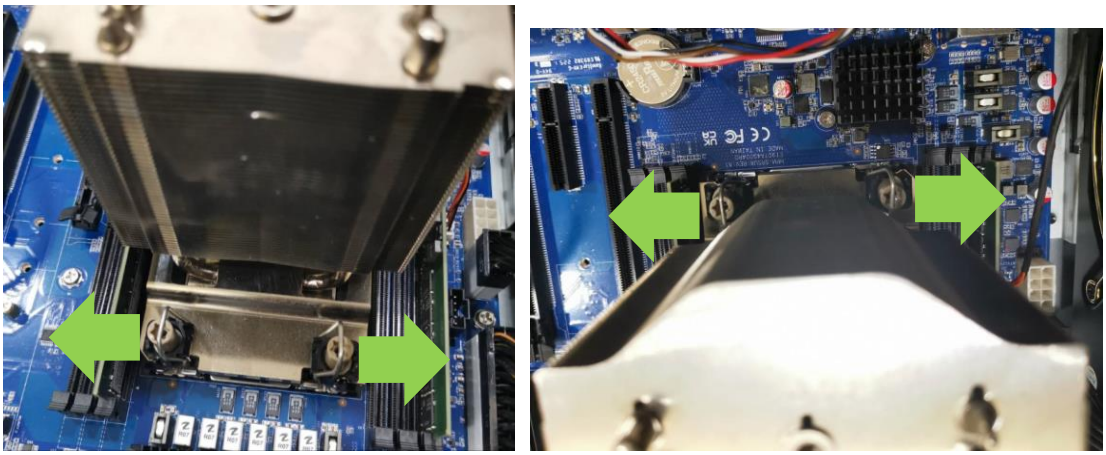
d. With a T30 screwdriver, gradually tighten the four screws to ensure even pressure. (Figure C)

★ The cooler module with CPU pin1 must be aligned with the CPU socket pin1 mark, and the direction cannot be changed at will, or it may cause the CPU to damage after pressing.

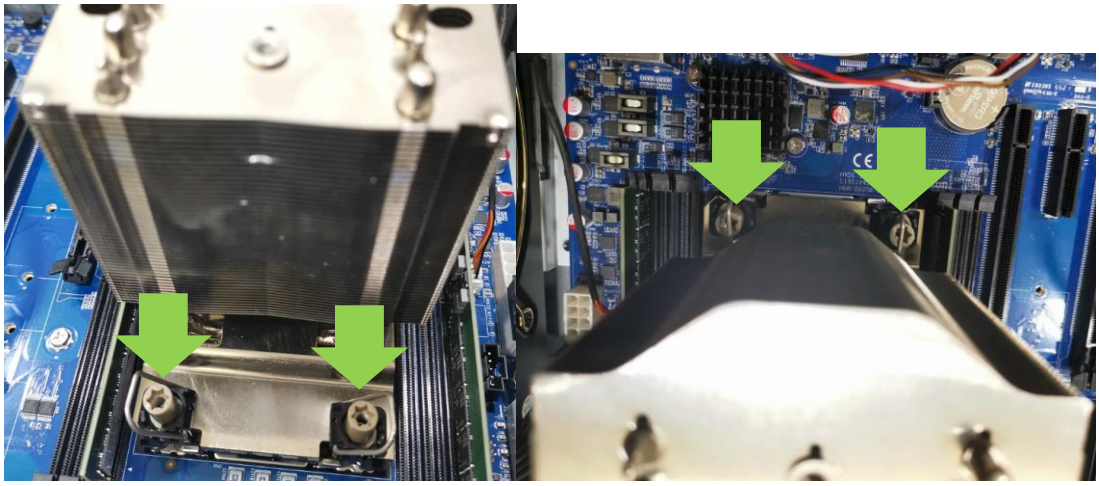




▲Figure A

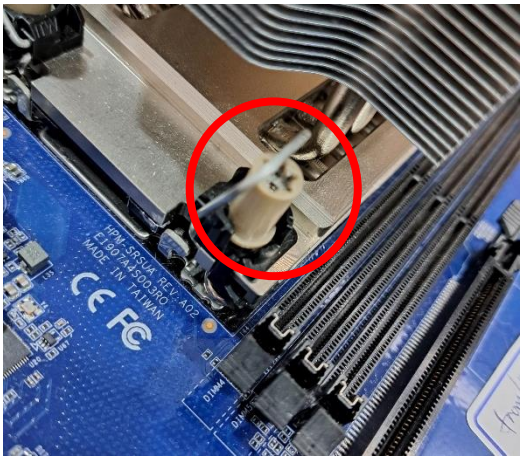


▲Figure B

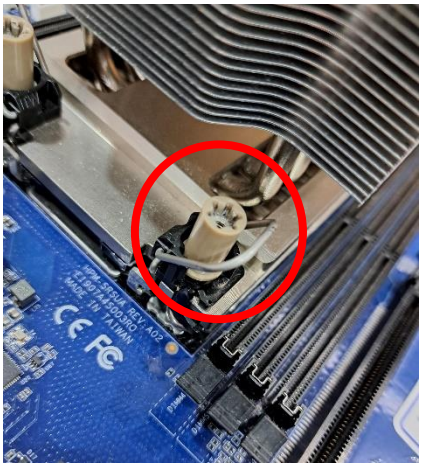


▲Figure C

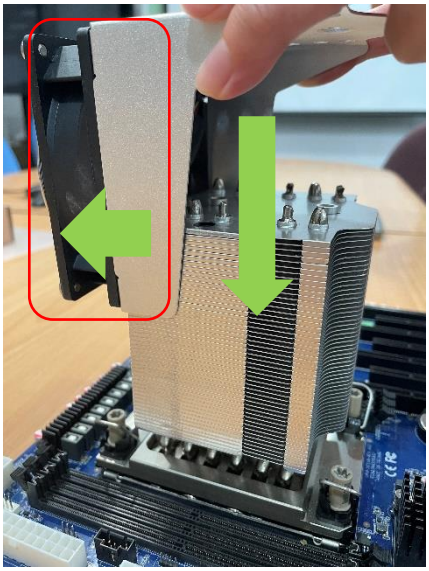
▼Before locking the tenons

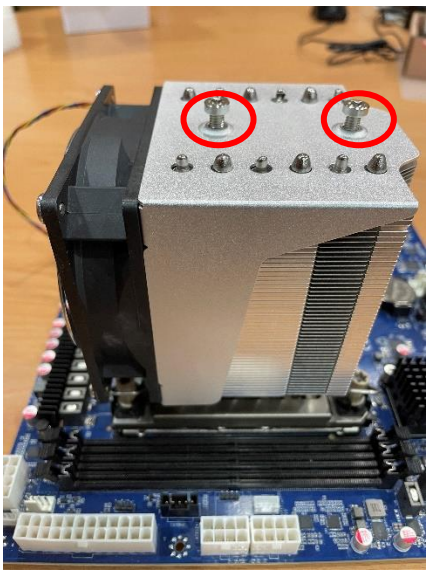


▼After locking the tenons



6. Install the cooling fan and holder on the cooler module and tighten two locking screws (T30) on the top of the fan holder.
   Note: The 4U cooler's fan for Xeon SP single socket is facing the opposite side of Edge I/O.

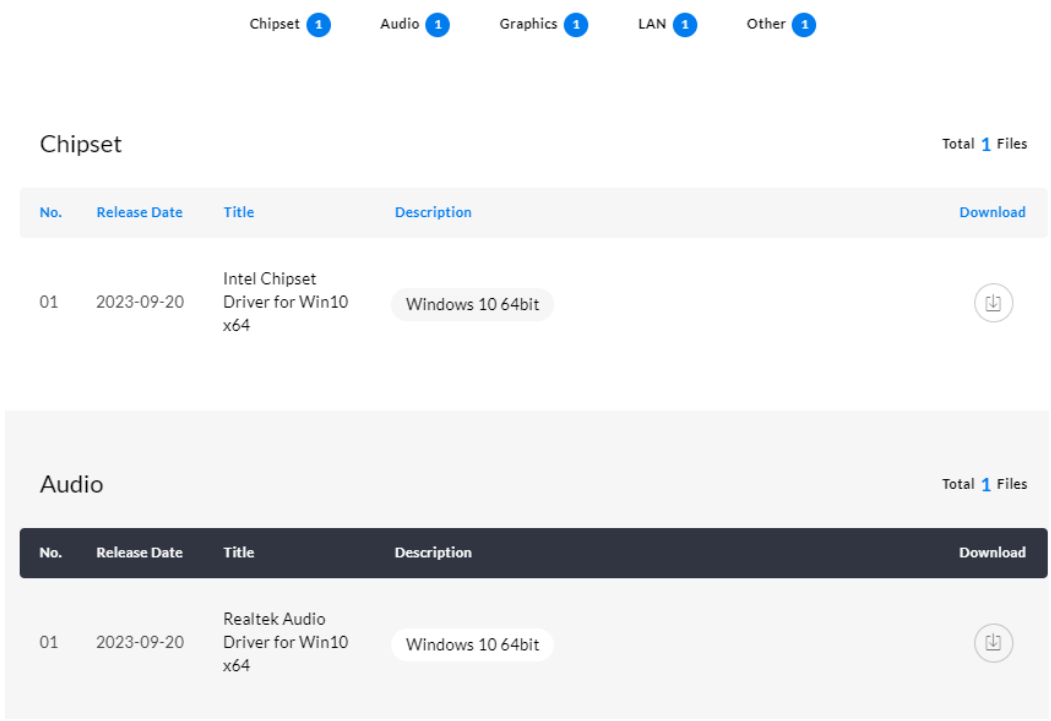




7. Connect the cooling fan connector to the fan header labeled for the CPU on the motherboard.

3. Drivers Installation

All the drivers are available on Avalue Downloads Area (https://www.avalue.com/en/support/download). Type the model name and press Enter to find all the relevant software, utilities, and documentation.



(For reference only)

Note: Installation procedures and screen shots in this section are for your reference and may not be exactly the same as shown on your screen.

3.1 Install Chipset Driver

All drivers can be found on the Avalue Official Website:
www.avalue.com.

Note: The installation procedures and screen shots in this section are based on Windows 11 operation system. If the warning message appears while the installation process, click Continue to go on.

Step 3. Click **Install**.

Step1. Click **Next**.

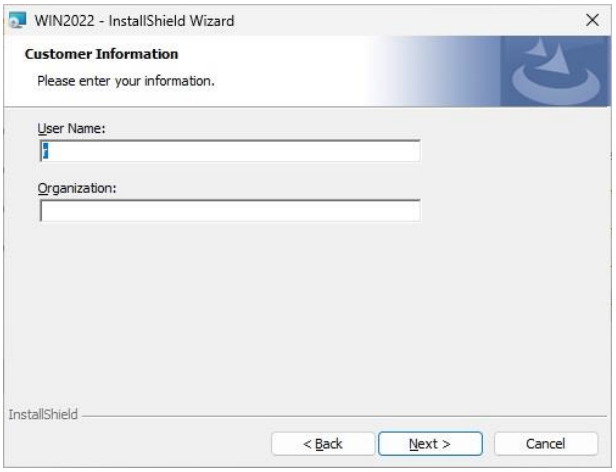
Step 4. Setup completed.

Step 2. Click **Accept**.

3.2 Install VGA Driver

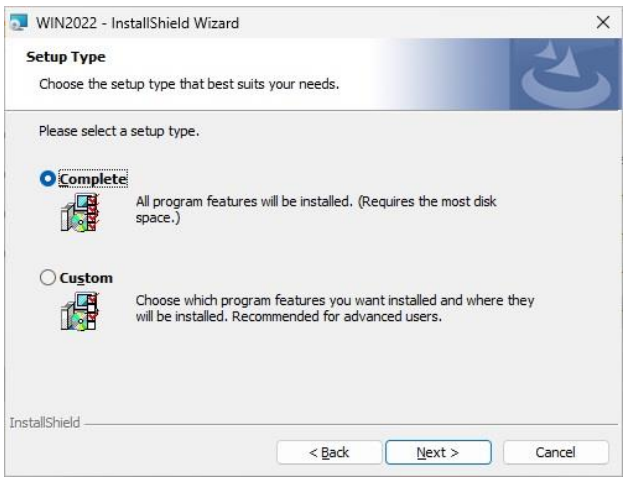
All drivers can be found on the Avalue Official Website: www.avalue.com.

Note: The installation procedures and screen shots in this section are based on Windows 11 operation system.

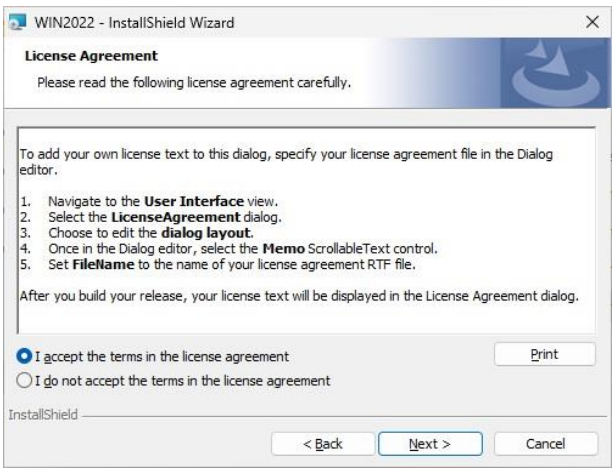


Step 3. Click **Next.**

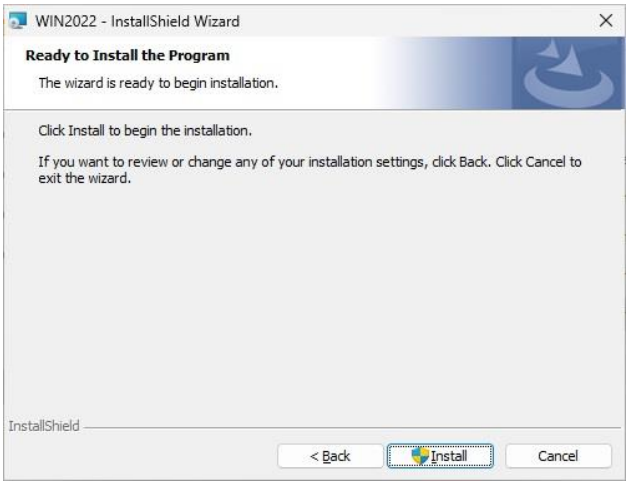
Step 1. Click **Next** to continue installation.



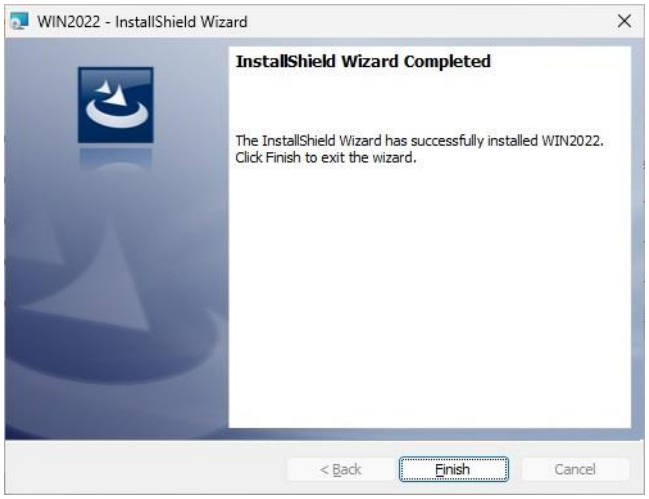
Step 4. Click **Next**.



Step 2. Click **Next**.



Step 5. Click **Install**.



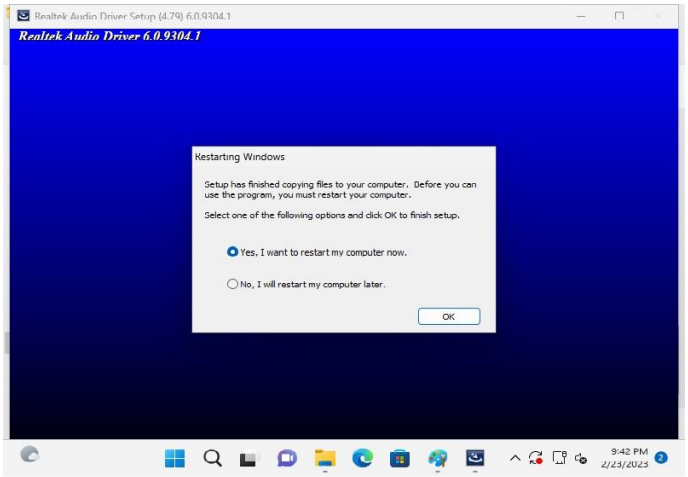
Step 6. Click **Finish** to complete setup.

3.3 Install Audio Driver

All drivers can be found on the Avalue Official Website:
www.avalue.com.

Note: The installation procedures and screen shots in this section are based on Windows 11 operation system.

Step 1. Click **Yes** to continue installation.



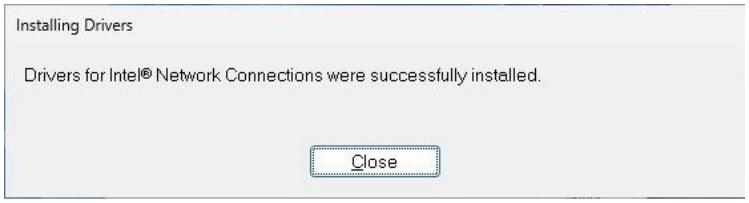
Step 2. Setup completed.

3.4 Install Ethernet Driver

All drivers can be found on the Avalue Official Website:
www.avalue.com.

Note: The installation procedures and screen shots in this section are based on Windows 11 operation system.

Step 1. Click **OK** to continue installation.

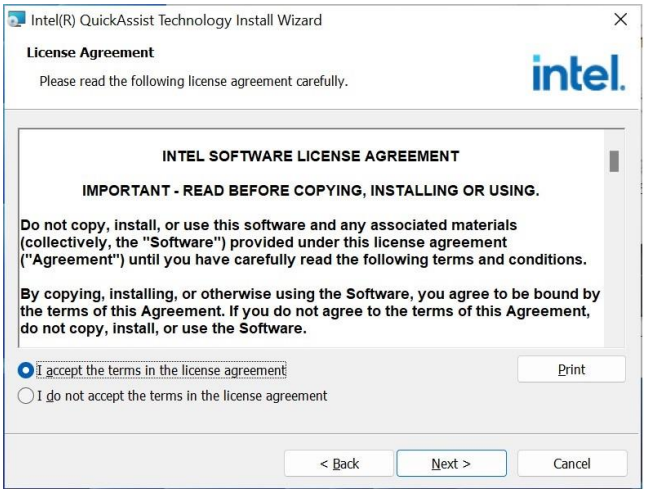


Step 2. Setup completed.

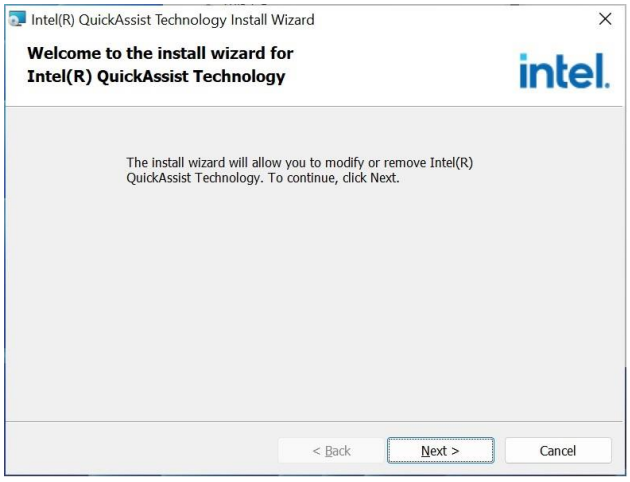
3.5 Install QuickAssist Technology Driver

All drivers can be found on the Avalue Official Website:
www.avalue.com.

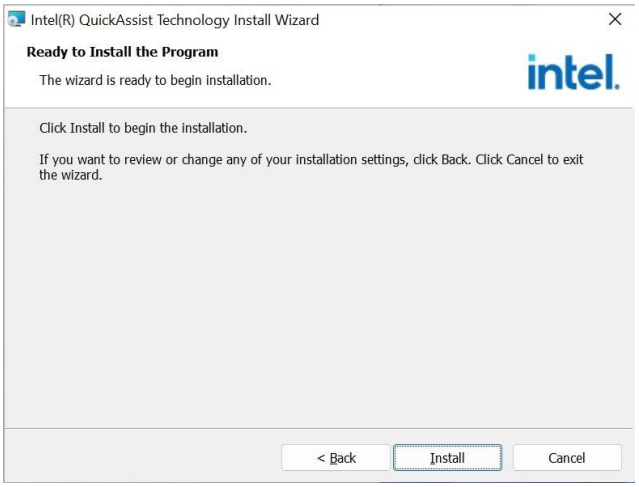
Note: The installation procedures and screen shots in this section are based on Windows 11 operation system.



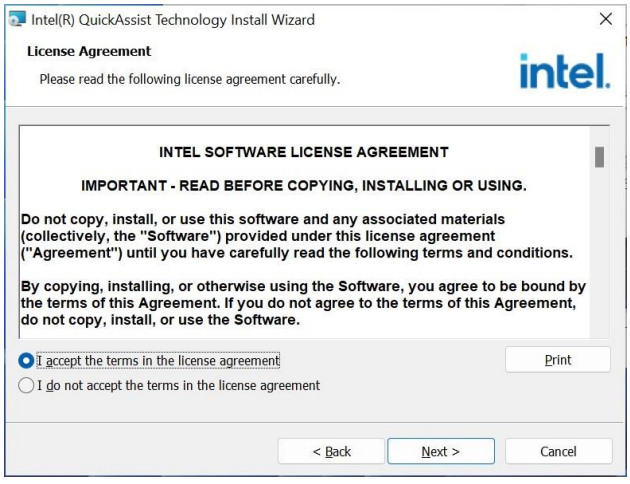
Step 3. Click **Next**.



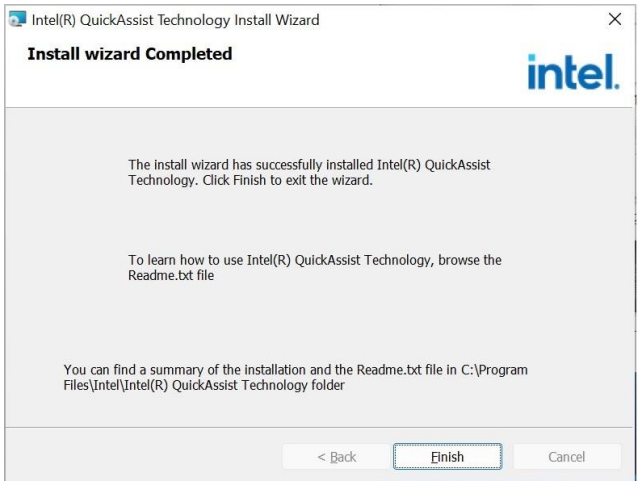
Step 1. Click **Next** to continue installation.



Step 4. Click **Install**.



Step 2. Click **Next**.

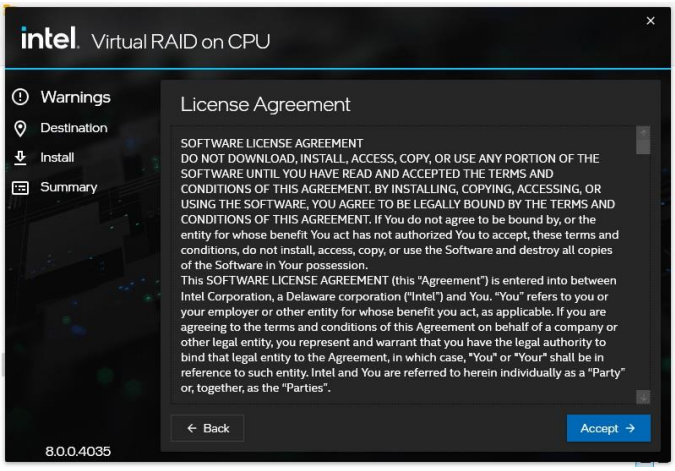


Step 5. Click **Finish** to complete setup.

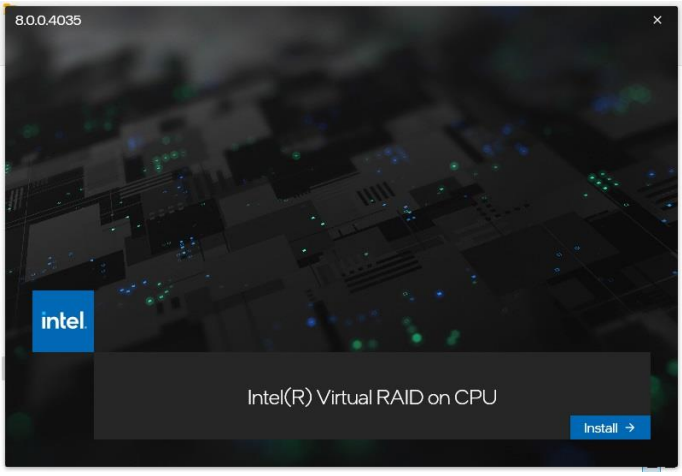
3.6 Install VROC Driver

All drivers can be found on the Avalue Official Website:
www.avalue.com.

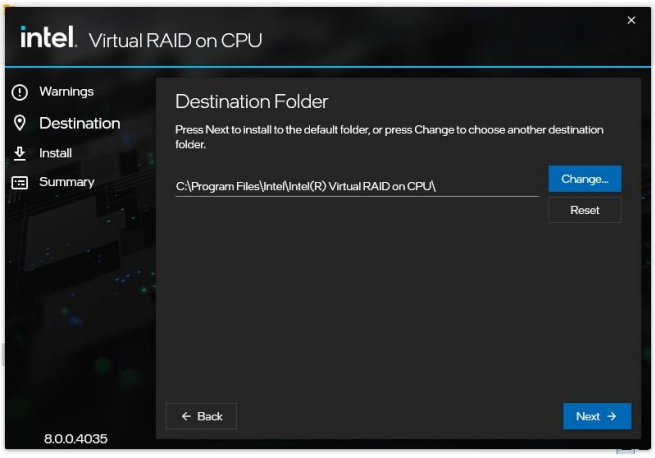
Note: The installation procedures and screen shots in this section are based on Windows 11 operation system.



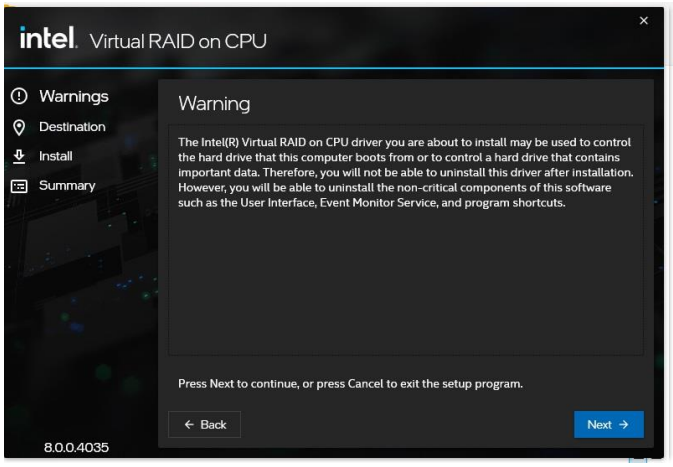
Step 3. Click **Accept**.



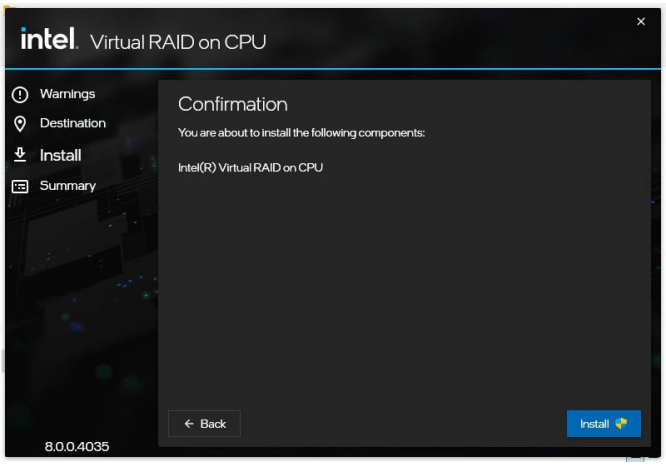
Step 1. Click **Install** to continue installation.



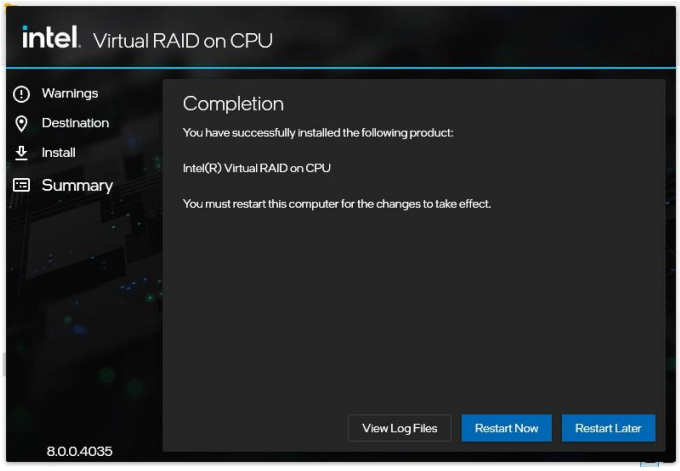
Step 4. Click **Next**.



Step 2. Click **Next**.



Step 5. Click **Install**.



Step 6. Setup completed.

4.BIOS Setup

4.1 Introduction

The BIOS setup program allows users to modify the basic system configuration. In this following chapter will describe how to access the BIOS setup program and the configuration options that may be changed.

4.2 Starting Setup

AMI BIOS™ is immediately activated when you first power on the computer. The BIOS reads the system information contained in the NVRAM and begins the process of checking out the system and configuring it. When it finishes, the BIOS will seek an operating system on one of the disks and then launch and turn control over to the operating system.

While the BIOS is in control, the Setup program can be activated in one of two ways:
By pressing <ESC> or <Del> immediately after switching the system on, or
By pressing the < ESC> or <Del> key when the following message appears briefly at the left-top of the screen during the POST (Power On Self Test).

Press <ESC> or <Del> to enter SETUP

If the message disappears before you respond and you still wish to enter Setup, restart the system to try again by turning it OFF then ON or pressing the "RESET" button on the system case. You may also restart by simultaneously pressing <Ctrl>, <Alt>, and <Delete> keys.

4.3 Using Setup

In general, you use the arrow keys to highlight items, press <Enter> to select, use the PageUp and PageDown keys to change entries, press <F1> for help and press <Esc> to quit. The following table provides more detail about how to navigate in the Setup program using the keyboard.

Button	Description
↑	Move to previous item
↓	Move to next item
←	Move to the item in the left hand
→	Move to the item in the right hand
Esc key	Main Menu -- Quit and not save changes into NVRAM Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu
+ key	Increase the numeric value or make changes
- key	Decrease the numeric value or make changes
F1 key	General help, only for Status Page Setup Menu and Option Page Setup Menu
F2 key	Previous Values
F3 key	Optimized defaults
F4 key	Save & Exit Setup

- **Navigating Through The Menu Bar**

  Use the left and right arrow keys to choose the menu you want to be in.

Note: Some of the navigation keys differ from one screen to another.

- **To Display a Sub Menu**

  Use the arrow keys to move the cursor to the sub menu you want. Then press <Enter>. A "➢" pointer marks all sub menus.

4.4 Getting Help

Press F1 to pop up a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window press <Esc> or the <Enter> key again.

4.5 In Case of Problems

If, after making and saving system changes with Setup, you discover that your computer no longer is able to boot, the AMI BIOS supports an override to the NVRAM settings which resets your system to its defaults.

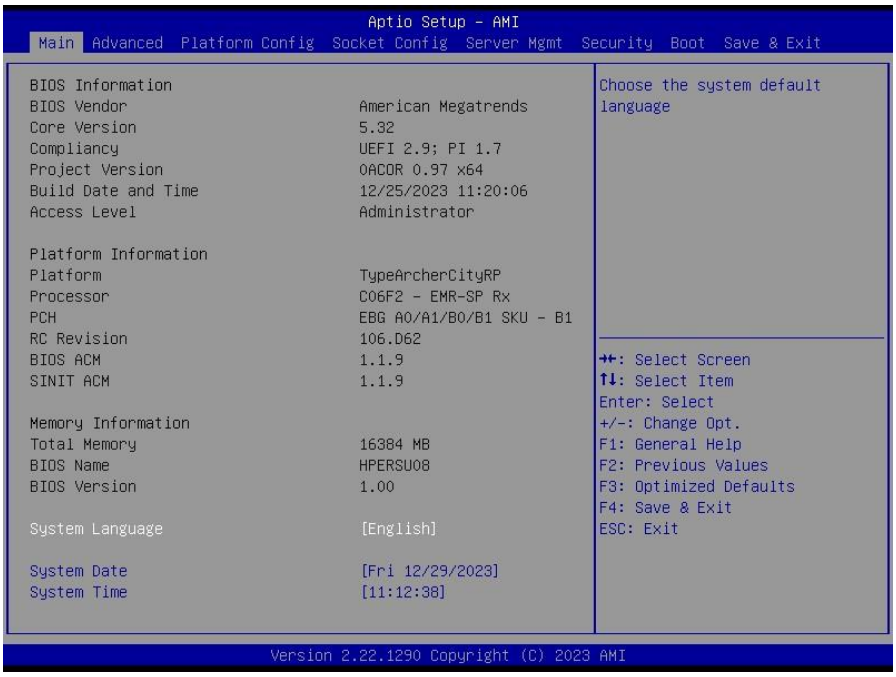
The best advice is to only alter settings which you thoroughly understand. To this end, we strongly recommend that you avoid making any changes to the chipset defaults. These defaults have been carefully chosen by both BIOS Vendor and your systems manufacturer to provide the absolute maximum performance and reliability. Even a seemingly small change to the chipset setup has the potential for causing you to use the override.

4.6 BIOS setup

Once you enter the Aptio Setup Utility, the Main Menu will appear on the screen. The Main Menu allows you to select from several setup functions and exit choices. Use the arrow keys to select among the items and press <Enter> to accept and enter the sub-menu.

4.6.1 Main Menu

This section allows you to record some basic hardware configurations in your computer and set the system clock.



4.6.1.1 System Language

This option allows choosing the system default language.

4.6.1.2 System Date

Use the system date option to set the system date. Manually enter the Month, day and year.

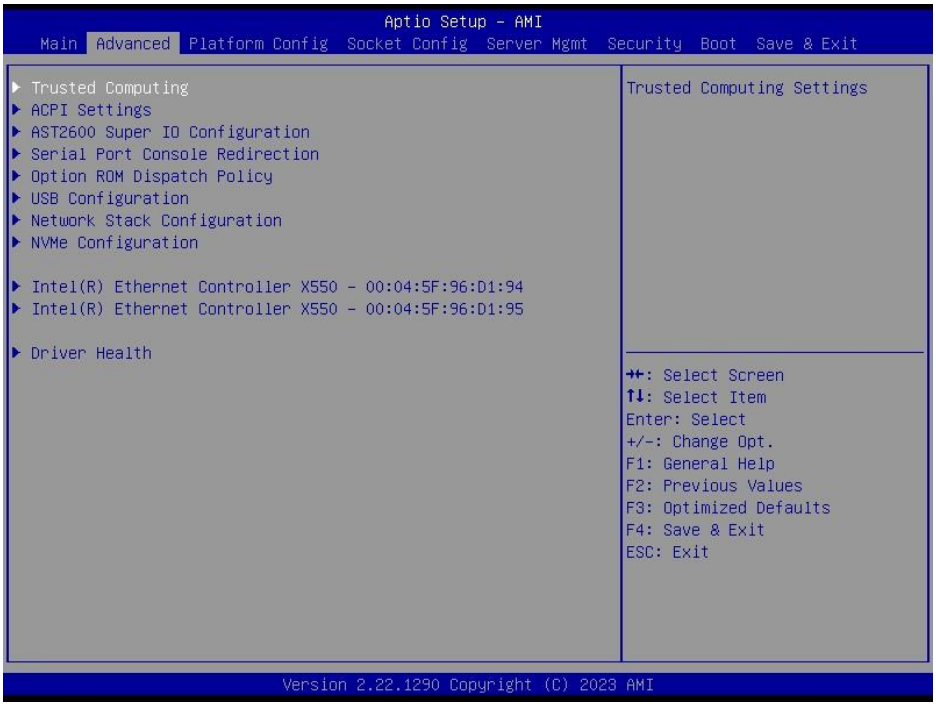
4.6.1.3 System Time

Use the system time option to set the system time. Manually enter the hours, minutes and seconds.

Note: The BIOS setup screens shown in this chapter are for reference purposes only, and may not exactly match what you see on your screen.
Visit the Avalue website (www.avalue.com) to download the latest product and BIOS information.

4.6.2 Advanced Menu

This section allows you to configure your CPU and other system devices for basic operation through the following sub-menus.

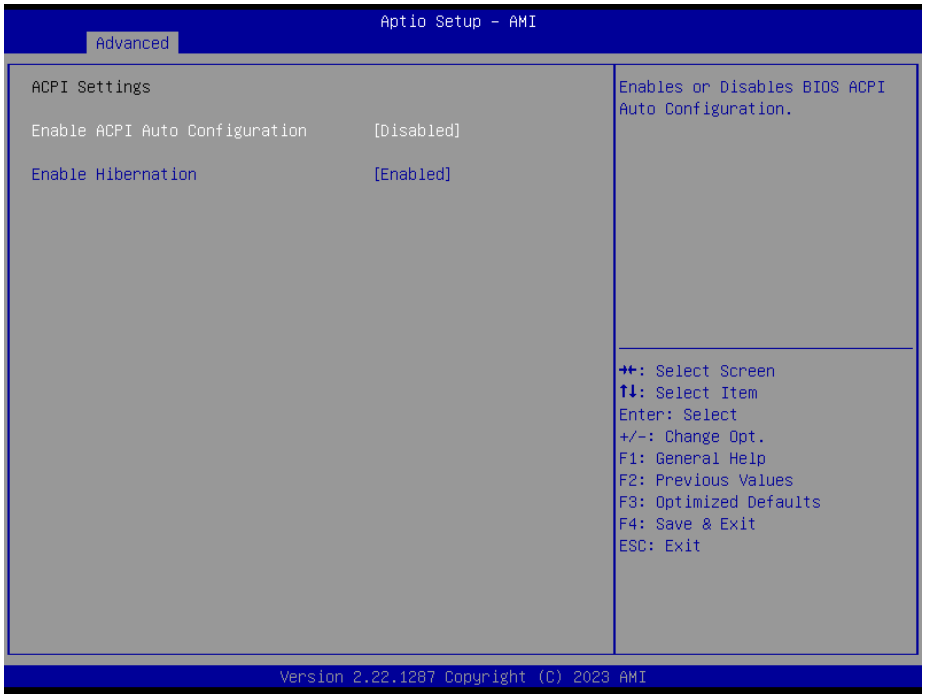


4.6.2.1 Trusted Computing

Item	Options	Description
Security Device Support	Disable, Enable**[Default]**	Enables or Disables BIOS support for security device. O.S. will not show Security Device. TCG EFI protocol and INT1A interface will not be available.

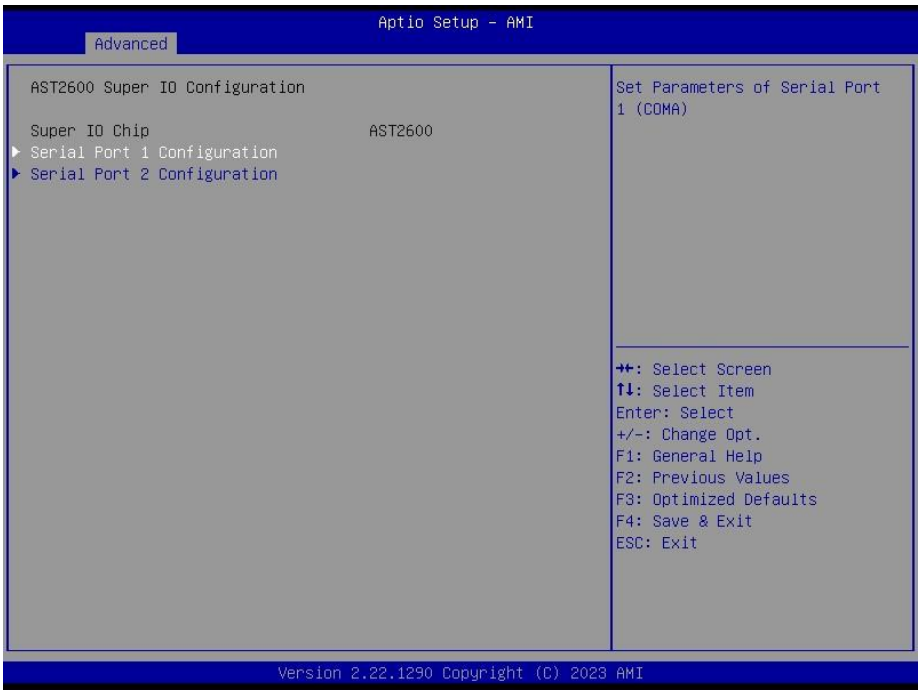
SHA256 PCR Bank	Disabled, Enabled**[Default]**	Enables or Disables SHA256 PCR Bank.
SHA384 PCR Bank	Disabled**[Default]**, Enabled	Enables or Disables SHA384 PCR Bank.
Pending operation	None**[Default]** TPM Clear	Schedule an Operation for the Security Device. NOTE: Your Computer will reboot during restart in order to change State of Security Device.
Physical Presence Spec Version	1.2 1.3**[Default]**	Select to Tell O.S. to support PPI Spec Version 1.2 or1.3 Note some HCK tests might not support 1.3.
Device Select	TPM 2.0 Auto**[Default]**	TPM 1.2 will restrict support to TPM 1.2 devices, TPM 2.0 will restrict support to TPM 2.0 devices, Auto will support both with default set to TPM 2.0 devices if not found, TPM 1.2 devices will be enumerated.

4.6.2.2 ACPI Settings



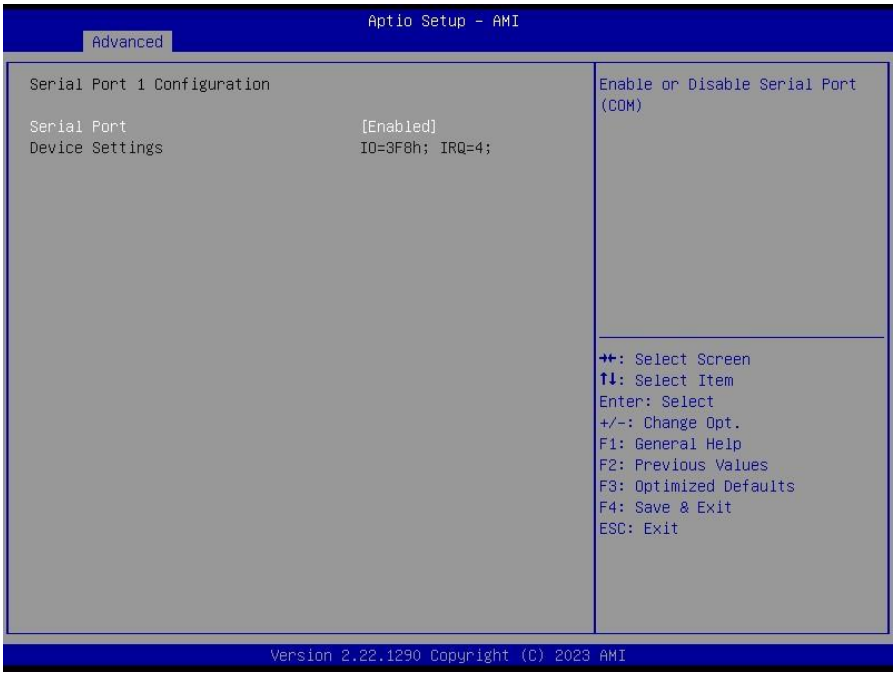
Item	Options	Description
Enable ACPI Auto Configuration	Disabled**[Default]** Enabled	Enables or Disables BIOS ACPI Auto Configuration.
Enable Hibernation	Disabled Enabled**[Default]**	Enables or Disables System ability to Hibernate (OS/S4 Sleep State). This option may not be effective with some operating systems.

4.6.2.3 AST2600 Super IO Configuration



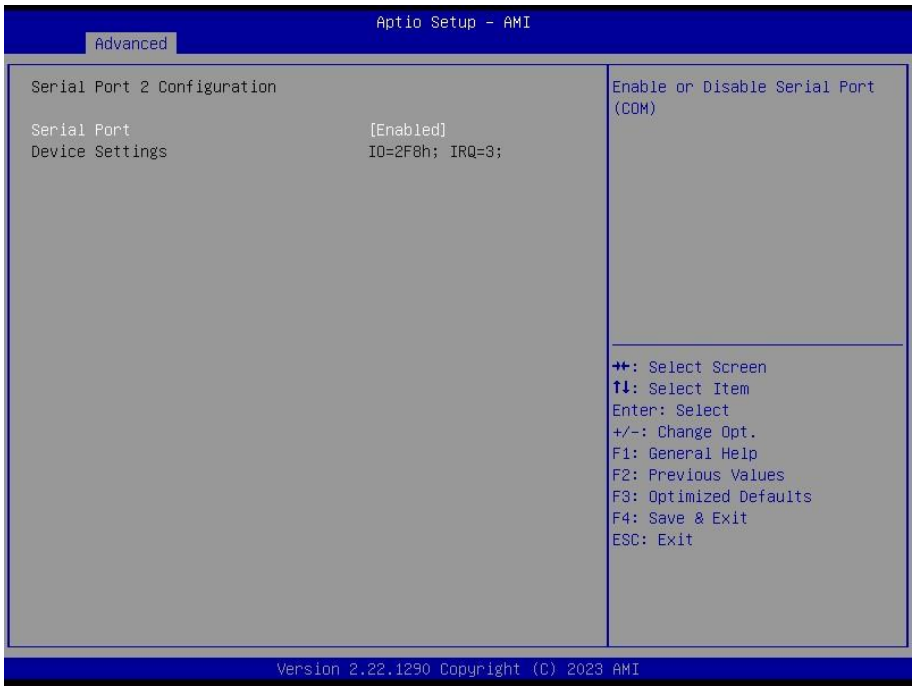
Item	Description
Serial Port 1 Configuration	Set Parameters of Serial Port 1 (COMA).
Serial Port 2 Configuration	Set Parameters of Serial Port 2 (COMB).

4.6.2.3.1 Serial Port 1 Configuration



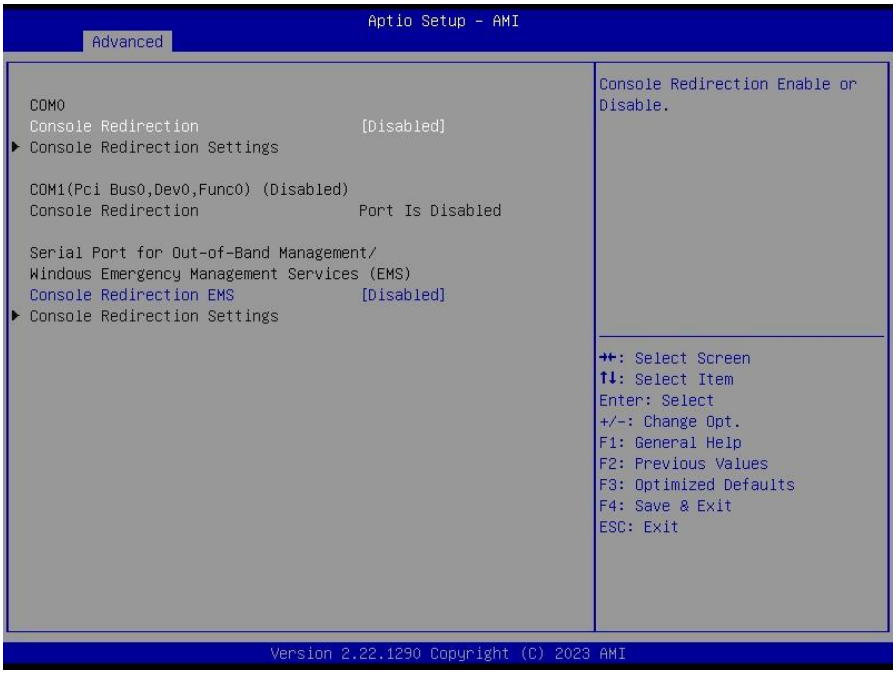
Item	Option	Description
Serial Port	Enabled**[Default]**, Disabled	Enable or Disable Serial Port (COM).

4.6.2.3.2 Serial Port 2 Configuration



Item	Option	Description
Serial Port	Enabled**[Default]**, Disabled	Enable or Disable Serial Port (COM).

4.6.2.4 Serial Port Console Redirection



Item	Options	Description
Console Redirection	Disabled**[Default]**, Enabled	Console Redirection Enable or Disable.

Console Redirection EMS	Disabled**[Default]**, Enabled	Console Redirection Enable or Disable.

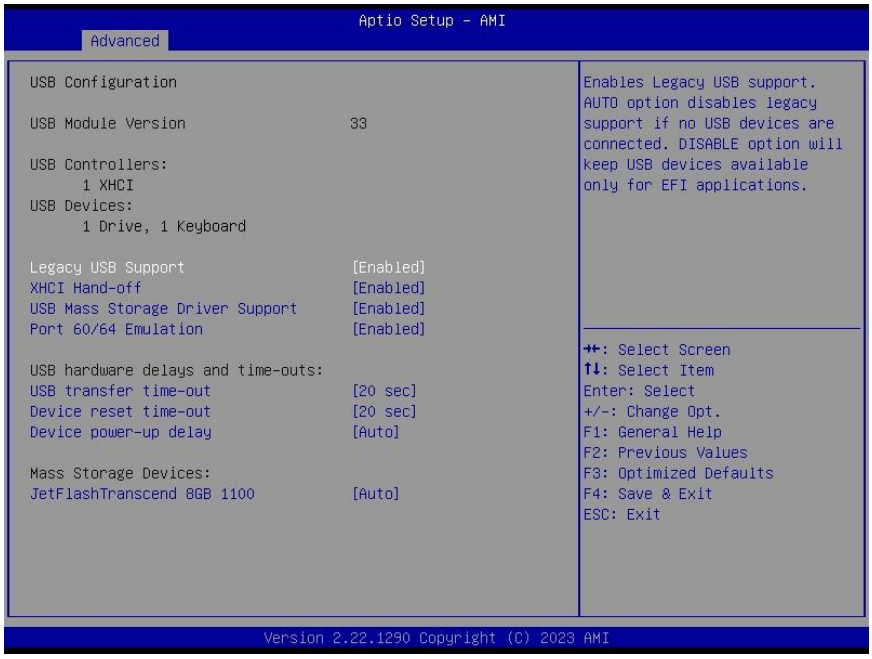
4.6.2.5 Option ROM Dispatch Policy

Item	Options	Description
Restore if Failure	Disabled Enabled**[Default]**,	If system fails to boot and this option is set to 'Enabled', software will reset settings of this page as well as CSM page to its default values automatically.
Primary Video Ignore	Disabled Enabled**[Default]**,	If software will detect that due to the Policy settings. Option ROM of Primary Video Device will not dispatch, it will ignore this device policy settings, and restore it to 'Enable' automatically.
Onboard Mass Storage Controller	Enabled**[Default],** Disabled	Onboard Device has: UEFI [X] Legacy [X] Embedded ROM(s). VIDx8086; DIDxA1D2 @ s0|Bx0 |Dx11 |Fx5
Onboard Display Controller	Enabled**[Default],** Disabled	Onboard Device has: UEFI [X] Legacy [X] Embedded ROM(s). VIDx1A03; DIDx2000 @ s0|BxA |Dx0 |Fx0
Onboard Network Controller	Enabled**[Default],** Disabled	Onboard Device has: UEFI [X] Legacy [X] Embedded ROM(s).

		VIDx8086; DIDx1533 @ s0|Bx6 |Dx0 |Fx0
Slot#1 Empty	Enabled**[Default],** Disabled	Enable or Disable Option ROM execution for selected Slot.
Slot#2 Empty	Enabled**[Default],** Disabled	Enable or Disable Option ROM execution for selected Slot.
Slot#3 Empty	Enabled**[Default],** Disabled	Enable or Disable Option ROM execution for selected Slot.
Slot#4 Empty	Enabled**[Default],** Disabled	Enable or Disable Option ROM execution for selected Slot.
Slot#5 Empty	Enabled**[Default],** Disabled	Enable or Disable Option ROM execution for selected Slot.
Slot#6 Empty	Enabled**[Default],** Disabled	Enable or Disable Option ROM execution for selected Slot.
Slot#7 Empty	Enabled**[Default],** Disabled	Enable or Disable Option ROM execution for selected Slot.

4.6.2.6 USB Configuration

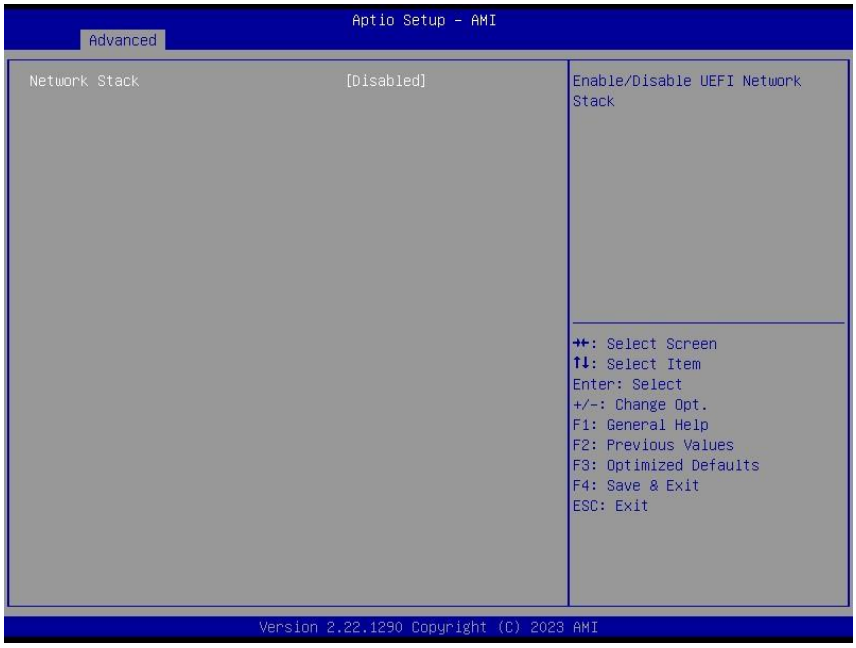
The USB Configuration menu helps read USB information and configures USB settings.



Item	Options	Description
Legacy USB Support	Enabled**[Default]**, Disabled Auto	Enables Legacy USB support. AUTO option disables legacy support if no USB devices are connected. DISABLE option will keep USB devices available only for EFI applications.
XHCI Hand-off	Enabled**[Default]**, Disabled	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	Disabled Enabled**[Default]**,	Enable/Disable USB Mass Storage Driver Support.
Port 60/64 Emulation	Disabled Enabled**[Default]**,	Enables I/O port 60h/64h emulation support. This should be enabled for the complete USB

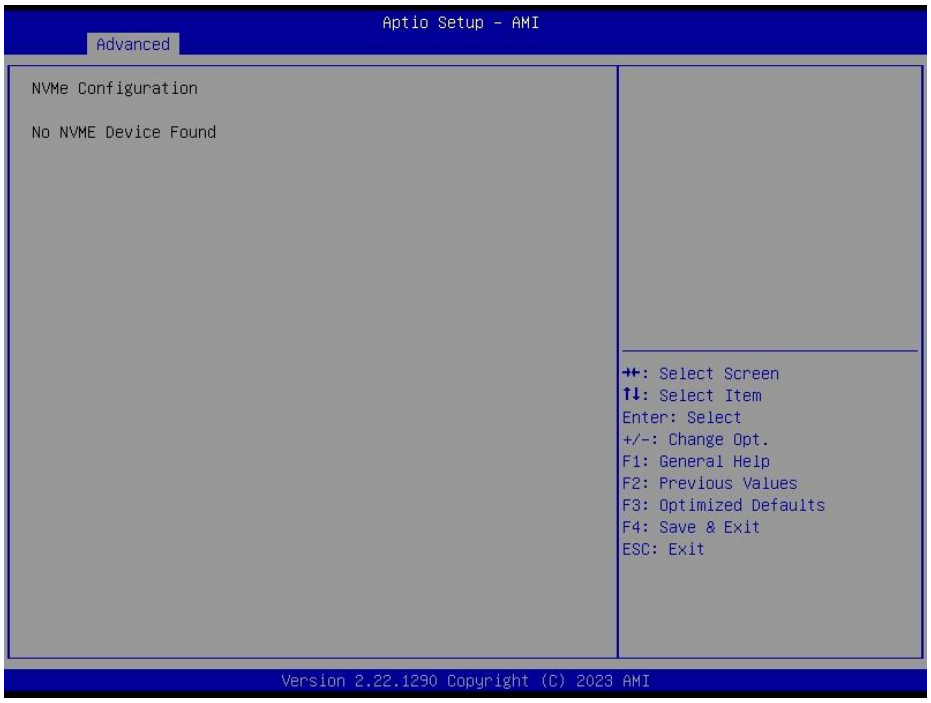
		keyboard legacy support for non-USB aware OSes.
USB transfer time-out	1 sec 5 sec 10 sec 20 sec**[Default]**	The time-out value for Control, Bulk, and Interrupt transfers.
Device reset time-out	10 sec 20 sec**[Default]** 30 sec 40 sec	USB mass storage device Start Unit command time-out.
Device power-up delay	Auto**[Default]** Manual	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 100 ms, for a Hub port the delay is taken from Hub descriptor.
Mass Storage Devices	Auto**[Default]** Floppy Forced FDD Hard Disk CD-ROM	Mass storage device emulation type. 'AUTO' enumerates devices according to their media format. Optical drives are emulated as 'CDROM', drives with no media will be emulated according to a drive type.

4.6.2.7 Network Stack Configuration

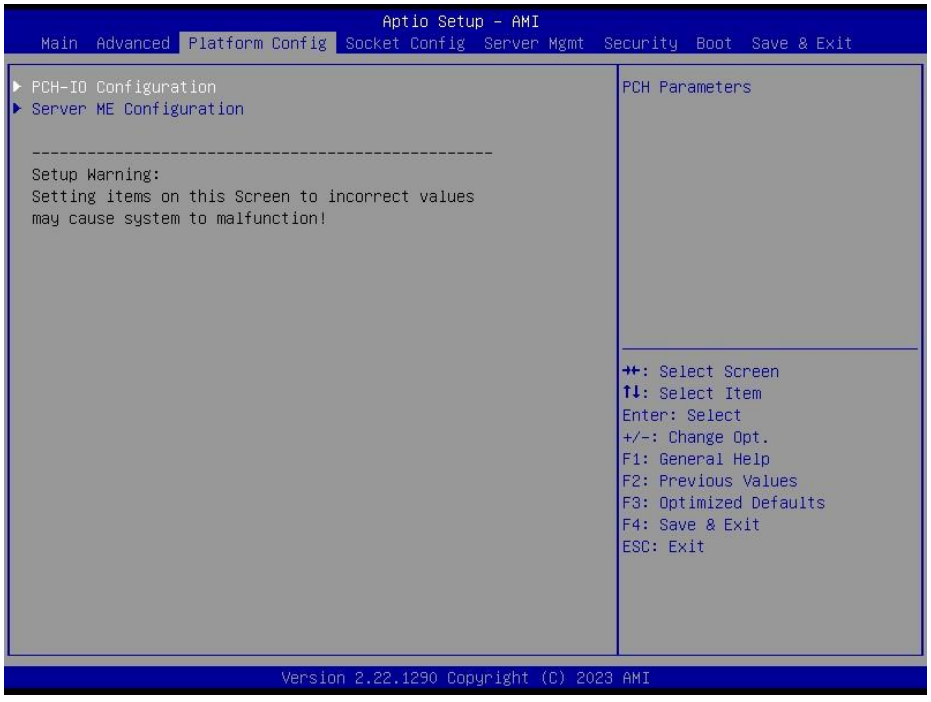


Item	Options	Description
Network Stack	Enabled Disabled**[Default]**	Enable/Disable UEFI Network Stack.

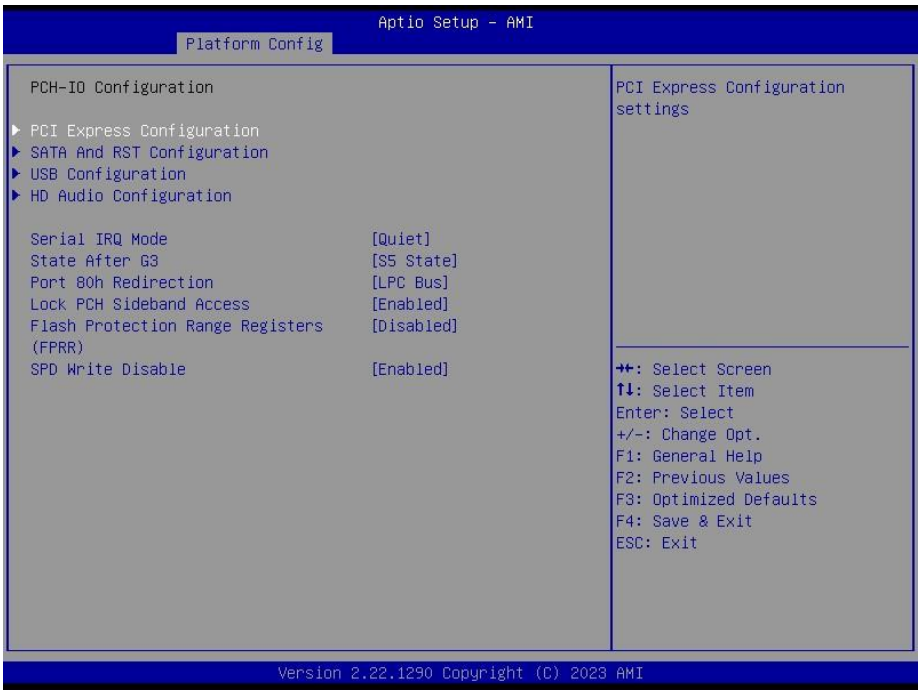
4.6.2.8 NVMe Configuration



4.6.3 Platform Config

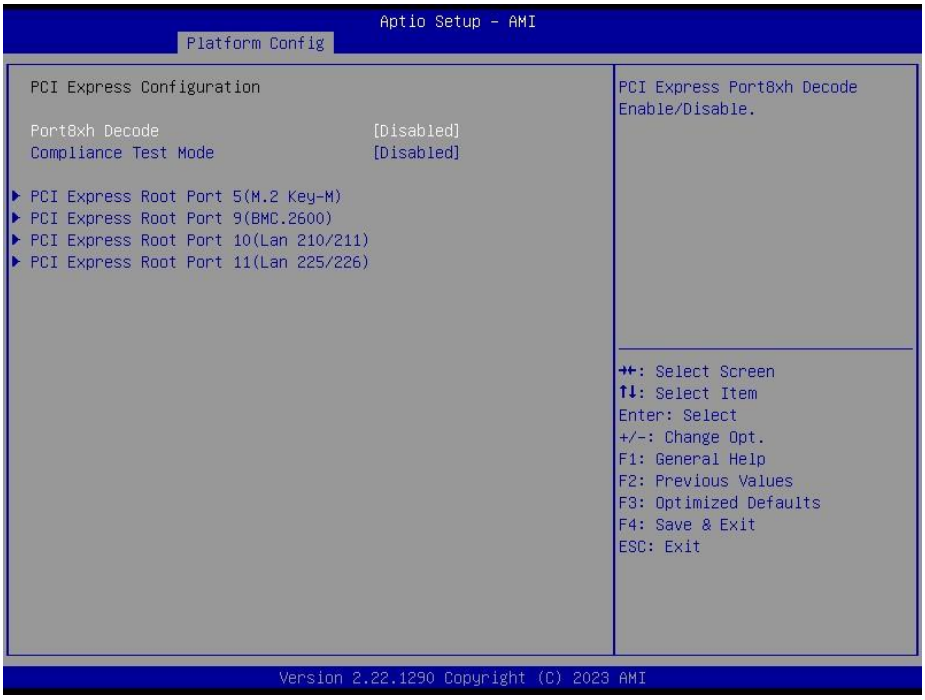


4.6.3.1 PCH-IO Configuration



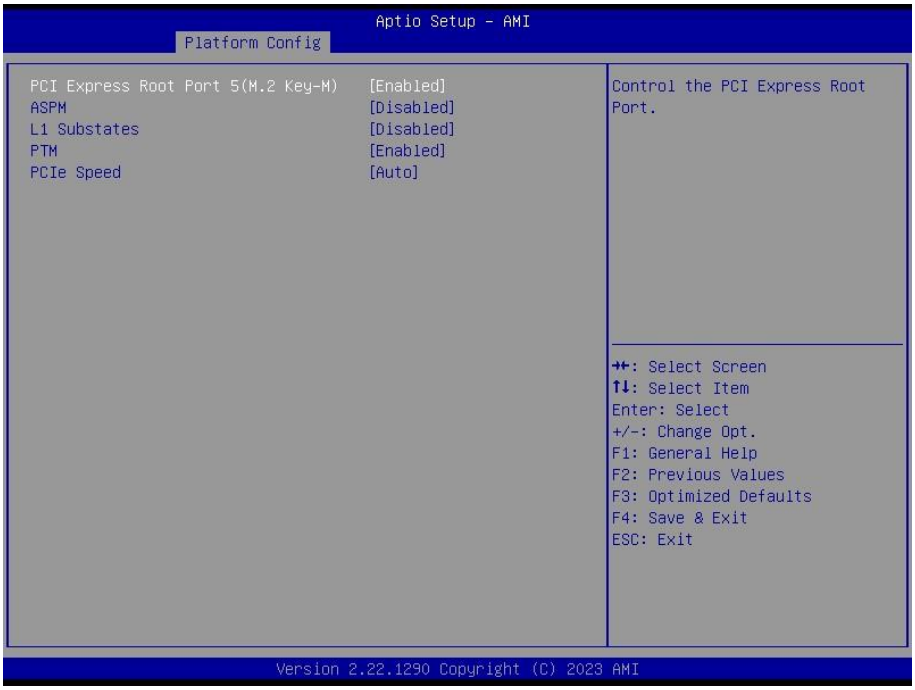
Item	Option	Description
Serial IRQ Mode	Quiet**[Default]** Continuous	Configure Serieal IRQ Mode.
State After G3	S0 State S5 State**[Default]**	Specify what state to go to when power is re-applied after a power failure (G3 state).
Port 80h Redirection	LPC Bus**[Default]** PCIE Bus	Control where the Port 80h cycles are sent.
Lock PCH Side band Access	Disabled Enabled**[Default]**	Lock PCH Sideband access, include SideBand interface lock and SideBand PortID mask for certain end point (e.g. PSFx). The option is invalid if POSTBOOT SAI is set.
Flash Protection Range Registers(FRRR)	Disabled**[Default]** Enabled	Enable Flash Protection Range Registers.
SPD Write Disable	Disabled Enabled**[Default]**	Enable/Disable setting SPD Write Disable bit. For sucurity recommendations, SPD write disable bit must be set.

4.6.3.1.1 PCI Express Configuration



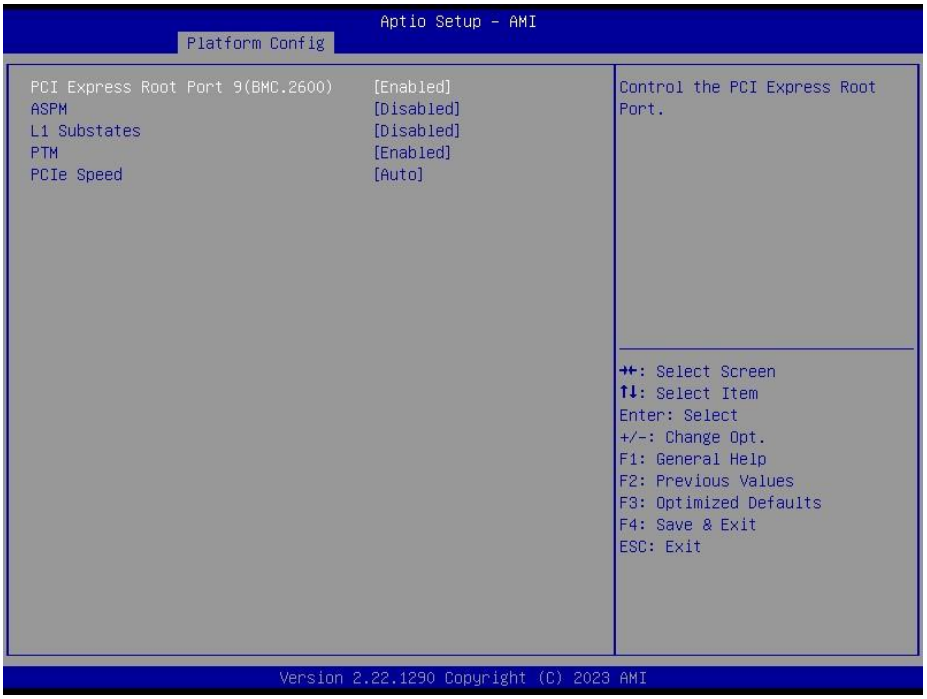
Item	Option	Description
Port8xh Decode	Disabled**[Default]** Enabled	PCI Express Port8xh Decode Enable/Disable.
Compliance Test Mode	Disabled**[Default]** Enabled	Enable when using Compliance Load Board.

4.6.3.1.1.1 PCI Express Root Port 5(M.2 Key-M)



Item	Option	Description
PCI Express Root Port 5(M.2 Key-M)	Enabled**[Default]**, Disabled	Control the PCI Express Root Port.
ASPM	Disabled**[Default]**, L1	PCI Express Active State Power Management settings.
L1 Substates	Disabled**[Default]** L1.1 L1.2 L1.1 & L1.2	PCI Express L1 Substates settings.
PTM	Enabled**[Default]**, Disabled	Enable/Disable Precision Time Measurement.
PCIe Speed	Auto**[Default]** Gen1 Gen2 Gen3	Configure PCIe Speed.

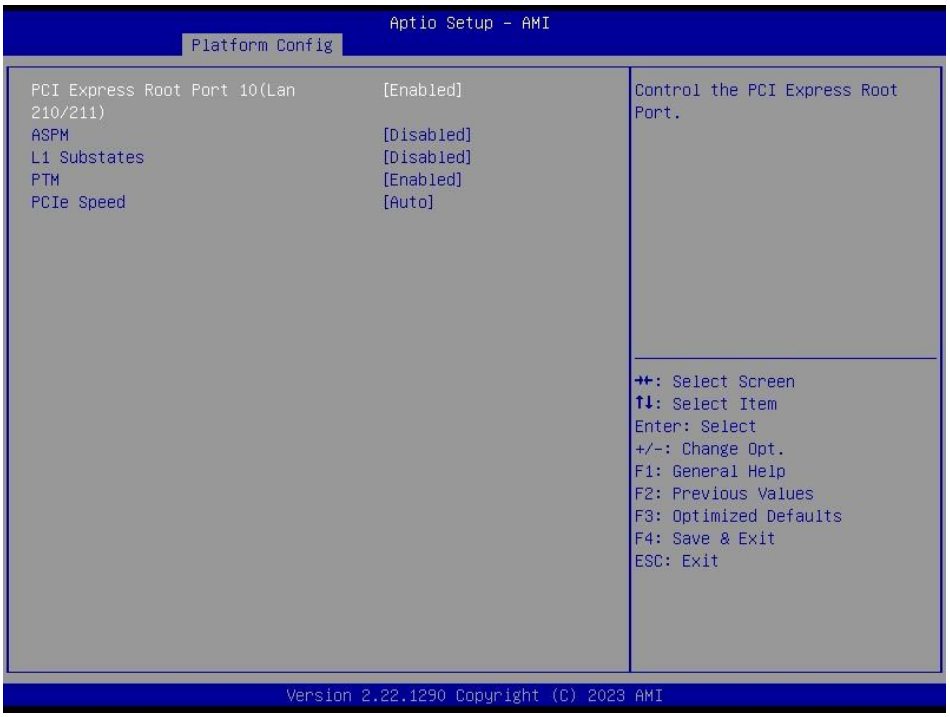
4.6.3.1.1.2 PCI Express Root Port 9(BMC.2600)



Item	Option	Description
PCI Express Root Port 9(BMC. 2600)	Enabled**[Default]**, Disabled	Control the PCI Express Root Port.
ASPM	Disabled**[Default]**, L1	PCI Express Active State Power Management settings.
L1 Substates	Disabled**[Default]** L1.1 L1.2 L1.1 & L1.2	PCI Express L1 Substates settings.

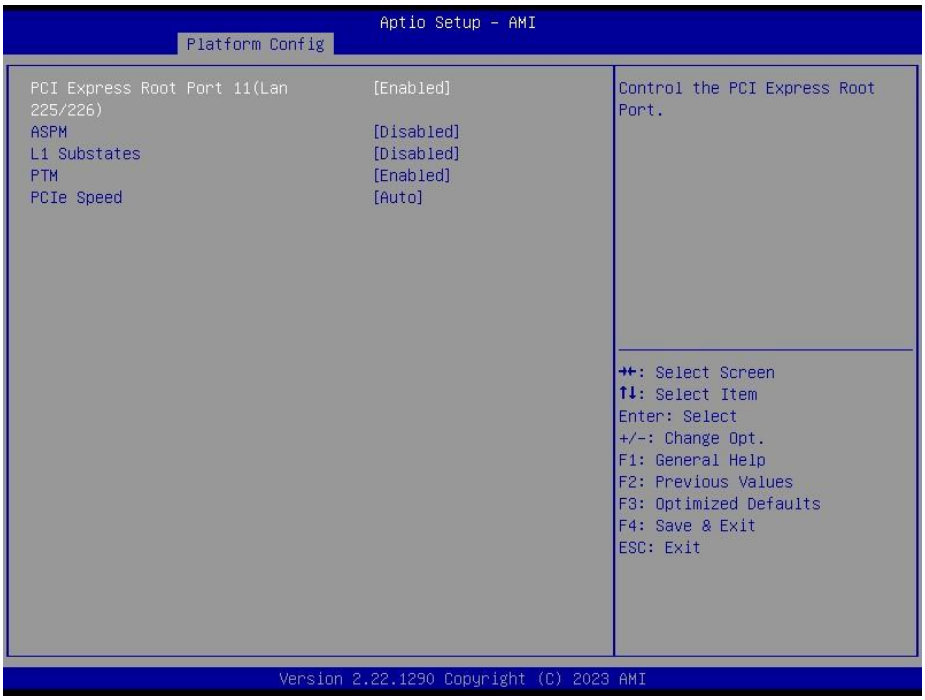
PTM	Enabled**[Default]**, Disabled	Enable/Disable Precision Time Measurement.
PCIe Speed	Auto**[Default]** Gen1 Gen2 Gen3	Configure PCIe Speed.

4.6.3.1.1.3 PCI Express Root Port 10(LAN 210/211)



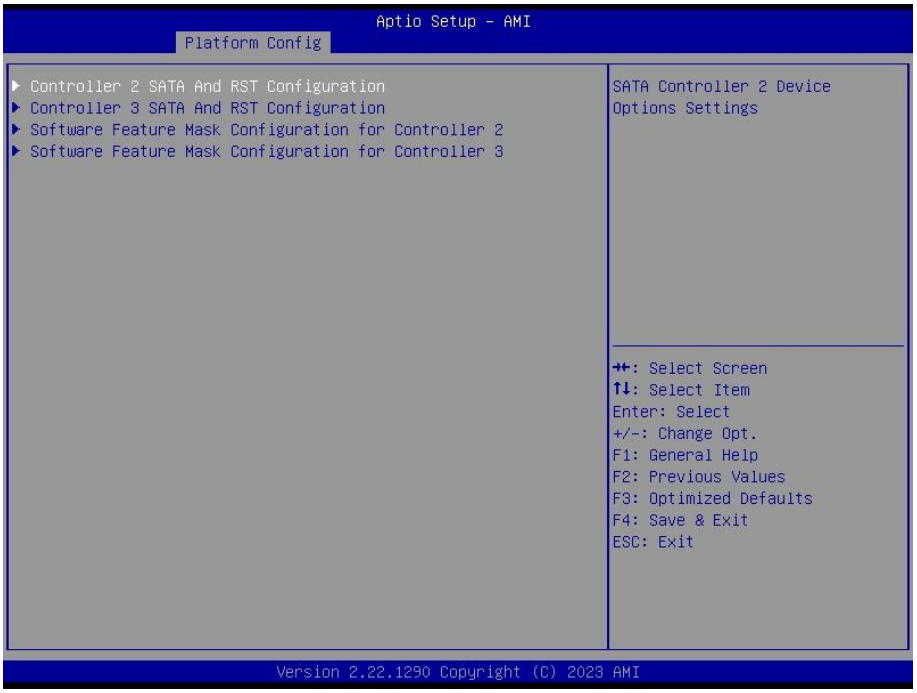
Item	Option	Description
PCI Express Root Port 10(LAN 210/211)	Enabled**[Default]**, Disabled	Control the PCI Express Root Port.
ASPM	Disabled**[Default]**, L1	PCI Express Active State Power Management settings.
L1 Substates	Disabled**[Default]** L1.1 L1.2 L1.1 & L1.2	PCI Express L1 Substates settings.
PTM	Enabled**[Default]**, Disabled	Enable/Disable Precision Time Measurement.
PCIe Speed	Auto**[Default]** Gen1 Gen2 Gen3	Configure PCIe Speed.

4.6.3.1.1.4 PCI Express Root Port 11(LAN 225/226)

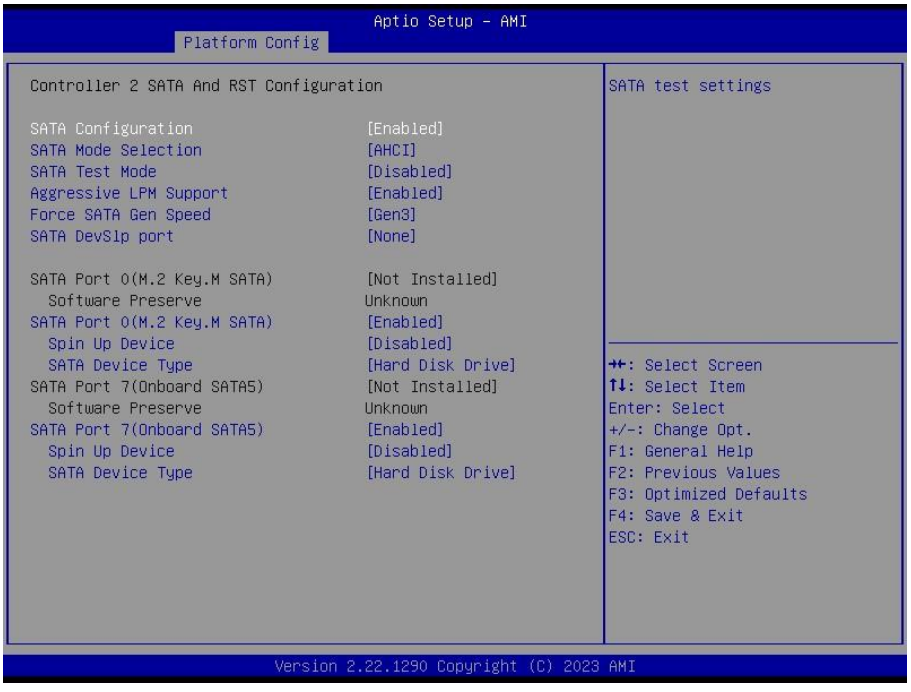


Item	Option	Description
PCI Express Root Port 11(LAN 225/226)	Enabled**[Default]**, Disabled	Control the PCI Express Root Port.
ASPM	Disabled**[Default]**, L1	PCI Express Active State Power Management settings.
L1 Substates	Disabled**[Default]** L1.1 L1.2 L1.1 & L1.2	PCI Express L1 Substates settings.
PTM	Enabled**[Default]**, Disabled	Enable/Disable Precision Time Measurement.
PCIe Speed	Auto**[Default]** Gen1 Gen2 Gen3	Configure PCIe Speed.

4.6.3.1.2 SATA And RST Configuration



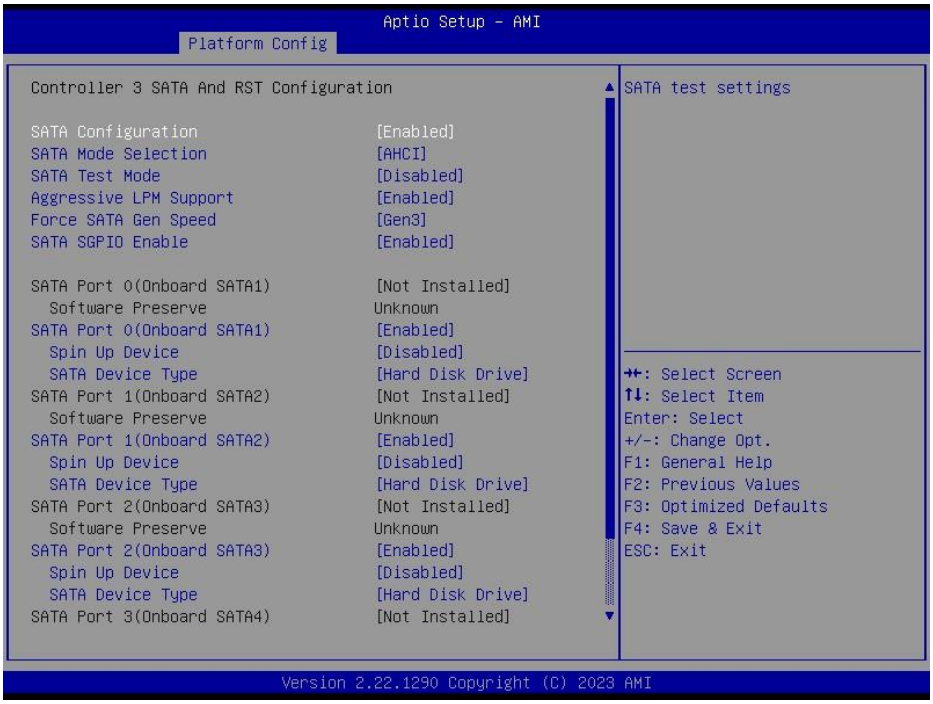
4.6.3.1.2.1 Controller 2 SATA And RST Configuration



Item	Options	Description
SATA Configuration	Enabled**[Default]** Disabled,	SATA test settings.
SATA Mode Selection	AHCI**[Default]**, RAID	Determines how SATA controller(s) operate.
SATA Test Mode	Enabled Disabled**[Default]**	Test Mode Enable/Disable (Loop Back).

Aggressive LPM Support	Enabled Disabled**[Default]**	Enable PCH to aggressively enter link power state.
Force SATA Gen Speed	Gen1 Gen2 Gen3**[Default]**	Changes SATA Gen Speed for port.
SATA DevSlp port	None**[Default]** Port0 Port1 Port2 Port3 Port4 Port5 Port6 Port7	Enable SATA DevSlp feature for port. It is possible to enable DevSlp for only one port or none.
SATA Port 0(M.2 Key.M SATA)	Disabled Enabled**[Default]**	Enable or Disable SATA Port.
Spin Up Device	Disabled**[Default]** Enabled	If enabled for any of ports Staggerred Spin Up will be performed and only the drives which have this option enabled will spin up at boot. Otherwise all drives spin up at boot.
SATA Device Type	Hard Disk Drive**[Default]** Solid State Drive	Identify the SATA port is connected to Solid State Drive or Hard Disk Drive.
SATA Port 7(Onboard SATA5)	Disabled Enabled**[Default]**	Enable or Disable SATA Port.
Spin Up Device	Disabled**[Default]** Enabled	If enabled for any of ports Staggerred Spin Up will be performed and only the drives which have this option enabled will spin up at boot. Otherwise all drives spin up at boot.
SATA Device Type	Hard Disk Drive**[Default]** Solid State Drive	Identify the SATA port is connected to Solid State Drive or Hard Disk Drive.

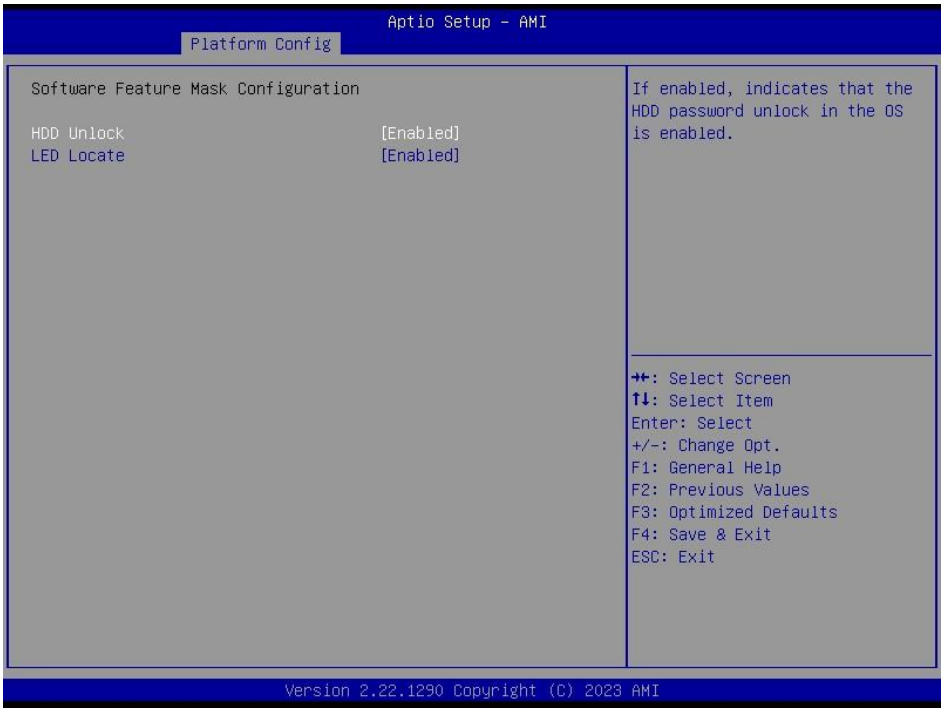
4.6.3.1.2.2 Controller 3 SATA And RST Configuration



Item	Options	Description
SATA Configuration	Enabled**[Default]** Disabled,	SATA test settings.
SATA Mode Selection	AHCI**[Default]**, RAID	Determines how SATA controller(s) operate.
SATA Test Mode	Enabled Disabled**[Default]**	Test Mode Enable/Disable (Loop Back).
Aggressive LPM Support	Enabled Disabled**[Default]**	Enable PCH to aggressively enter link power state.
Force SATA Gen Speed	Gen1 Gen2 Gen3**[Default]**	Changes SATA Gen Speed for port.
SATA DevSlp port	None**[Default]** Port0 Port1 Port2 Port3 Port4 Port5 Port6 Port7	Enable SATA DevSlp feature for port. It is possible to enable DevSlp for only one port or none.
SATA Port 0(Onboard SATA1)	Disabled Enabled**[Default]**	Enable or Disable SATA Port.
Spin Up Device	Disabled**[Default]** Enabled	If enabled for any of ports Staggerred Spin Up will be performed and only the drives which have this option enabled will spin up at boot. Otherwise all drives spin up at boot.

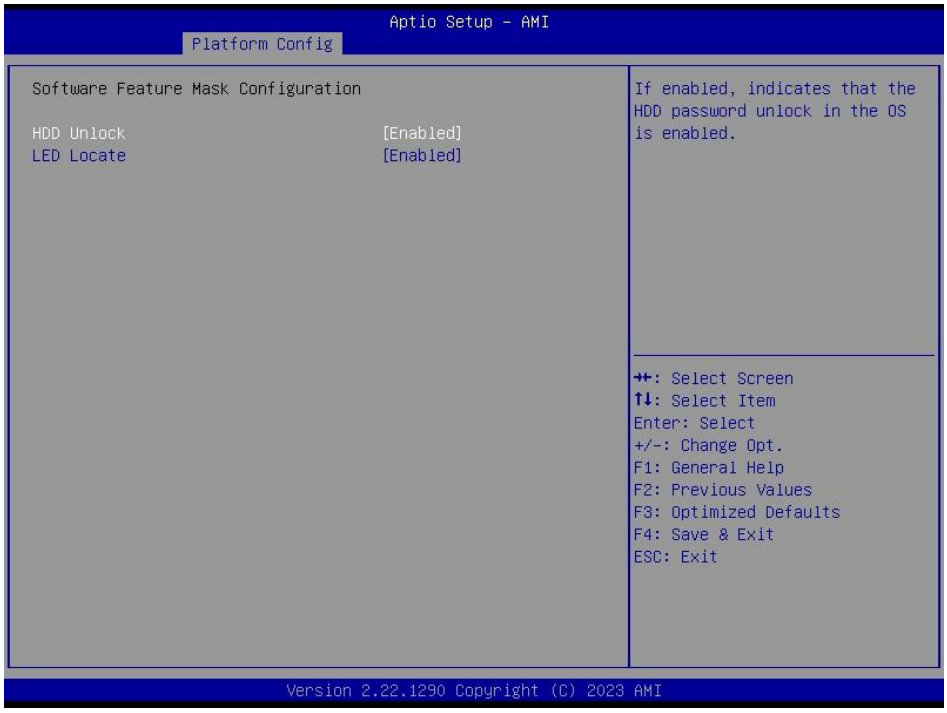
SATA Device Type	Hard Disk Drive**[Default]** Solid State Drive	Identify the SATA port is connected to Solid State Drive or Hard Disk Drive.
SATA Port 1(Onboard SATA2)	Disabled Enabled**[Default]**	Enable or Disable SATA Port.
Spin Up Device	Disabled**[Default]** Enabled	If enabled for any of ports Staggerred Spin Up will be performed and only the drives which have this option enabled will spin up at boot. Otherwise all drives spin up at boot.
SATA Device Type	Hard Disk Drive**[Default]** Solid State Drive	Identify the SATA port is connected to Solid State Drive or Hard Disk Drive.
SATA Port 2(Onboard SATA3)	Disabled Enabled[Default]	Enable or Disable SATA Port.
Spin Up Device	Disabled[Default] Enabled	If enabled for any of ports Staggerred Spin Up will be performed and only the drives which have this option enabled will spin up at boot. Otherwise all drives spin up at boot.
SATA Device Type	Hard Disk Drive[Default] Solid State Drive	Identify the SATA port is connected to Solid State Drive or Hard Disk Drive.
SATA Port 3(Onboard SATA4)	Disabled Enabled[Default]	Enable or Disable SATA Port.
Spin Up Device	Disabled[Default] Enabled	If enabled for any of ports Staggerred Spin Up will be performed and only the drives which have this option enabled will spin up at boot. Otherwise all drives spin up at boot.
SATA Device Type	Hard Disk Drive[Default] Solid State Drive	Identify the SATA port is connected to Solid State Drive or Hard Disk Drive.

4.6.3.1.2.3 Software Feature Mask Configuration for Controller 2



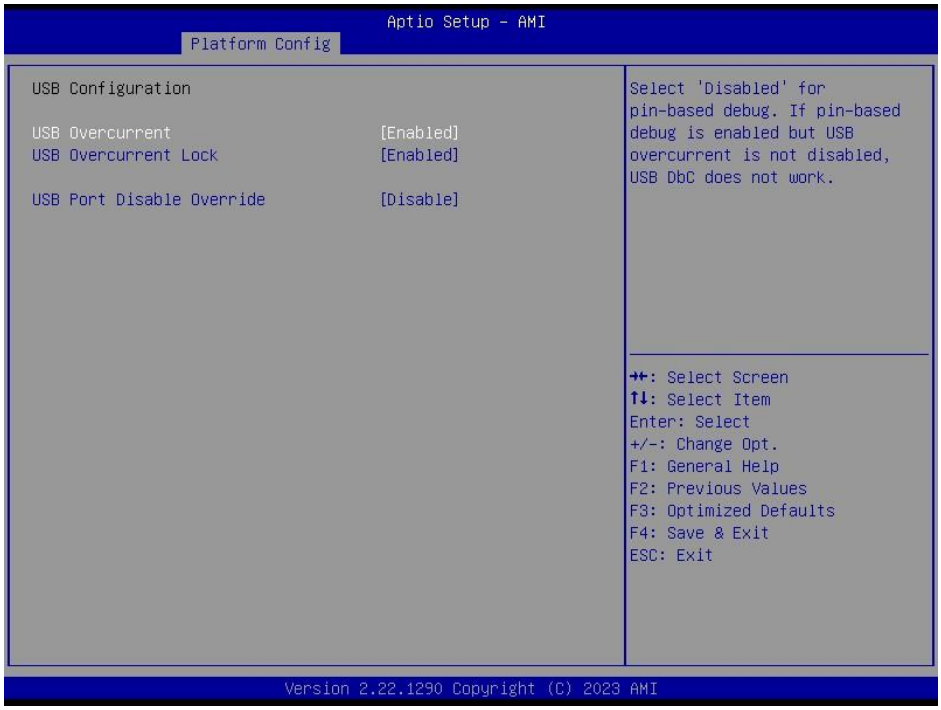
Item	Options	Description
HDD Unlock	Disabled, Enabled**[Default]**	If enabled, indicates that the HDD password unlock in the OS is enabled.
LED Locate	Disabled, Enabled**[Default]**	If enabled, indicates that the LED/SGPIO hardware is attached and ping to locate feature is enabled on the OS.

4.6.3.1.2.4 Software Feature Mask Configuration for Controller 3



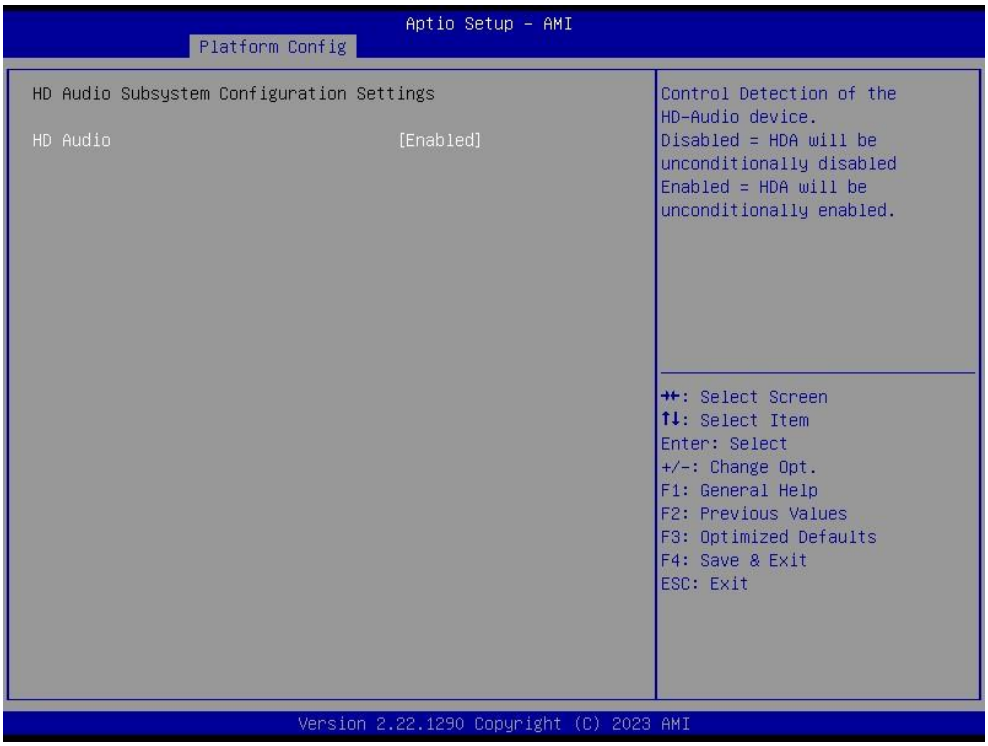
Item	Options	Description
HDD Unlock	Disabled, Enabled**[Default]**	If enabled, indicates that the HDD password unlock in the OS is enabled.
LED Locate	Disabled, Enabled**[Default]**	If enabled, indicates that the LED/SGPIO hardware is attached and ping to locate feature is enabled on the OS.

4.6.3.1.3 USB Configuration



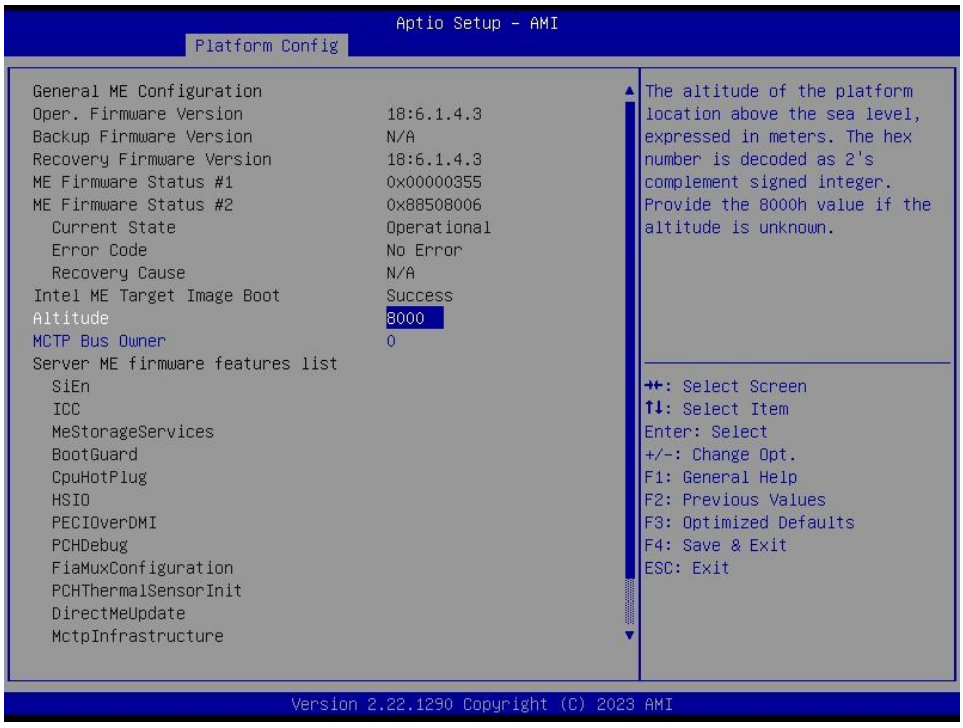
Item	Options	Description
USB Overcurrent	Disabled, Enabled**[Default]**	Select ‘Disabled’ for pin-based debug. If pin-based debug is enabled but USB overcurrent is not disabled, USB DbC does not work.
USB Overcurrent Lock	Disabled, Enabled**[Default]**	Select ‘Enabled’. If Overcurrent functionality is used. Enabling this will make xHCI controller consume the Overcurrent mapping data.
USB Port Disable Override	Disabled**[Default]** Select Per-Pin	Selectively Enable/Disable the corresponding USB port from reporting a Device Connection to the controller.

4.6.3.1.4 HD Audio Configuration



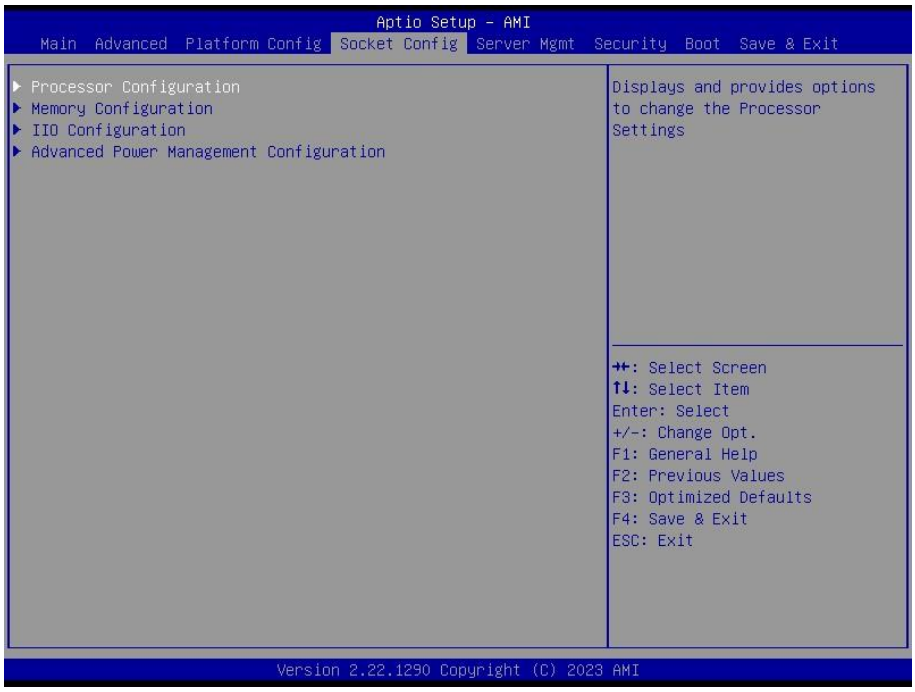
Item	Options	Description
HD Audio	Disabled, Enabled**[Default]**	Control Detection of the HD-Audio device. Disabled=HDA will be unconditionally disabled Enabled=HDA will be unconditionally enabled.

4.6.3.2 Server ME Configuration

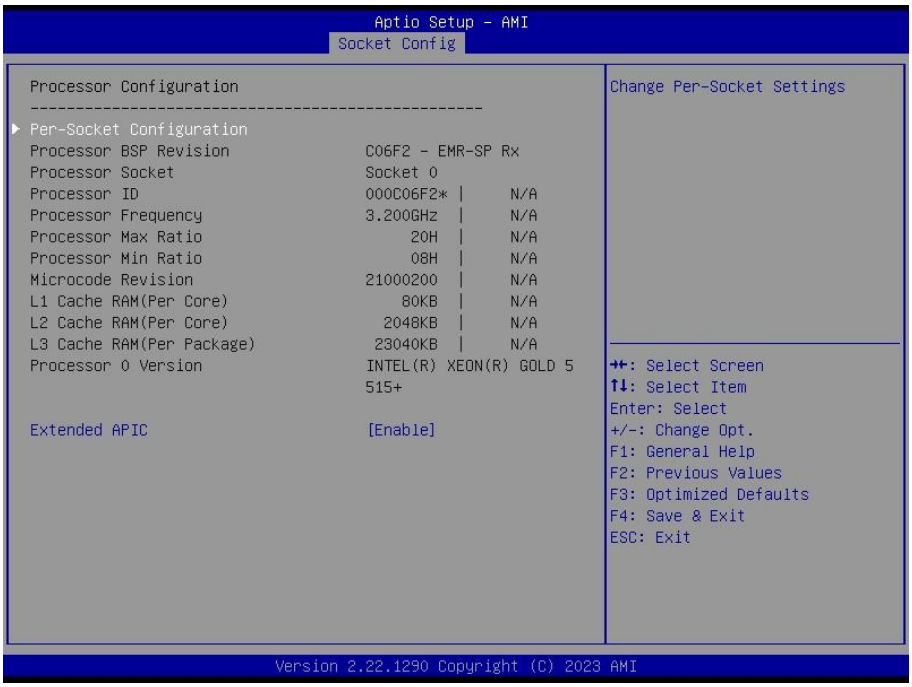


Item	Option	Description
Altitude	8000	The altitude of the platform location above the sea level, expressed in meters. The hex number is decoded as 2's complement signed integer. Provide the 8000h value if the altitude is unknown.
MCTP Bus Owner	0	MCTP bus owner location on PCIe: [15:8] bus, [7:3] device, [2:0] function. If all zeros sending bus owner is disabled.

4.6.4 Socket Config

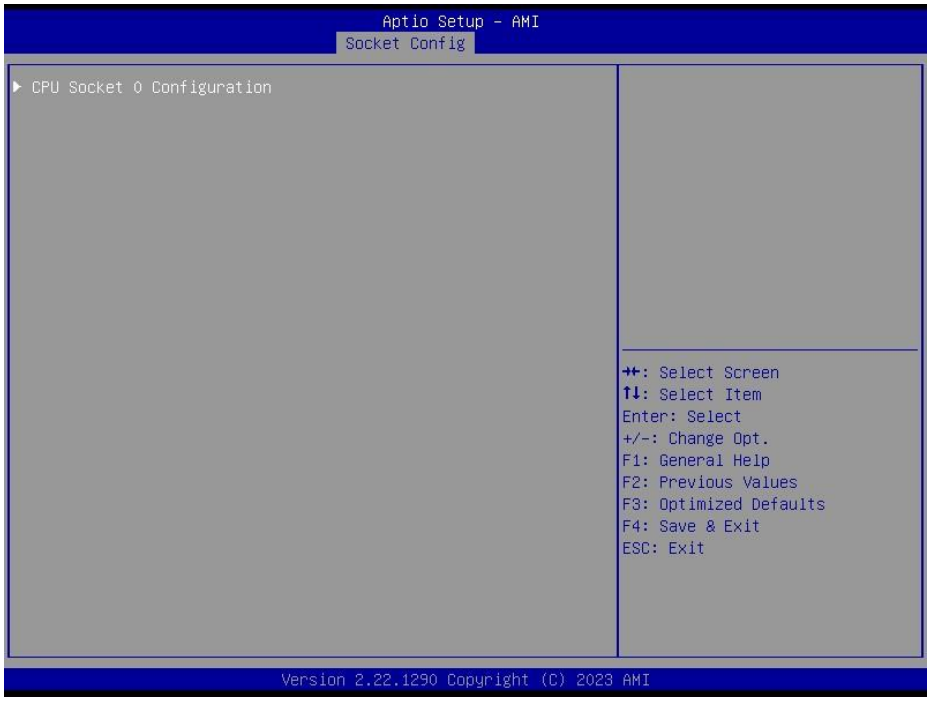


4.6.4.1 Processor Configuration

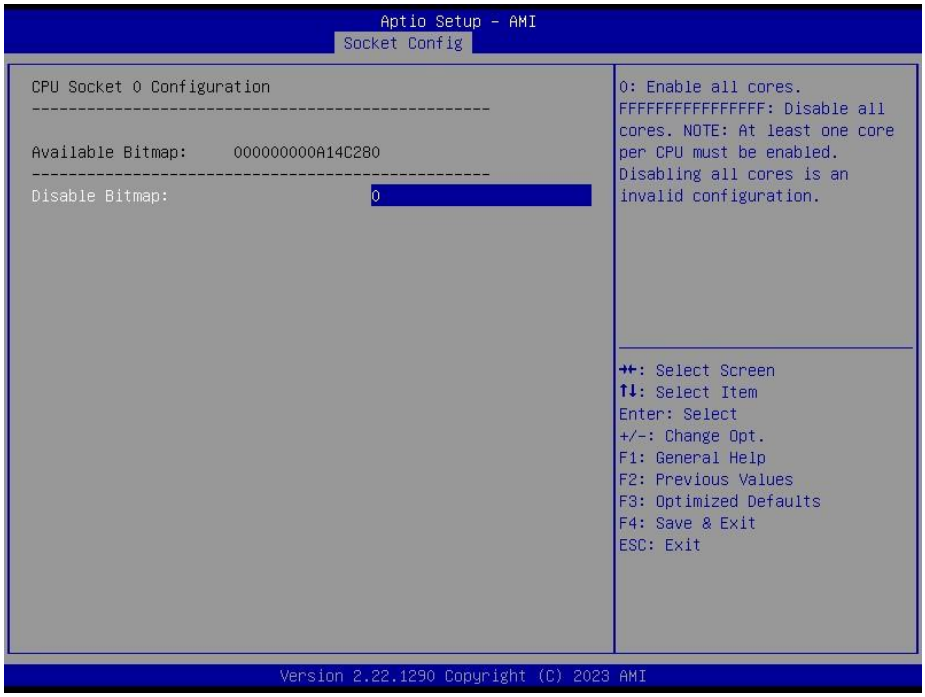


Item	Option	Description
Extended APIC	Disable Enable**[Default]**	Enable/disable extended APIC support. Note: When enabled, VT-d_Interrupt Remapping will be automatically enabled.

4.6.4.1.1 Per-Socket Configuration

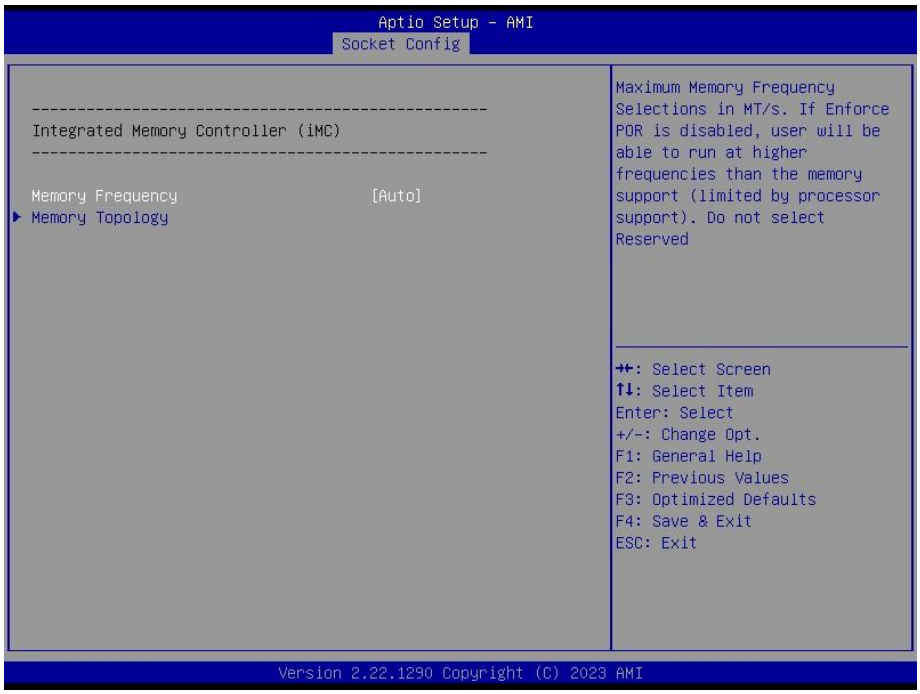


4.6.4.1.1.1 CPU Socket 0 Configuration



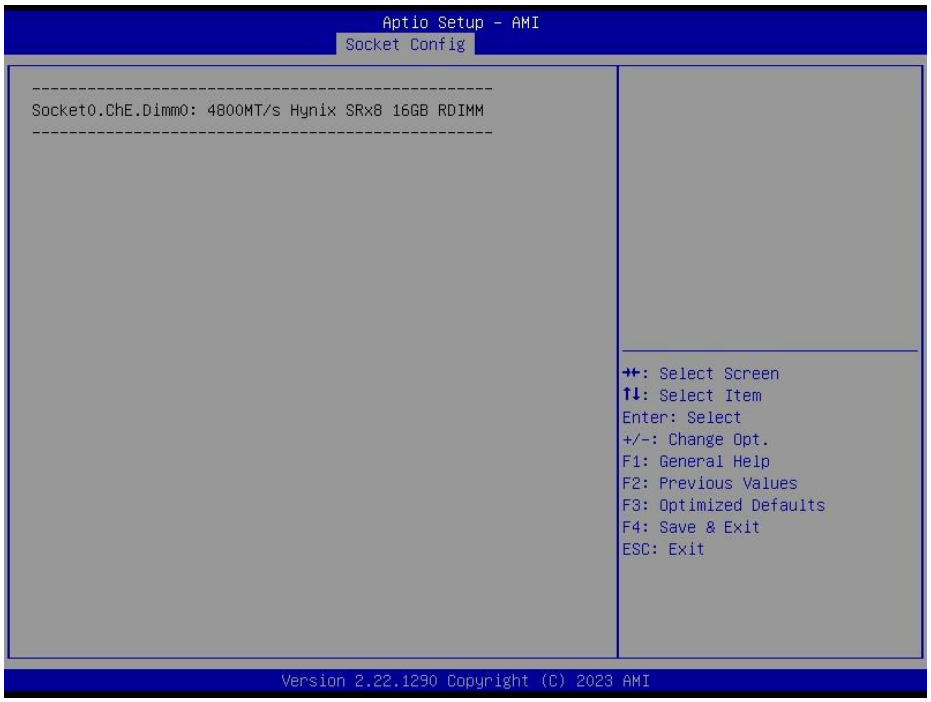
Item	Option	Description
Disable Bitmap:	0	0: Enable all cores. FFFFFFFFFFFFFFFF: Disable all cores. NOTE: AT least one core per CPU must be enabled. Disabling all cores is an invalid configuration.

4.6.4.2 Memory Configuration

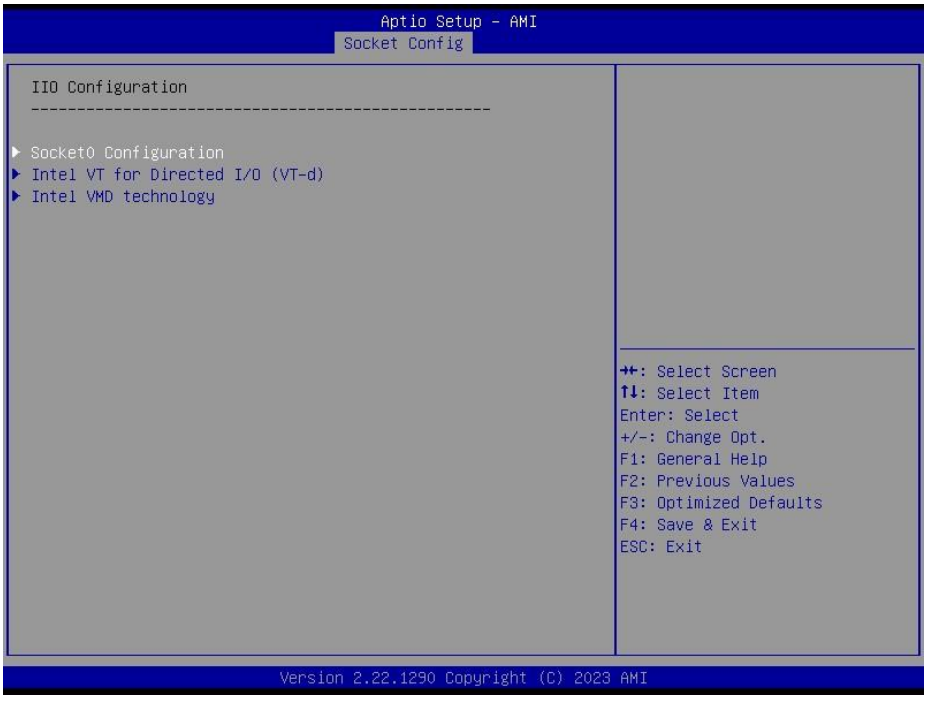


Item	Option	Description
Memory Frequency	Auto**[Default]** 3200 3600 4000 4400 4800 5200 5600	Maximum Memory Frequency Selections in MT/s. If Enforce POR is disabled, user will be able to run at higher frequencies than the memory suppot (limited by processor support). Do not select Reserved.

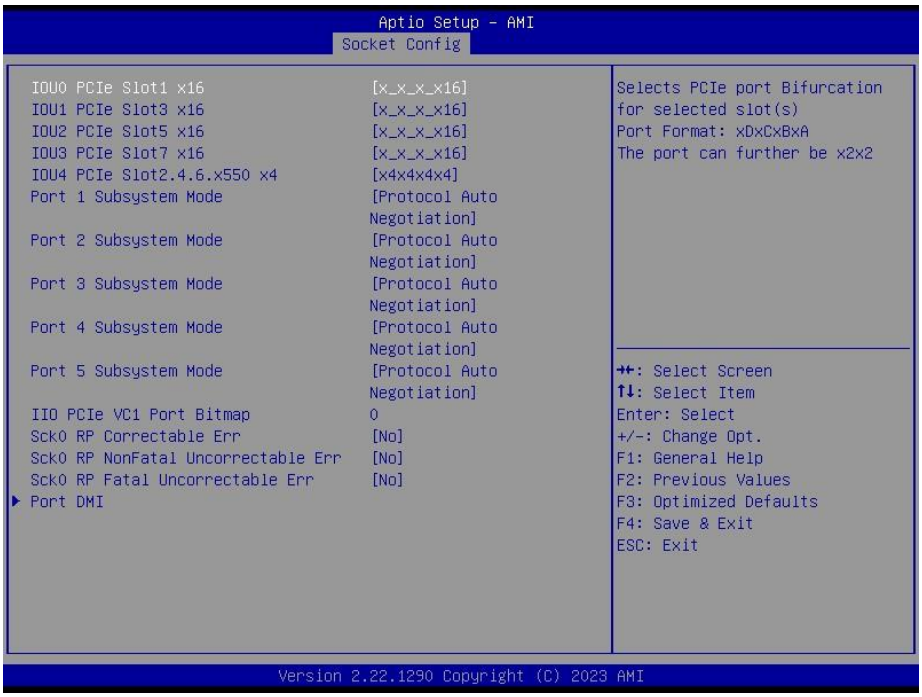
4.6.4.2.1 Memory Topology



4.6.4.3 IIO Configuration



4.6.4.3.1 Socket0 Configuration



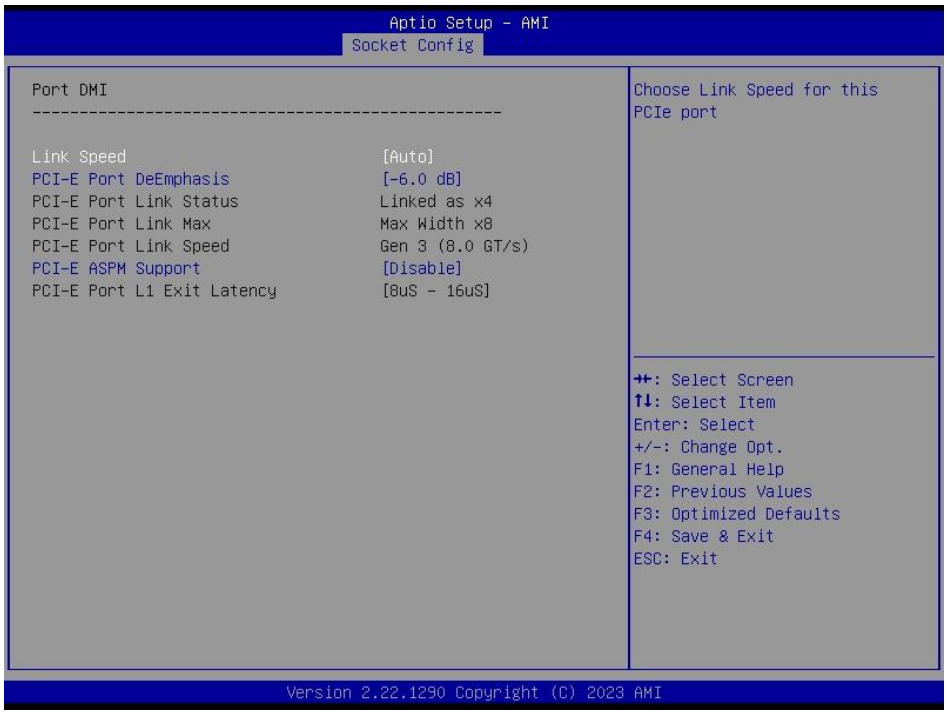
Item	Options	Description
IOU0 PCIe Slot1 x16	Auto x4x4x4x4 x4x4x_x8 x_x8x4x4 x_x8x_x8 x_x_x_x16**[Default]** x2x2x4x_x8 x4x2x2x_x8 x_x8x2x2x4 x2x2x4x4x4 x4x2x2x4x4 x4x4x2x2x4 x2x2x2x2x_x8 x2x2x2x2x4x4 x2x2x4x2x2x4 x4x2x2x2x2x4 x2x2x2x2x2x2x4 x_x8x4x2x2 x4x4x4x2x2 x_x8x2x2x2x2 x2x2x4x4x2x2 x4x2x2x4x2x2 x4x4x2x2x2x2 x2x2x2x2x4x2x2 x2x2x4x2x2x2x2 x4x2x2x2x2x2x2 x2x2x2x2x2x2x2x2	Selects PCIe port Bifurcation for selected slot(s) Port Format: xDxCxBxA The port can further be x2x2.
IOU1 PCIe Slot3 x16	Auto x4x4x4x4 x4x4x_x8 x_x8x4x4 x_x8x_x8	Selects PCIe port Bifurcation for selected slot(s) Port Format: xDxCxBxA The port can further be x2x2.

	x_x_x_x16**[Default]** x2x2x4x_x8 x4x2x2x_x8 x_x8x2x2x4 x2x2x4x4x4 x4x2x2x4x4 x4x4x2x2x4 x2x2x2x2x_x8 x2x2x2x2x4x4 x2x2x4x2x2x4 x4x2x2x2x2x4 x2x2x2x2x2x2x4 x_x8x4x2x2 x4x4x4x2x2 x_x8x2x2x2x2 x2x2x4x4x2x2 x4x2x2x4x2x2 x4x4x2x2x2x2 x2x2x2x2x4x2x2 x2x2x4x2x2x2x2 x4x2x2x2x2x2x2 x2x2x2x2x2x2x2x2	
IOU2 PCIe Slot5 x16	Auto x4x4x4x4 x4x4x_x8 x_x8x4x4 x_x8x_x8 x_x_x_x16**[Default]** x2x2x4x_x8 x4x2x2x_x8 x_x8x2x2x4 x2x2x4x4x4 x4x2x2x4x4 x4x4x2x2x4 x2x2x2x2x_x8 x2x2x2x2x4x4 x2x2x4x2x2x4 x4x2x2x2x2x4 x2x2x2x2x2x2x4 x_x8x4x2x2 x4x4x4x2x2 x_x8x2x2x2x2 x2x2x4x4x2x2 x4x2x2x4x2x2 x4x4x2x2x2x2 x2x2x2x2x4x2x2 x2x2x4x2x2x2x2 x4x2x2x2x2x2x2 x2x2x2x2x2x2x2x2	Selects PCIe port Bifurcation for selected slot(s) Port Format: xDxCxBxA The port can further be x2x2.
IOU3 PCIe Slot7 x16	Auto x4x4x4x4 x4x4x_x8 x_x8x4x4 x_x8x_x8 x_x_x_x16**[Default]** x2x2x4x_x8 x4x2x2x_x8 x_x8x2x2x4 x2x2x4x4x4 x4x2x2x4x4	Selects PCIe port Bifurcation for selected slot(s) Port Format: xDxCxBxA The port can further be x2x2.

	x4x4x2x2x4 x2x2x2x2x_x8 x2x2x2x2x4x4 x2x2x4x2x2x4 x4x2x2x2x2x4 x2x2x2x2x2x2x4 x_x8x4x2x2 x4x4x4x2x2 x_x8x2x2x2x2 x2x2x4x4x2x2 x4x2x2x4x2x2 x4x4x2x2x2x2 x2x2x2x2x4x2x2 x2x2x4x2x2x2x2 x4x2x2x2x2x2x2 x2x2x2x2x2x2x2x2	
IOU4 PCIe Slot2.4.6x550 x4	Auto x4x4x4x4**[Default]** x4x4x_x8 x_x8x4x4 x_x8x_x8 x_x_x_x16 x2x2x4x_x8 x4x2x2x_x8 x_x8x2x2x4 x2x2x4x4x4 x4x2x2x4x4 x4x4x2x2x4 x2x2x2x2x_x8 x2x2x2x2x4x4 x2x2x4x2x2x4 x4x2x2x2x2x4 x2x2x2x2x2x2x4 x_x8x4x2x2 x4x4x4x2x2 x_x8x2x2x2x2 x2x2x4x4x2x2 x4x2x2x4x2x2 x4x4x2x2x2x2 x2x2x2x2x4x2x2 x2x2x4x2x2x2x2 x4x2x2x2x2x2x2 x2x2x2x2x2x2x2x2	Selects PCIe port Bifurcation for selected slot(s) Port Format: xDxCxBxA The port can further be x2x2.
Port 1 Subsystem Mode	Gen5 Protocol Auto Negotiation**[Default]**	Select PCIe Subsystem Mode for selected slot(s) Gen4: Gen4 controller only Gen5: Gen5 with or without mix mode Auto: Auto select Force CXL: There is no training discovery, the attached device must also supports this mode.
Port 2 Subsystem Mode	Gen5 Protocol Auto Negotiation**[Default]**	Select PCIe Subsystem Mode for selected slot(s) Gen4: Gen4 controller only Gen5: Gen5 with or without mix mode Auto: Auto select Force CXL: There is no training discovery, the attached

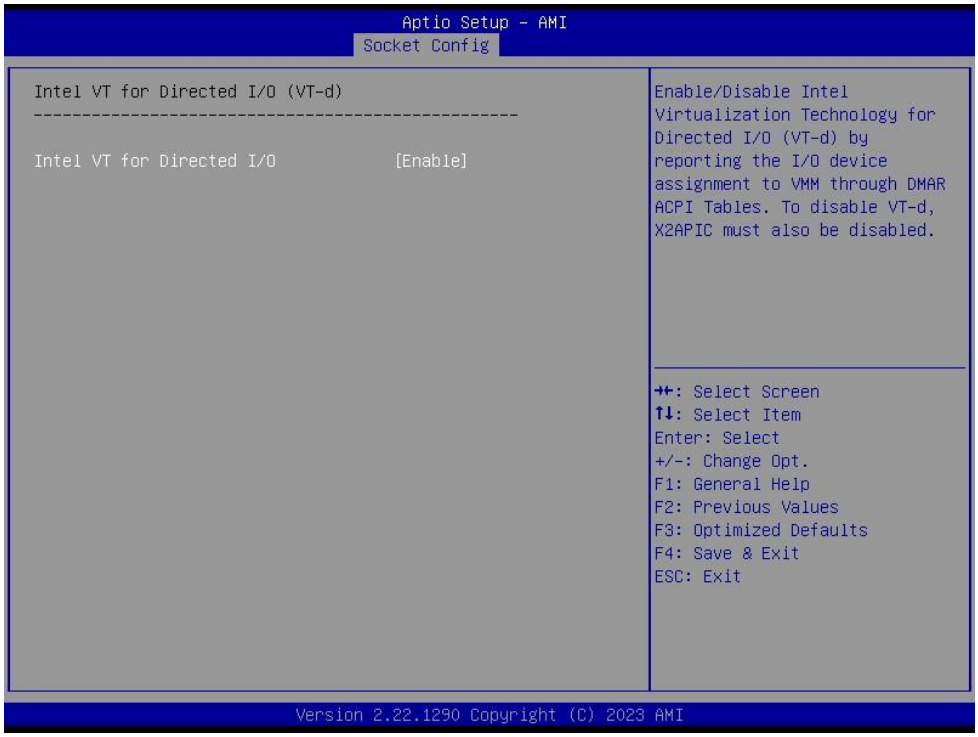
		device must also supports this mode.
Port 3 Subsystem Mode	Gen5 Protocol Auto Negotiation**[Default]**	Select PCIe Subsystem Mode for selected slot(s) Gen4: Gen4 controller only Gen5: Gen5 with or without mix mode Auto: Auto select Force CXL: There is no training discovery, the attached device must also supports this mode.
Port 4 Subsystem Mode	Gen5 Protocol Auto Negotiation**[Default]**	Select PCIe Subsystem Mode for selected slot(s) Gen4: Gen4 controller only Gen5: Gen5 with or without mix mode Auto: Auto select Force CXL: There is no training discovery, the attached device must also supports this mode.
Port 5 Subsystem Mode	Gen5 Protocol Auto Negotiation**[Default]**	Select PCIe Subsystem Mode for selected slot(s) Gen4: Gen4 controller only Gen5: Gen5 with or without mix mode Auto: Auto select Force CXL: There is no training discovery, the attached device must also supports this mode.
IIO PCIe VC1 Port Bitmap	0	Enable/Disable PCIe Port VC1 support. Port 0 is allocated to DMI or DMI as PCIe. Port 0 bit will have no effect in DMI mode. 0-VC1 support disabled. 1-VC1 support enabled. Example: bit 0= IIO PCIe Port 0…bit n = IIO PCIe Portn.
Sck0 RP Correctable Err	No**[Default]** Yes	Applies to root ports only. Enabled interrupt on correctable errors.
Sck0 RP NonFatal Uncorrectable Err	No**[Default]** Yes	Applies to root ports only. Enabled interrupt on a non-fatal error.
Sck0 RP Fatal Uncorrectable Err	No**[Default]** Yes	Applies to root ports only. Enabled MSI/INTx interrupt on fatal errors.

4.6.4.3.1.1 Port DMI



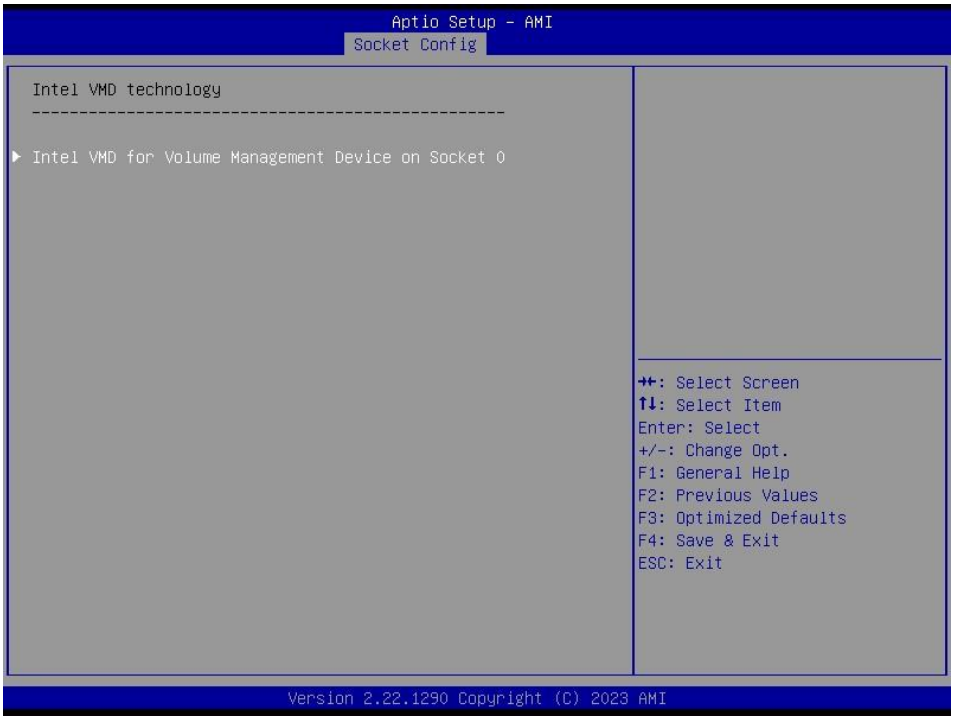
Item	Option	Description
Link Speed	Auto**[Default]** Gen 1 (2.5 GT/s) Gen 2 (5 GT/s) Gen 3 (8 GT/s) Gen 4 (16 GT/s) Gen 5 (32 GT/s)	Choose Link Speed for this PCIe port.
PCI-E Port DeEmphasis	-6.0 dB**[Default]** -3.5 dB	De-Emphais control (LNKCON2[6]) for this PCIe port.
PCI-E ASPM Support	Disabled**[Default]** Auto	This option can disable ASPM support in a PCIe root port. ‘Auto’ keeps hardware default.

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

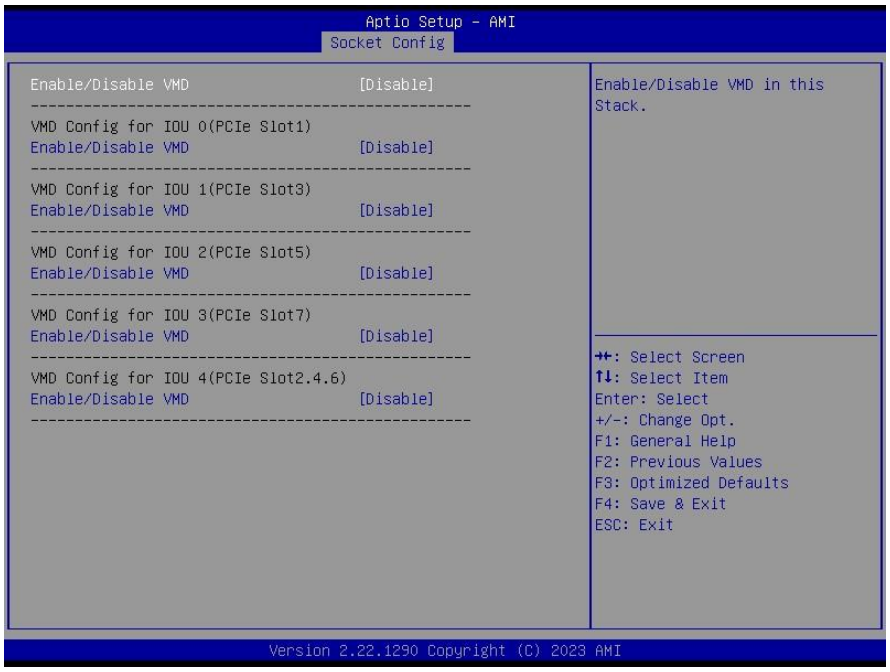


Item	Options	Description
Intel VT for Directed I/O	Enable**[Default]** Disable	Eneble/Disable Intel Virtualization Technology for Directed I/O (VT-d) by reporting the I/O device assignment to VMM through DMAR ACPI Tables. To disable VT-d, X2APIC must also be disabled.

4.6.4.3.3 Intel VMD technology

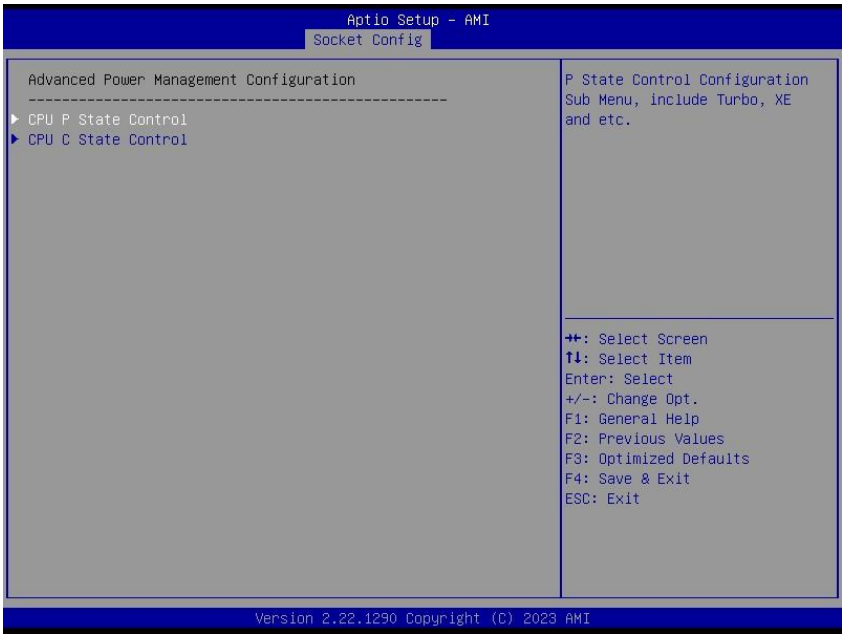


4.6.4.3.3.1 Intel VMD for Volume Management Device on Socket 0

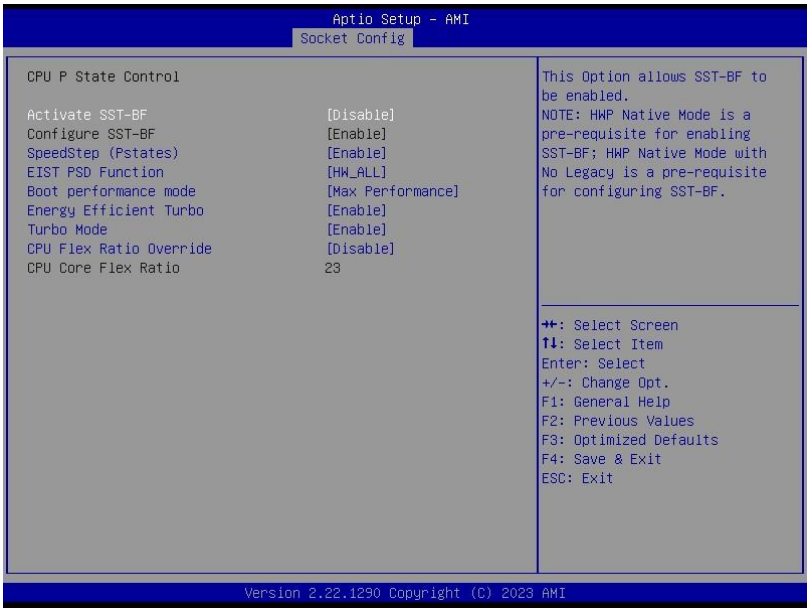


Item	Option	Description
Enable/Disable VMD	Disable**[Default]** Enable	Enable/Disable VMD in this Stack.

4.6.4.4 Advanced Power Management Configuration

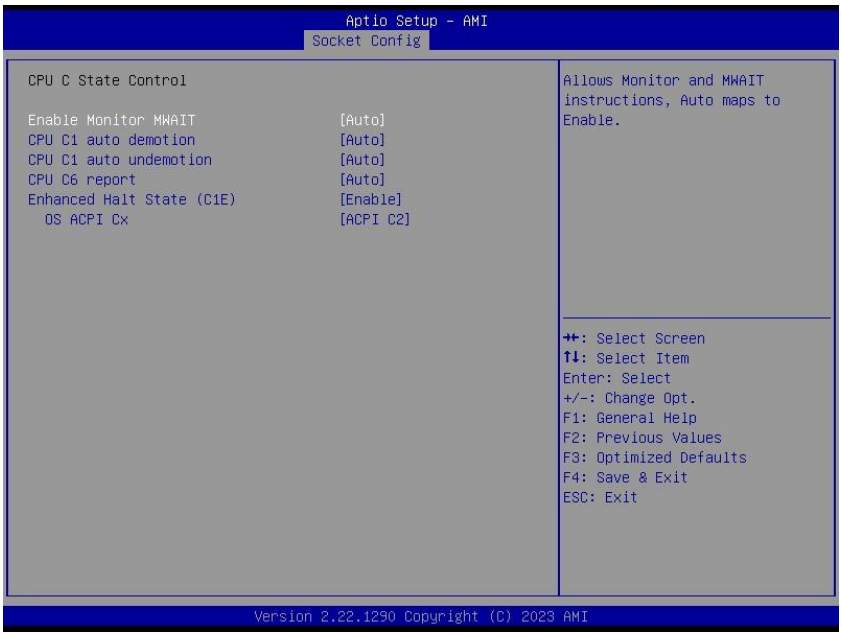


4.6.4.4.1 CPU P State Control



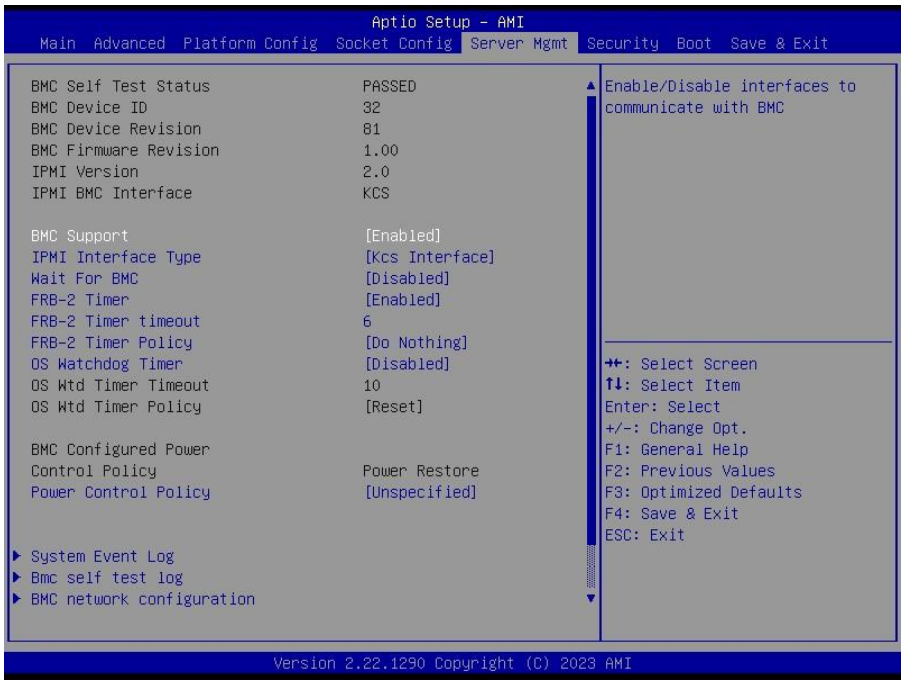
Item	Option	Description
Activate SST-BF	Disable**[Default]** Enable	This Option allows SST-BF to be enabled. NOTE: HWP Native Mode is a pre-requisite for enabling SST-BF; HWP Native Mode with No Legacy is a pre-requisite for configuring SST-BF.
SpeedStep (Pstates)	Disable Enable**[Default]**	Enable/Disable EIST (P-States).
EIST PSD Function	HW_ALL**[Default]** SW_ALL	Choose HW_ALL/SW_ALL in _PSD return.
Boot performance mode	Max Performance**[Default]** Max Efficient Set by Intel Node Manager	Select the performance state that the BIOS will set before OS hand off.
Energy Efficient Turbo	Enable**[Default]** Disable	Energy Efficient Turbo Disable, MSR 0x1FC[19].
Turbo Mode	Disable Enable**[Default]**	Enable/Disable processor Turbo Mode (requires EMTTM enabled too).
CPU Flex Ratio Override	Disable**[Default]** Enable	Enable/Disable CPU Flex Ratio Programming.

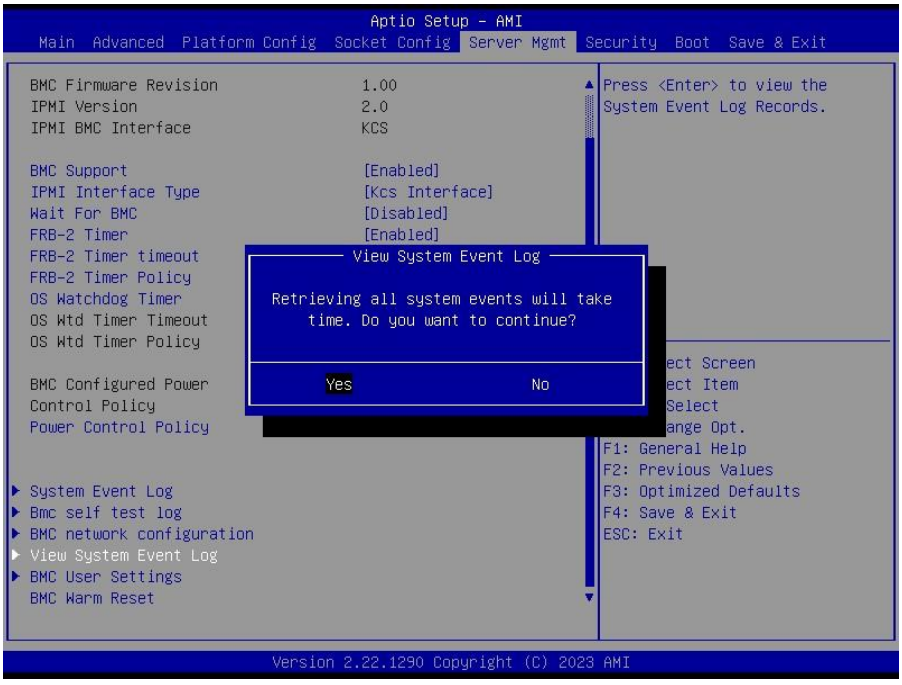
4.6.4.4.2 CPU C State Control



Item	Option	Description
Enable Monitor MWAIT	Disable Enable Auto**[Default]**	Allows Monitor and MWAIT instructions, Auto maps to Enable.
CPU C1 auto demotion	Disable Enable Auto**[Default]**	Allows CPU to automatically demote to C1. Takes effect after reboot.
CPU C1 auto undemotion	Disable Enable Auto**[Default]**	Allows CPU to automatically undemote from C1. Takes effect after reboot.
CPU C6 report	Disable Enable Auto**[Default]**	Enable/Disable CPU C6(ACPI C3) report to OS, Auto maps to enable.
Enhanced Halt State (C1E)	Disable Enable**[Default]**	Core C1E auto promotion Control. Takes effect after reboot. Will be enforced to enable when Optimized Power Mode is enabled.
OS ACPI Cx	ACPI C2**[Default]** ACPI C3	Report CC3/CC6 to OS ACPI C2 or ACPI C3.

4.6.5 Server Mgmt

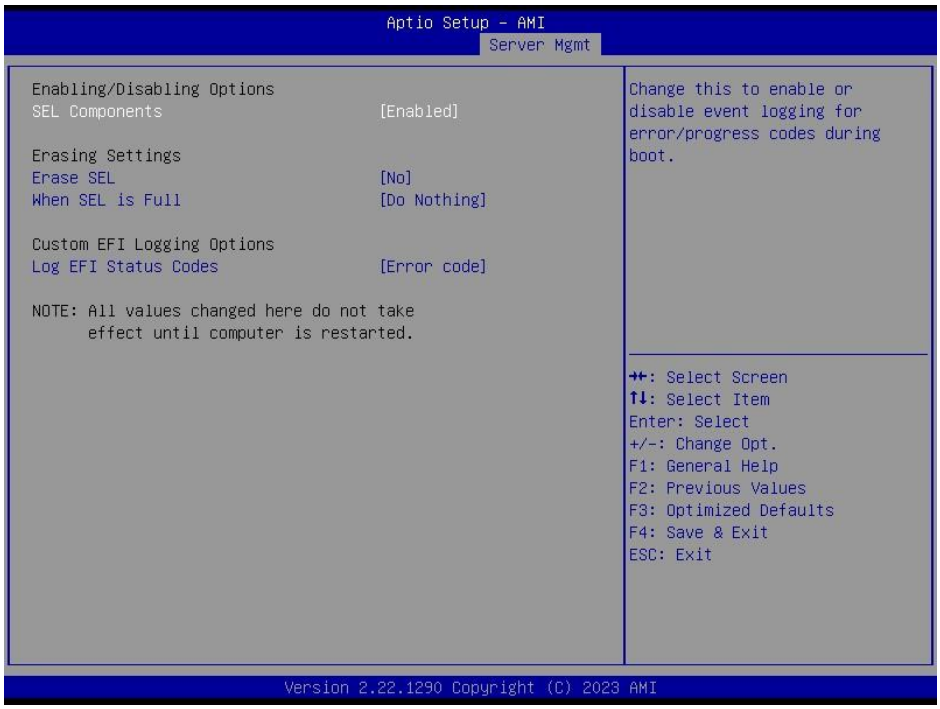




Item	Options	Description
BMC Support	Enabled**[Default]** Disabled	Enable/Disable interfaces to communicate with BMC.
IPMI Interface Type	Kcs Interface**[Default]** Ssif Interface Ipmb Interface Usb Interface Oem1 Interface Oem2 Interface	Type of Interface to communicate BMC from HOST.

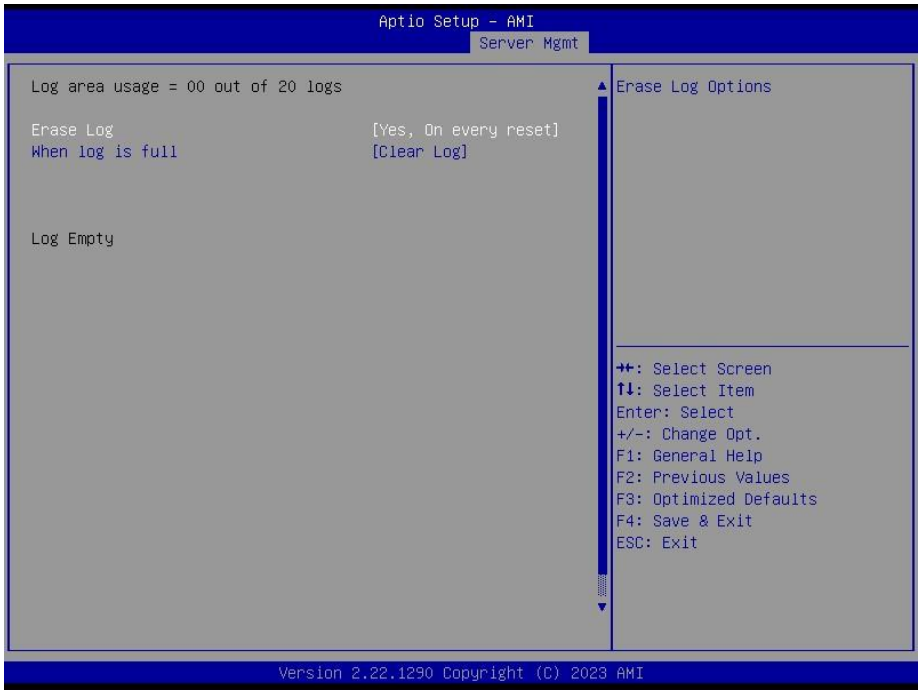
Wait For BMC	Enabled Disabled**[Default]**	Wait For BMC response for specified time out. BMC starts at the same time when BIOS starts during AC power ON. It takes around 30 seconds to initialize Host to BMC interfaces.
FRB-2 Timer	Enabled**[Default]** Disabled	Enable or Disable FRB-2 time (POST timer).
FRB-2 Timer timeout	6	Enter value Between 3 to 6 min for FRB-2 Timer Expiration value.
FRB-2 Timer Policy	Do Nothing**[Default]** Reset Power Down Power Cycle	Configure how the system should respond if the FRB-2 Timer expires. Not available if FRB-2 Timer is disabled.
OS Watchdog Timer	Enabled Disabled**[Default]**	If enabled, starts a BIOS timer which can only be shut off by Management Software after the OS loads. Helps determine that the OS successfully loaded or follows the OS Boot Watchdog Timer policy.
Power Control Policy	Do Not PowerUp Last Power State Power Restore Unspecified**[Default]**	Configure how the system should respond if AC Power is lost, Reset not required as selected Power policy will be set in BMC when policy is saved.
BMC Warm Reset	Press <Enter> to do Warm Reset BMC.	

4.6.5.1 System Event Log



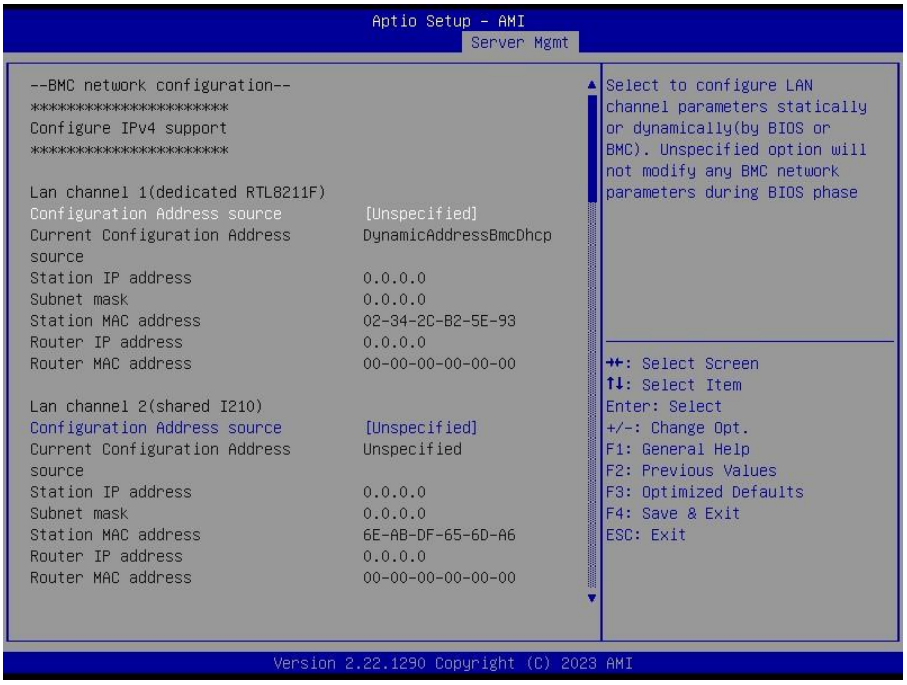
Item	Option	Description
SEL Components	Enabled**[Default]** Disabled	Change this to enable or disable event logging for error/progress codes during boot.
Erase SEL	No**[Default]** Yes, On next reset Yes, On every reset	Choose options for erasing SEL.
When SEL is Full	Do Nothing**[Default]** Erase Immediately Delete Oldest Record	Choose options for reactions to a full SEL.
Log EFI Status Codes	Disabled Both Error code**[Default]** Progress code	Disable the logging of EFI Status Codes or log only error code or only progress code or both.

4.6.5.2 Bmc self test log



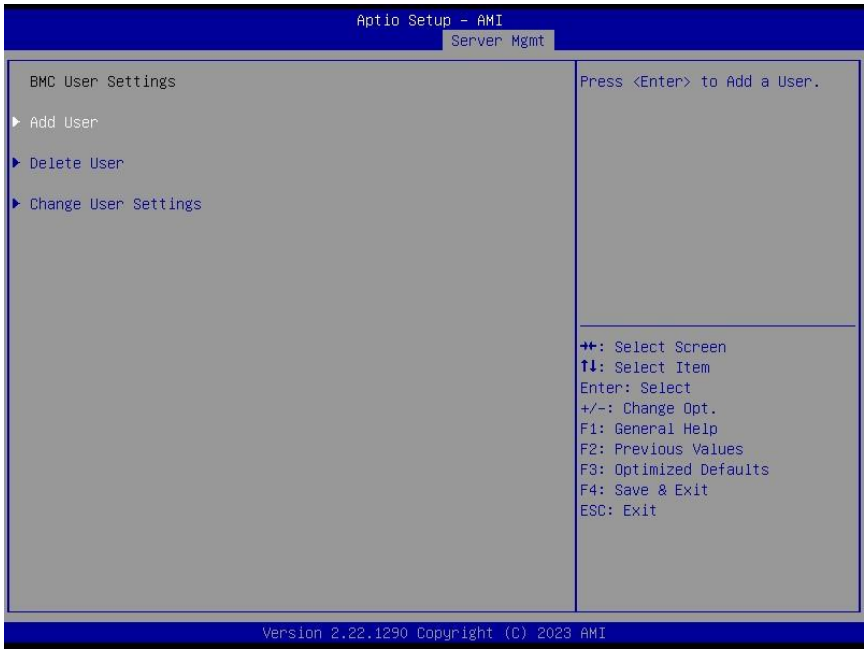
Item	Option	Description
Erase Log	Yes, On every reset**[Default]** No	Erase Log Options.
When log is full	Clear Log**[Default]** Do not log any more	Select the action to be taken when log is full.

4.6.5.3 BMC network configuration

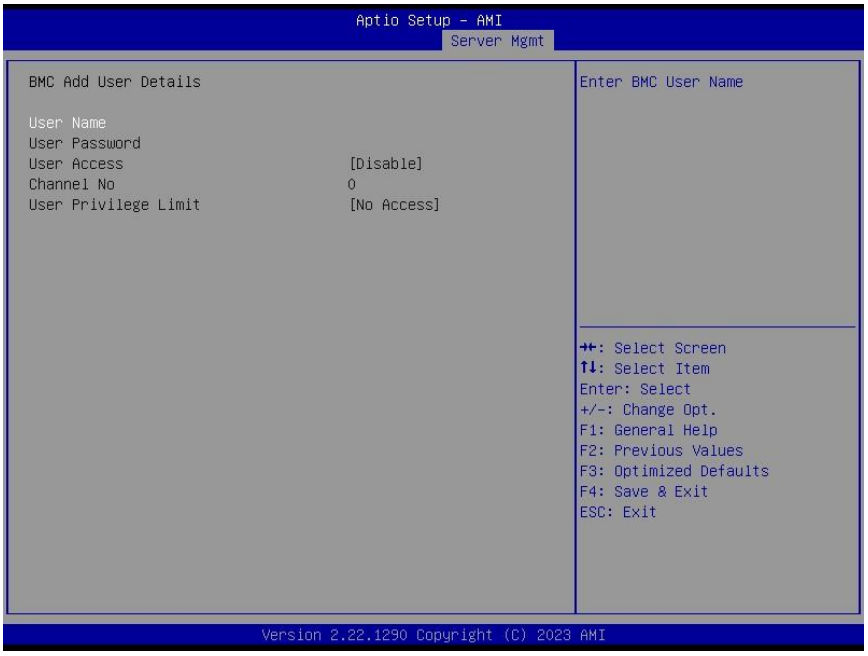


Item	Option	Description
Configuration Address source	Unspecified**[Default]** Static DynamicBmcDhcp DynamicBmcNonDhcp	Select configure LAN channel parameters statically or dynamically(by BIOS or BMC). Unspecified option will not modify any BMC network parameters during BIOS phase.

4.6.5.4 BMC User Settings

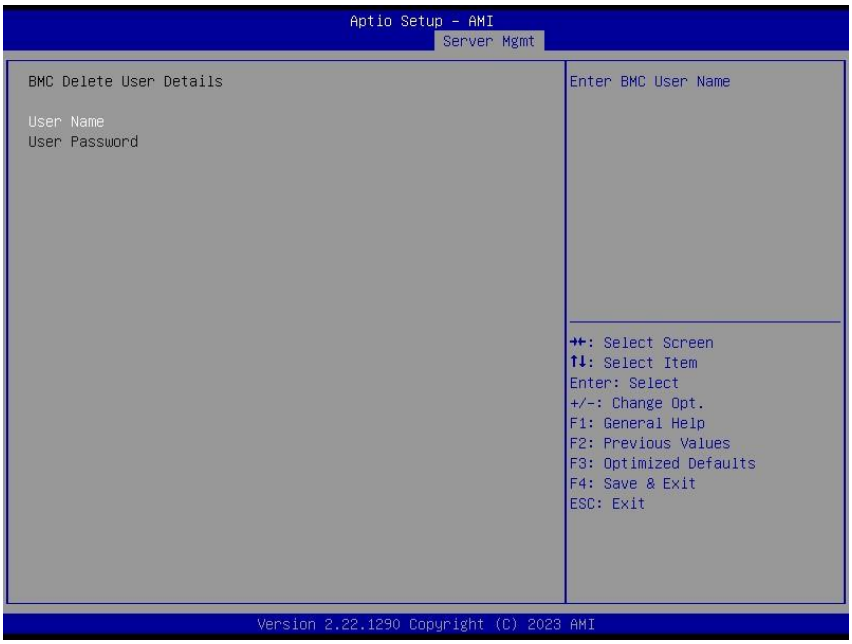


4.6.5.4.1 BMC Add User Details



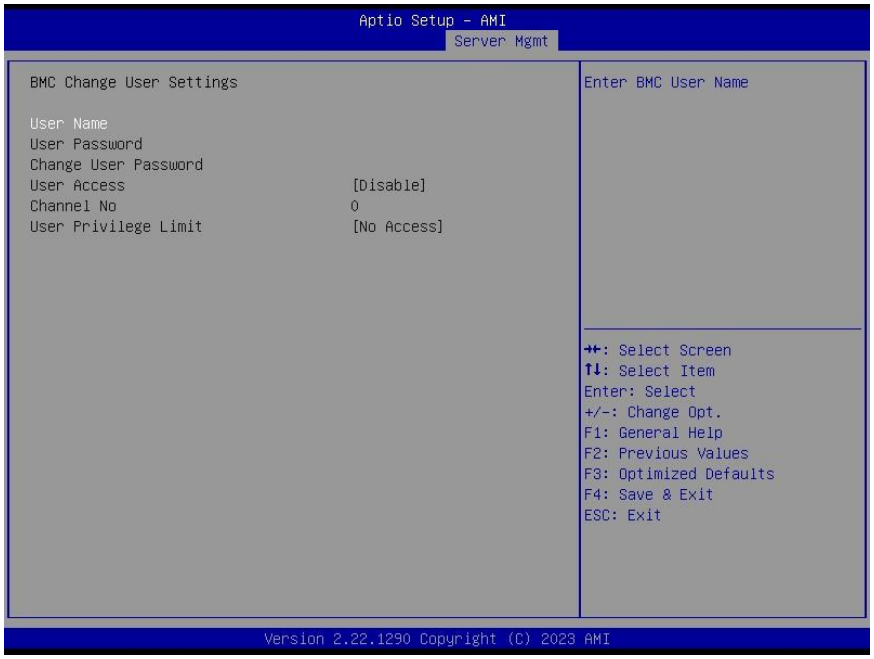
Item	Description
User Name	Enter BMC User Name.

4.6.5.4.2 BMC Delete User Details



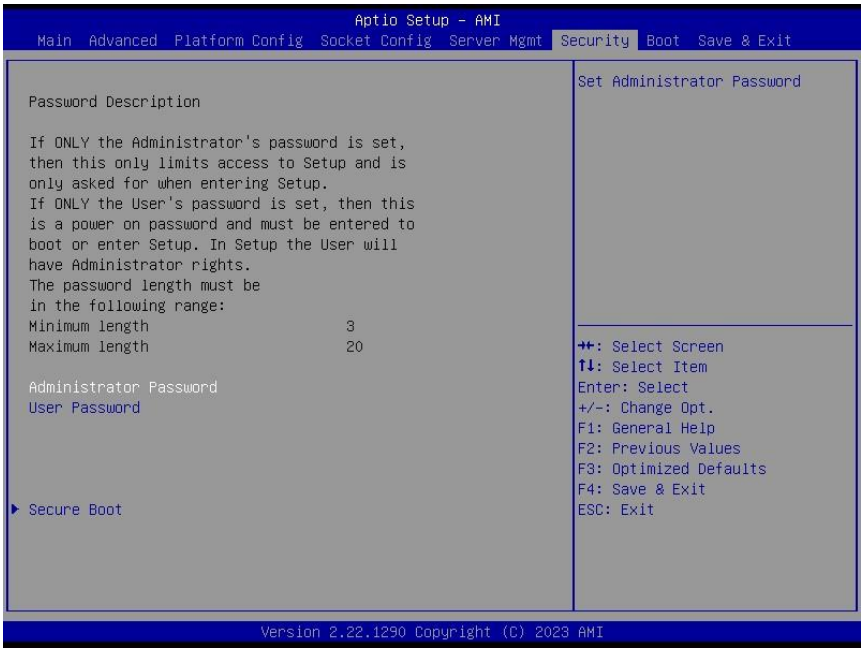
Item	Description
User Name	Enter BMC User Name.

4.6.5.4.3 BMC Change User Settings



Item	Description
User Name	Enter BMC User Name.

4.6.6 Security



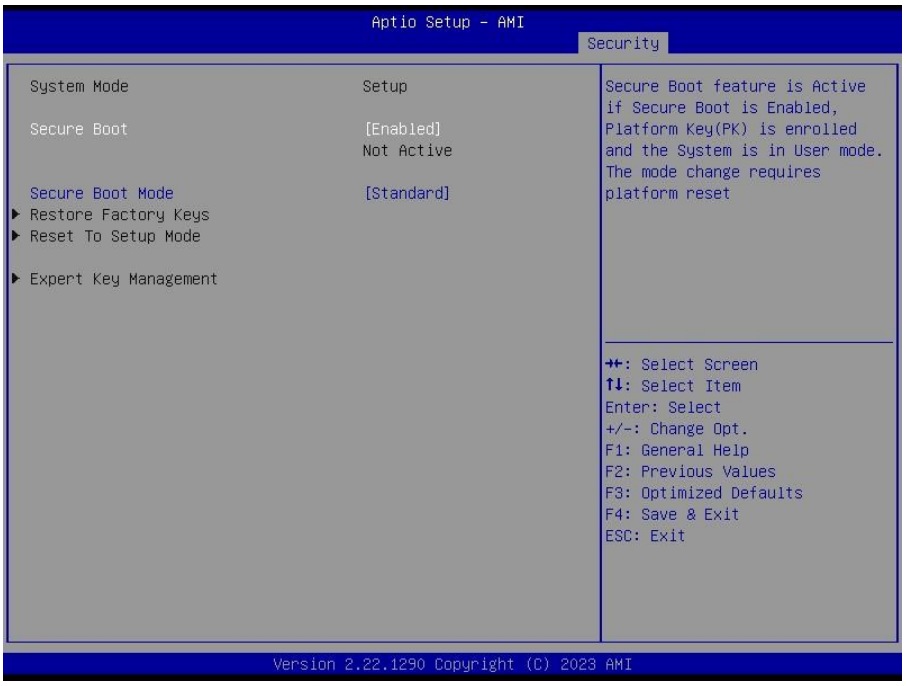
- **Administrator Password**

Set setup Administrator Password

- **User Password**

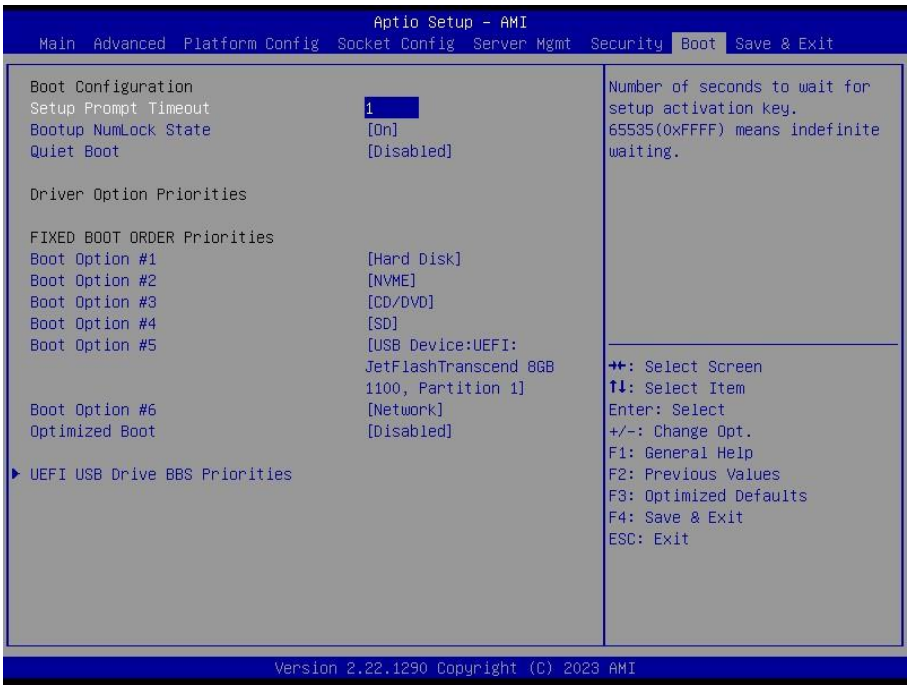
Set User Password

4.6.6.1 Secure Boot



Item	Option	Description
Secure Boot	Disabled Enabled**[Default]**	Secure Boot feature is Active if Secure Boot is Enables, Platform Key(PK) is enrolled and the System is in User mode. The mode chagne requires platform reset.
Secure Boot Mode	Standard**[Default]** Custom	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.

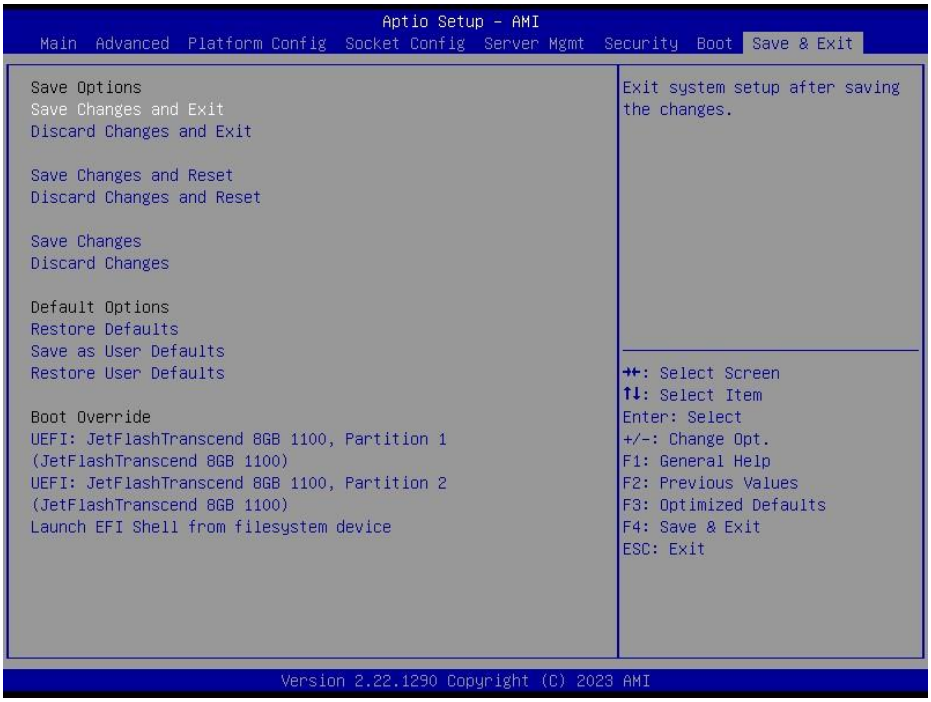
4.6.7 Boot



Item	Option	Description
Setup Prompt Timeout	1~ 65535	Set the default timeout before system boot. A value of 65535 will disable the timeout completely.
Bootup NumLock State	On**[Default]** Off	Select the keyboard NumLock state
Quiet Boot	Disabled**[Default]** Enabled	Enables or disables Quiet Boot option
Boot Option #1	Hard Disk**[Default]** NVME CD/DVD SD USB Device Network Disabled	Set the system boot order.
Boot Option #2	Hard Disk NVME**[Default]** CD/DVD SD USB Device Network Disabled	Set the system boot order.
Boot Option #3	Hard Disk NVME CD/DVD**[Default]** SD USB Device Network Disabled	Set the system boot order.
Boot Option #4	Hard Disk NVME	Set the system boot order.

	CD/DVD SD**[Default]** USB Device Network Disabled	
Boot Option #5	Hard Disk NVME CD/DVD SD USB Device**[Default]** Network Disabled	Set the system boot order.
Boot Option #6	Hard Disk NVME CD/DVD SD USB Device Network**[Default]** Disabled	Set the system boot order.
Optimized Boot	Disabled**[Default]** Enabled	Enables or disables Optimized Boot. Enabling Optimized Boot will disable Csm support and disable connecting Network devices to decrease boot time. While disabling Optimized Boot, make sure to restore Csm Support option to previous value before enabling Optimized Boot.

4.6.8 Save and exit



4.6.8.1 Save Changes and Exit

Use the save changes and reset option to save the changes made to the BIOS options and to exit the BIOS configuration setup program.

4.6.8.2 Discard Changes and Exit

Use the Discard changes and Exit option to exit the system without saving the changes made to the BIOS configuration setup program.

4.6.8.3 Save Changes and Reset

Reset the system after saving the changes.

4.6.8.4 Discard Changes and Reset

Any changes made to BIOS settings during this session of the BIOS setup program are discarded. The setup program then exits and reboots the controller.

4.6.8.5 Save Changes

Changes made to BIOS settings during this session are committed to NVRAM. The setup program remains active, allowing further changes.

4.6.8.6 Discard Changes

Any changes made to BIOS settings during this session of the BIOS setup program are discarded. The BIOS setup continues to be active.

4.6.8.7 Restore Defaults

This option restores all BIOS settings to the factory default. This option is useful if the controller exhibits unpredictable behavior due to an incorrect or inappropriate BIOS setting.

4.6.8.8 Save as User Defaults

This option saves a copy of the current BIOS settings as the User Defaults. This option is useful for preserving custom BIOS setup configurations.

4.6.8.9 Restore User Defaults

This option restores all BIOS settings to the user defaults. This option is useful for restoring previously preserved custom BIOS setup configurations.

5. Maintenance & Troubleshooting

System Maintenance Introduction
If the components of the product fail they must be replaced.
Please contact the system reseller or vendor to purchase the replacement parts. Please follow the safety precautions outlined in the sections that follow

General Safety Precautions

Please ensure the following safety precautions are adhered to at all times.

1. Follow the electrostatic precautions outlined below whenever the device is opened.
2. Make sure the power is turned off and the power cord is disconnected whenever the product is being installed, moved or modified.
3. To prevent the risk of electric shock, make sure power cord is unplugged from wall socket. To fully disengage the power to the unit, please disconnect the power cord from the AC outlet. Refer servicing to qualified service personnel. The AC outlet shall be readily available and accessible.
4. Do not apply voltage levels that exceed the specified voltage range. Doing so may cause fire and/or an electrical shock. Use a power cord that matches the voltage of the power outlet, which has been approved and complies with the safety standard of your particular country.
5. Electric shocks can occur if the product chassis is opened when it is running. To avoid risk of electric shock, this device must only be connected to a supply mains with protective earth.
6. Do not drop or insert any objects into the ventilation openings of the product.
7. If considerable amounts of dust, water, or fluids enter the device, turn off the power supply immediately, unplug the power cord, and contact your dealer or the nearest service center.
8. This equipment is not suitable for use in locations where children are likely to be present.
9. DO NOT:

- Drop the device against a hard surface.
- Strike or exert excessive force onto the LCD panel.
- Touch any of the LCD panels with a sharp object.
- In a site where the ambient temperature exceeds the rated temperature.

Anti-Static Precautions

WARNING:
Failure to take ESD precautions during the installation of the product may result in permanent damage to the product and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the product. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the product is opened and any of the electrical components are handled, the following anti-static precautions are strictly adhered to.

- Wear an anti-static wristband: Wearing a simple anti-static wristband can help to prevent ESD from damaging any electrical component.
- Self-grounding: Before handling any electrical component, touch any grounded conducting material. During the time the electrical component is handled, frequently touch any conducting materials that are connected to the ground.
- Use an anti-static pad: When configuring or working with an electrical component, place it on an anti-static pad. This reduces the possibility of ESD damage.
- Only handle the edges of the electrical component. When handling the electrical component, hold the electrical component by its edges. Please ensure the following safety precautions are adhered to at all times.

Maintenance and Cleaning

When maintaining or cleaning the product, please follow the guidelines below.

WARNING:

- For safety reasons, turn-off the power and unplug the panel PC before cleaning.
- If you dropped any material or liquid such as water onto the panel PC when cleaning, unplug the power cable immediately and contact your dealer or the nearest service center. Always make sure your hands are dry when unplugging the power cable.

Maintenance and Cleaning

Prior to cleaning any part or component of the product, please read the details below.

- Except for the LCD panel, never spray or squirt liquids directly onto any other components. To clean the LCD panel, gently wipe it with a piece of soft dry cloth or a slightly moistened cloth.
- The interior of the device does not require cleaning. Keep fluids away from the device interior.
- Be cautious of all small removable components when vacuuming the device.
- Never drop any objects or liquids through the openings of the device.
- Be cautious of any possible allergic reactions to solvents or chemicals used when cleaning the device.
- Avoid eating, drinking and smoking within vicinity of the device.

Cleaning Tools

Some components in the panel PC may only be cleaned using a product specifically designed for the purpose. In such case, the product will be explicitly mentioned in the cleaning tips. Below is a list of items to use when cleaning the panel PC.

- Cloth: Although paper towels or tissues can be used, a soft, clean piece of cloth is recommended when cleaning the device.
- Water or rubbing alcohol: A cloth moistened with water or rubbing alcohol can be used to clean the device.
- Using solvents: The use of solvents is not recommended when cleaning the device as they may damage the plastic parts.
- Vacuum cleaner: Using a vacuum specifically designed for computers is one of the best methods of cleaning the device. Dust and dirt can restrict the airflow in the device and cause its circuitry to corrode.
- Cotton swabs: Cotton swaps moistened with rubbing alcohol or water are excellent tools for wiping hard to reach areas.
- Foam swabs: Whenever possible, it is best to use lint free swabs such as foam swabs for cleaning.

Basic Troubleshooting

PEI Beep Codes

# of Beeps	Description
1	Memory not Installed
2	Recovery started
3	Typically for development use. The beep code is generated when DXEIPL PPI or DXE Core is not found.
4	Recovery failed
4	S3 Resume failed
7	Typically for development use. The beep code is generated when platform cannot be reset because reset PPI is not available.

DXE Beep Codes

# of Beeps	Description
1	Invalid password
4	Typically for development use. The beep code is generated when some of the Architectural Protocols are not available.
5	No Console Input or Output Devices are found
5	No Console Input Devices are found
6	Flash update is failed
7	Typically for development use. The beep code is generated when platform cannot be reset because reset protocol is not available.
8	Platform PCI resource requirements cannot be met