HPS-GNR1U

1U Compact Server support Single Intel Xeon 6 Processor, 850W, 10x E1.S NVME SSD, IPMI2.0

Quick Reference Guide

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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.

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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. 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

Customer Services

Each and every 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 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 has come to be known.

Your satisfaction is our primary concern. Here is a guide to 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 website 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

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

We endeavor to offer customers the most comprehensive post-sales services and protection; besides offering a 2-year warranty for standard 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 are offered a 2-year warranty, from the date of delivery. For ODM/OEM products manufactured 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 (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. 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. For other products, the product warranty and repair time shall be based on the service standards provided by the original manufacturer; in principle We 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 product DOA (Defect-on-Arrival) when the customer finds any defect within 1 month after the delivery, we 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, we will immediately proceed with new product replacement for the said DOA case. On validation of the confirmed defect, we are 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, we will handle defects by way of repair. The customer will be requested to send the defective product to an authorized service center, and we 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. We reserve the right for the ruling of the aforementioned situations.
- Product damage resulting from lightning, flood, earthquake or other calamities.
- The warranty rules of other 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.
- Semi-product and outsourced products without 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, we will not provide any repair service for the rejected product, and the product will be returned to the customer at customer’s cost. We 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 and log-in with an account number
and a password authorized. 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 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 partsf or 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 we 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. We 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 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, We reserve 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, we 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

We 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. We reserve the right for the ruling of the aforementioned situations.

- Product damage resulting from lightning, flood, earthquake or other calamities.
- The warranty rules for other 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.
- Semi-product and outsourced products without 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, we 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, we reserve the right of whether or not to provide the repair service. In case the customer does not reply in 3 months, we 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, we provide 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 to be unable to repair/replace a warranted but phased-out product, we 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 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 Sales Department.

Defect Analysis Report (DAR)

We provide 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

We are 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 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.
		**WARNING** • **INGESTION HAZARD**: This product contains a button cell or coin battery. • **DEATH** or serious injury can occur if ingested. • A swallowed button cell or coin battery can cause **Internal Chemical Burns** in as little as **2 hours**. • **KEEP** new and used batteries **OUT OF REACH of CHILDREN**. • **Seek immediate medical attention** if a battery is suspected to be swallowed or inserted inside any part of the body.

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 18
1.1 Safety Precautions 18
1.2 Packing List 19
1.3 System Specifications 20
1.4 System Overview 26
1.4.1 Front View 26
1.4.2 Rear View 26
1.5 System Dimensions 28
2. Hardware Configuration 30
2.1 HPS-GNR1U connector mapping 31
2.1.1 Serial Port connector (COM) 31
2.2 HPM-GNR1U Overviews 32
2.3 HPM-GNR1U Jumper & Connector list 33
2.4 HPM-GNR1U Jumpers & Connectors settings 35
2.4.1 Force PWRON setting (JPALLPWRON1) 35
2.4.2 Clear CMOS (JPRTC1) 35
2.4.3 Boot UART5 setting (JPBOOT_UART5) 36
2.4.4 CPU I3C Debug setting (JPI3CDBG1) 36
2.4.5 TPM setting (JPTPOB1) 37
2.4.6 CPLD JTAG header (JCPLD_JTAG1) 37
2.4.7 System fan connector 1 (SYS_FAN1) 38
2.4.8 System fan connector 2 (SYS_FAN2) 38
2.4.9 System fan connector 3 (SYS_FAN3) 39
2.4.10 System fan connector 4 (SYS_FAN4) 39
2.4.11 System fan connector 5 (SYS_FAN5) 40
2.4.12 System fan connector 6 (SYS_FAN6) 40
2.4.13 CPU fan connector 1 (CPU_FAN1) 41
2.4.14 SPI connector (JSPI1) 41
2.4.15 BMC_UART5 debug connector (JCOM5) 42
2.4.16 ATX 12V power connector 1 (ATX12V1) 42
2.4.17 ATX 12V power connector 2 (ATX12V2) 43
2.4.18 ATX power connector (ATXPWR1) 43
2.4.19 Power supply PMBus connector (JPMBUS1) 44
2.4.20 USB3.2 Gen1 connector (JUSB1) 44
2.4.21 Front Panel connector (JFP2) 45

2.4.22 Inlet Thermal Sensor (JINLET_SER1) 45
2.4.23 Outlet Thermal Sensor (JOUTLET_SER1) 46
2.4.24 HDD Backplane thermal Sensor (JHDD_SER1) 46
2.4.25 CASE OPEN connector (JCASE_OPEN1) 47
2.4.26 VROC RAID KEY connector (JRAID_KEY1) 47
2.4.27 CPU PCIE HP SMB connector (JPEHPSMB1) 48
2.4.28 ESPI connector (JESPI1) 48
2.4.29 USB2.0 connector (USB1) 49
2.4.30 TPM connector (JTPM1) 49
3. Installation 50
3.1 CPU Shroud & Power Mylar Assembly 51
4. Drivers Installation 53
4.1 Install Chipset Driver 54
4.2 Install VGA Driver 55
4.3 Install Ethernet Driver 56
4.4 Install QuickAssist Technology Driver 57
4.5 Install VROC Driver 58
5.BIOS Setup 60
5.1 Introduction 61
5.2 Starting Setup 61
5.3 Using Setup 62
5.4 Getting Help 63
5.5 In Case of Problems 63
5.6 BIOS setup 64
5.6.1 Main Menu 64
5.6.1.1 System Language 64
5.6.1.2 System Date 64
5.6.1.3 System Time 64
5.6.2 Advanced Menu 65
5.6.2.1 Trusted Computing 65
5.6.2.2 AST2600 Super IO Configuration 66
5.6.2.2.1 Serial Port 1 Configuration 67
5.6.2.3 Serial Port Console Redirection 67
5.6.2.4 Option ROM Dispatch Policy 68
5.6.2.5 USB Configuration 69
5.6.2.6 Network Stack Configuration 70
5.6.2.7 NVMe Configuration 70
5.6.3 Platform Config 71
5.6.3.1 IBL-IO Configuration 71
5.6.3.2 Miscellaneous Configuration 72

5.6.4 Socket Config 72
5.6.4.1 Processor Configuration 73
5.6.4.2 Memory Configuration 73
5.6.4.2.1 Memory Topology 74
5.6.4.2.2 Memory RAS Configuration 75
5.6.4.3 IIO Configuration 76
5.6.4.3.1 Socket0 Configuration 76
5.6.4.3.1.1 PCI Express 0 77
5.6.4.3.1.1.1 Intel VMD technology 78
5.6.4.3.1.1.2 Port A ~ Port H 78
5.6.4.3.1.2 PCI Express 1 80
5.6.4.3.1.2.1 Intel VMD technology 81
5.6.4.3.1.2.2 Port A ~ Port H 82
5.6.4.3.1.3 PCI Express 2 83
5.6.4.3.1.3.1 Intel VMD technology 84
5.6.4.3.1.3.2 Port A ~ Port H 85
5.6.4.3.1.4 PCI Express 3 86
5.6.4.3.1.4.1 Intel VMD technology 87
5.6.4.3.1.4.2 Port A ~ Port H 88
5.6.4.3.1.5 PCI Express 4 88
5.6.4.3.1.5.1 Intel VMD technology 89
5.6.4.3.1.5.2 Port A ~ Port H 90
5.6.4.3.1.6 PCI Express 5 93
5.6.4.3.1.6.1 Intel VMD technology 94
5.6.4.3.1.6.2 Port A ~ Port H 94
5.6.4.3.2 Global Configuration 96
5.6.4.3.3 Advanced Power Management Configuration 97
5.6.4.4.1 CPU P State Control 97
5.6.4.4.2 CPU C State Control 98
5.6.5 Server Mgmt 99
5.6.5.1 System Event Log 100
5.6.5.2 Bmc self test log 101
5.6.5.3 BMC network configuration 102
5.6.5.4 BMC User Settings 102
5.6.5.4.1 BMC Add User Details 103
5.6.5.4.2 BMC Delete User Details 103
5.6.5.4.3 BMC Change User Settings 104
5.6.6 Security 104
5.6.6.1 Secure Boot 105
5.6.6.1.1 Expert Key Management 106

5.6.7 Boot 107
5.6.8 Save and exit 109
5.6.8.1 Save Changes and Exit 109
5.6.8.2 Discard Changes and Exit 109
5.6.8.3 Save Changes and Reset 110
5.6.8.4 Discard Changes and Reset 110
5.6.8.5 Save Changes 110
5.6.8.6 Discard Changes 110
5.6.8.7 Restore Defaults 110
5.6.8.8 Save as User Defaults 110
5.6.8.9 Restore User Defaults 110

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.



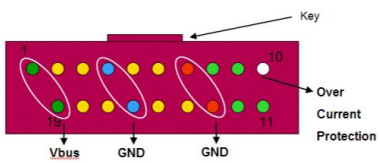
There is danger of explosion if the battery is mishandled or incorrectly replaced. Replace only with the same type of battery. Do not disassemble it or attempt to recharge it outside the system. Do not crush, puncture, dispose of in fire, short the external contacts, or expose to water or other liquids.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

1.2 Packing List

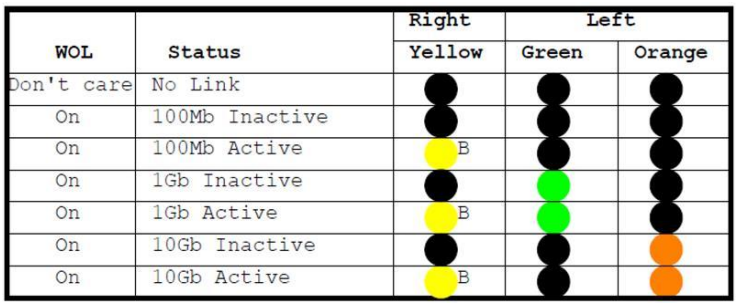
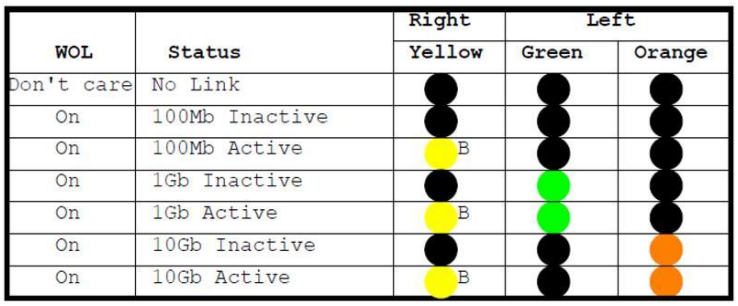
- 1 x HPS-GNR1U barebone system
  - HPM-GNR1U motherboard
  - 850W Single PSU or 850W Slimtype 1+1 Redundant PSU
- 1 x LGA4677 CPU carrier-E1B
- 1 x Air shroud

1.3 System Specifications

System Information	
Processor	Single 6th Gen. Intel® Xeon® Processors support up to 350W TDP. L10 system: 1 x Intel® Xeon® Gold 6781P Processor(350W), Intel (P/N: BCC-CPU-6781R)
System Memory	8 x DDR5 6400MT/s RDIMM Up to 2TB L10 system: 2 x DDR5 5600 16GB 288PIN RDIMM
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) (Note: Reserve this feature on the board level)
RAID	Intel VMD and Virtual RAID on CPU(VROC) 1 x Intel VROC header (Note: RAID key for CPU PCIe NVME only)
TPM	TPM 2.0 NuvoTon_NPCT760AAEYX or equivalent 1 x TPM header (10 Pin)
SBC	HPM-GNR1U
BMC	IPMI 2.0 with AST 2600 BMC controller onboard.
Other	1 x Outlet Sensor Onboard (TI TMP75AIDGKT or Equivalent) 1 x Inlet Sensor Header 1 x Outlet Sensor Header
Expansion	
PCIe (Gen X)	1 x PCIe Gen5 x32 Slot, 1 x PCIe Gen 5 x8 Slot Slot 1, PCIe Gen5 x16 FHFL Slot via riser card Slot 2, PCIe Gen5 x16 FHFL Slot via riser card(Computing GPU – RTX 4000 Blackwell for L10 System) Slot 3, PCIe Gen5 x8 HHHL(In x16 Physical Slot) (This Slot is closest to the CPU)(Display GPU – A400 for L10 system)
Storage	
M.2 (Signal)	Storage expansion option 1: 2 x M.2 M-Key Slot to support PCIe 5.0 x4 NVMe SSD 2242/2260/2280/22110 form factor(Optional Through Daughter Board)
2.5” Drive Bay	Storage expansion option 1:

(Height)	4 x Hot-Swappable 2.5” U.2 NVMe Drive Bays L10 system: 1x Apacer 512GB, U.2 SSD, PCIe Gen4x4, NVMe, 3D TLC BiCS5, PE: 3K, extended temp., PLP or Other equivalent products
Other	Storage expansion option 2: 10 x Hot-Swappable E1.S NVMe Drive Bays L10 system:1 x Solidigm™ Solid State Drive D5-P5430 or Other equivalent products 5 x MCIOx8 connectors (SFF-TA-1016)
Front I/O	
USB Port	2 x USB 3.2 Gen1 Type A Connectors
Power Button	1 x Power button
Reset Button	1 x Reset button
LED Indicator	1 x Power state 1 x Status LED 2 x Network activity (1 for i210-AT, 1 for E610XAT2)
System Fan	6 x Middle 40 x 56mm PWM Fans 23000 RPM
Rear I/O	
USB Port	2x USB 3.2 Gen1 ports by Renesas UPD720201K8-701-BAC-A (From PCIe Gen2 x1)
COM Port	1 x D-Sub 9
DP	1 x Mini-DisplayPort
LAN Port	MGMT port : Dedicated IPMI function access 1 x 1GbE Ethernet port for Intel I210-AT controller, shared with IPMI function access 2 x 10GbE Ethernet ports for Intel E610-XAT2 controller (Only support x2 link in hardware design) (Connector: 1 x 2X1 10G Base-T RJ45 module jack)
AC/DC Input	1 x AC-In power connector from Power Supply 1U Single ATX 850W FSP(BCC-PSU-850N-02R) (Default) 2 x AC-In power connectors from Power Supply 1U 1+1 CRPS 850W 3Y (BCC-RPS-850N-02R) (Option)
Onboard I/O	
USB Port	4x USB 3.2 Gen1 ports by via VL822-Q7 (1 x USB Hub to 4 x USB) - 1x USB 3.2 Gen1 ports type A vertical - 1x USB 2.0 port - 2x USB 3.2 Gen1 ports in two USB 3.0 internal headers Pin definition : 

<table>
<tr><td></td><td>
<table>
<tr><th>Pin No.</th><th>Signal</th><th>Description</th></tr>
<tr><td>1</td><td>Vbus</td><td>Power</td></tr>
<tr><td>2</td><td>IntA_P1_SSRX-</td><td>USB3 ICC Port1 SuperSpeed Rx-</td></tr>
<tr><td>3</td><td>IntA_P1_SSRX+</td><td>USB3 ICC Port1 SuperSpeed Rx+</td></tr>
<tr><td>4</td><td>GND</td><td>GND</td></tr>
<tr><td>5</td><td>IntA_P1_SSTX-</td><td>USB3 ICC Port1 SuperSpeed Tx-</td></tr>
<tr><td>6</td><td>IntA_P1_SSTX+</td><td>USB3 ICC Port1 SuperSpeed Tx+</td></tr>
<tr><td>7</td><td>GND</td><td>GND</td></tr>
<tr><td>8</td><td>IntA_P1_D-</td><td>USB3 ICC Port1 D- (USB2 Signal D-)</td></tr>
<tr><td>9</td><td>IntA_P1_D+</td><td>USB3 ICC Port1 D+ (USB2 Signal D+)</td></tr>
<tr><td>10</td><td>ID</td><td>Over Current Protection</td></tr>
<tr><td>11</td><td>IntA_P2_D+</td><td>USB3 ICC Port2 D+ (USB2 Signal D+)</td></tr>
<tr><td>12</td><td>IntA_P2_D-</td><td>USB3 ICC Port2 D- (USB2 Signal D-)</td></tr>
<tr><td>13</td><td>GND</td><td>GND</td></tr>
<tr><td>14</td><td>IntA_P2_SSTX+</td><td>USB3 ICC Port2 SuperSpeed Tx+</td></tr>
<tr><td>15</td><td>IntA_P2_SSTX-</td><td>USB3 ICC Port2 Super Speed Tx-</td></tr>
<tr><td>16</td><td>GND</td><td>GND</td></tr>
<tr><td>17</td><td>IntA_P2_SSRX+</td><td>USB3 ICC Port2 SuperSpeed Rx+</td></tr>
<tr><td>18</td><td>IntA_P2_SSRX-</td><td>USB3 ICC Port2 SuperSpeed Rx-</td></tr>
<tr><td>19</td><td>Vbus</td><td>Power</td></tr>
</table>
</td></tr>
<tr><td>RTC Battery</td><td>1 x Horizontal Socket Type CMOS Battery Holder with CR2450 +
NXP/PCF85053ATKJ
1 x Battery header (2 pin)</td></tr>
<tr><td>Front Panel</td><td>1 x Front panel connector (2.54 mm Pitch)(SSI SPEC)
Front Panel DB add 1x Inlet sensor IC
The pin-out for SSI control cable is as follows:
Table 51. Front Panel SSI connector pin-out
<table>
<tr><th>Pin</th><th>Signal Name</th><th>Pin</th><th>Signal Name</th></tr>
<tr><td>1</td><td>P3V3_STBY (Power LED Anode)</td><td>2</td><td>P3V3_STBY (Front Panel Power)</td></tr>
<tr><td>3</td><td>Key</td><td>4</td><td>P5V_STBY (ID LED Anode)</td></tr>
<tr><td>5</td><td>FP_PWR_LED_N</td><td>6</td><td>FP_ID_LED_BUF_N</td></tr>
<tr><td>7</td><td>P3V3 (HDD Activity LED Anode)</td><td>8</td><td>FP_LED_STATUS_GREEN_N</td></tr>
<tr><td>9</td><td>LED_HDD_ACTIVITY_N</td><td>10</td><td>FP_LED_STATUS_A MBER_N</td></tr>
<tr><td>11</td><td>FP_PWR_BTN_N</td><td>12</td><td>NIC3_LINK_LED_N</td></tr>
<tr><td>13</td><td>GND (Power Button GND)</td><td>14</td><td>NIC1_LINK_LED_N</td></tr>
<tr><td>15</td><td>BMC_RST_BTN_N</td><td>16</td><td>SMB_SENSOR_3V3STB_DATA</td></tr>
<tr><td>17</td><td>GND (Reset GND)</td><td>18</td><td>SMB_SENSOR_3V3STB_CLK</td></tr>
<tr><td>19</td><td>FP_ID_BTN_N</td><td>20</td><td>FP_CHASSIS_INTRU</td></tr>
<tr><td>21</td><td>NIC5_LINK_LED_N</td><td>22</td><td>NIC4_LINK_LED_N</td></tr>
<tr><td>23</td><td>FP_NMI_BTN_N</td><td>24</td><td>NIC2_LINK_LED_N</td></tr>
</table>
Front panel USB connector pin-out is as follows:</td></tr>
<tr><td>Buzzer</td><td>1 x onboard buzzer</td></tr>
<tr><td>CPU/System FAN</td><td>1 x 4 Pin, pitch 2.54mm CPU Fan Header (4 Pin PWM)
6 x 4 Pin, pitch 2.54mm Chassis Fan Header (4 Pin PWM, 6 for Middle fan)</td></tr>
<tr><td colspan="2">Display</td></tr>
<tr><td>Graphic Chipset</td><td>1 x Mini DP port
AST2600 BMC controller</td></tr>
<tr><td>Resolution</td><td>1920x1200@60Hz 32bpp</td></tr>
<tr><td colspan="2">Ethernet</td></tr>
<tr><td>LAN Chipset</td><td>1 x Intel I210AT</td></tr>
</table>

<table>
<tr><td></td><td>1 x Intel E610-XAT2</td></tr>
<tr><td>Data Rate Per Port</td><td>1 x 1G 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>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>
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>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>
Power Indicator: To identify whether the system is ready or dead.
<table>
<tr><td>1. Power button ON</td></tr>
<tr><td>2. Power indicator ON</td></tr>
<tr><td>3. BIOS initialization, Power indicator from ON to blinking</td></tr>
<tr><td>4. Power indicator to always on means:
A. ON.
B. System Error.</td></tr>
</table>
<table>
<tr><td>Power Indicator</td><td>Condition</td><td>Memo</td><td>FAN status</td></tr>
<tr><td>OFF</td><td>S5</td><td>Power off</td><td>OFF</td></tr>
<tr><td>ON</td><td>System always Failed</td><td>System boot failed/VGA is not ready</td><td>ON</td></tr>
<tr><td>ON</td><td>BIOS ready to boot</td><td>VGA is ready. (Informed by BIOS)</td><td>ON</td></tr>
<tr><td>Blinking</td><td>BIOS initializing</td><td>Blinking
(BMC to implement)</td><td>ON</td></tr>
</table></td></tr>
<tr><td colspan="2">Power Requirement</td></tr>
<tr><td>Voltage Input Conn.</td><td>1 x Std. 24 pin ATX Connector
2 x 8 Pin SSI 12V Connectors</td></tr>
</table>

<table>
<tr><td></td><td>Connector current rating information.
<table>
<tr><th colspan="9">MAXIMUM CURRENT RATING(Amperes)
Wire-to-Wire and Wire-to- Board</th></tr>
<tr><th colspan="5">Brass</th><th colspan="4">Phosphor Bronze</th></tr>
<tr><th>Ckt.Size
Wire</th><th>2 & 3</th><th>4 - 6</th><th>7 - 10</th><th>12 - 24</th><th>Ckt.Size
Wire</th><th>2 & 3</th><th>4 - 6</th><th>7 - 10</th><th>12 - 24</th></tr>
<tr><td>AWG #16</td><td>9</td><td>8</td><td>7</td><td>6</td><td>AWG #16</td><td>8</td><td>7</td><td>6</td><td>5</td></tr>
<tr><td>AWG #18</td><td>9</td><td>8</td><td>7</td><td>6</td><td>AWG #18</td><td>8</td><td>7</td><td>6</td><td>5</td></tr>
<tr><td>AWG #20</td><td>7</td><td>6</td><td>5</td><td>5</td><td>AWG #20</td><td>6</td><td>5</td><td>4</td><td>4</td></tr>
<tr><td>AWG #22</td><td>5</td><td>4</td><td>4</td><td>4</td><td>AWG #22</td><td>4</td><td>3</td><td>3</td><td>3</td></tr>
<tr><td>AWG #24</td><td>4</td><td>3</td><td>3</td><td>3</td><td>AWG #24</td><td>3</td><td>2</td><td>2</td><td>2</td></tr>
<tr><td>AWG #26</td><td>3</td><td>2</td><td>2</td><td>2</td><td>AWG #26</td><td>2</td><td>1</td><td>1</td><td>1</td></tr>
<tr><td>AWG #28</td><td>2</td><td>1</td><td>1</td><td>1</td><td>AWG #28</td><td>1</td><td>1</td><td>1</td><td>1</td></tr>
</table></td></tr>
<tr><td>ACPI</td><td>Yes, S0 and S5</td></tr>
<tr><td>Power Mode</td><td>H/W: ATX power well design only.
BMC: AT (Default)</td></tr>
<tr><td>Power Supply Unit</td><td>FSP 850W Single ATX PSU (Default)
3Y 850W 1+1 1U CRPS (Option)</td></tr>
<tr><td colspan="2">Mechanical & Environment</td></tr>
<tr><td>Operating Temp.</td><td>Condition 1: Temperature: 0 to 40°C (L6 w/ FSP 850W PSU)
Condition 2: Temperature: 0 to 40°C (L6 w/ 3Y 850W CRPS PSU)
Condition 3: Temperature: 0 to 35°C (L10, GPU RTX 4000 Blackwell Max-Q+A400)
Condition 4: Temperature: 0 to TBC °C (L10 system, depends on added card spec.)</td></tr>
<tr><td>Storage Temp.</td><td>-40°C 24hrs IEC60068-2-1 Cold test Test: Ab
70°C/ RH95% 24hrs IEC 60068-2-3 Test: CA</td></tr>
<tr><td>Operating Humidity</td><td>35℃ /RH95%/24hrs
IEC 60068-2-56 Test: Cb</td></tr>
<tr><td>Dimension (W*L*H)</td><td>437mm(17.2”) x 596.9mm(23.5”) x 43.5mm(1.7”)</td></tr>
<tr><td>Weight</td><td>13.2 kg</td></tr>
<tr><td>Vibration Test</td><td>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</td></tr>
</table>

	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 11 LTSC (24H2) Windows Server 2025 LTSC Ubuntu 24.04 Red Hat Enterprise Linux (RHEL) 8.0 or above

Note: Specifications are subject to change without notice.

DIMM population requirements

		Install DIMM Qty:			
DIMM No.	CPU MEM Ch.	1	4	4	8
DIMM1	CPU1 CH-A DIMM0	V	V		V
DIMM2	CPU1 CH-B DIMM0			V	V
DIMM3	CPU1 CH-C DIMM0		V		V
DIMM4	CPU1 CH-D DIMM0			V	V
DIMM5	CPU1 CH-E DIMM0		V		V
DIMM6	CPU1 CH-F DIMM0			V	V
DIMM7	CPU1 CH-G DIMM0		V		V
DIMM8	CPU1 CH-H DIMM0			V	V

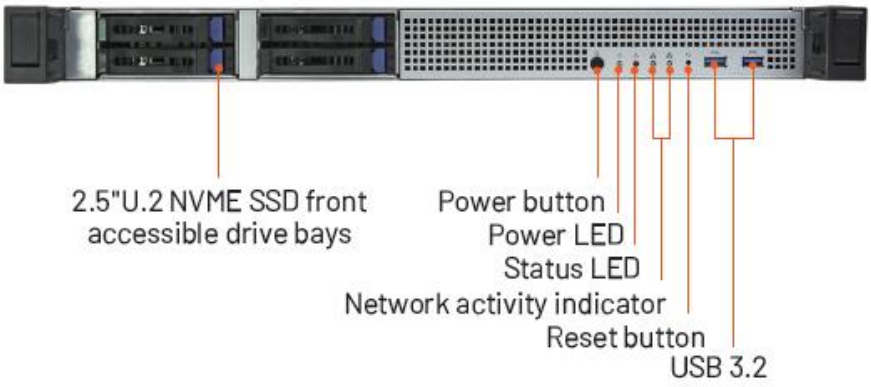
1.4 System Overview

1.4.1 Front View

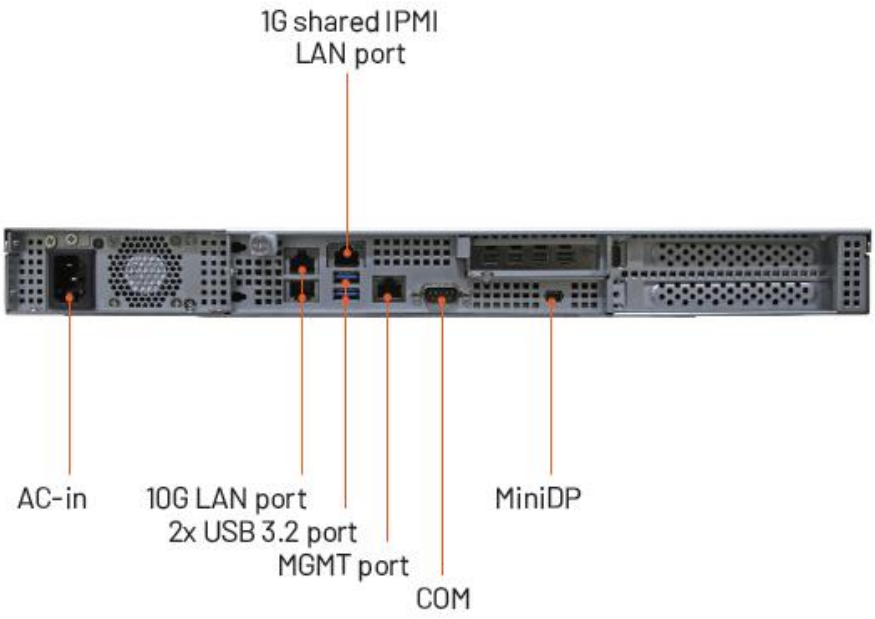
10x E1.S NVMe version



4x 2.5" NVMe SSD version



1.4.2 Rear View



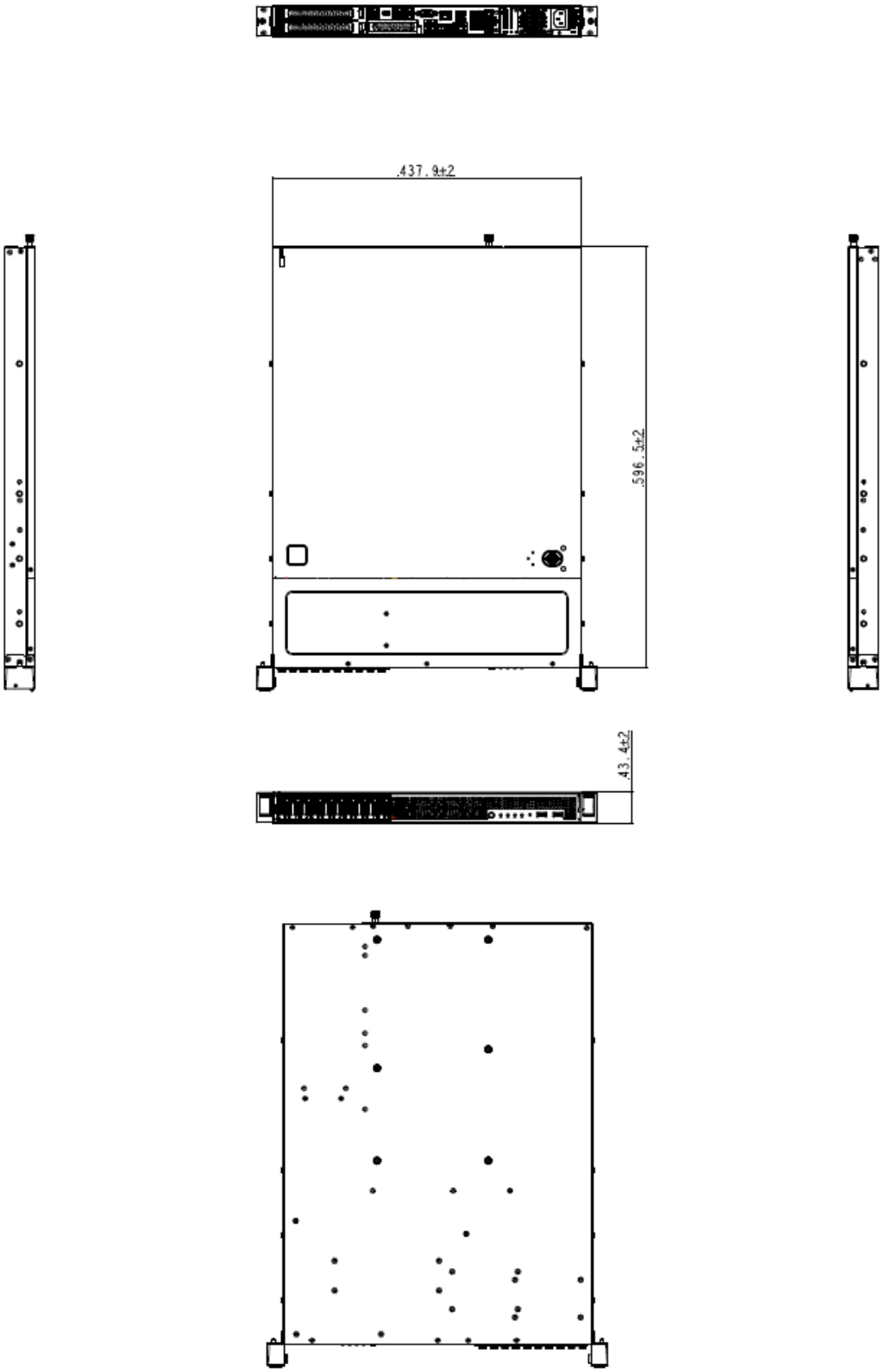
Connectors

Label	Function	Note
E1.S NVMe Front accessible drive bays	E1.S NVMe Front accessible drive bays	

2.5” U.2 NVME SSD front accessible drive bays	4 x 2.5” U.2 NVME SSD front accessible drive bays	
Power button	Power button	
Power LED	Power state	
Status LED	2 x Status LED	
Reset button	Reset button	
Network activity indicator	Network activity indicator	
Disk activity indicator	Disk activity indicator	
USB3.2	4 x USB3.2 Gen1 connector	
AC-in	AC power-in connector	
10G LAN port	2 x 10GbE RJ-45 Ethernet connector	
1G shared IPMI LAN port	1GbE RJ-45 Ethernet connector	
MGMT port	MGMT port	
COM	Serial port connector	D-sub 9-pin, male
MiniDP	Mini-Display port	

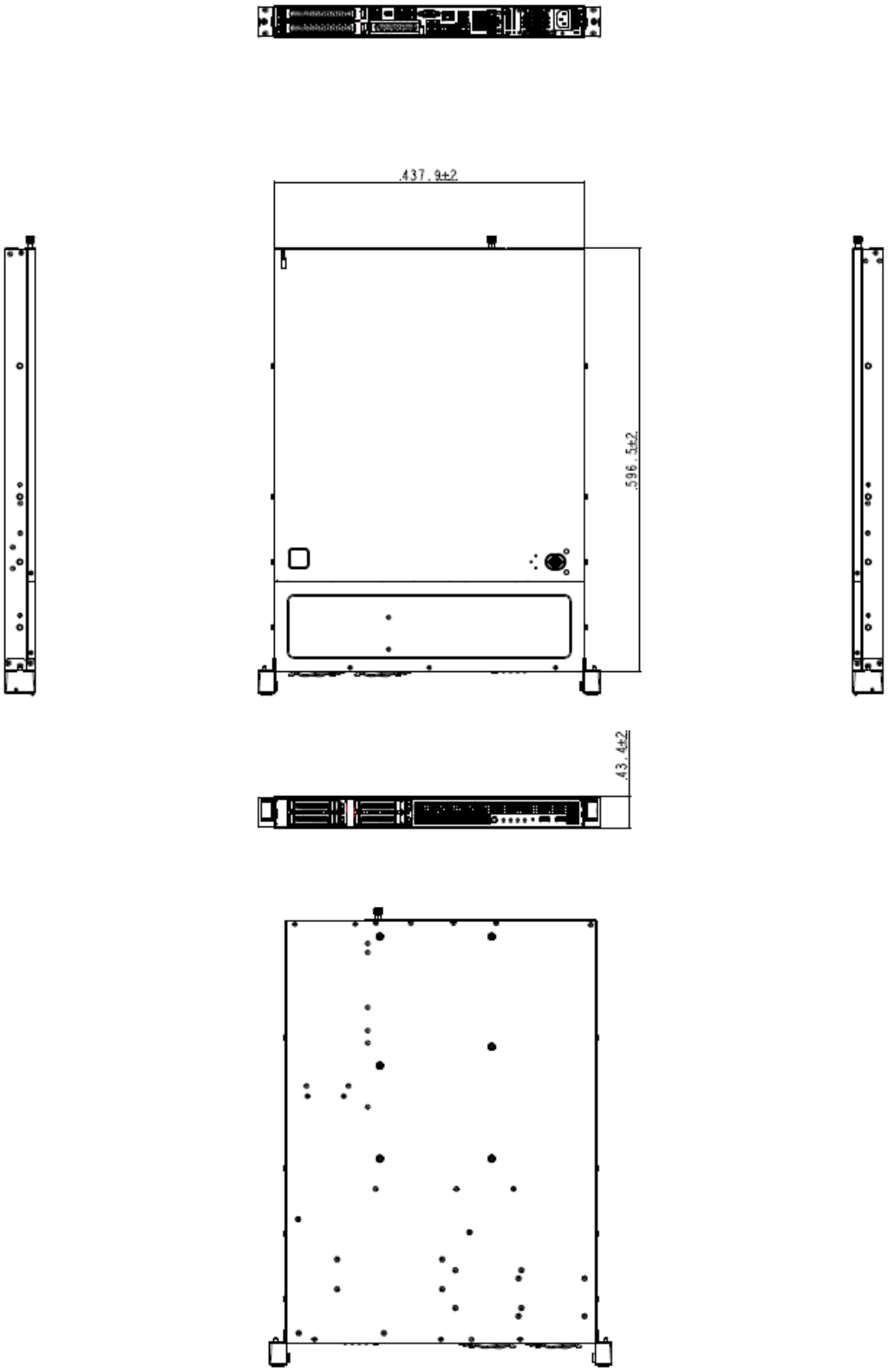
1.5 System Dimensions

10x E1.S NVMe version



(Unit: mm)

4x 2.5" NVMe SSD version



(Unit: mm)

2. Hardware Configuration

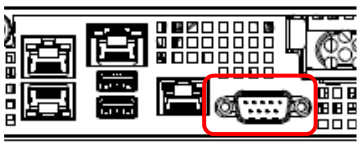
Jumper and Connector Setting

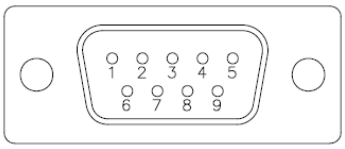
For advanced information, please refer to:

1- HPM-GNR1U included in this manual.

2.1 HPS-GNR1U connector mapping

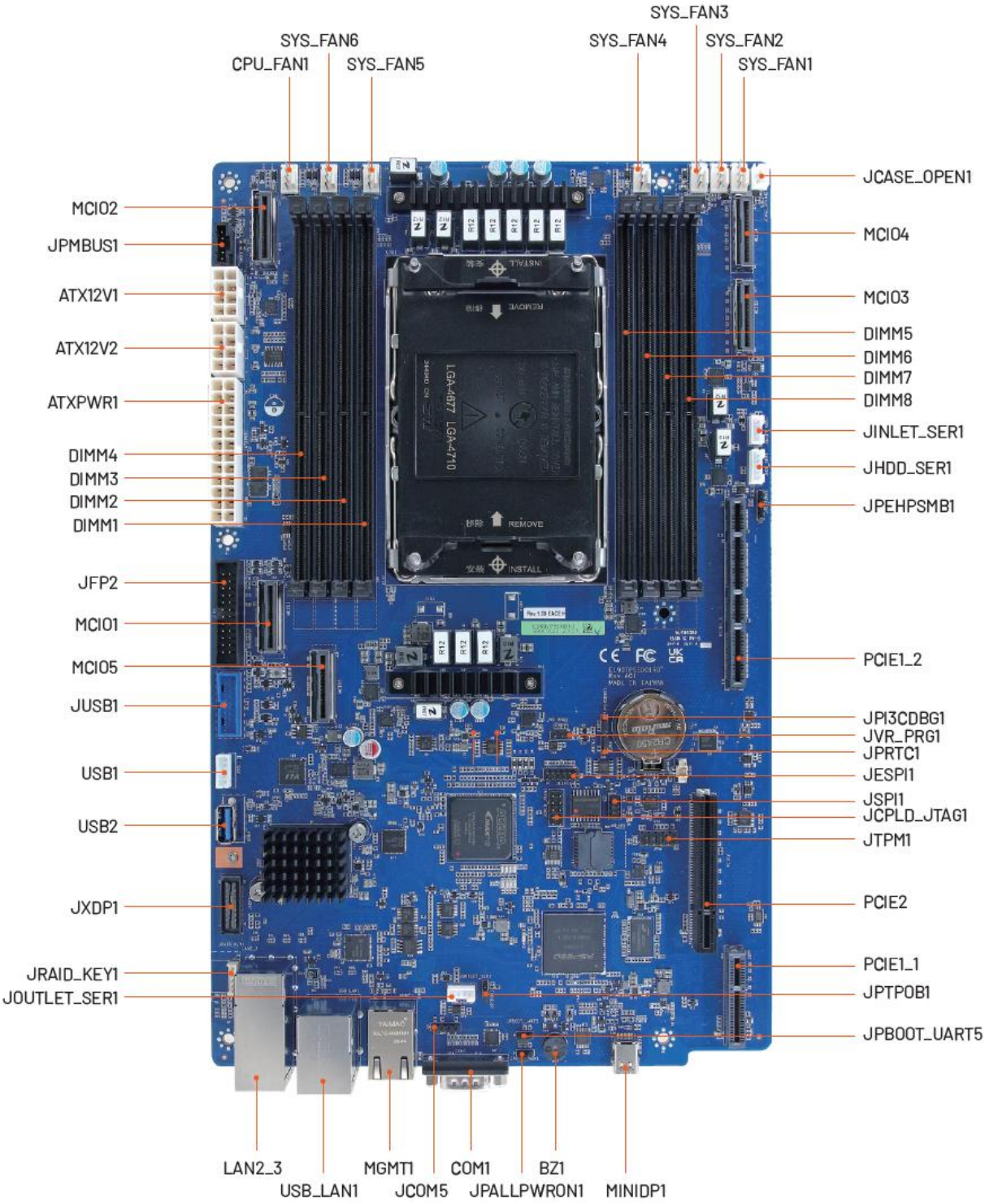
2.1.1 Serial Port connector (COM)





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

2.2 HPM- Overviews



2.3 HPM-GNR1U Jumper & Connector list

Jumpers

Label	Function	Note
JPBOOT_UART5	Boot UART5 setting	3 x 1 header, pitch 2.00mm
JPALLPWRON1	Force PWRON setting	3 x 1 header, pitch 2.00mm
JPRTC1	Clear CMOS	3 x 1 header, pitch 2.00mm
JPI3CDBG1	CPU I3C Debug setting	3 x 1 header, pitch 2.00mm
JPTPOB1	TPM setting	3 x 1 header, pitch 2.00mm

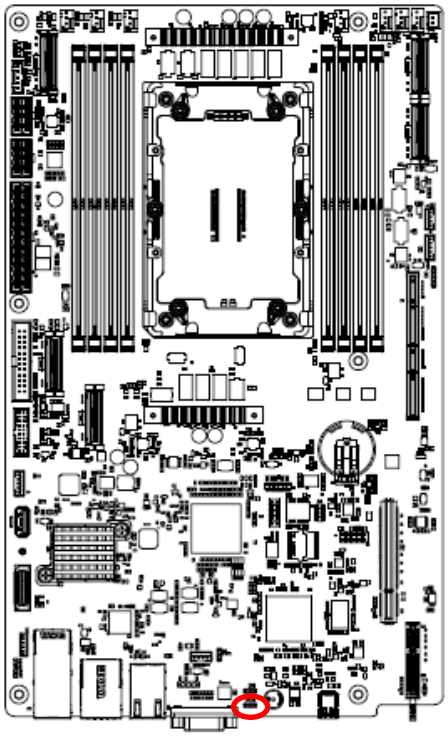
Connectors

Label	Function	Note
SYS_FAN1-6	System fan connector 1-6	4 x 1 wafer, pitch 2.54mm
CPU_FAN1	CPU fan connector	4 x 1 wafer, pitch 2.54mm
COM1	Serial port 1 connector	
JTPM1	TPM connector	5 x 2 header, pitch 2.54mm
JCOM5	BMC_UART5 debug connector	4 x 1 header, pitch 2.54mm
MGMT1	MGMT port	
PCIE1_1	PCIe Gen5 x16	
PCIE1_2	PCIe Gen5 x8	
PCIE2	PCIe Gen5 x16	
MINIDP1	Mini-DisplayPort	
JFP2	Front Panel connector	12 x 2 wafer, pitch 2.54mm
USB_LAN1	2 x USB3.2 Gen1 connector 1 x RJ-45 Ethernet (LAN1 Share IPMI Port)	
LAN2_3	2 x RJ-45 Ethernet	
USB1	USB2.0 connector	5 x 1 wafer, pitch 2.00mm
USB2	USB3.2 Gen1 connector	
JUSB1	USB3.2 Gen1 connector	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
MCIO1-4	5 x MCIOx8 connectors	
JXDP1	XDP connector	
BZ1	PC Buzzer connector	
JRAID_KEY1	VROC RAID KEY connector	4 x 1 wafer, pitch 2.00mm

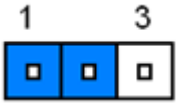
DIMM1-8	8 x DDR5 RDIMM socket	
JCASE_OPEN1	CASE OPEN connector	2 x 1 wafer, pitch 2.50mm
ATX12V1	ATX 12V power connector 1	4 x 2 wafer, pitch 4.20mm
ATX12V2	ATX 12V power connector 2	4 x 2 wafer, pitch 4.20mm
ATXPWR1	ATX power connector	12 x 2 wafer, pitch 4.20mm
JPMBUS1	Power supply PMBus connector	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
JCPLD_JTAG1	CPLD JTAG header	5 x 2 header, pitch 2.54mm
JVR_PRG1	SMBUS VR connector	3 x 1 header, pitch 2.54mm

2.4 HPM-GNR1U Jumpers & Connectors settings

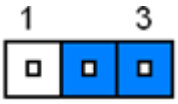
2.4.1 Force PWRON setting (JPALLPWRON1)



Disable*

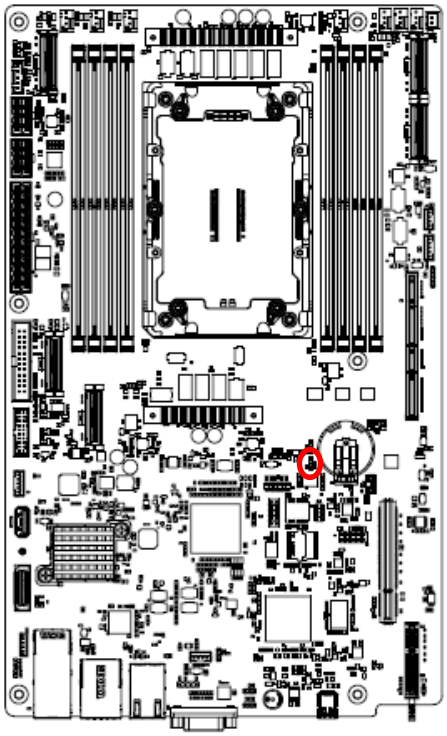


Enable

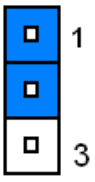


*** Default**

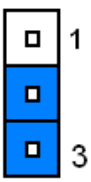
2.4.2 Clear CMOS (JPRTC1)



Normal RTC Reset*

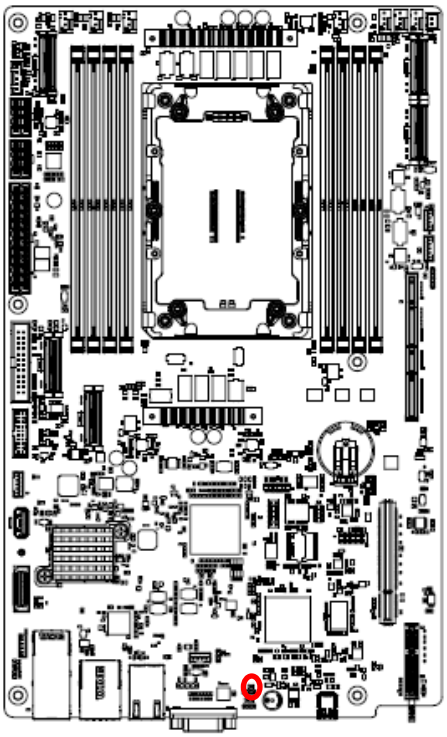


Clear RTC REGISTERS

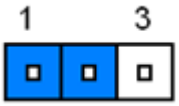


*** Default**

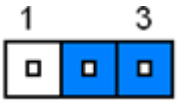
2.4.3 Boot UART5 setting (JPBOOT_UART5)



Disable*

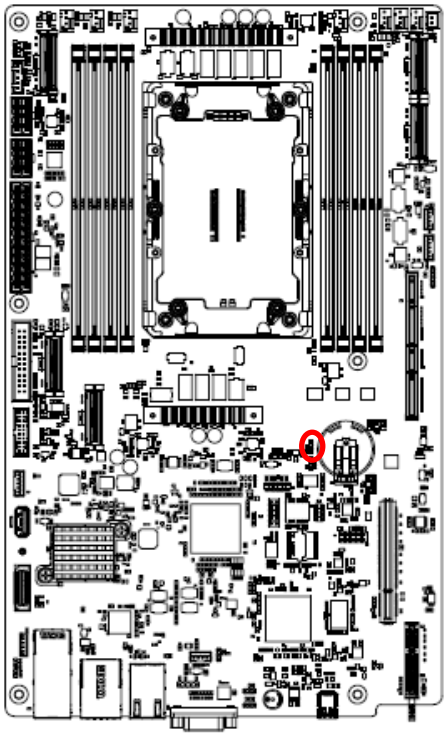


Enable BOOT FROM UART5

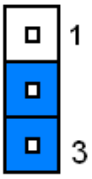


*** Default**

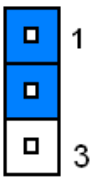
2.4.4 CPU I3C Debug setting (JPI3CDBG1)



MBP Functionality*

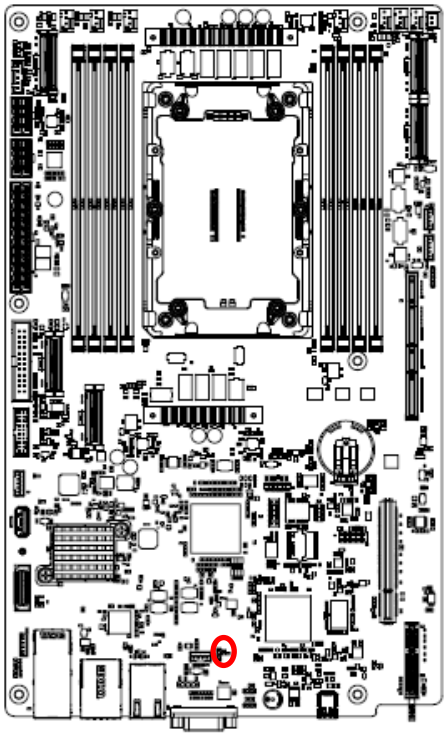


I3C Functionality

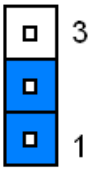


*** Default**

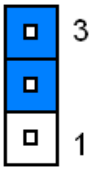
2.4.5 TPM setting (JPTPOB1)



NORMAL Onboard TPM Enable*

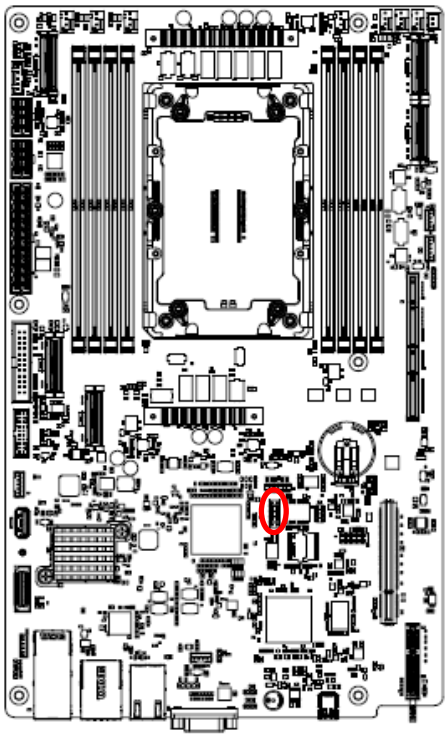


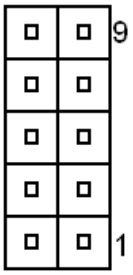
Disabled Onboard TPM/JTPM module use



*** Default**

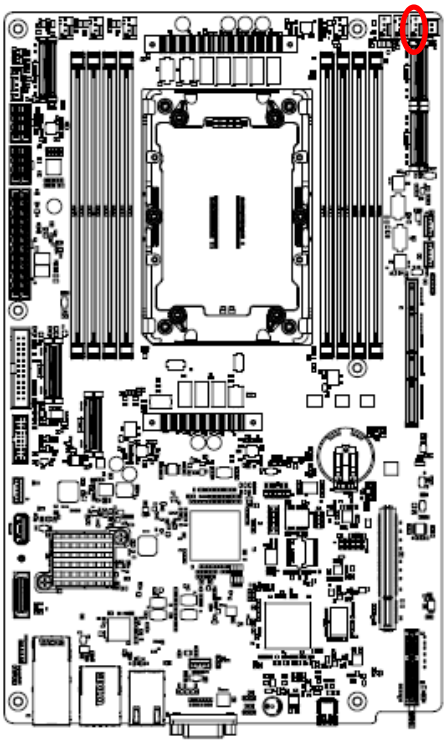
2.4.6 CPLD JTAG header (JCPLD_JTAG1)





Signal	PIN	PIN	Signal
GND	10	9	JTAG_TDI_CONN
NC	8	7	NC
NC	6	5	JTAG_TMS_CONN
+3.3VSB	4	3	JTAG_TDO_CONN
CPLD_JTAG_MUX_CTL	2	1	JTAG_TCK_CONN

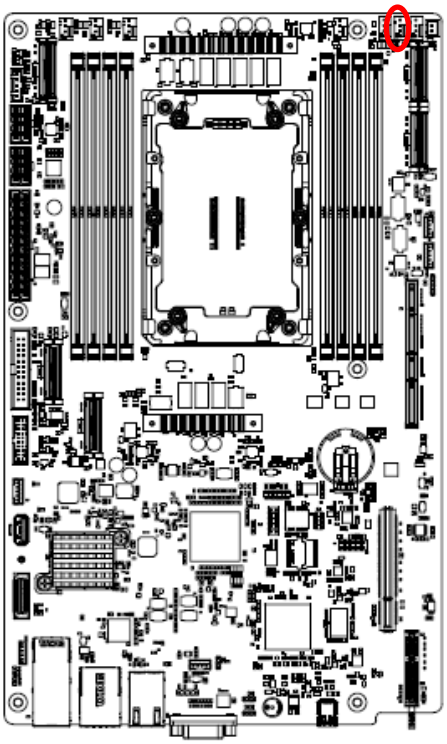
2.4.7 System fan connector 1 (SYS_FAN1)





Signal	PIN
SYS_PWM1	4
FAN_R2_TACH1	3
+12V	2
GND	1

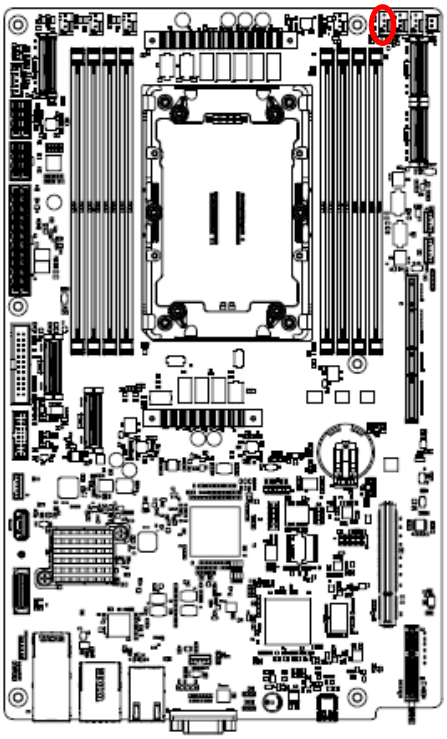
2.4.8 System fan connector 2 (SYS_FAN2)





Signal	PIN
SYS_PWM2	4
FAN_R2_TACH2	3
+12V	2
GND	1

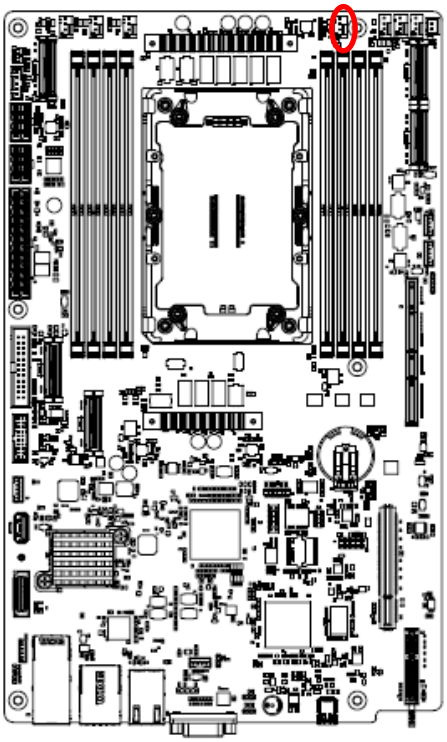
2.4.9 System fan connector 3 (SYS_FAN3)





Signal	PIN
SYS_PWM3	4
FAN_R2_TACH3	3
+12V	2
GND	1

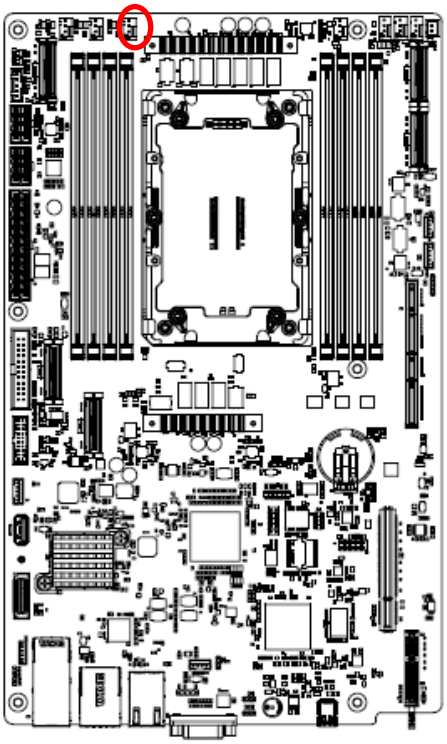
2.4.10 System fan connector 4 (SYS_FAN4)





Signal	PIN
SYS_PWM4	4
FAN_R2_TACH4	3
+12V	2
GND	1

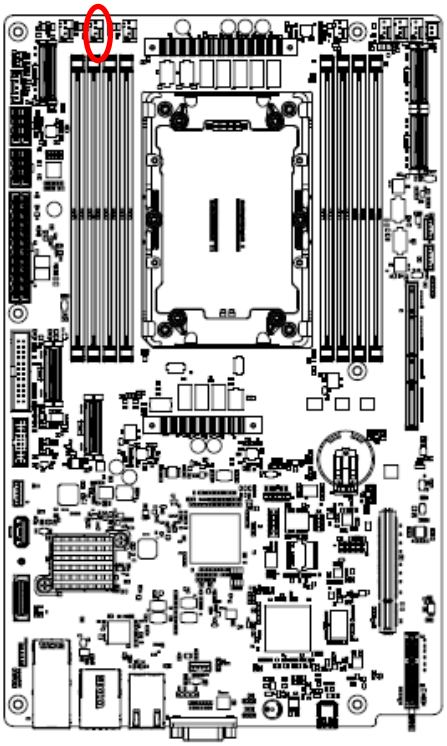
2.4.11 System fan connector 5 (SYS_FAN5)





Signal	PIN
SYS_PWM5	4
FAN_R2_TACH5	3
+12V	2
GND	1

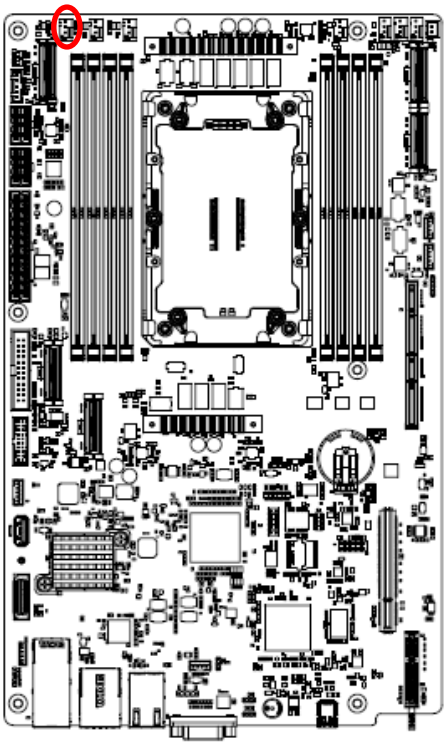
2.4.12 System fan connector 6 (SYS_FAN6)





Signal	PIN
SYS_PWM6	4
FAN_R2_TACH6	3
+12V	2
GND	1

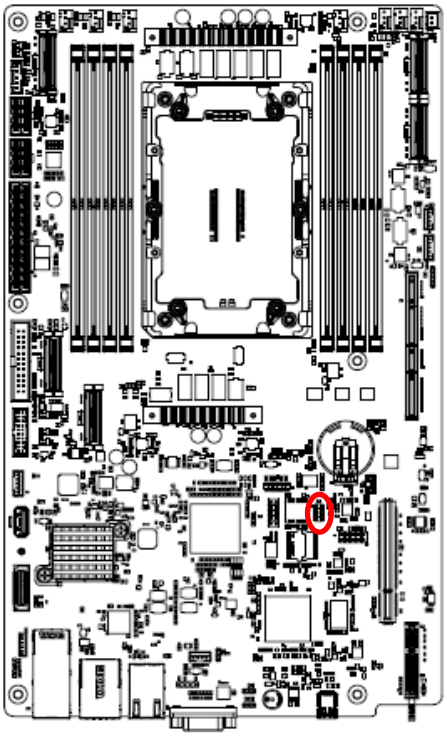
2.4.13 CPU fan connector 1 (CPU_FAN1)

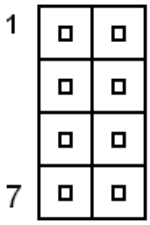




Signal	PIN
CPU0_PWM	4
FAN_R2_TACH0	3
+12V	2
GND	1

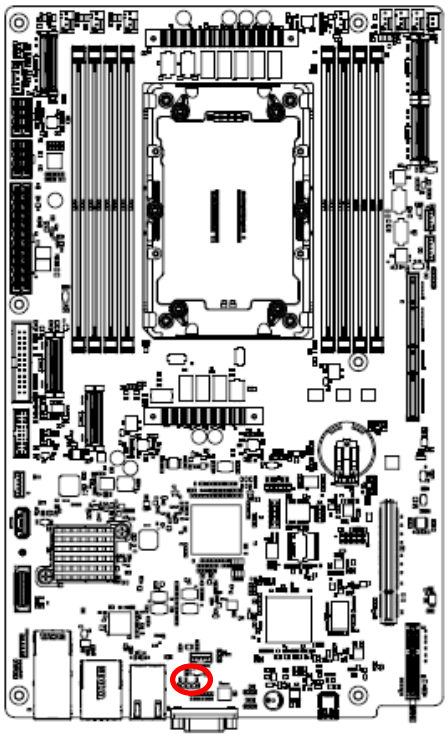
2.4.14 SPI connector (JSPI1)

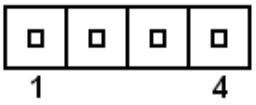




Signal	PIN	PIN	Signal
+1.8VSB	1	2	GND
SPI_DED_CS0_N	3	4	CPI_DED_CLK
SPI_DED_MISO	5	6	SPI_DED_MOSI
SPI_DED_IO3	7	8	SPI_DED_IO2

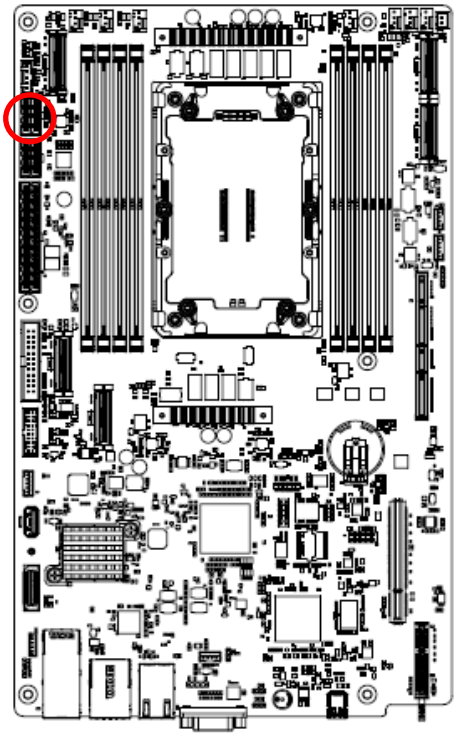
2.4.15 BMC_UART5 debug connector (JCOM5)

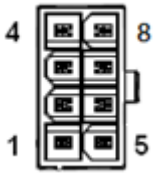




Signal	PIN
UART5_TX	1
UART5_RX	2
GND	3
+3.3VSB	4

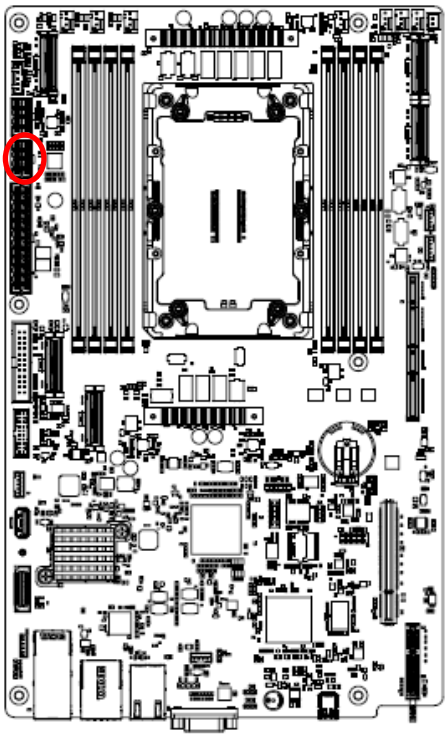
2.4.16 ATX 12V power connector 1 (ATX12V1)

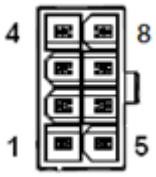




Signal	PIN	PIN	Signal
GND	4	8	+12V
GND	3	7	+12V
GND	2	6	+12V
GND	1	5	+12V

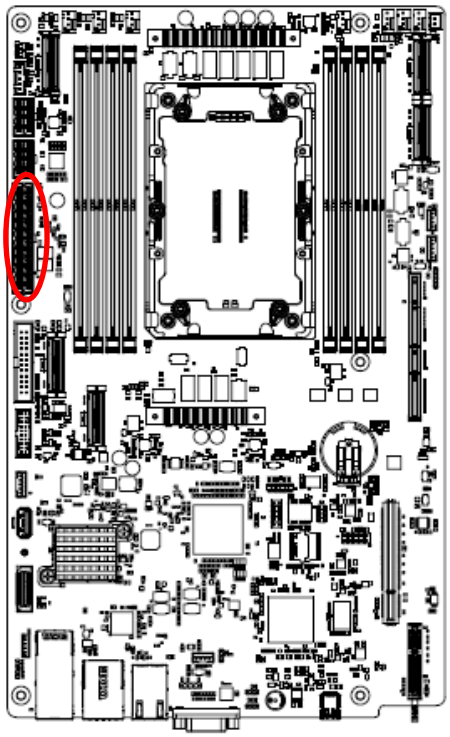
2.4.17 ATX 12V power connector 2 (ATX12V2)

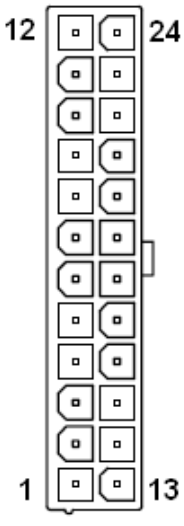




Signal	PIN	PIN	Signal
GND	4	8	+12V
GND	3	7	+12V
GND	2	6	+12V
GND	1	5	+12V

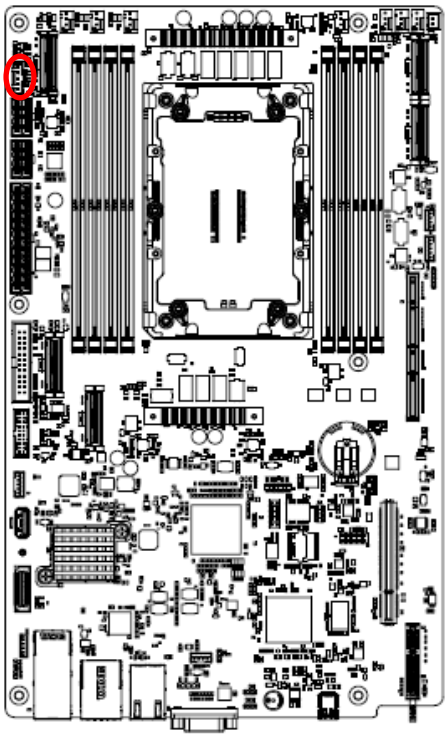
2.4.18 ATX power connector (ATXPWR1)

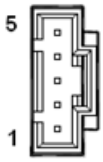




Signal	PIN	PIN	Signal
+3.3V	12	24	GND
+12V	11	23	+5V
+12V	10	22	+5V
+V5SB	9	21	+5V
PWRGD_PS_PWROK_R	8	20	NC
GND	7	19	GND
+5V	6	18	GND
GND	5	17	GND
+5V	4	16	FM_PS_EN_PSU_N
GND	3	15	GND
+3.3V	2	14	-12V
+3.3V	1	13	+3.3V

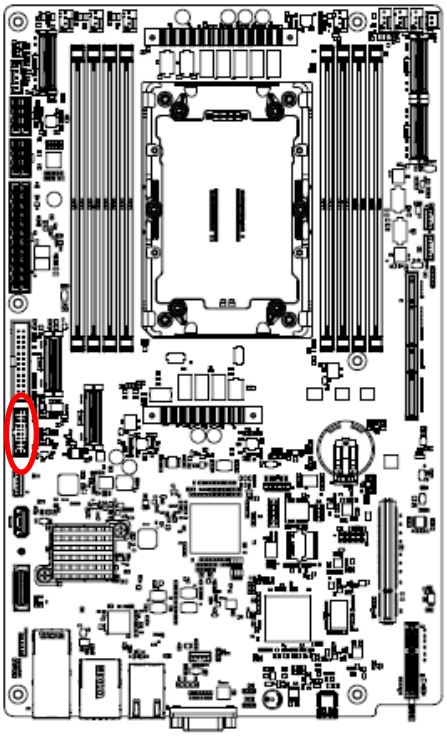
2.4.19 Power supply PMBus connector (JPMBUS1)

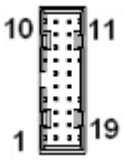




Signal	PIN
NC	5
GND	4
PSU_ALERT_z_N	3
PSU_z_SDA	2
PSU_z_SCL	1

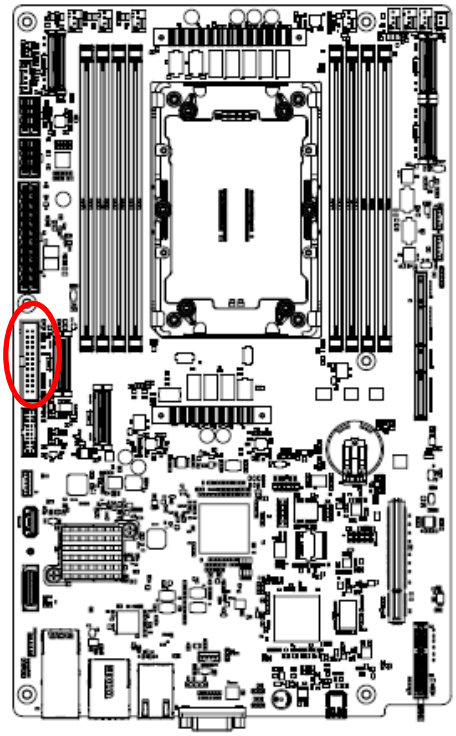
2.4.20 USB3.2 Gen1 connector (JUSB1)

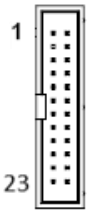




Signal	PIN	PIN	Signal
FRONTUSB3_OC1_N	10	11	USB_z_PP6
USB_z_PP5	9	12	USB_z_PN6
USB_z_PN5	8	13	GND
GND	7	14	USB3_z_TP6
USB3_z_TP5	6	15	USB3_z_TN6
USB3_z_TN5	5	16	GND
GND	4	17	USB3_z_RP6
USB3_z_RP5	3	18	USB3_z_RN6
USB3_z_RN5	2	19	+5V
+5V	1		

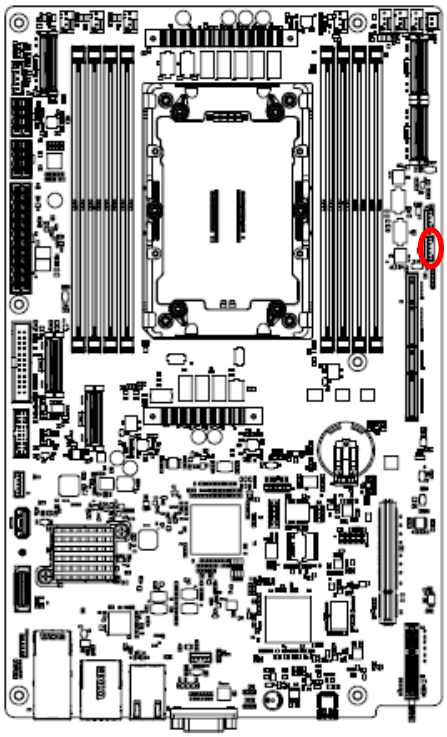
2.4.21 Front Panel connector (JFP2)





Signal	PIN	PIN	Signal
+3.3VSB	1	2	+3.3VSB
		4	FRONT_UID_LED_P
PWRLED_R_N	5	6	FRONT_UID_LED_N
HDD_LED_P	7	8	STATUS_LED_N
LED_HDD_ACTIVITY_N	9	10	STATUS_LED_P
FP_PWR_BTN_N_R	11	12	LAN1_FRONT_LED_ACT_P
GND	13	14	LAN1_LED_ACT_N
FP_RST_BTN_N_R	15	16	SMB_FP_SDA
GND	17	18	SMB_FP_SCL
FP_UID_BTN_N_R	19	20	FP_CHASSIS_INTRUSION
NC	21	22	LAN2_FRONT_LED_ACT_P
FP_NMI_BTN_N_R	23	24	LAN2_LED_ACT_N

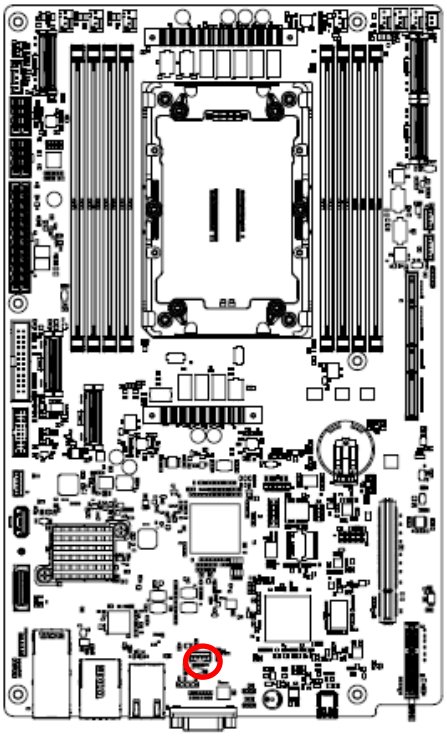
2.4.22 Inlet Thermal Sensor (JINLET_SER1)

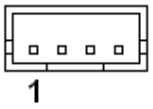




Signal	PIN
+3.3VSB	4
SMB_INLET_TEMPSENSOR_SDA	3
SMB_INLET_TEMPSENSOR_SCL	2
GND	1

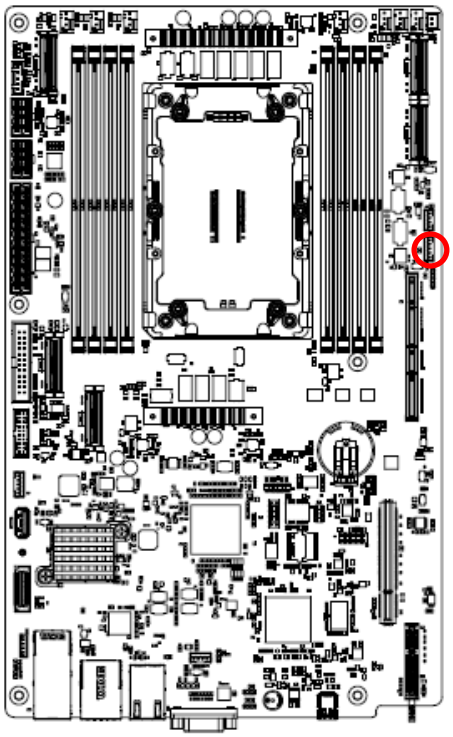
2.4.23 Outlet Thermal Sensor (JOUTLET_SER1)





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

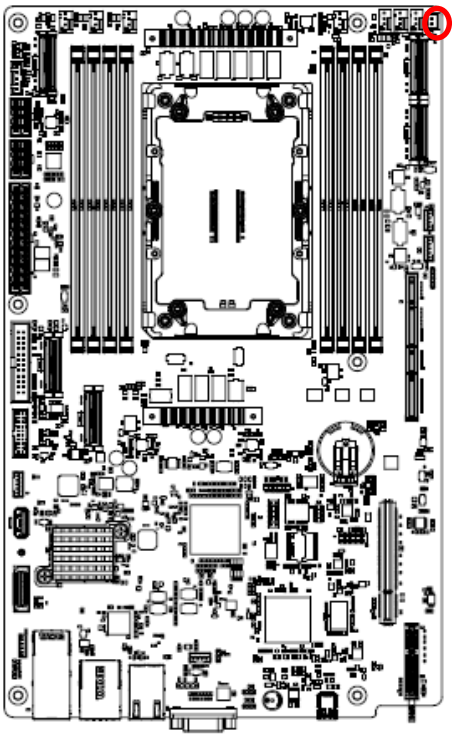
2.4.24 HDD Backplane thermal Sensor (JHDD_SER1)





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

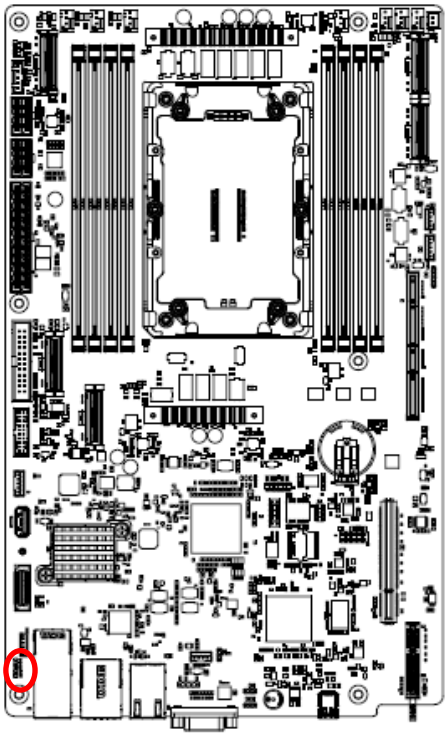
2.4.25 CASE OPEN connector (JCASE_OPEN1)





Signal	PIN
GND	2
FP_CHASSIS_INTRUSION	1

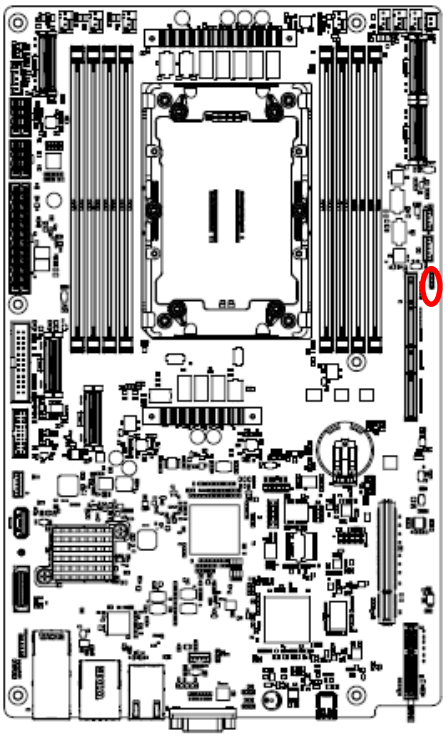
2.4.26 VROC RAID KEY connector (JRAID_KEY1)

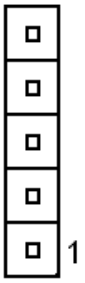




Signal	PIN
GND	1
PU_VROC_HW_KEY_CONN_PIN2_R	2
GND	3
FM_VROC_HW_KEY_R_LVC3	4

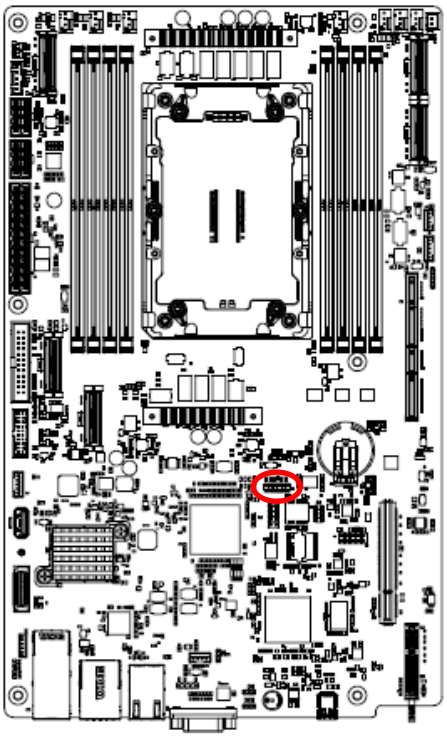
2.4.27 CPU PCIE HP SMB connector (JPEHPSMB1)

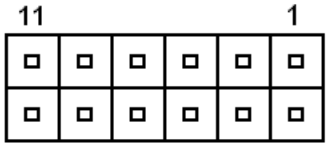




Signal	PIN
FM_SMB_CPU0_ALERT_N	5
GND	4
SMB_PEHPCPU0_LVC3_SDA_JP	3
GND	2
SMB_PEHPCPU0_LVC3_SCL_JP	1

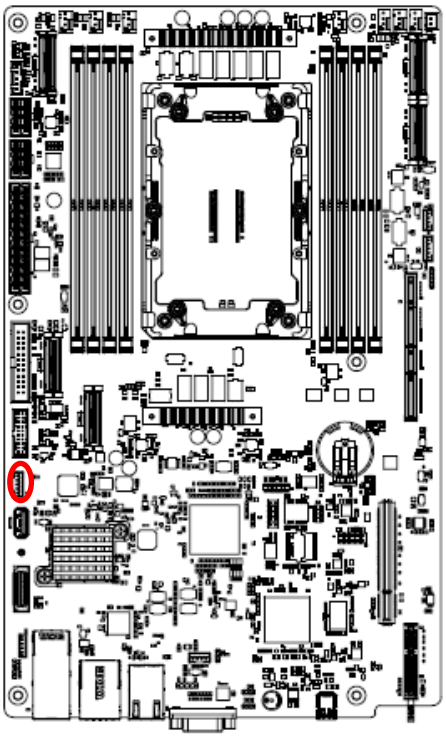
2.4.28 ESPI connector (JESPI1)





Signal	PIN	PIN	Signal
ESPI_CONN_D0_P1V8	1	2	+3.3VSB
ESPI_CONN_D1_P1V8	3	4	RST_PLTRST_LPC_HEADER_N
ESPI_CONN_D2_P1V8	5	6	ESPI_CONN_CS_P1V8
_NESPI_CONN_D3_P1V8	7	8	ESPI_CONN_CLK_P1V8
NC	9	10	GND
ESPI_CONN_RESET_P1V8_N	11	12	ESPI_CONN_ALERT_P1V8_N

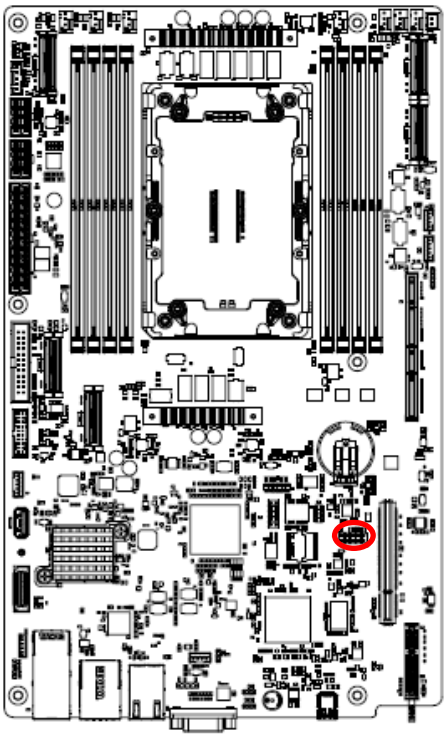
2.4.29 USB2.0 connector (USB1)

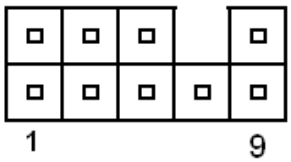




Signal	PIN
GND	1
GND	2
USB_z_PP7	3
USB_z_PN7	4
+5V	5

2.4.30 TPM connector (JTPM1)



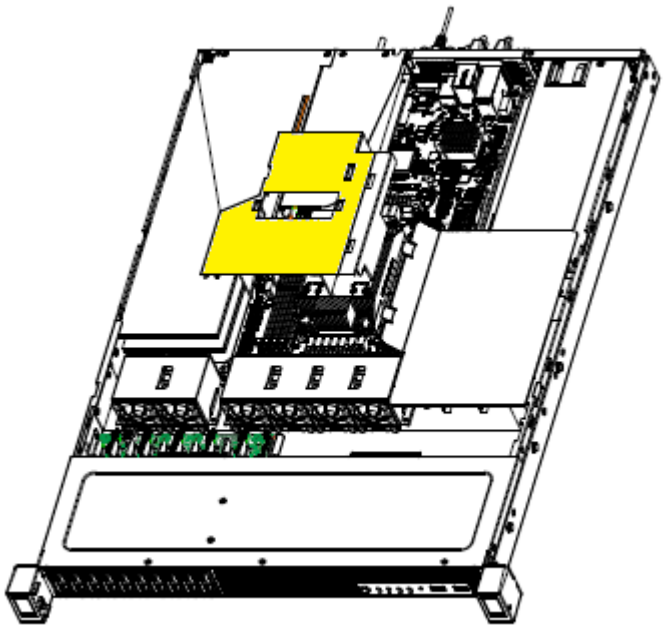


Signal	PIN	PIN	Signal
+V1.8S_+V3.3S_JTPM_CONN	1	2	SPI_CPU0_TPM_CONN_CS_N
RST_CPU0_PLTRST_TPM_CONN_N	3	4	SPI_CPU0_TPM_CONN_MISO
SPI_CPU0_TPM_CONN_CLK	5	6	GND
SPI_CPU0_TPM_CONN_MOSI	7		
+VCCFA_EHV_+V1.8A_CPU0	9	10	IRQ_CPU0_TPM_CONN_PIRQ_N

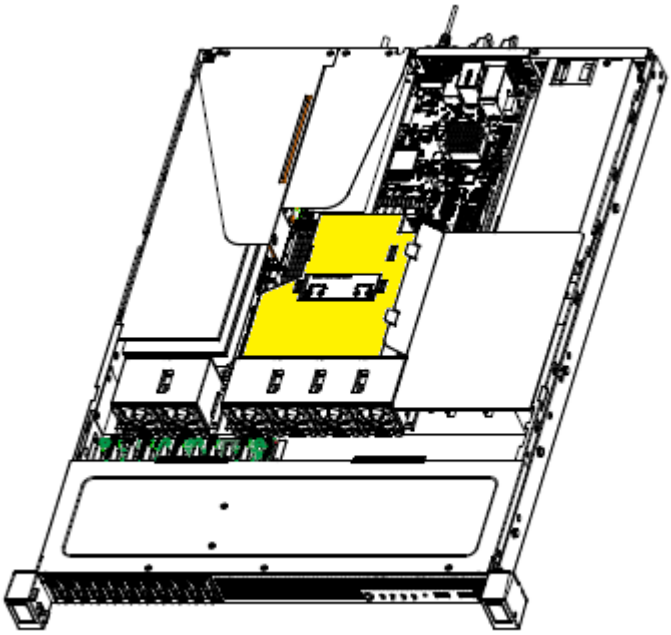
3. Installation

3.1 CPU Shroud & Power Mylar Assembly

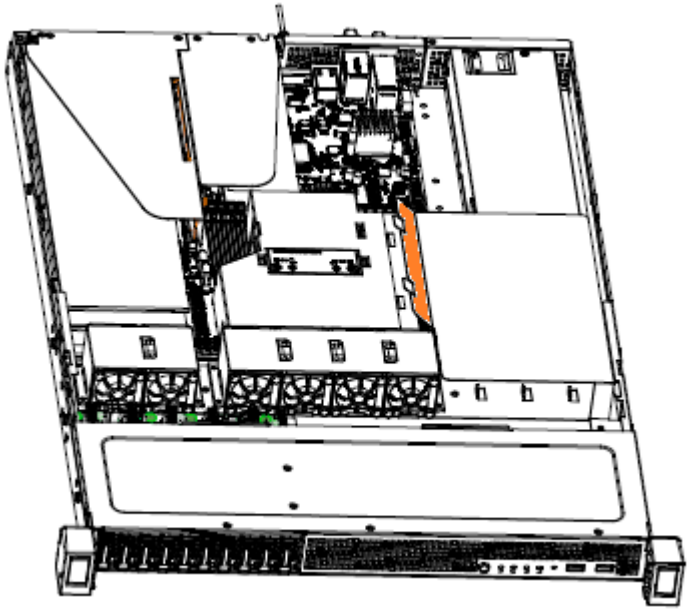
Note: Before installing the CPU Shroud, make sure the **CPU, heatsink, and memory modules are fully installed.**



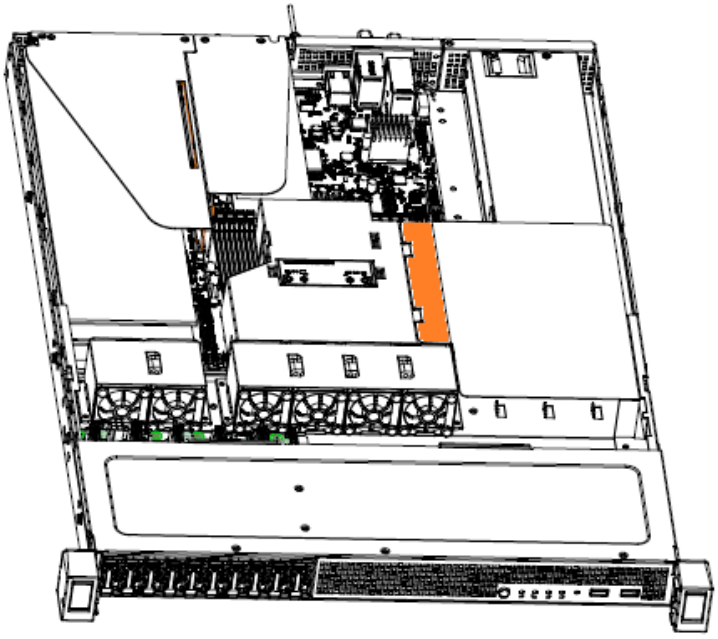
Step1. Align and install the CPU Shroud.



Step2. Make sure the CPU Shroud is properly secured.



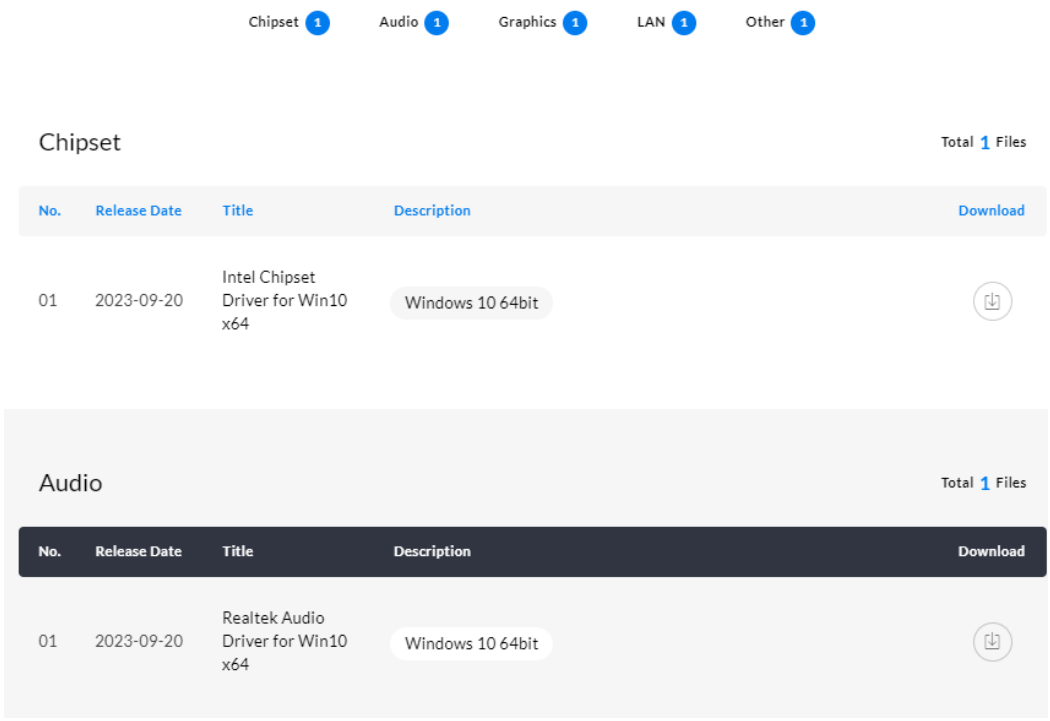
Step3. Press the Mylar downward and snap the protruding tabs into place.



Step4. Make sure the Power Mylar is properly secured.

4. Drivers Installation

All the drivers are available on Downloads Area. 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.

4.1 Install Chipset Driver

All drivers can be found on the website.

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. Click **Finish** to complete setup.

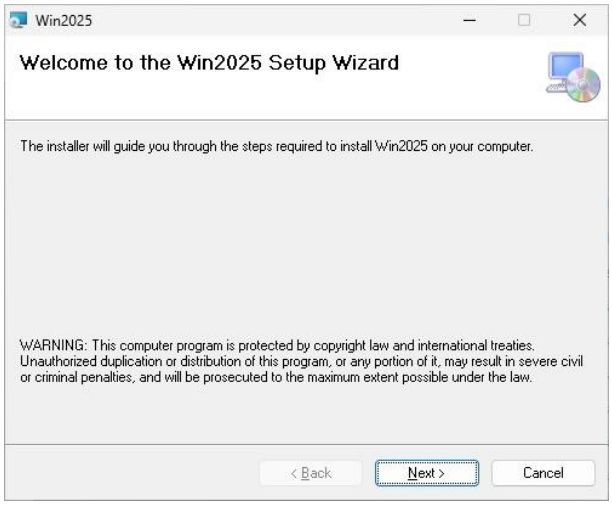


Step 2. Click **Accept**.

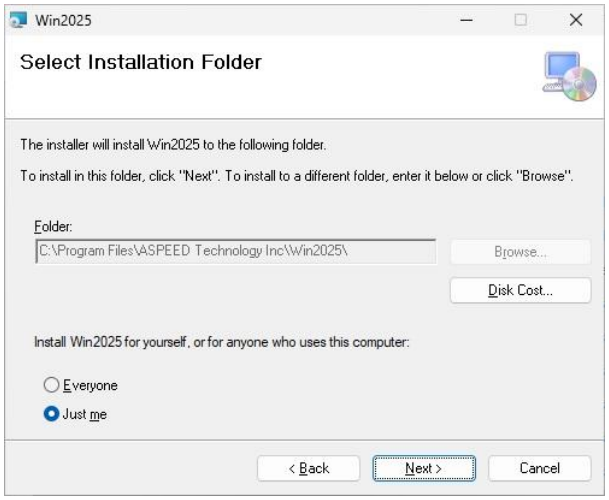
4.2 Install VGA Driver

All drivers can be found on the website.

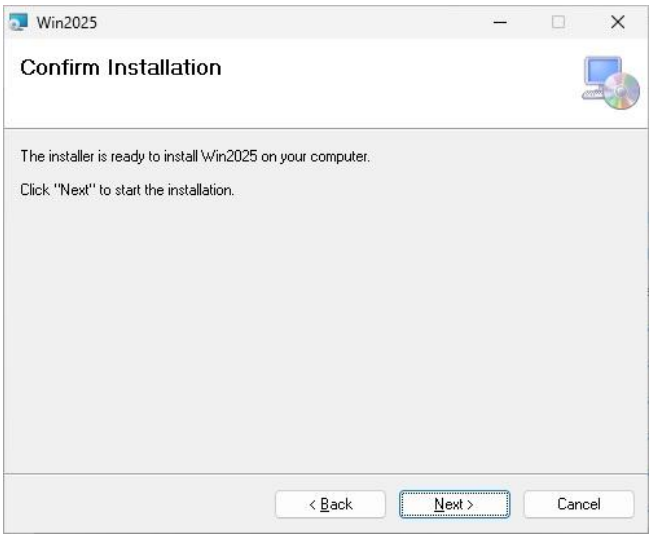
Note: The installation procedures and screen shots in this section are based on Windows 11 operation system.



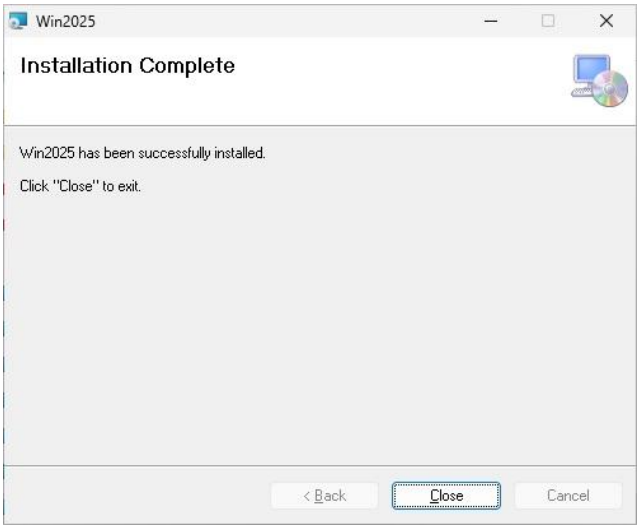
Step 1. Click **Next** to continue installation.



Step 2. Click **Next**.



Step 3. Click **Next.**



Step 4. Setup completed.

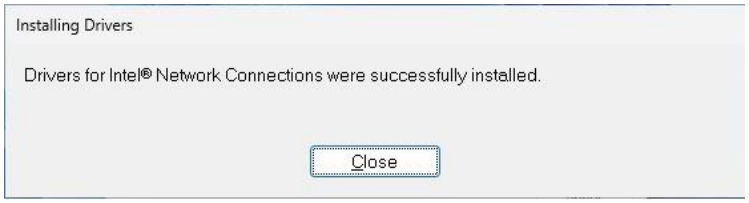
4.3 Install Ethernet Driver

All drivers can be found on the website.

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



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

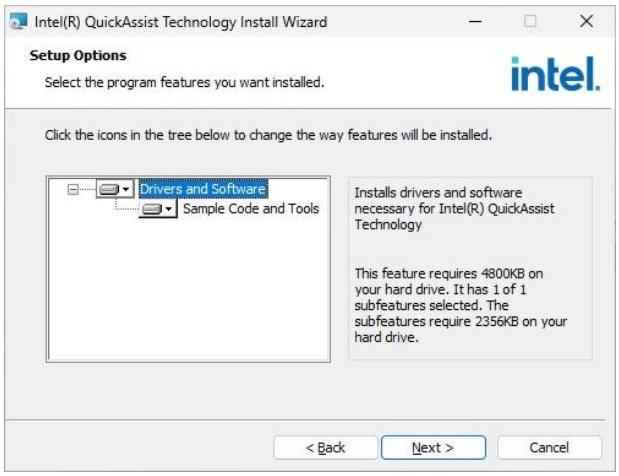


Step 2. Setup completed.

4.4 Install QuickAssist Technology Driver

All drivers can be found on the website.

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



Step 3. Click **Next**.



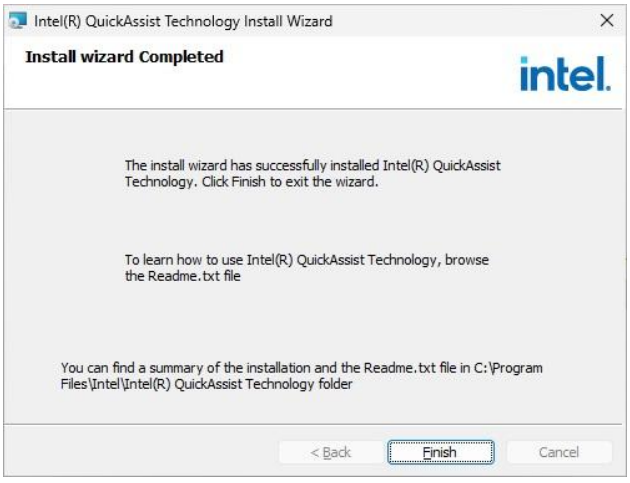
Step 1. Click **Next** to continue installation.



Step 4. Click **Install**.



Step 2. Click **Next**.

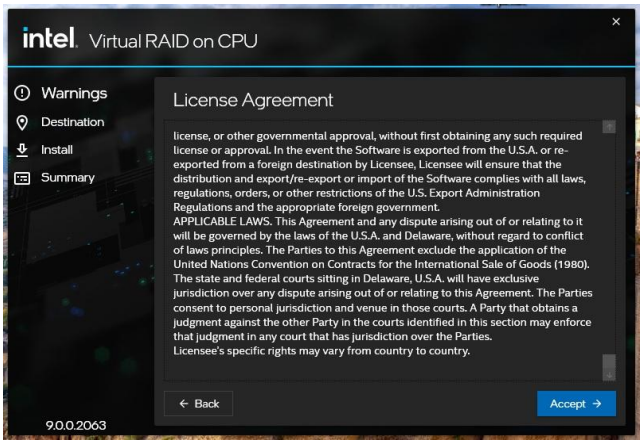


Step 5. Click **Finish** to complete setup.

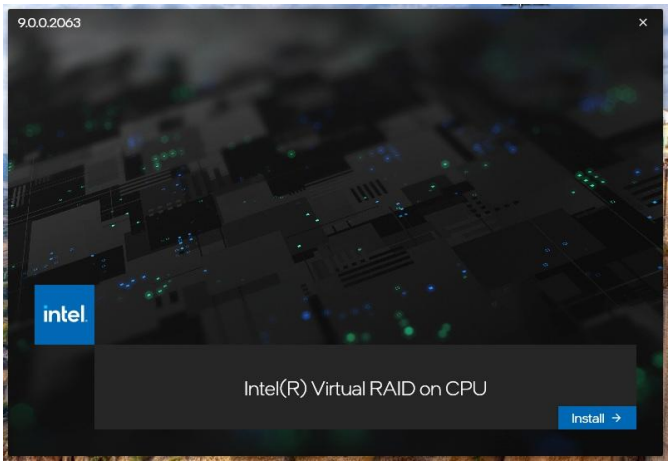
4.5 Install VROC Driver

All drivers can be found on the website.

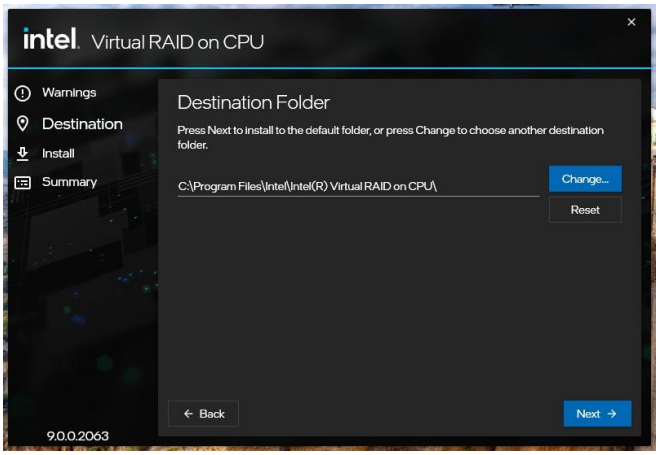
Note: The installation procedures and screen shots in this section are based on Windows 11 operation system.



Step 3. Click **Accept**.



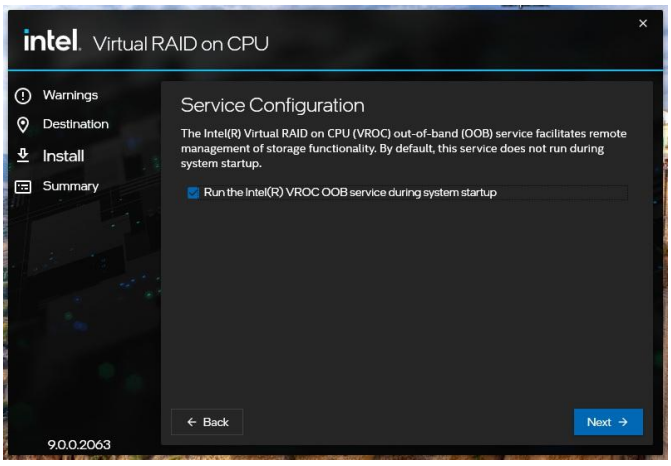
Step 1. Click **Install** to continue installation.



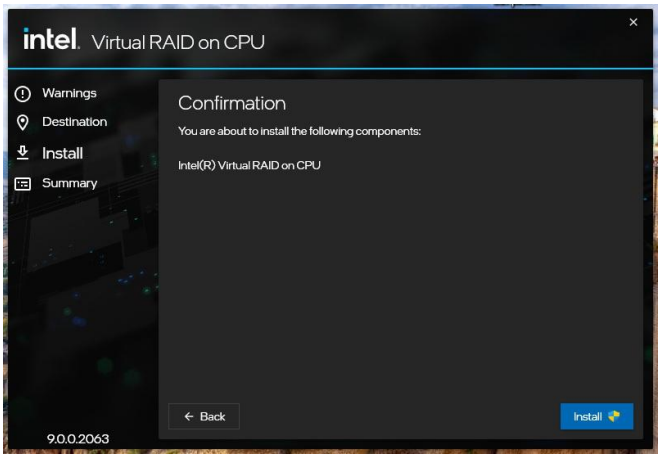
Step 4. Click **Next**.



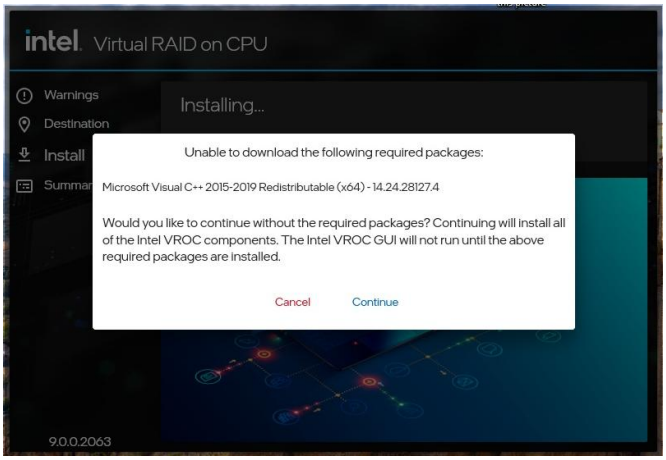
Step 2. Click **Next**.



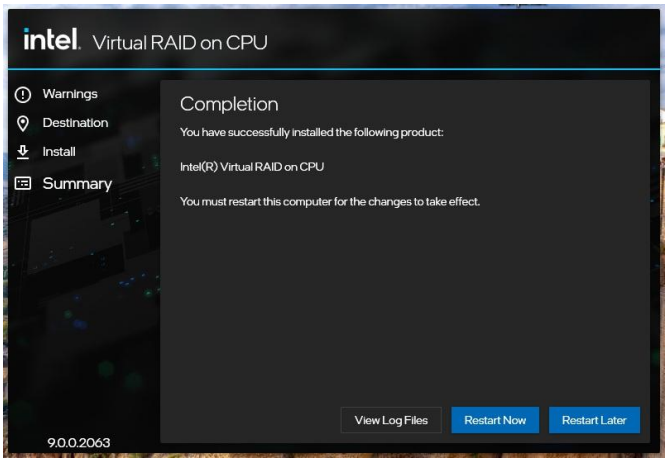
Step 5. Click **Next**.



Step 6. Click **Install**.



Step 7. Click **Continue**.



Step 8. Setup completed.

5.BIOS Setup

5.1 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.

5.2 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.

5.3 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.

5.4 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.

5.5 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.

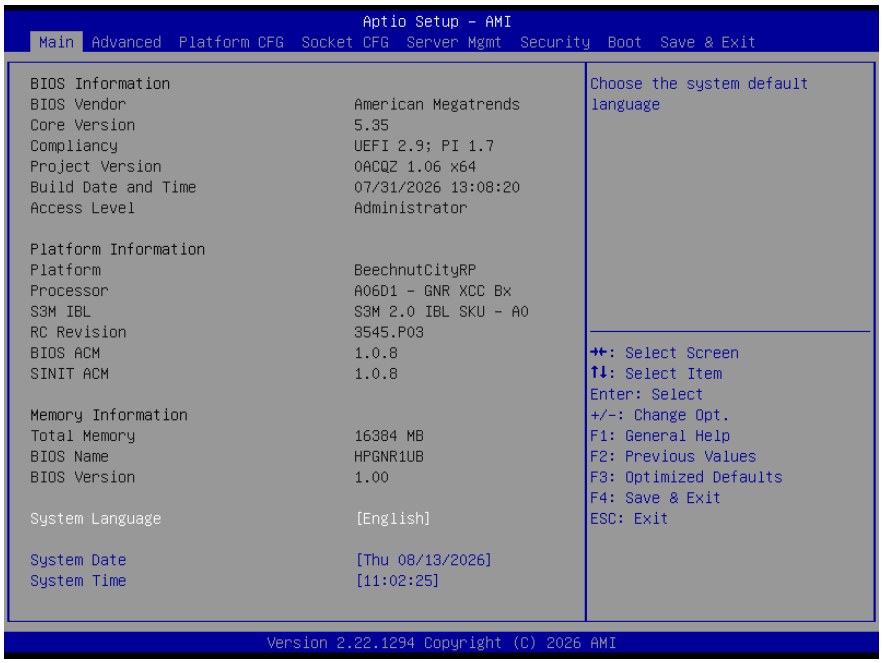
The best advice is to only alter settings which you thoroughly understand. To this end, we strongly recommend that you avoid making any changes to the chipset defaults. These defaults have been carefully chosen by both BIOS Vendor and your systems manufacturer to provide the absolute maximum performance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

5.6 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.

5.6.1 Main Menu

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



5.6.1.1 System Language

This option allows choosing the system default language.

5.6.1.2 System Date

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

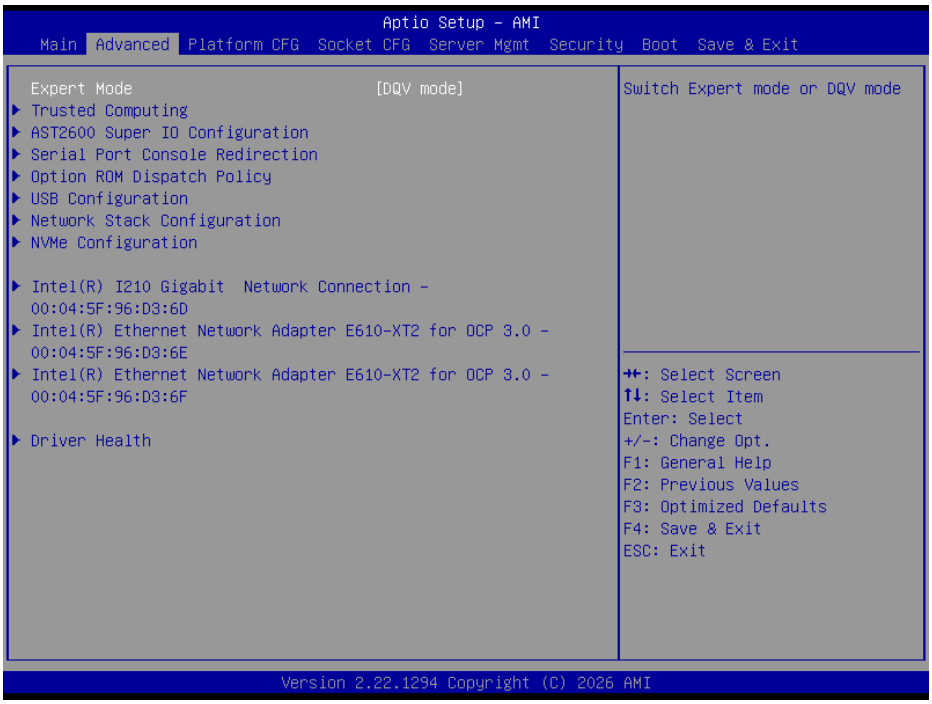
5.6.1.3 System Time

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

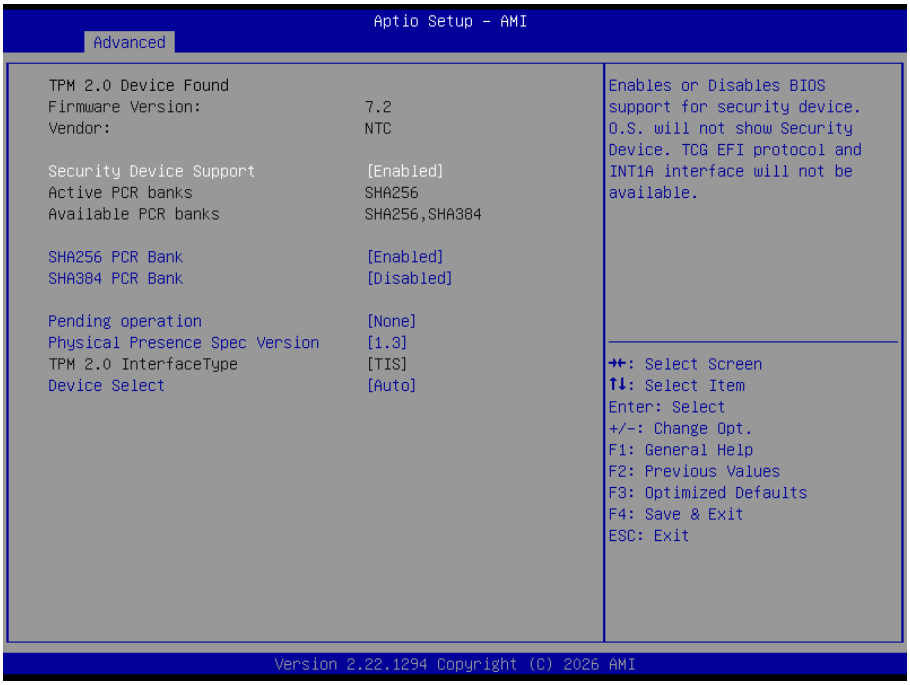
Note: The BIOS setup screens shown in this chapter are for reference purposes only, and may not exactly match what you see on your screen.

5.6.2 Advanced Menu

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



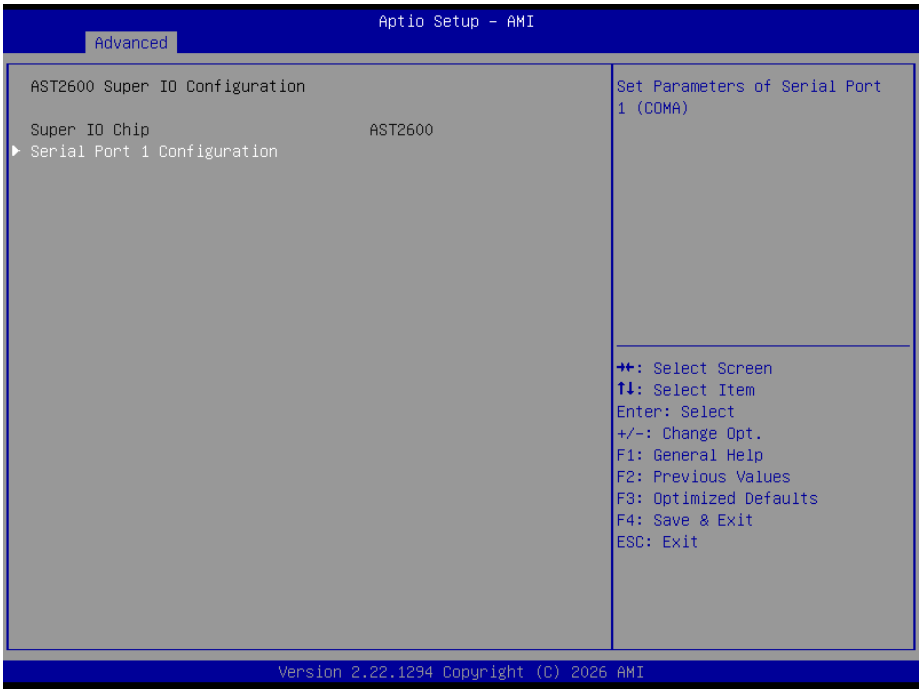
5.6.2.1 Trusted Computing



	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.

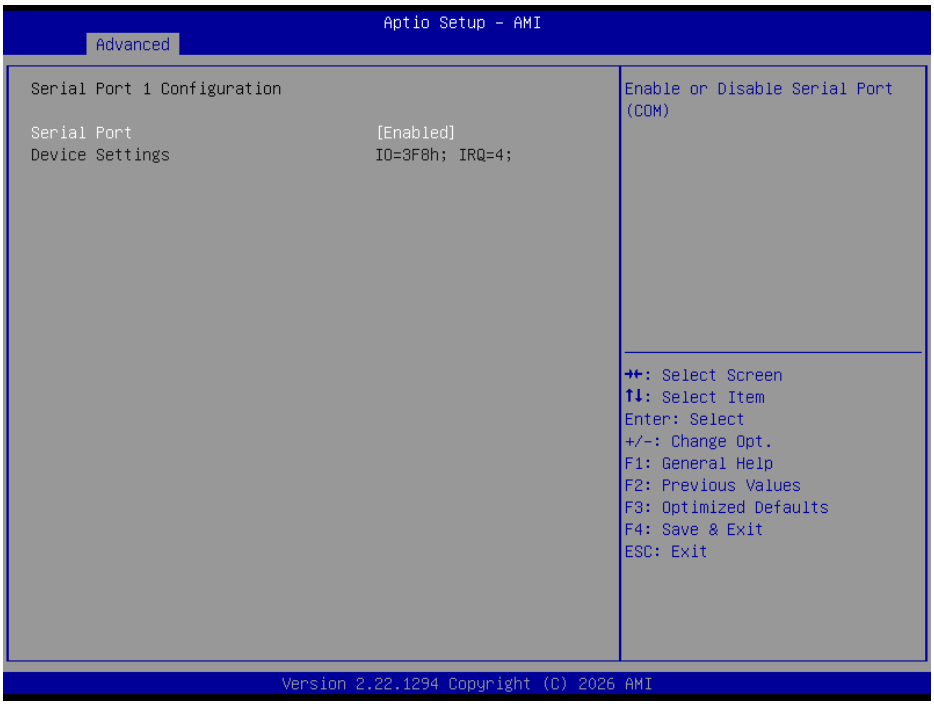
SHA384 PCR Bank	Disabled**[Default]**, Enabled	Enables or Disables SHA384 PCR Bank.
Pending operation	None**[Default]** TPM Clear	Schedule an Operation for the Security Device. NOTE: Your Computer will reboot during restart in order to change State of Security Device.
Physical Presence Spec Version	1.2 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.

5.6.2.2 AST2600 Super IO Configuration



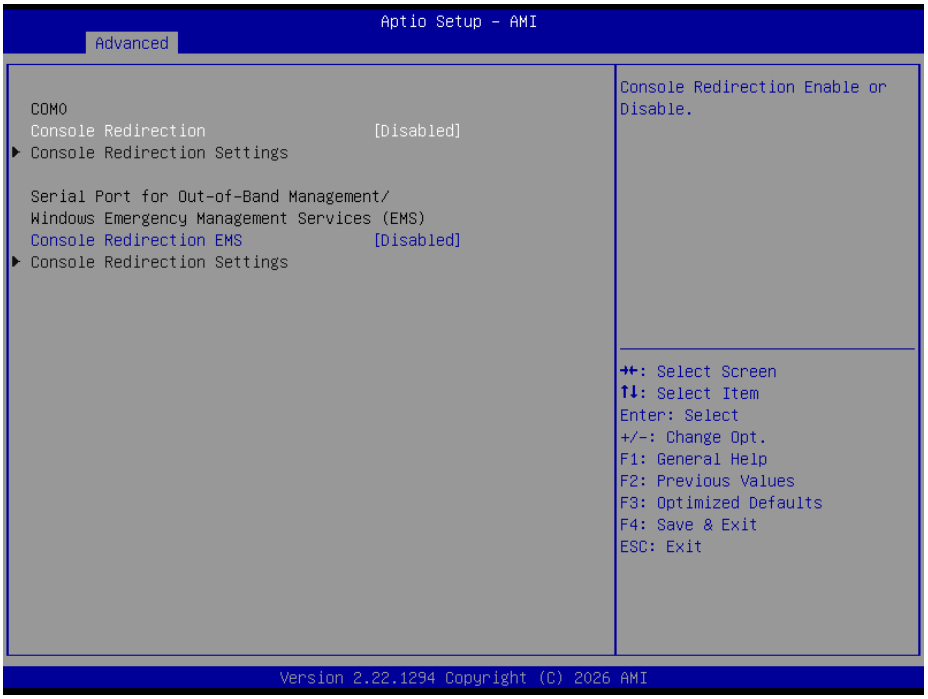
Item	Description
Serial Port 1 Configuration	Set Parameters of Serial Port 1 (COMA).

5.6.2.2.1 Serial Port 1 Configuration



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

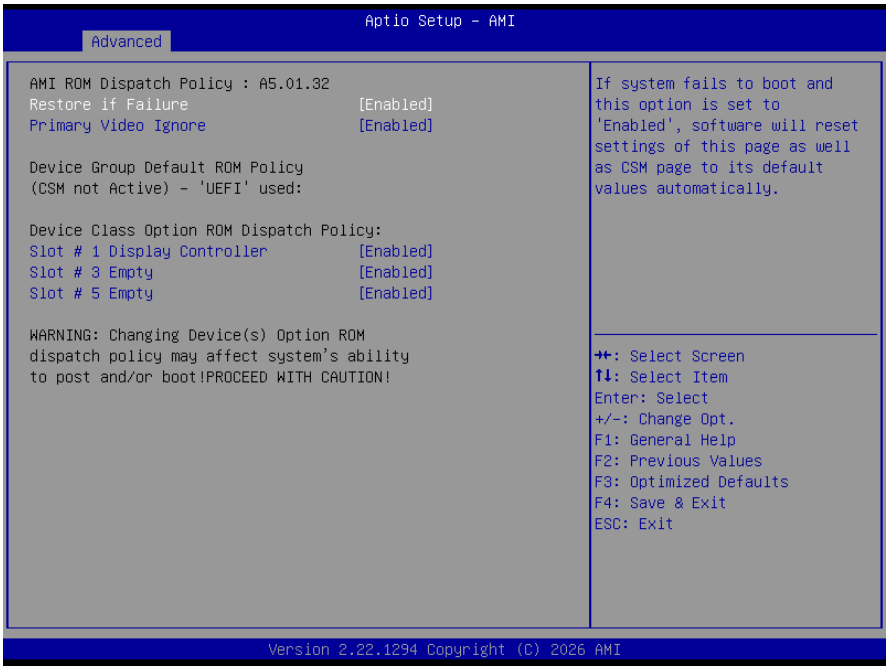
5.6.2.3 Serial Port Console Redirection



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

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

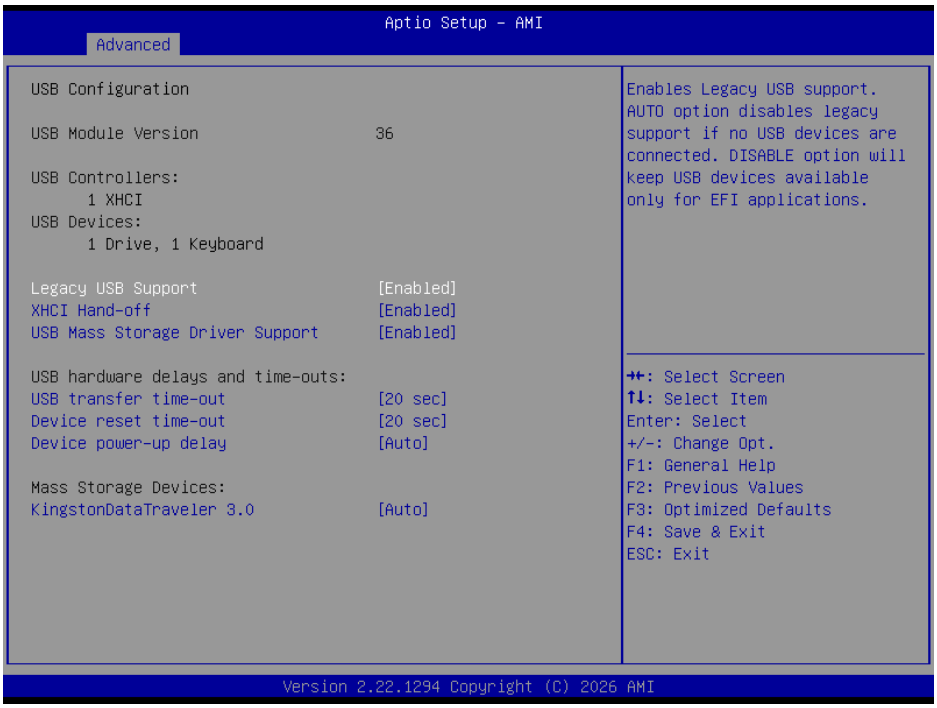
5.6.2.4 Option ROM Dispatch Policy



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.
Slot#1 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#5 Empty	Enabled**[Default],** Disabled	Enable or Disable Option ROM execution for selected Slot.

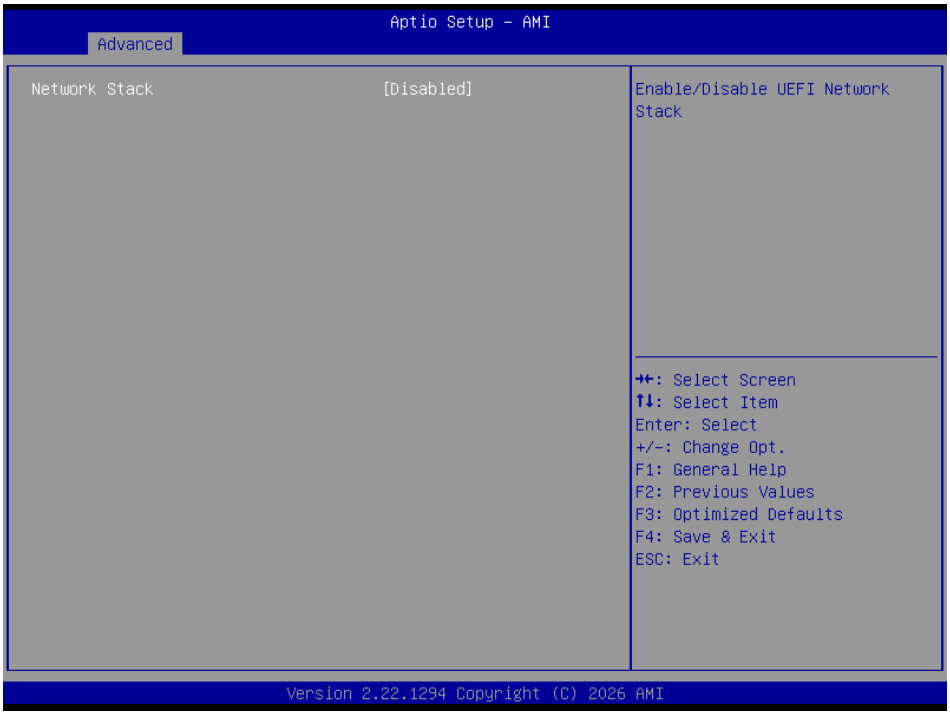
5.6.2.5 USB Configuration

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



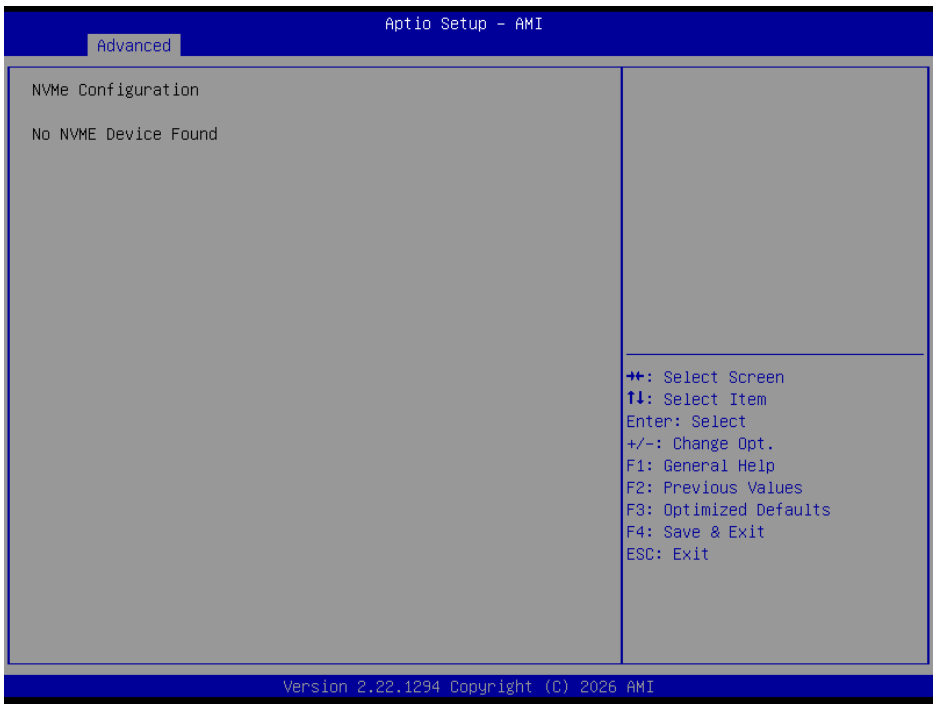
Item	Options	Description
Legacy USB Support	Enabled**[Default]**, Disabled Auto	Enables Legacy USB support. AUTO option disables legacy support if no USB devices are connected. DISABLE option will keep USB devices available only for EFI applications.
XHCI Hand-off	Enabled**[Default]**, Disabled	This 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.
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.

5.6.2.6 Network Stack Configuration

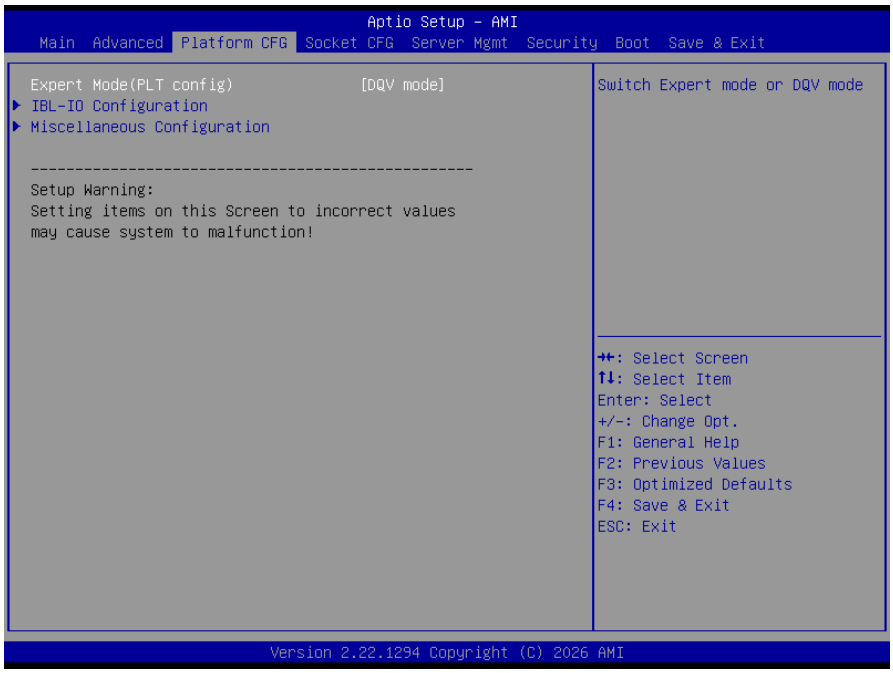


Item	Option	Description
Network stack	Enabled Disabled**[Default]**	Enable/Disable UEFI Network Stack.

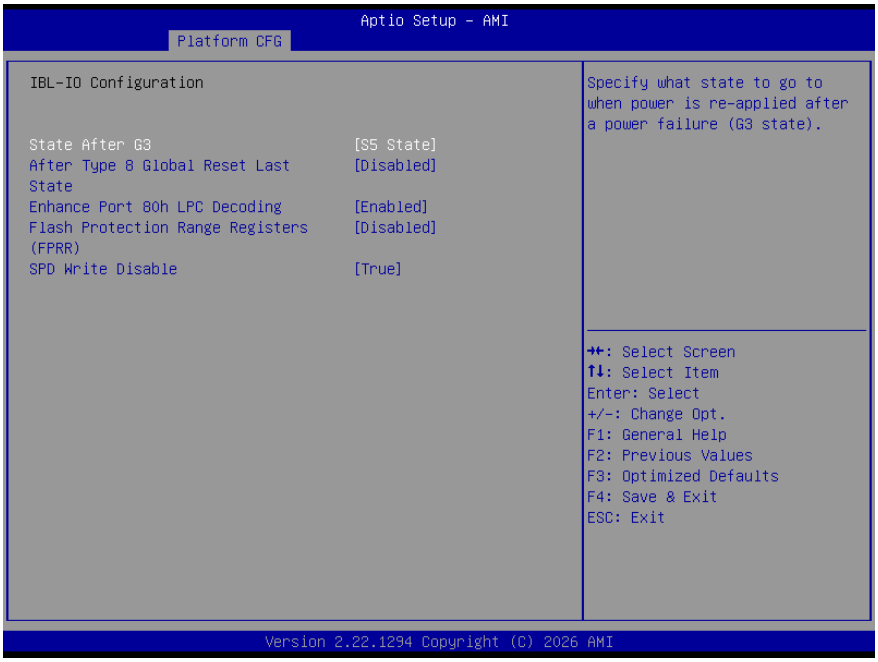
5.6.2.7 NVMe Configuration



5.6.3 Platform Config



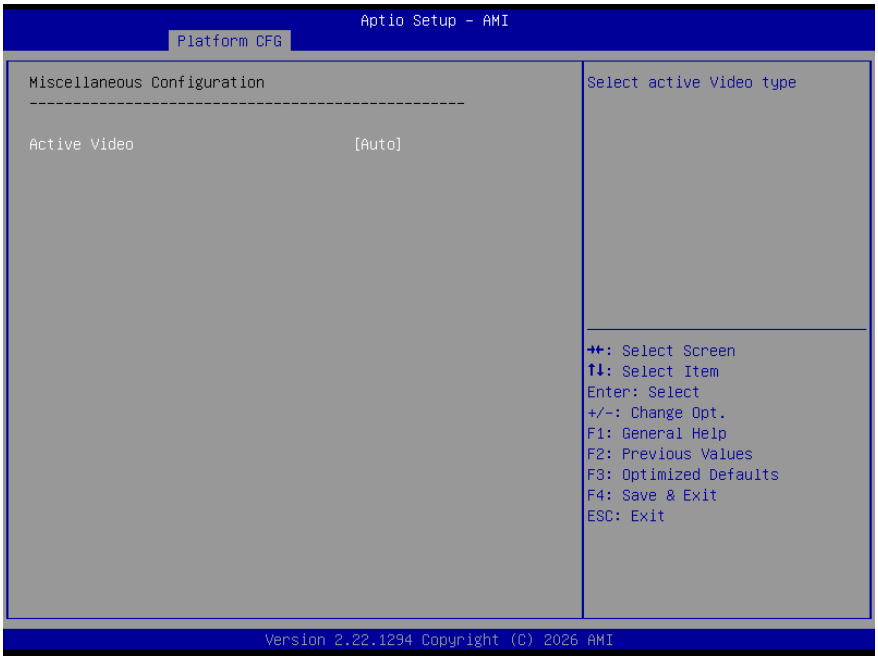
5.6.3.1 IBL-IO Configuration



Item	Option	Description
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).
After Type 8 Global Reset Last State	Disabled**[Default]** Enabled	Specify whether platform's previous state will be considered when deternining whether to power-up after non-thernal and non-explicitly requested type 8 globeal resets.
Enhance Port 80h LPC Decoding	Disabled Enabled**[Default]**	Support the word/dword decoding of port 80h behind LPC.

Flash Protection Range Registers (FRRR)	Disabled**[Default]** Enabled	Enable Flash Protection Range Registers.
SPD Write Disable	True**[Default]** False	Enable/Disable setting SPD Write Disable.

5.6.3.2 Miscellaneous Configuration

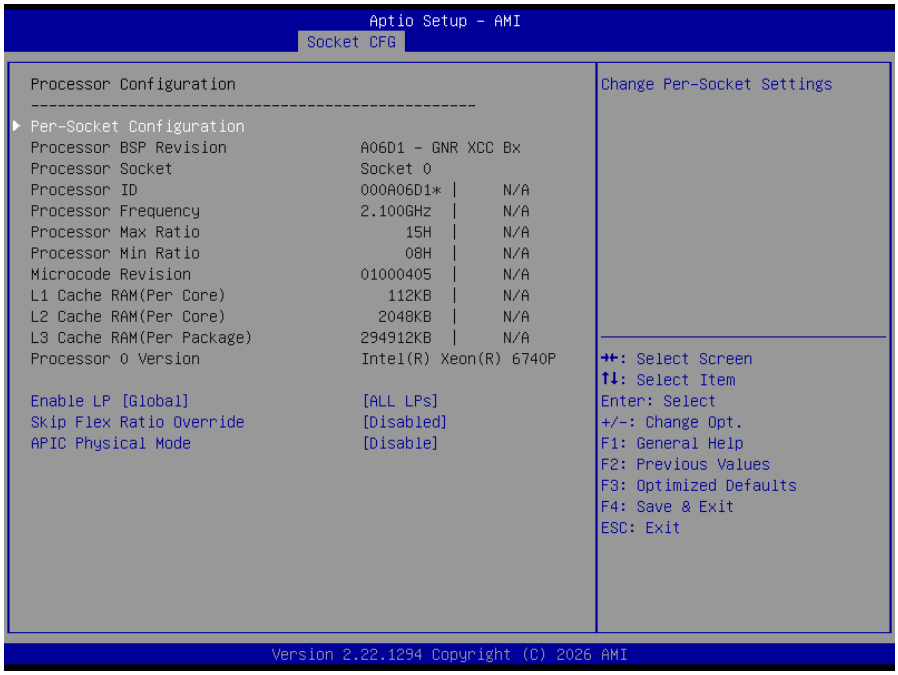


Item	Option	Description
Active Video	Auto**[Default]** Onboard Device(BMC VGA) PCIE Device	Select active Video type. Early display always output to BMC-VGA. BIOS P.O.S.T display output to PCIe if system have discrete GPU with Option Auto/PCIe-Device.

5.6.4 Socket Config

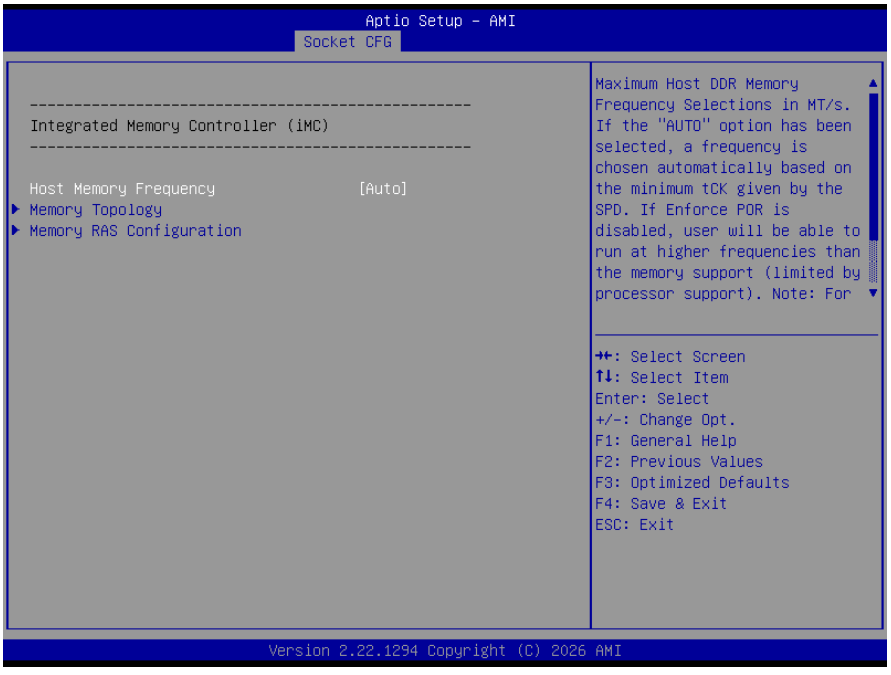


5.6.4.1 Processor Configuration



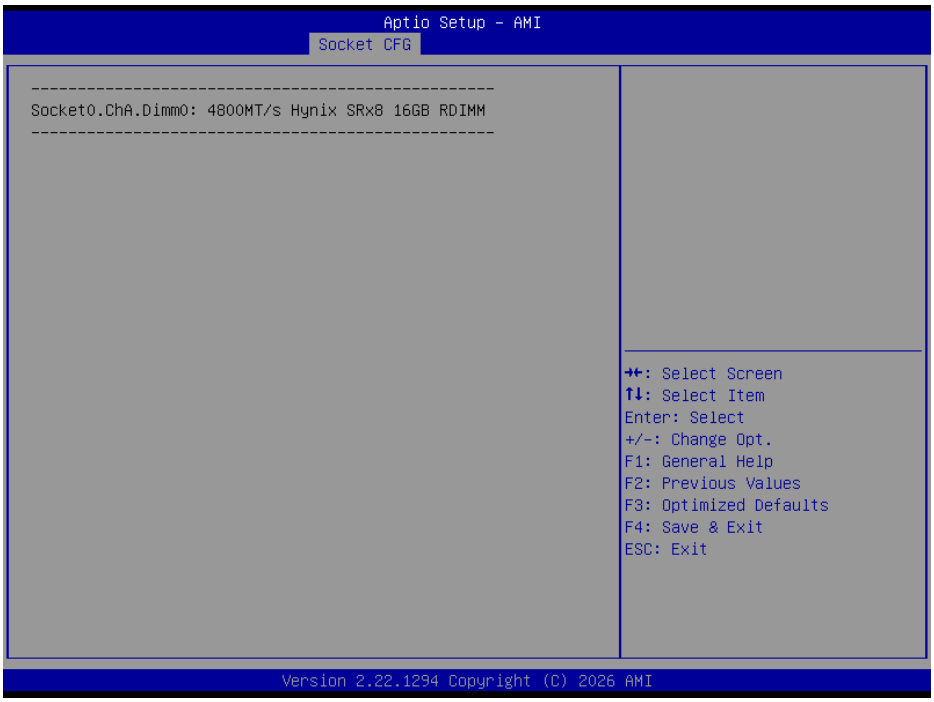
Item	Option	Description
Enable LP [Global]	All LPs**[Default]** Single LP Two LPs	Enables Logical processor (Software Method o Enable/Disable Logical Processor threads).
Skip Flex Ratio Override	Disabled**[Default]** Enabled	Skip Flex Ratio override to use power-on default Flex Ratio values. In multi-socket systems, this will allow mixed flex ratio limits.
APIC Physical Mode	Disabled**[Default]** Enabled	Enable/Disable the APIC physical destination mode.

5.6.4.2 Memory Configuration

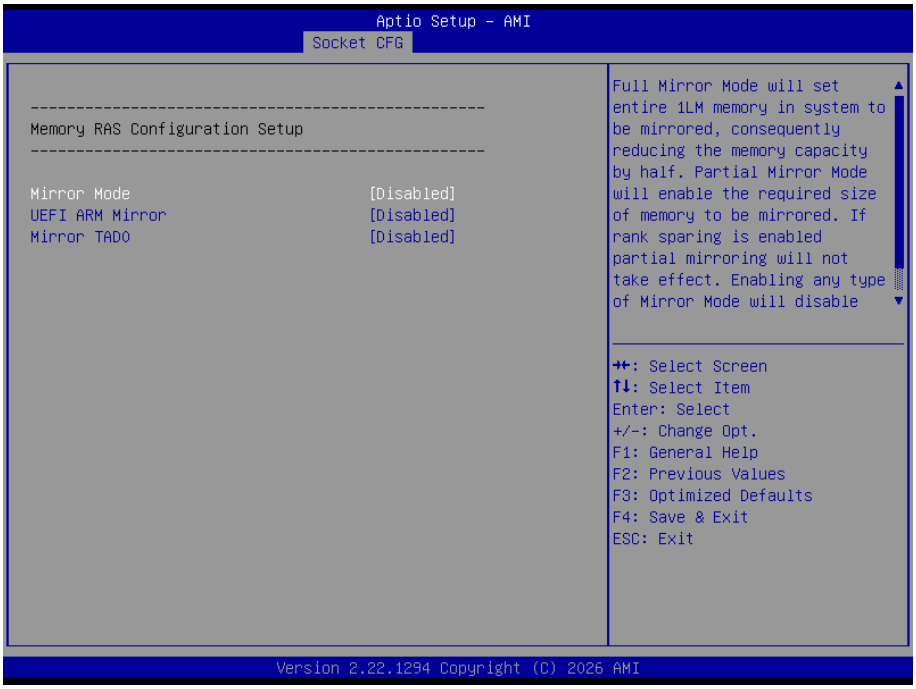


Item	Option	Description
Memory Frequency	Auto**[Default]** 3200 3600 4000 4400 4800 5200 5600	Maximum Memory Frequency Selections in MT/s. If Enforce POR is disabled, user will be able to run at higher frequencies than the memory suppot (limited by processor support). Do not select Reserved.

5.6.4.2.1 Memory Topology

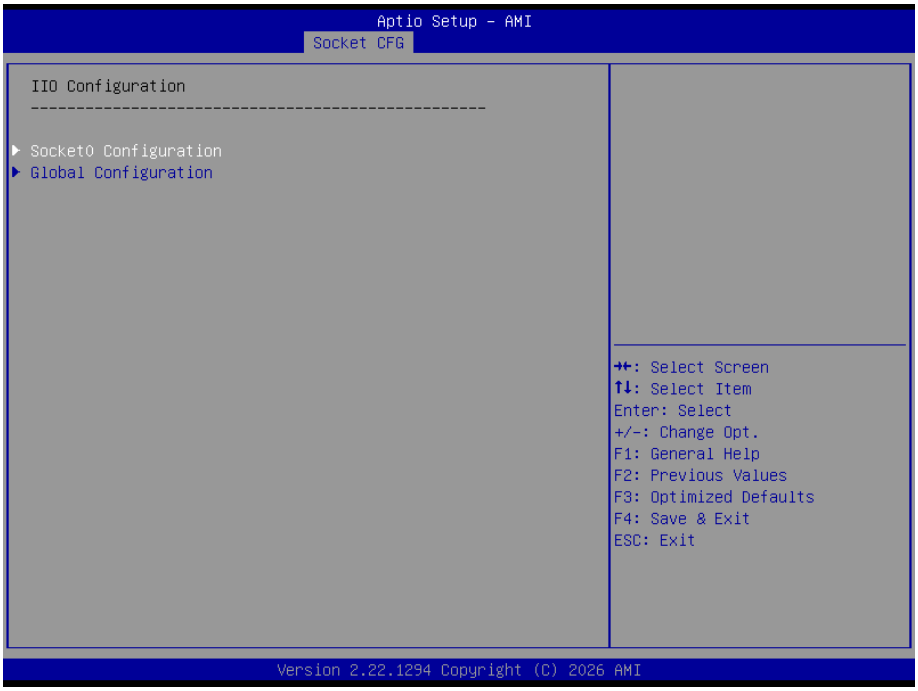


5.6.4.2.2 Memory RAS Configuration

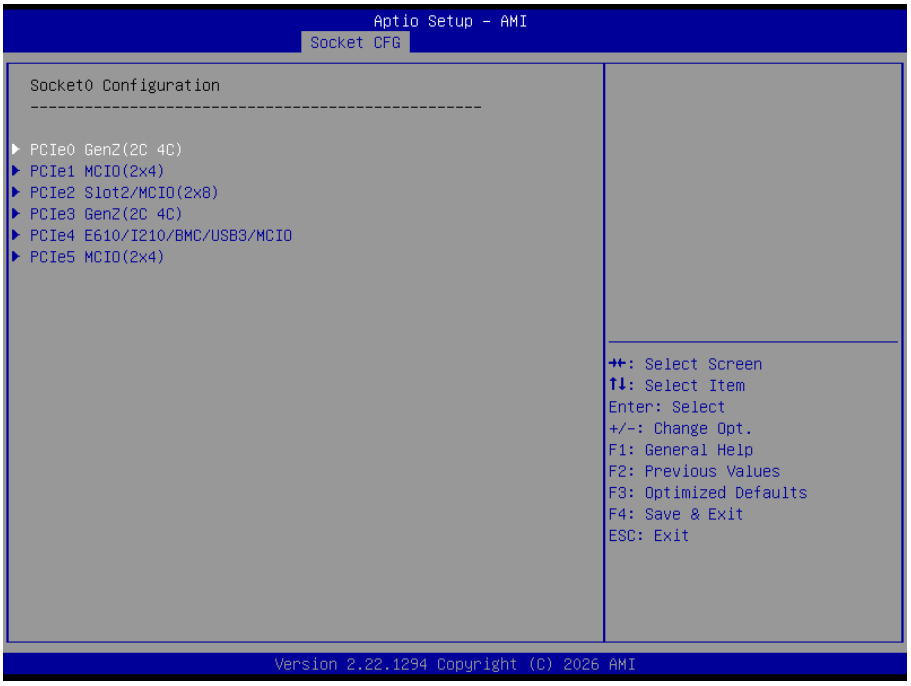


Item	Option	Description
Mirror Mode	Disabled**[Default]** Full Mirror Mode	Full Mirror Mode will set entire 1LM memory in system to be mirrored, consequently reducing the memory capacity by half, Partial Mirror Mode will enable the required size of memory to be mirrored. If rank sparing is enabled partial mirroring will not take effect. Enabling any type of Mirror Mode will disable XPT Prefetch.
UEFI ARM Mirror	Disabled**[Default]** Enabled	Imitate behavior of UEFI based Address Range Mirror with setup option.
Mirror TAD0	Disabled**[Default]** Enabled	Enable Mirror on entire memory for TAD0.

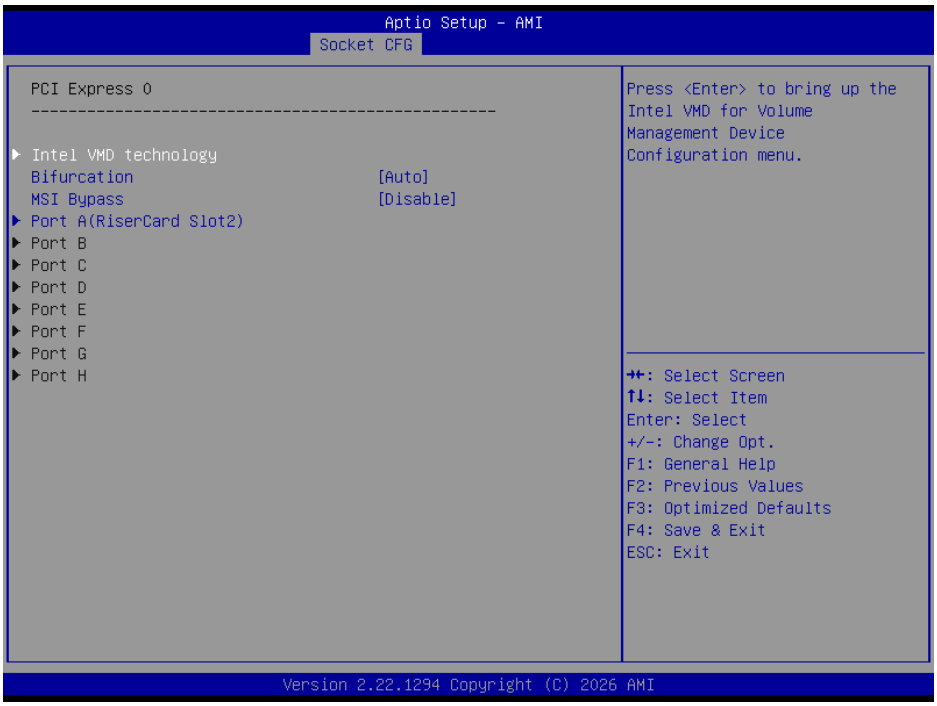
5.6.4.3 IIO Configuration



5.6.4.3.1 Socket0 Configuration

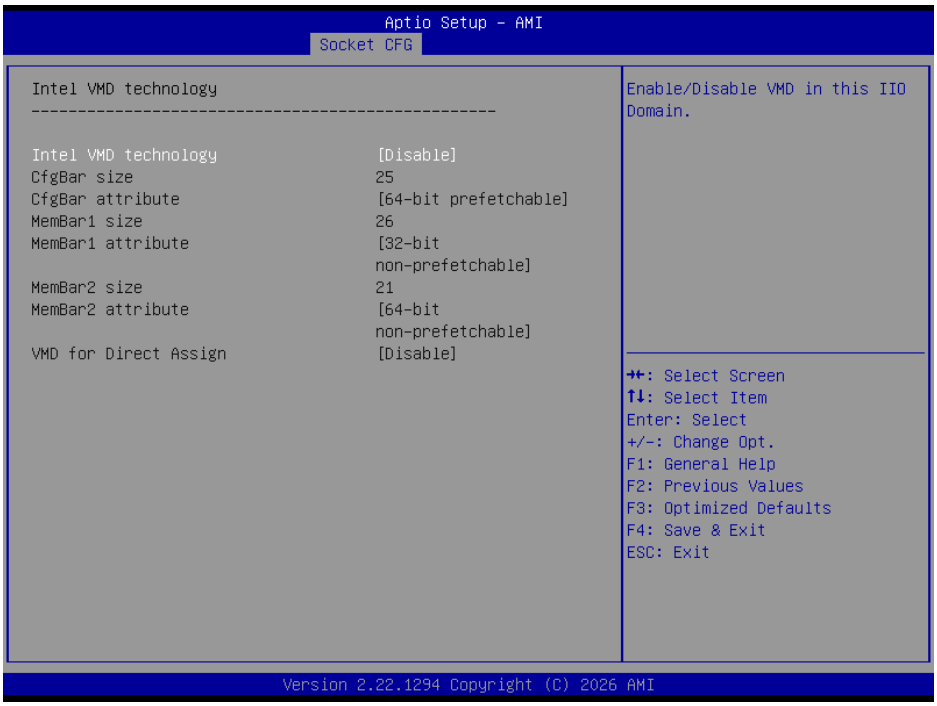


5.6.4.3.1.1 PCI Express 0



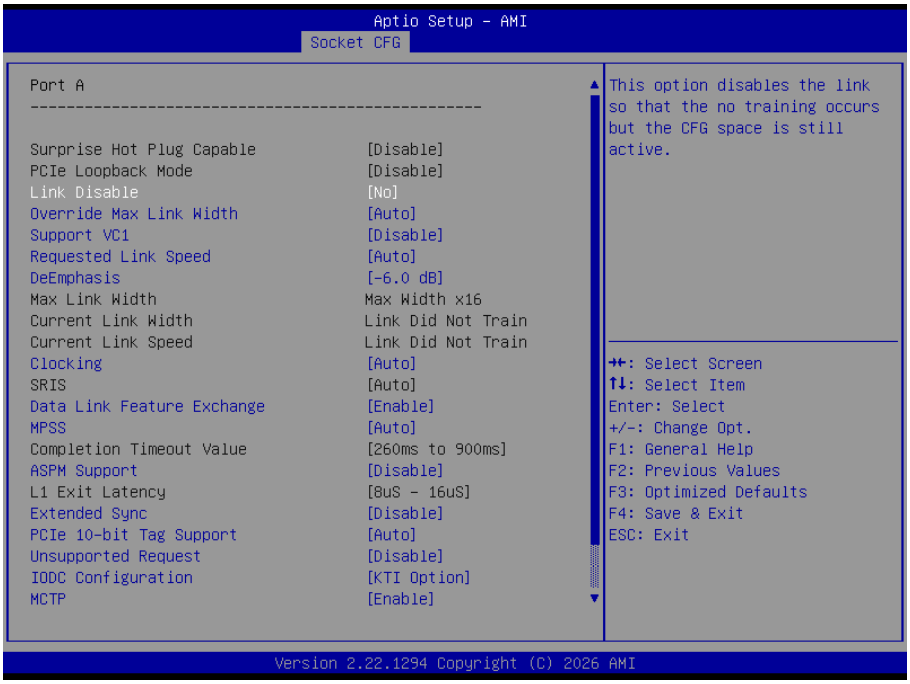
Item	Option	Description
Bifurcation	Auto**[Default]** x4x4x4x4 x4x4x_x8 x_x8x4x4 x_x8x_x8 x_x_x_x16 x2x2x4x_x8 x4x2x2x_x8 x_x8x2x2x4 x2x2x4x4x4 x4x2x2x4x4 x4x4x2x2x4 x2x2x2x2x_x8 x2x2x2x2x4x4 x2x2x4x2x2x4 x4x2x2x2x2x4 x2x2x2x2x2x2x4 x_x8x4x2x2 x4x4x4x2x2 x_x8x2x2x2x2 x2x2x4x4x2x2 x4x2x2x4x2x2 x4x4x2x2x2x2 x2x2x2x2x4x2x2 x2x2x4x2x2x2x2 x4x2x2x2x2x2x2 x2x2x2x2x2x2x2x2	Select PCIe port Bifurcation for selected slot(s) Port Format: xGxExCxA The port can further be x2x2 Disable-disable all PCIe Lanes and the controller.

5.6.4.3.1.1.1 Intel VMD technology



Item	Option	Description
Intel VMD technology	Disabled**[Default]** Enabled	Intel VMD technology

5.6.4.3.1.1.2 Port A ~ Port H

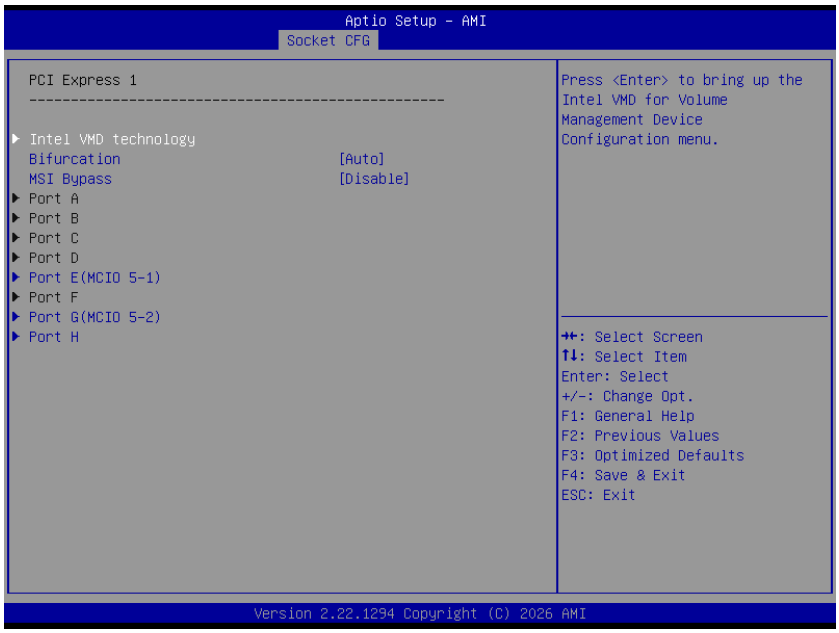


Item	Option	Description
Link Disable	No**[Default]** Yes	This option disables the link so that the no training occurs but the CFG space is

		still active.
Override Max Link Width	Auto**[Default]** x1 x2 x4 x8 x16	Override the max link width that was set by bifurcation.
Support VC1	Disable**[Default]** Enable	Enable/Disable PCIe Port VC1 support. x2 ports share the same VC1 channel.
Requested 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.
DeEmphasis	-6.0 dB**[Default]** -3.5 dB	DeEmphais control (LNKCON2[6]) for this PCIe port.
Clocking	Distinct Common Auto**[Default]**	Configure port clocking via LNKCON[6]. This refers to this components and the down stream component. ;Auto' keeps board default.
Data Link Feature Exchange	Disable Enable**[Default]**	Enable/Disable data link feature negotiation in the Data Link Feature Capabilities (DLFCAP) register.
MPSS	128B 256B 512B Auto**[Default]**	Configure Max Payload Size Supported in PCIe Device Capabilities register. 'Auto' keeps hardware default.
ASPM Support	Disabled**[Default]** Auto	This option can disable ASPM support in a PCIe root port. 'Auto' keeps hardware default.
Extended Sync	Disable**[Default]** Enable	Enable/disable the Extended Sync Mode (D:x F:0 O:7Ch B:7) where x is 0-9.
PCIe 10-bit Tag Support	Disable Auto**[Default]** Force Enable	'Disable' option can disable PCIe 10-bit Tag Requester (not Completer) supoort in a PCIe Root Port. 'Auto' keeps hardware default. When disabled system FW does not configure 10-bit Tag in hierarchy under Root Port, however OS could reconfigure and enable it . Advanced user may use 'Force Enable' option to enforce enabling 10-bit Tag in a hierarchy wherer Root Port is 10-bit Tag Completer capable, but not all nodes support 10-bit Tag Completer. The user assures, there will be no peer-to-peer traffic from node with 10-bit Tag Requester capability to a node without 10-bit Tag Completer capability, In such

		hierarchy 10-bit Tag Requester is not enabled in Root Port regardless of Root Port capability.
Unsupported Request	Disable**[Default]** Enable	Controls the reporting of unsupported requests that IIO itself detects on requests its receives from a PCI Express/DMI port.
IODC Configuration	KTI Option**[Default]**/Auto/ Enable for Remote InvItoM Hybrid Push/InvItoM AllocFlow/ Enable for Remote InvItoM Hybrid AllocNonAllow/Enable for Remote InvItoM and Remote WViLF	Enable/Disable IODC (IO Direct Cashe): Generate snoops instead of memory lookups, for remote InvItoM(IIO) and/or WCiLF(cores).
MCTP	Disable Enable**[Default]**	Enable/Disable MCTP.
Equalization Bypass To Highest Rate on port	Disable Enable[Default]	Equalization Bypass To Highest Rate Support Enable/Disable.
Intel VMD Technology	Disable[Default] Enable	Enable/Disable Intel Volume Management Device Technology on specific root port.

5.6.4.3.1.2 PCI Express 1

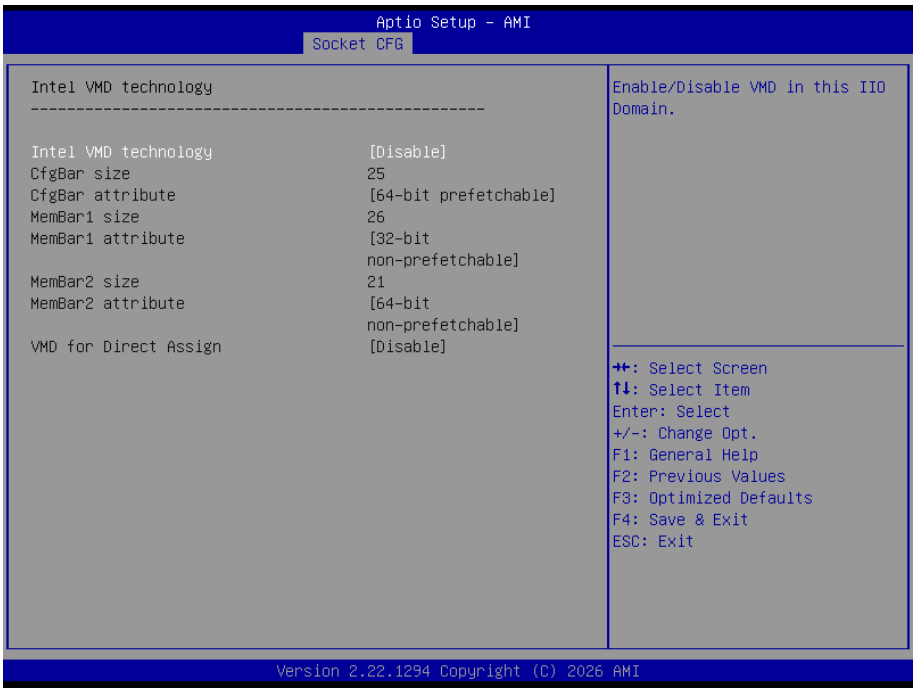


Item	Option	Description
Bifurcation	Auto**[Default]** x4x4x4x4 x4x4x_x8 x_x8x4x4 x_x8x_x8 x_x_x_x16 x2x2x4x_x8 x4x2x2x_x8 x_x8x2x2x4 x2x2x4x4x4 x4x2x2x4x4	Select PCIe port Bifurcation for selected slot(s) Port Format: xGxExCxA The port can further be x2x2 Disable-disable all PCIe Lanes and the controller.

	x4x4x2x2x4 x2x2x2x2x_x8 x2x2x2x2x4x4 x2x2x4x2x2x4 x4x2x2x2x2x4 x2x2x2x2x2x2x4 x_x8x4x2x2 x4x4x4x2x2 x_x8x2x2x2x2 x2x2x4x4x2x2 x4x2x2x4x2x2 x4x4x2x2x2x2 x2x2x2x2x4x2x2 x2x2x4x2x2x2x2 x4x2x2x2x2x2x2 x2x2x2x2x2x2x2x2	
MSI Bypass	Disable**[Default]** Enable	MSI Bypass Default is Disable.

5.6.4.3.1.2.1 Intel VMD technology

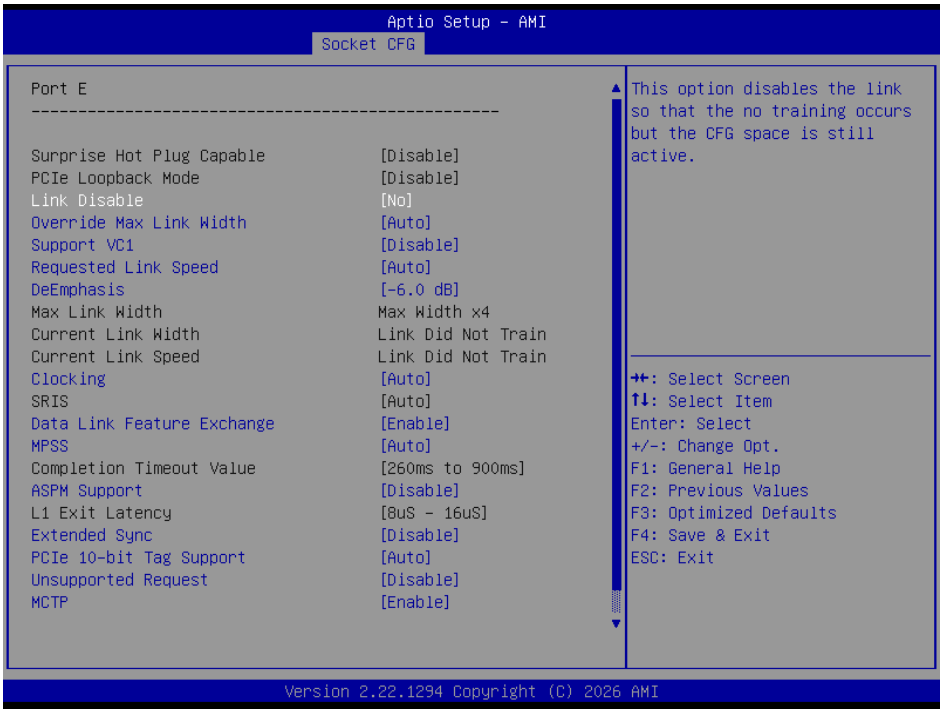
Please refer to 5.6.4.3.1.1.1 for more information.

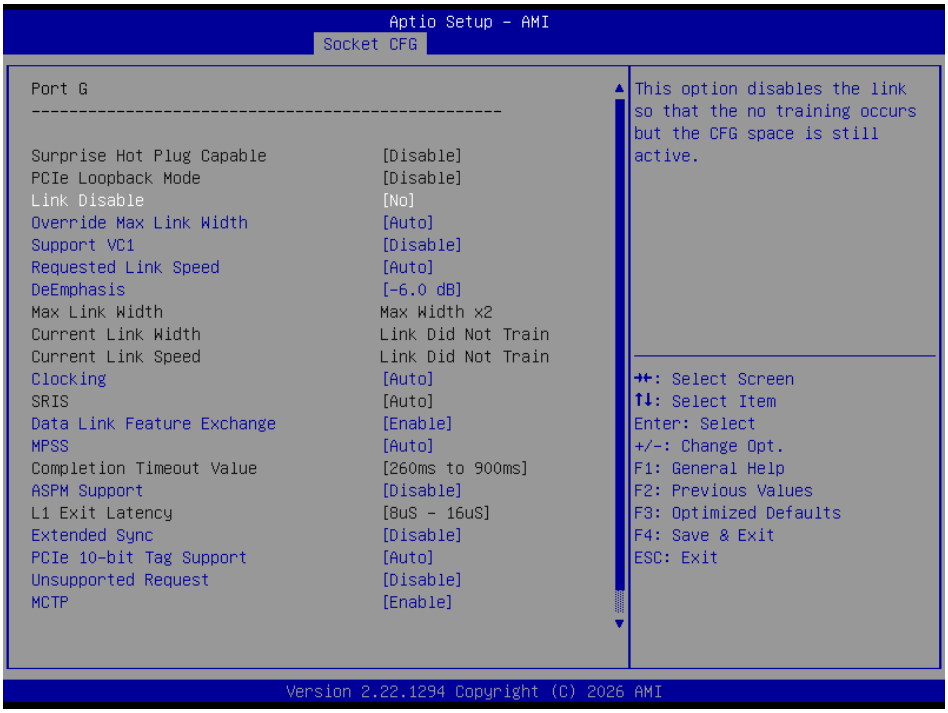


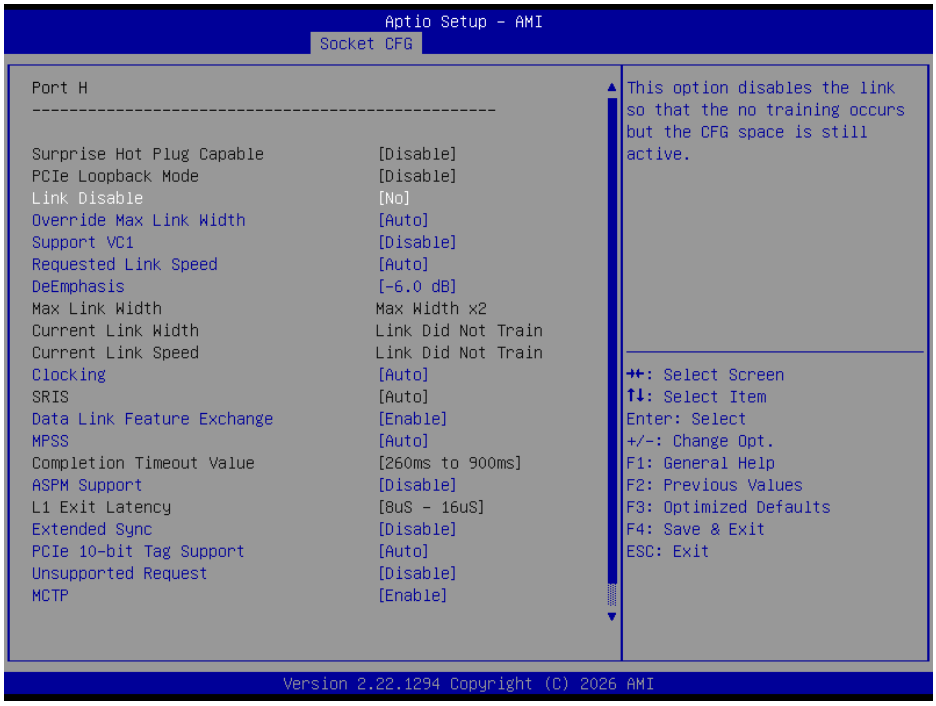
Item	Option	Description
Intel VMD technology	Disabled**[Default]** Enabled	Intel VMD technology

5.6.4.3.1.2.2 Port A ~ Port H

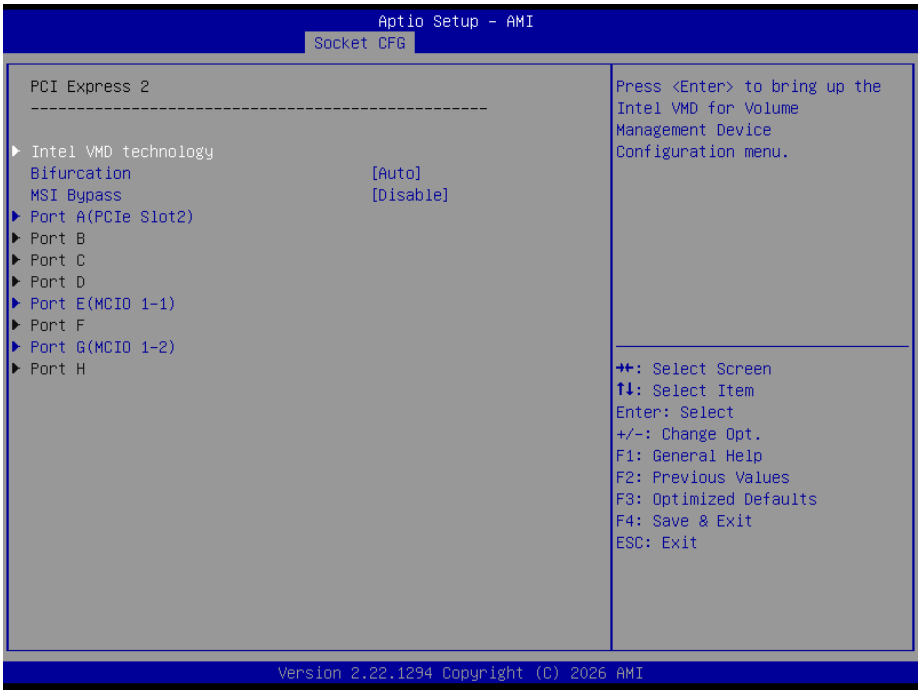
Please refer to 5.6.4.3.1.1.2 for more information.







5.6.4.3.1.3 PCI Express 2

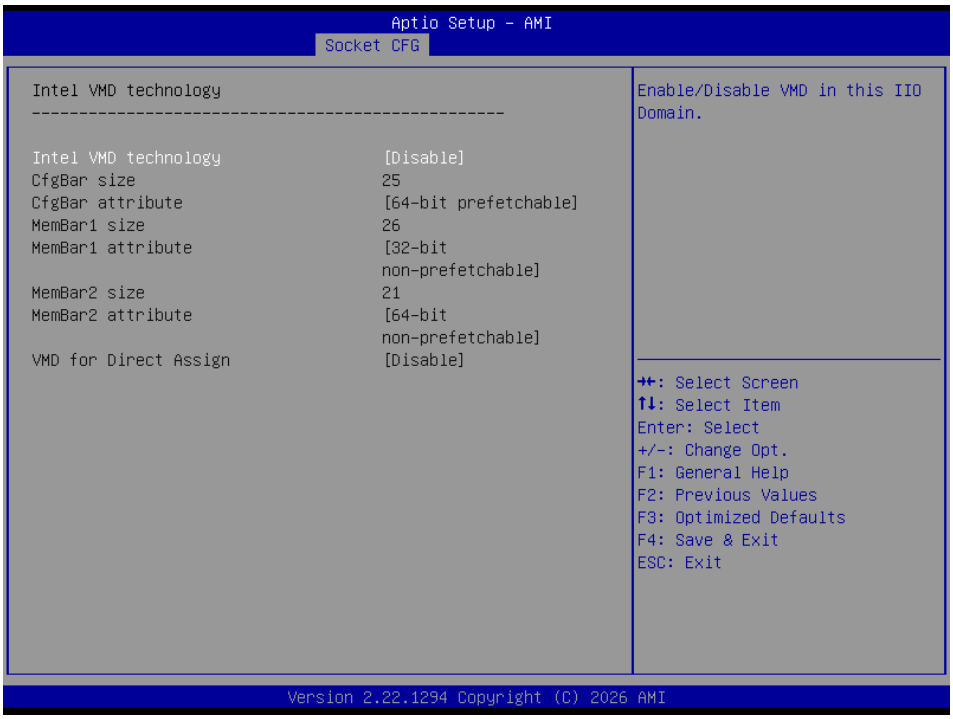


Item	Option	Description
Bifurcation	Auto**[Default]** x4x4x4x4 x4x4x_x8 x_x8x4x4 x_x8x_x8 x_x_x_x16 x2x2x4x_x8 x4x2x2x_x8 x_x8x2x2x4	Select PCIe port Bifurcation for selected slot(s) Port Format: xGxExCxA The port can further be x2x2 Disable-disable all PCIe Lanes and the controller.

	x2x2x4x4x4 x4x2x2x4x4 x4x4x2x2x4 x2x2x2x2x_x8 x2x2x2x2x4x4 x2x2x4x2x2x4 x4x2x2x2x2x4 x2x2x2x2x2x2x4 x_x8x4x2x2 x4x4x4x2x2 x_x8x2x2x2x2 x2x2x4x4x2x2 x4x2x2x4x2x2 x4x4x2x2x2x2 x2x2x2x2x4x2x2 x2x2x4x2x2x2x2 x4x2x2x2x2x2x2 x2x2x2x2x2x2x2x2	
MSI Bypass	Disable**[Default]** Enable	MSI Bypass Default is Disable.

5.6.4.3.1.3.1 Intel VMD technology

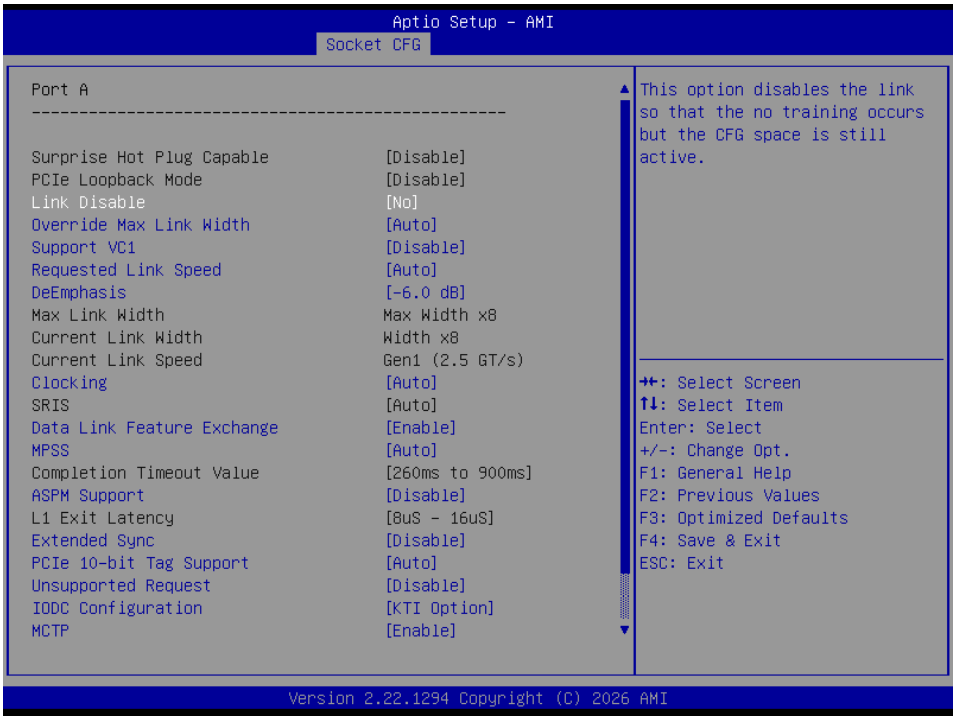
Please refer to 5.6.4.3.1.1.1 for more information.

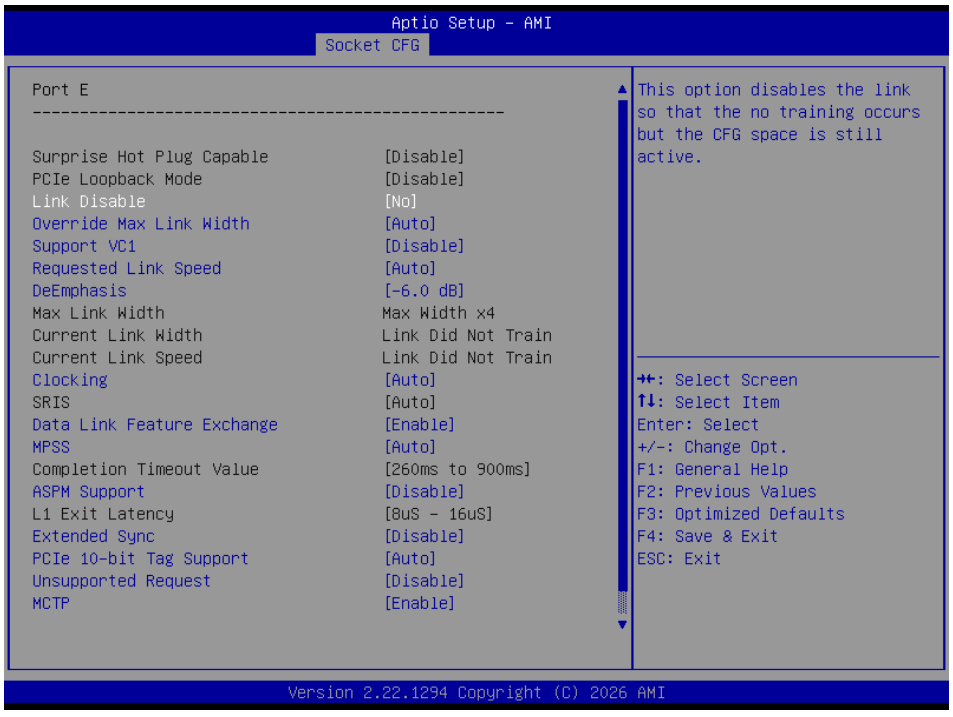


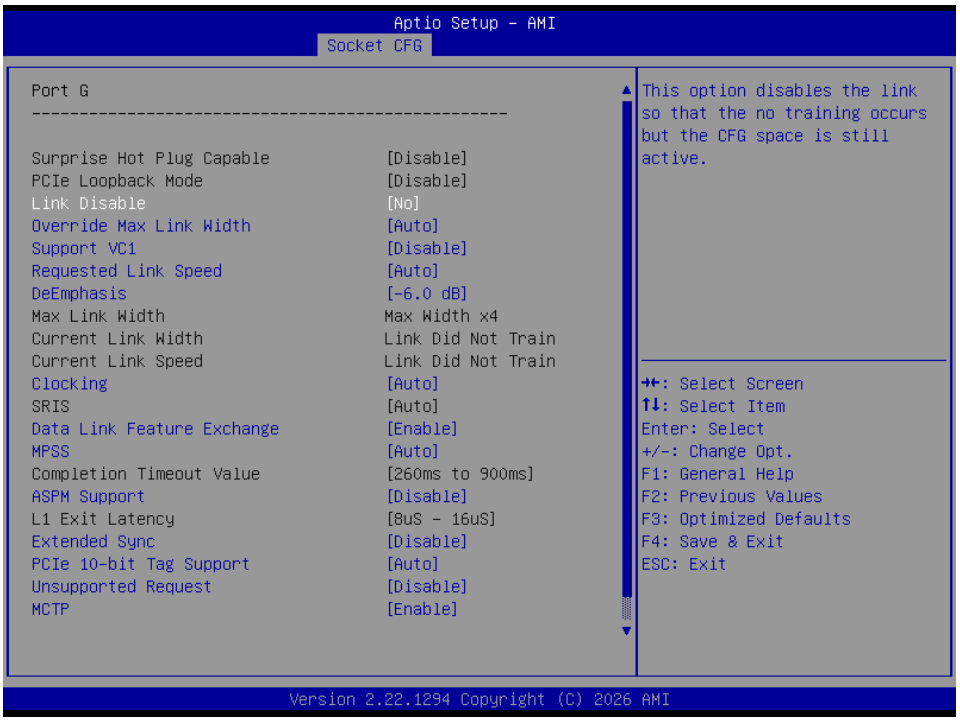
Item	Option	Description
Intel VMD technology	Disabled**[Default]** Enabled	Intel VMD technology

5.6.4.3.1.3.2 Port A ~ Port H

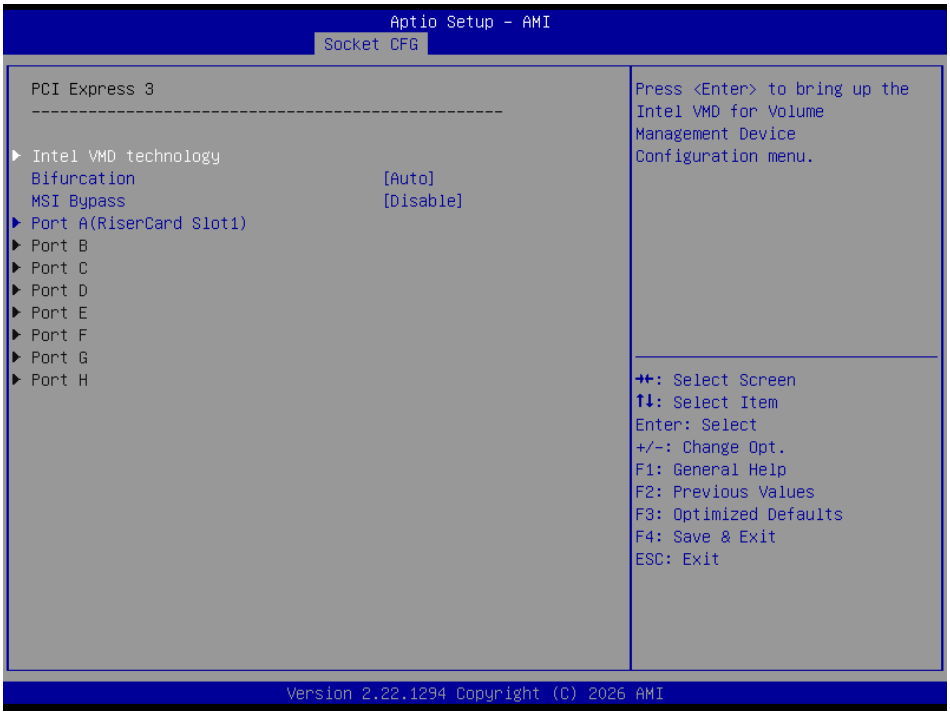
Please refer to 5.6.4.3.1.1.2 for more information.







5.6.4.3.1.4 PCI Express 3

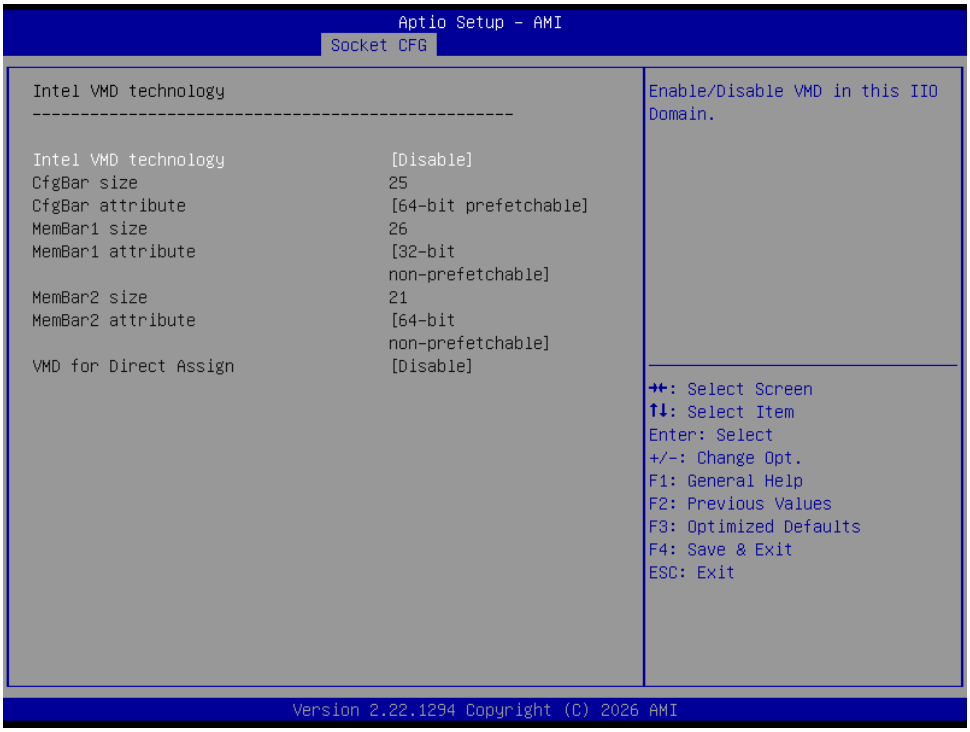


Item	Option	Description
Bifurcation	Auto**[Default]** x4x4x4x4 x4x4x_x8 x_x8x4x4 x_x8x_x8 x_x_x_x16 x2x2x4x_x8 x4x2x2x_x8 x_x8x2x2x4	Select PCIe port Bifurcation for selected slot(s) Port Format: xGxExCxA The port can further be x2x2 Disable-disable all PCIe Lanes and the controller.

	x2x2x4x4x4 x4x2x2x4x4 x4x4x2x2x4 x2x2x2x2x_x8 x2x2x2x2x4x4 x2x2x4x2x2x4 x4x2x2x2x2x4 x2x2x2x2x2x2x4 x_x8x4x2x2 x4x4x4x2x2 x_x8x2x2x2x2 x2x2x4x4x2x2 x4x2x2x4x2x2 x4x4x2x2x2x2 x2x2x2x2x4x2x2 x2x2x4x2x2x2x2 x4x2x2x2x2x2x2 x2x2x2x2x2x2x2x2	
MSI Bypass	Disable**[Default]** Enable	MSI Bypass Default is Disable.

5.6.4.3.1.4.1 Intel VMD technology

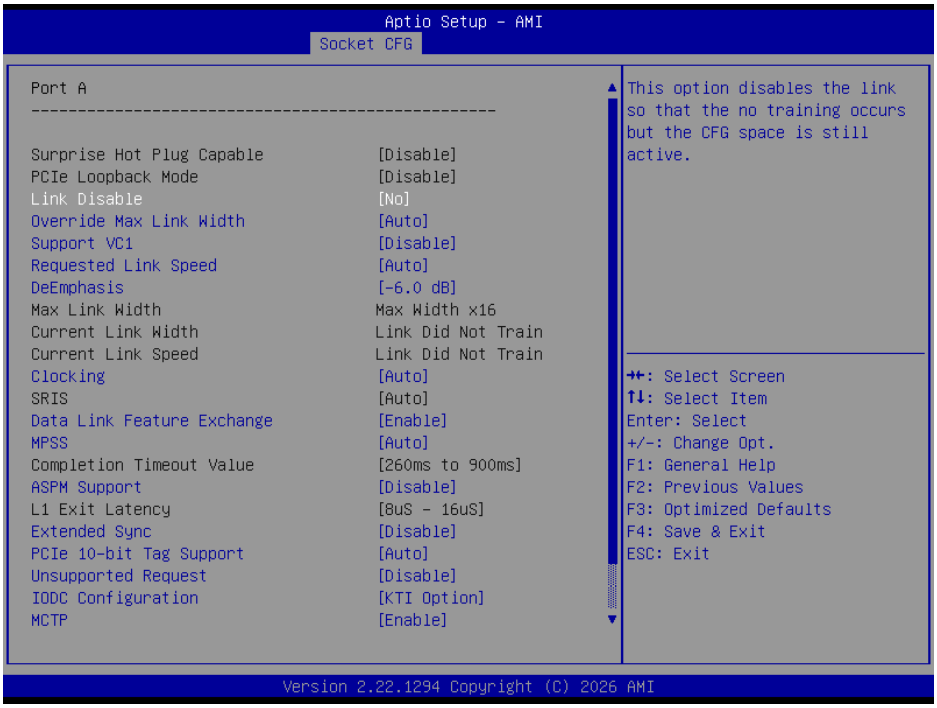
Please refer to 5.6.4.3.1.1.1 for more information.



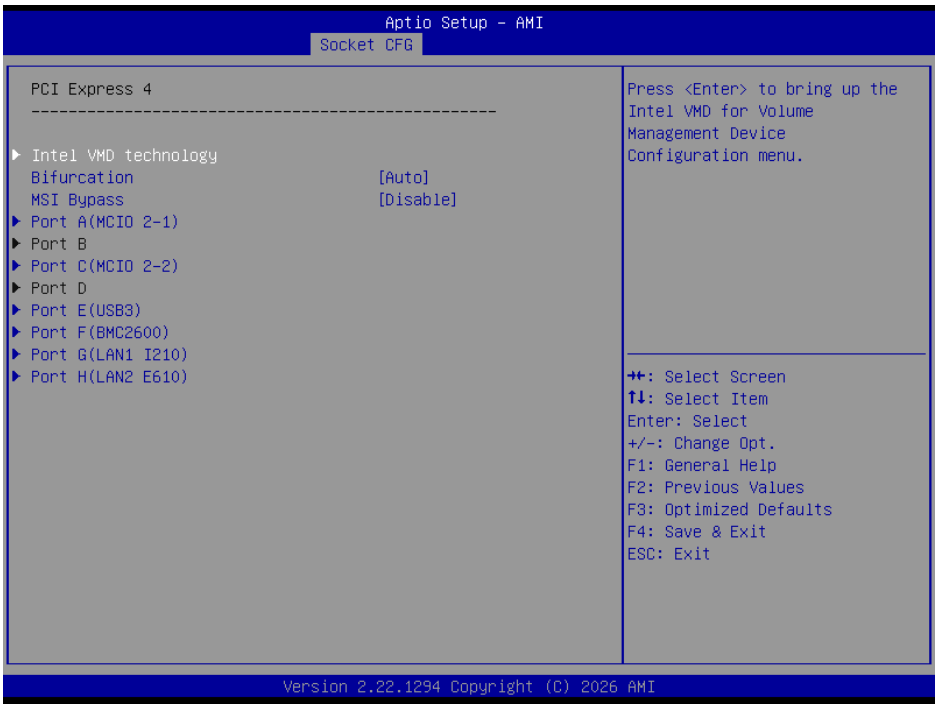
Item	Option	Description
Intel VMD technology	Disabled**[Default]** Enabled	Intel VMD technology

5.6.4.3.1.4.2 Port A ~ Port H

Please refer to 5.6.4.3.1.1.2 for more information.



5.6.4.3.1.5 PCI Express 4

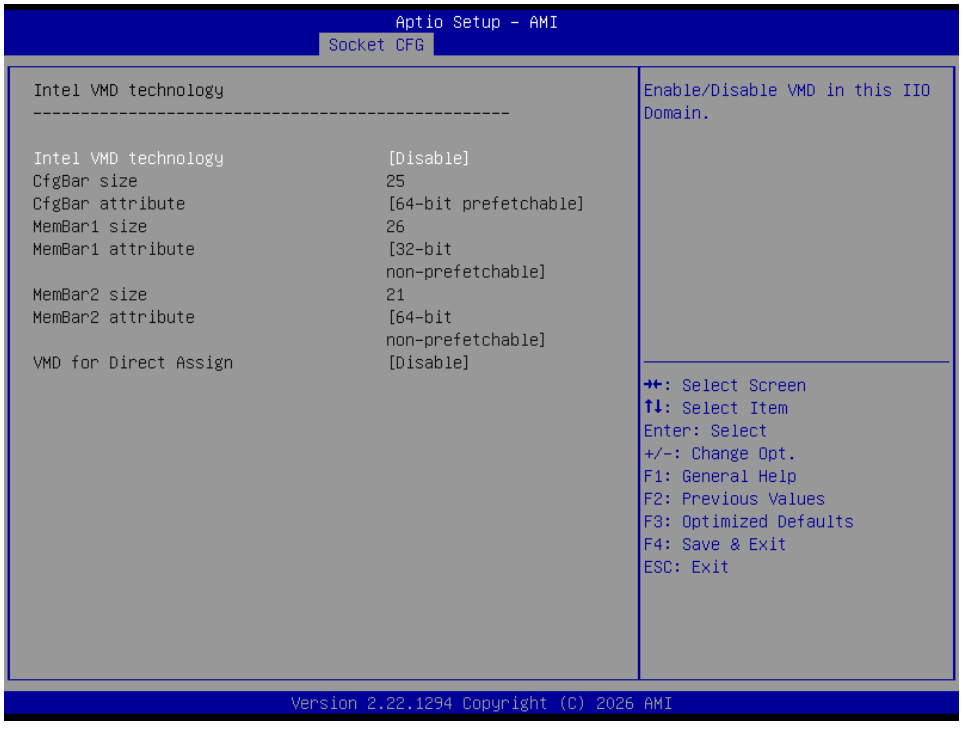


Item	Option	Description
Bifurcation	Auto**[Default]** x4x4x4x4 x4x4x_x8 x_x8x4x4 x_x8x_x8 x_x_x_x16	Select PCIe port Bifurcation for selected slot(s) Port Format: xGxExCxA The port can further be x2x2 Disable-disable all PCIe Lanes and the controller.

	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	
MSI Bypass	Disable**[Default]** Enable	MSI Bypass Default is Disable.

5.6.4.3.1.5.1 Intel VMD technology

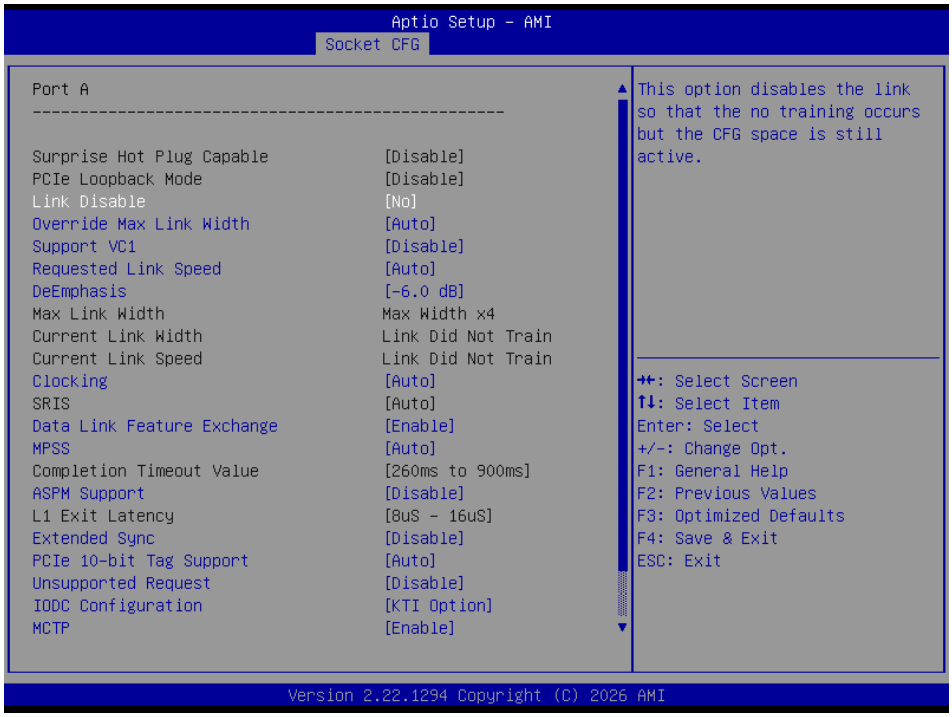
Please refer to 5.6.4.3.1.1.1 for more information.

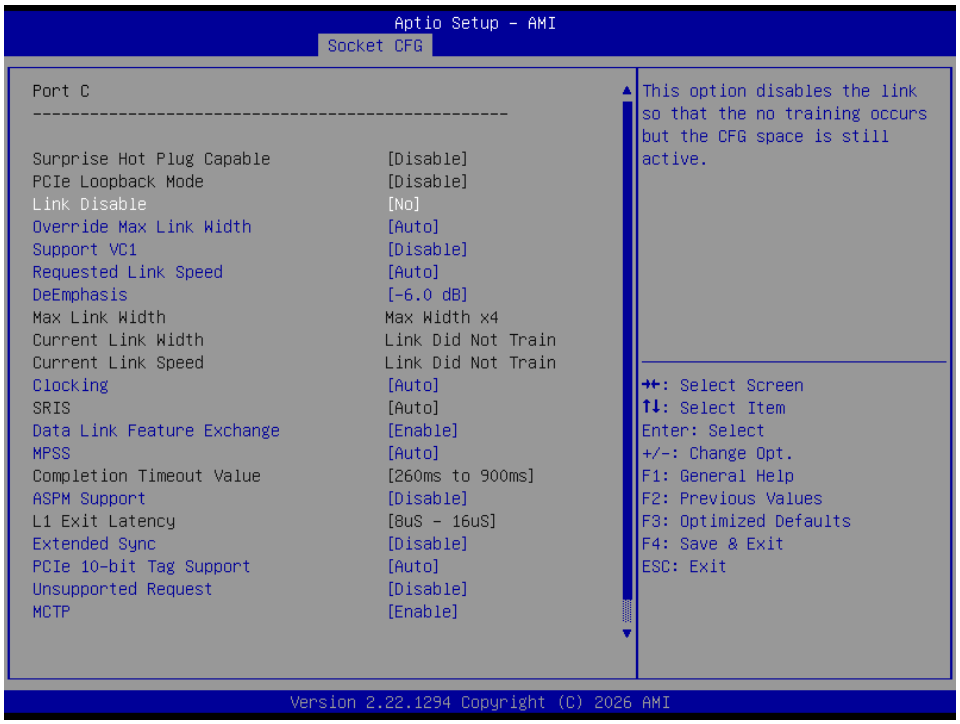


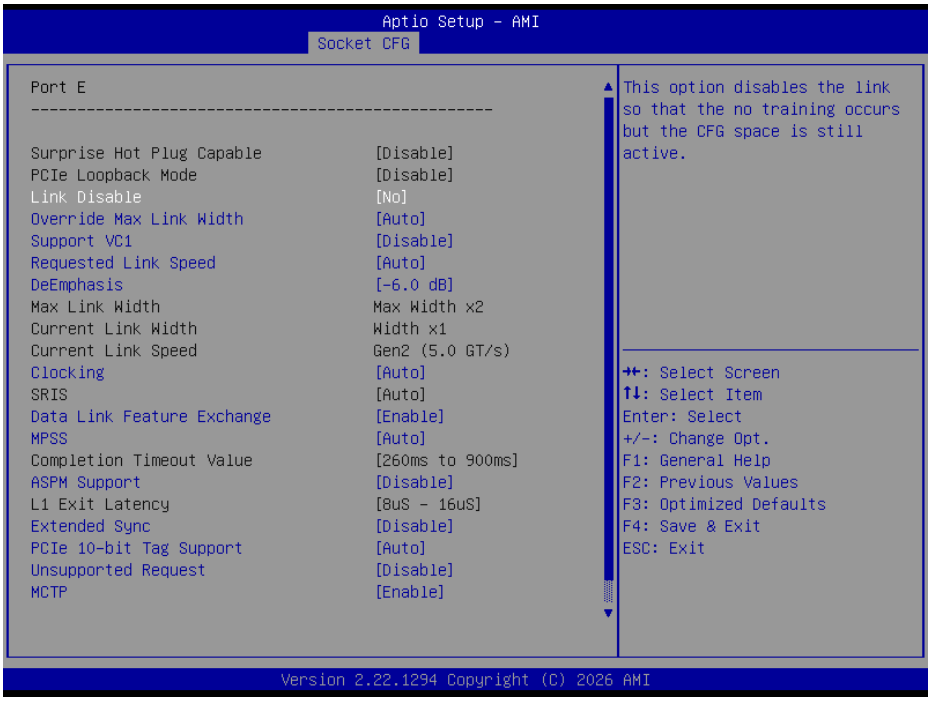
Item	Option	Description
Intel VMD technology	Disabled**[Default]** Enabled	Intel VMD technology

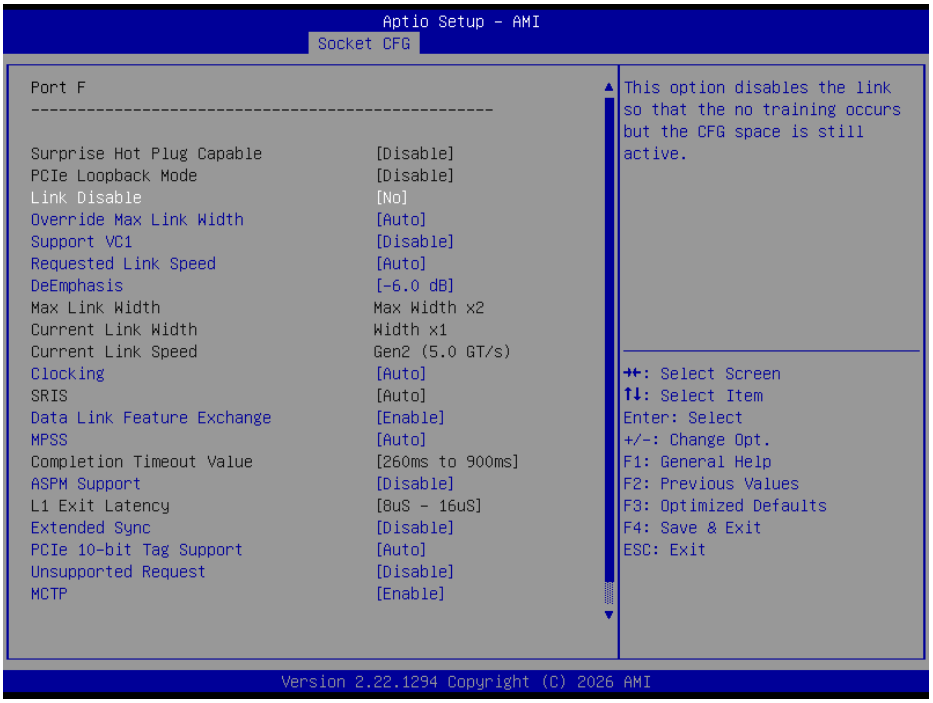
5.6.4.3.1.5.2 Port A ~ Port H

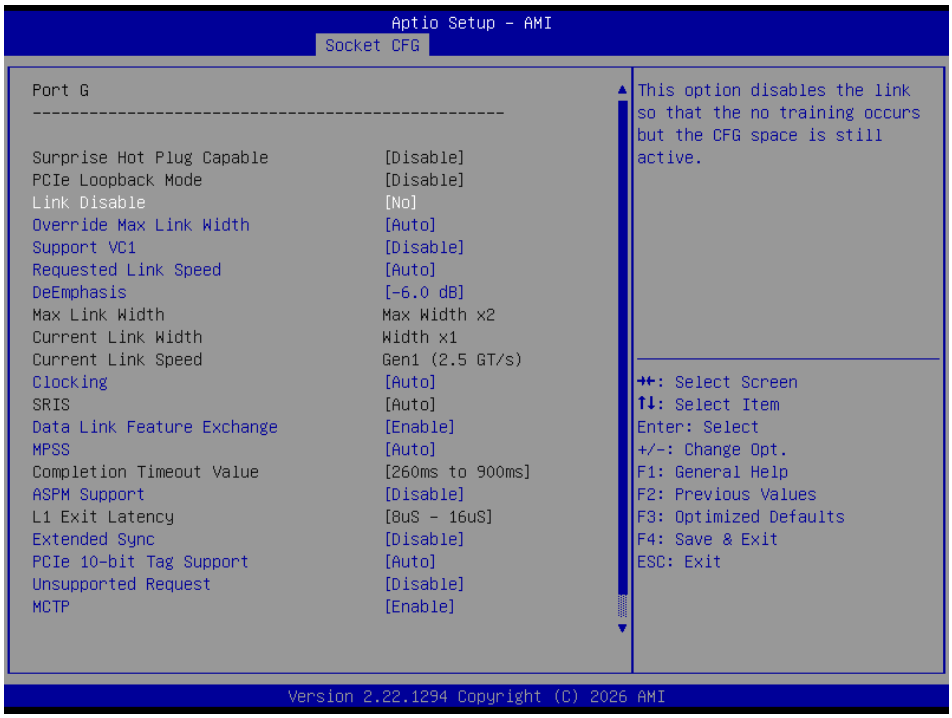
Please refer to 5.6.4.3.1.1.2 for more information.

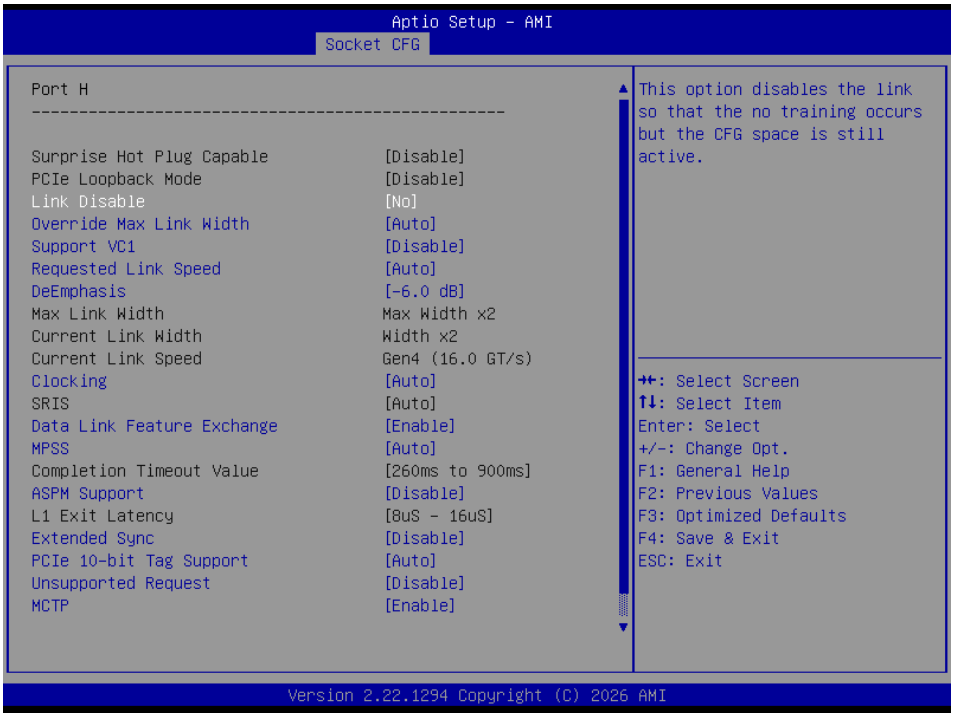





Aptio Setup – AMI
Socket CFG
Port E
Surprise Hot Plug Capable [Disable]
PCIe Loopback Mode [Disable]
Link Disable [No]
Override Max Link Width [Auto]
Support VC1 [Disable]
Requested Link Speed [Auto]
DeEmphasis [-6.0 dB]
Max Link Width Max Width x2
Current Link Width Width x1
Current Link Speed Gen2 (5.0 GT/s)
Clocking [Auto]
SRIS [Auto]
Data Link Feature Exchange [Enable]
MPSS [Auto]
Completion Timeout Value [260ms to 900ms]
ASPM Support [Disable]
L1 Exit Latency [8uS – 16uS]
Extended Sync [Disable]
PCIe 10-bit Tag Support [Auto]
Unsupported Request [Disable]
MCTP [Enable]
This option disables the link so that the no training occurs but the CFG space is still active.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.22.1294 Copyright (C) 2026 AMI


Aptio Setup – AMI
Socket CFG
Port F
Surprise Hot Plug Capable [Disable]
PCIe Loopback Mode [Disable]
Link Disable [No]
Override Max Link Width [Auto]
Support VC1 [Disable]
Requested Link Speed [Auto]
DeEmphasis [-6.0 dB]
Max Link Width Max Width x2
Current Link Width Width x1
Current Link Speed Gen2 (5.0 GT/s)
Clocking [Auto]
SRIS [Auto]
Data Link Feature Exchange [Enable]
MPSS [Auto]
Completion Timeout Value [260ms to 900ms]
ASPM Support [Disable]
L1 Exit Latency [8uS – 16uS]
Extended Sync [Disable]
PCIe 10-bit Tag Support [Auto]
Unsupported Request [Disable]
MCTP [Enable]
This option disables the link so that the no training occurs but the CFG space is still active.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.22.1294 Copyright (C) 2026 AMI


Aptio Setup – AMI
Socket CFG
Port G
Surprise Hot Plug Capable [Disable]
PCIe Loopback Mode [Disable]
Link Disable [No]
Override Max Link Width [Auto]
Support VC1 [Disable]
Requested Link Speed [Auto]
DeEmphasis [-6.0 dB]
Max Link Width Max Width x2
Current Link Width Width x1
Current Link Speed Gen1 (2.5 GT/s)
Clocking [Auto]
SRIS [Auto]
Data Link Feature Exchange [Enable]
MPSS [Auto]
Completion Timeout Value [260ms to 900ms]
ASPM Support [Disable]
L1 Exit Latency [8uS – 16uS]
Extended Sync [Disable]
PCIe 10-bit Tag Support [Auto]
Unsupported Request [Disable]
MCTP [Enable]
This option disables the link so that the no training occurs but the CFG space is still active.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.22.1294 Copyright (C) 2026 AMI


Aptio Setup – AMI
Socket CFG
Port H
Surprise Hot Plug Capable [Disable]
PCIe Loopback Mode [Disable]
Link Disable [No]
Override Max Link Width [Auto]
Support VC1 [Disable]
Requested Link Speed [Auto]
DeEmphasis [-6.0 dB]
Max Link Width Max Width x2
Current Link Width Width x2
Current Link Speed Gen4 (16.0 GT/s)
Clocking [Auto]
SRIS [Auto]
Data Link Feature Exchange [Enable]
MPSS [Auto]
Completion Timeout Value [260ms to 900ms]
ASPM Support [Disable]
L1 Exit Latency [8uS – 16uS]
Extended Sync [Disable]
PCIe 10-bit Tag Support [Auto]
Unsupported Request [Disable]
MCTP [Enable]
This option disables the link so that the no training occurs but the CFG space is still active.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
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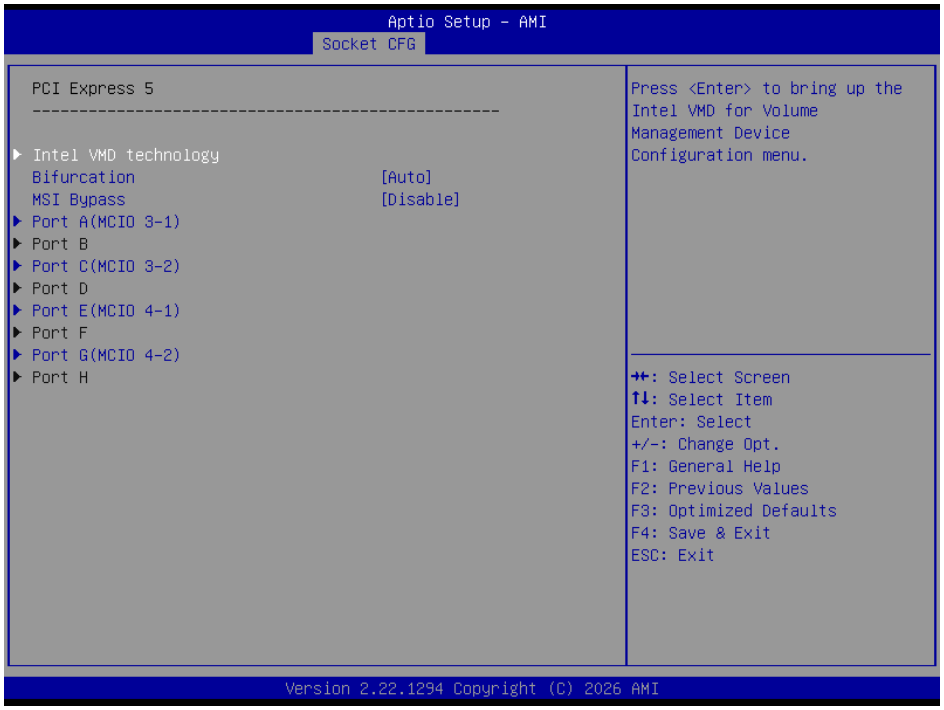
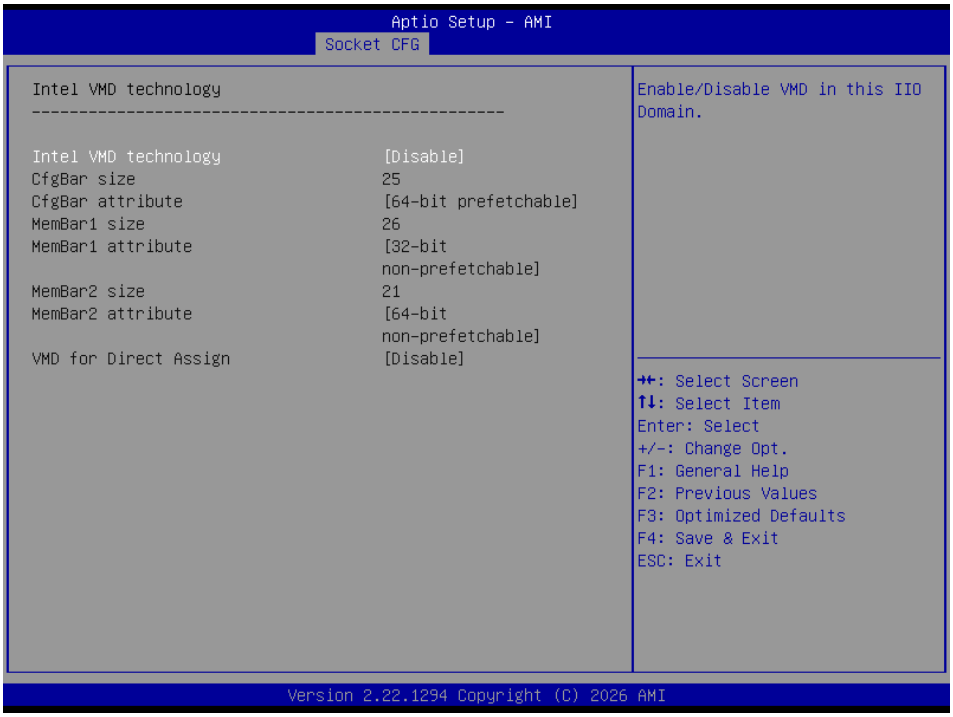
5.6.4.3.1.6 PCI Express 5



Item	Option	Description
Bifurcation	Auto**[Default]** x4x4x4x4 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	Select PCIe port Bifurcation for selected slot(s) Port Format: xGxExCxA The port can further be x2x2 Disable-disable all PCIe Lanes and the controller.
MSI Bypass	Disable**[Default]** Enable	MSI Bypass Default is Disable.

5.6.4.3.1.6.1 Intel VMD technology

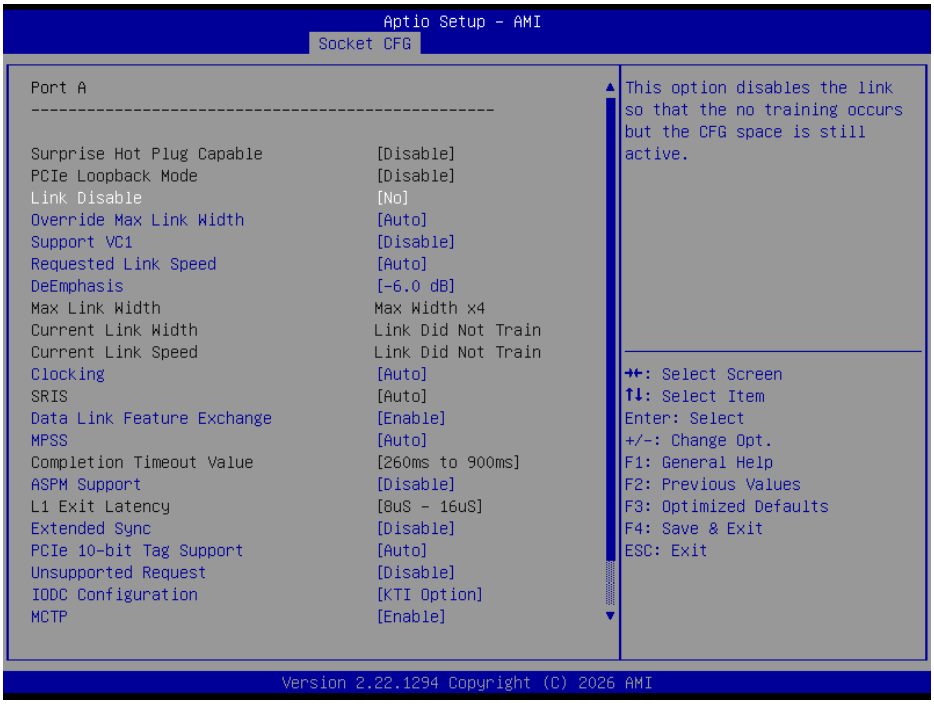
Please refer to 5.6.4.3.1.1.1 for more information.

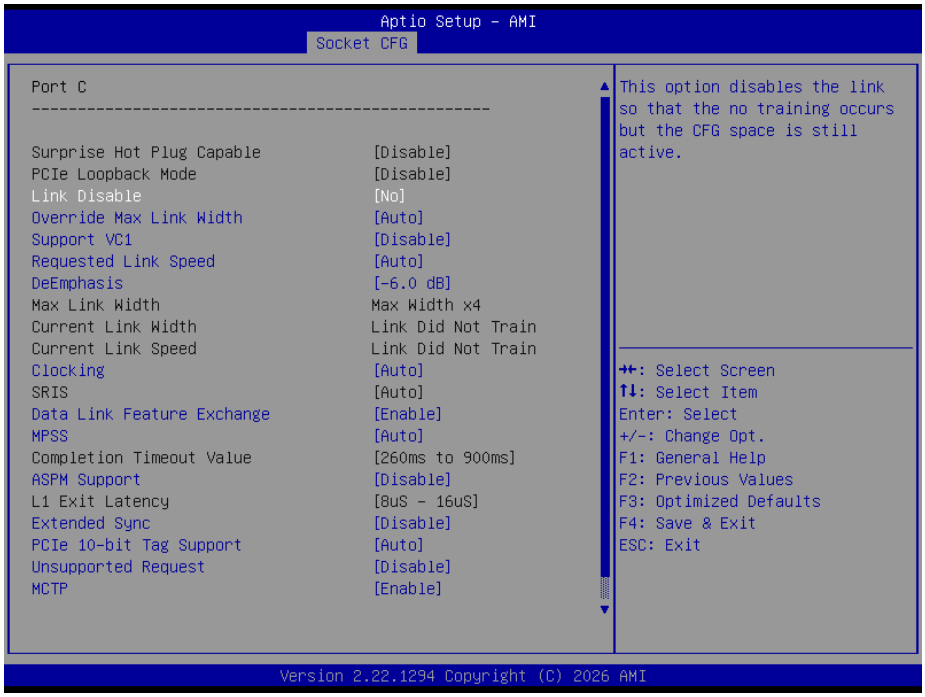


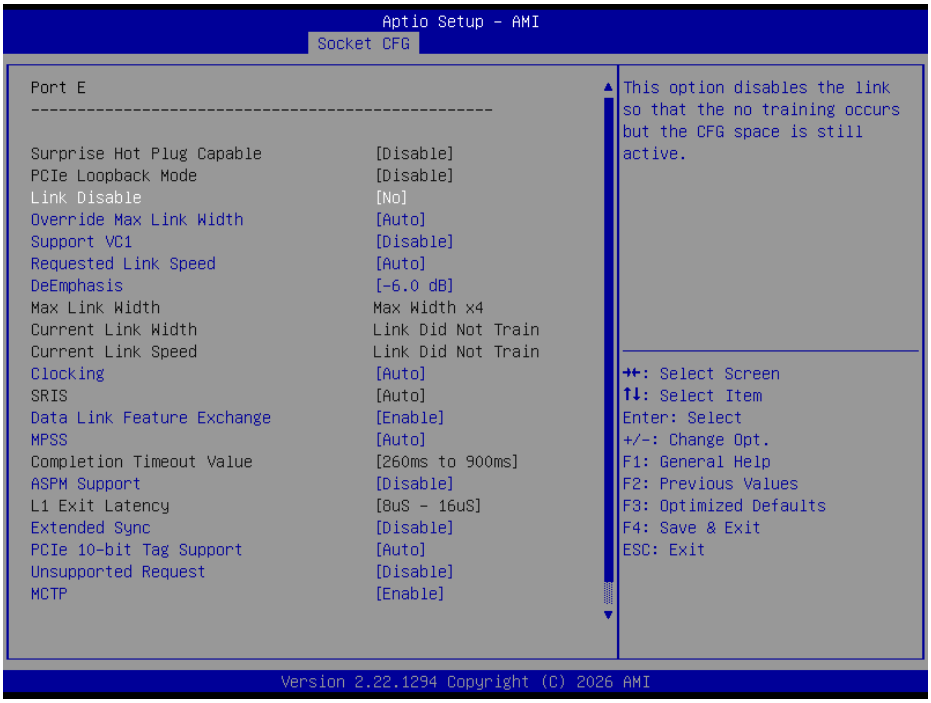
Item	Option	Description
Intel VMD technology	Disabled**[Default]** Enabled	Intel VMD technology

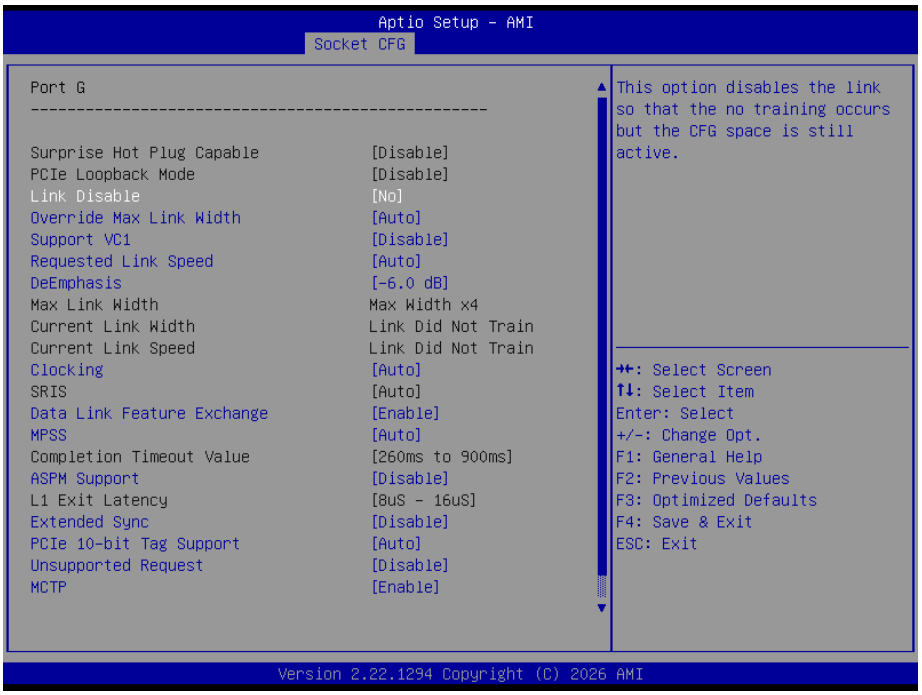
5.6.4.3.1.6.2 Port A ~ Port H

Please refer to 5.6.4.3.1.1.2 for more information.

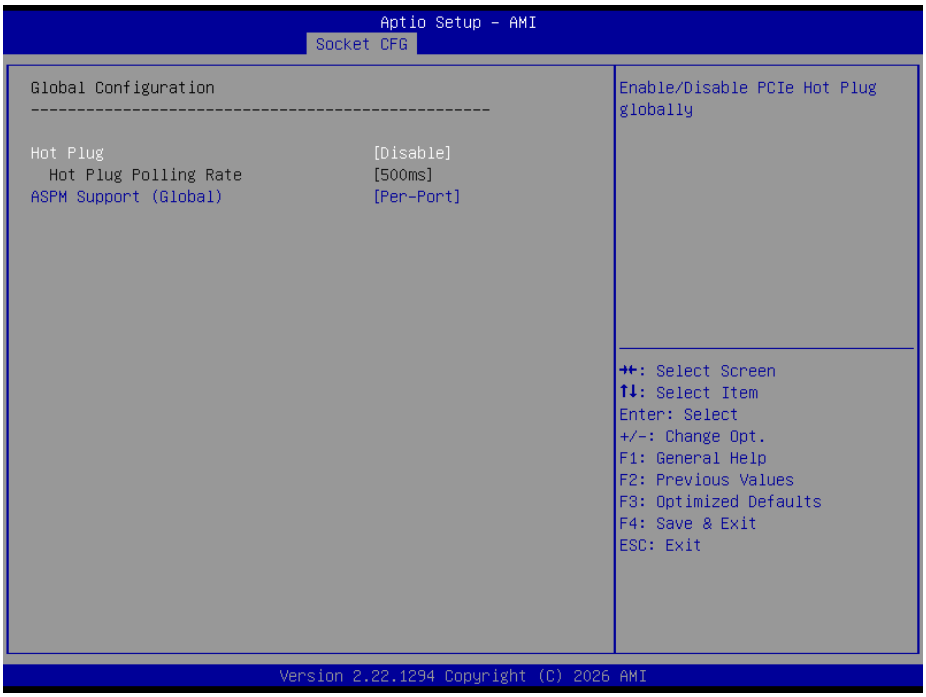



Aptio Setup – AMI
Socket CFG
Port C
Surprise Hot Plug Capable [Disable]
PCIe Loopback Mode [Disable]
Link Disable [No]
Override Max Link Width [Auto]
Support VC1 [Disable]
Requested Link Speed [Auto]
DeEmphasis [-6.0 dB]
Max Link Width Max Width x4
Current Link Width Link Did Not Train
Current Link Speed Link Did Not Train
Clocking [Auto]
SRIS [Auto]
Data Link Feature Exchange [Enable]
MPSS [Auto]
Completion Timeout Value [260ms to 900ms]
ASPM Support [Disable]
L1 Exit Latency [8uS – 16uS]
Extended Sync [Disable]
PCIe 10-bit Tag Support [Auto]
Unsupported Request [Disable]
MCTP [Enable]
This option disables the link so that the no training occurs but the CFG space is still active.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.22.1294 Copyright (C) 2026 AMI


Aptio Setup – AMI
Socket CFG
Port E
Surprise Hot Plug Capable [Disable]
PCIe Loopback Mode [Disable]
Link Disable [No]
Override Max Link Width [Auto]
Support VC1 [Disable]
Requested Link Speed [Auto]
DeEmphasis [-6.0 dB]
Max Link Width Max Width x4
Current Link Width Link Did Not Train
Current Link Speed Link Did Not Train
Clocking [Auto]
SRIS [Auto]
Data Link Feature Exchange [Enable]
MPSS [Auto]
Completion Timeout Value [260ms to 900ms]
ASPM Support [Disable]
L1 Exit Latency [8uS – 16uS]
Extended Sync [Disable]
PCIe 10-bit Tag Support [Auto]
Unsupported Request [Disable]
MCTP [Enable]
This option disables the link so that the no training occurs but the CFG space is still active.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.22.1294 Copyright (C) 2026 AMI

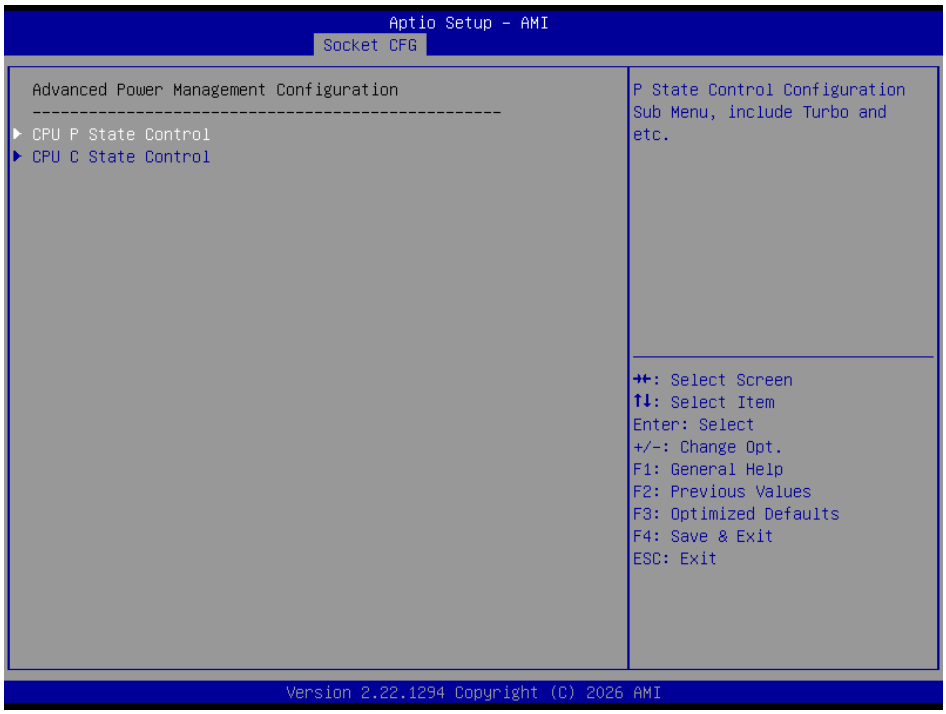


5.6.4.3.2 Global Configuration

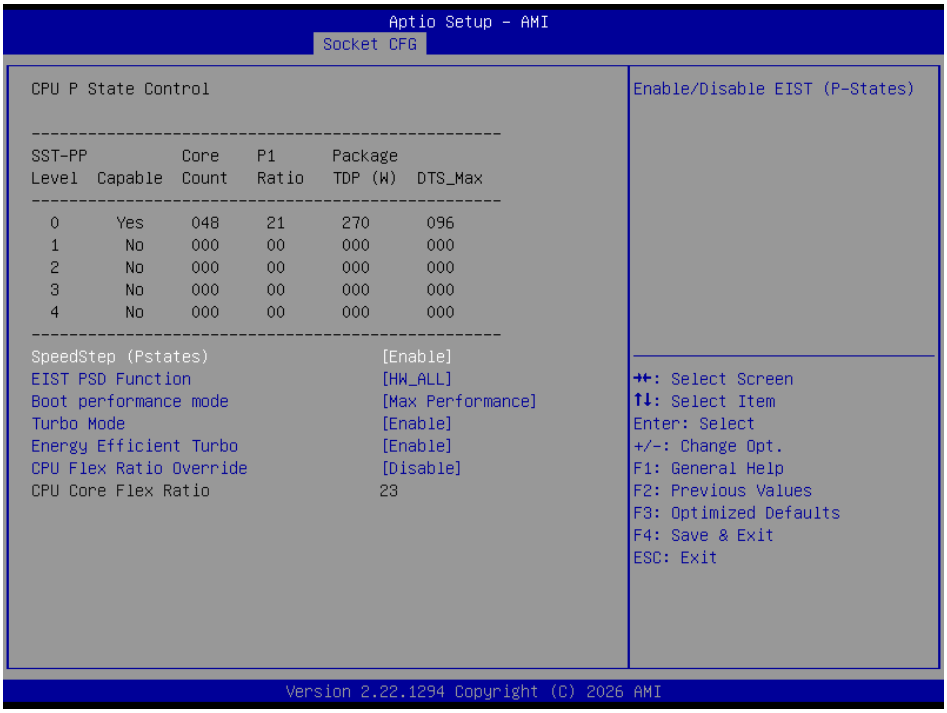


Item	Options	Description
Hot Plug	Enable Disable**[Default]**	Hot Plug.
ASPM Support (Global)	Disable Per-Port**[Default]**	This option can disable ASPM support for all PCIe root ports.

5.6.4.3.3 Advanced Power Management Configuration



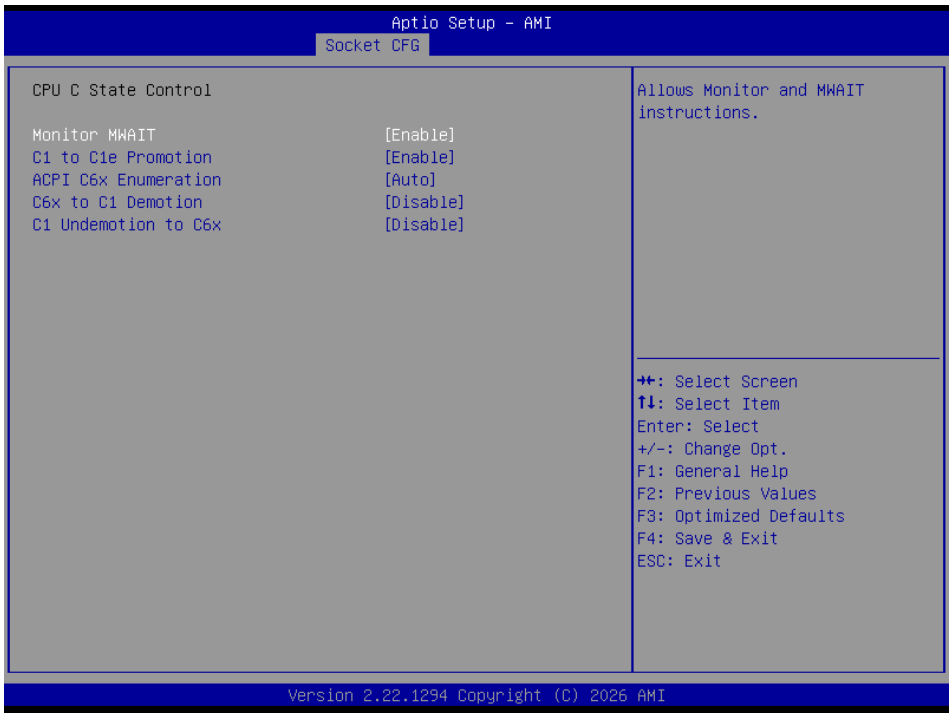
5.6.4.4.1 CPU P State Control



Item	Option	Description
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.

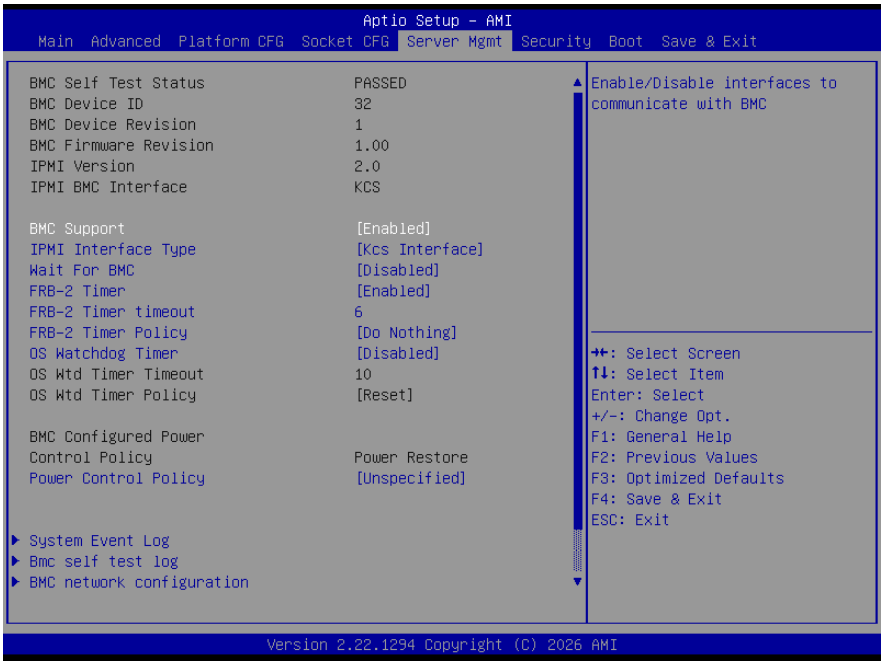
Turbo Mode	Disable Enable**[Default]**	Enable/Disable processor Turbo Mode (requires EMTTM enabled too).
Energy Efficient Turbo	Enable**[Default]** Disable	Energy Efficient Turbo Disable, MSR 0x1FC[19].
CPU Flex Ratio Override	Disable**[Default]** Enable	Enable/Disable CPU Flex Ratio Programming.

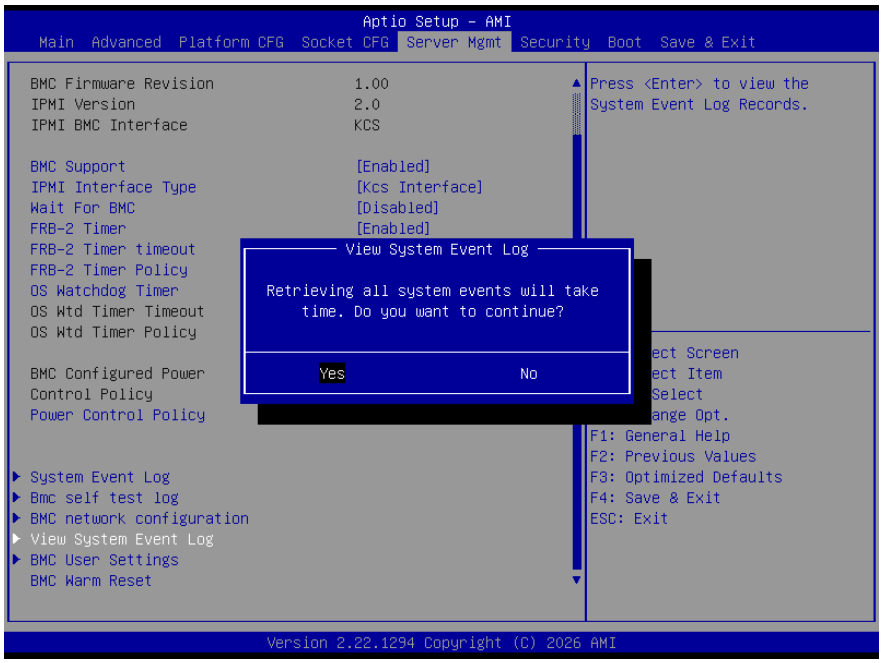
5.6.4.4.2 CPU C State Control



Item	Option	Description
Monitor MWAIT	Disable Enable**[Default]**	Allows Monitor and MWAIT instructions.
C1 to C1e Promotion	Disable Enable**[Default]**	Allows CPU to automatically demote to C1. Takes effect after reboot.
ACPI C6x Enumeration	Disable Auto**[Default]**	ACPI C6x Enumeration.
C6x to C1 Demotion	Disable**[Default]** Enable	Allows CPU to demote C6x state to C1 state.
C1 Undemotion to C6x	Disable**[Default]** Enable	Allows CPU to undemote demoted C1 state to C6x state.

5.6.5 Server Mgmt

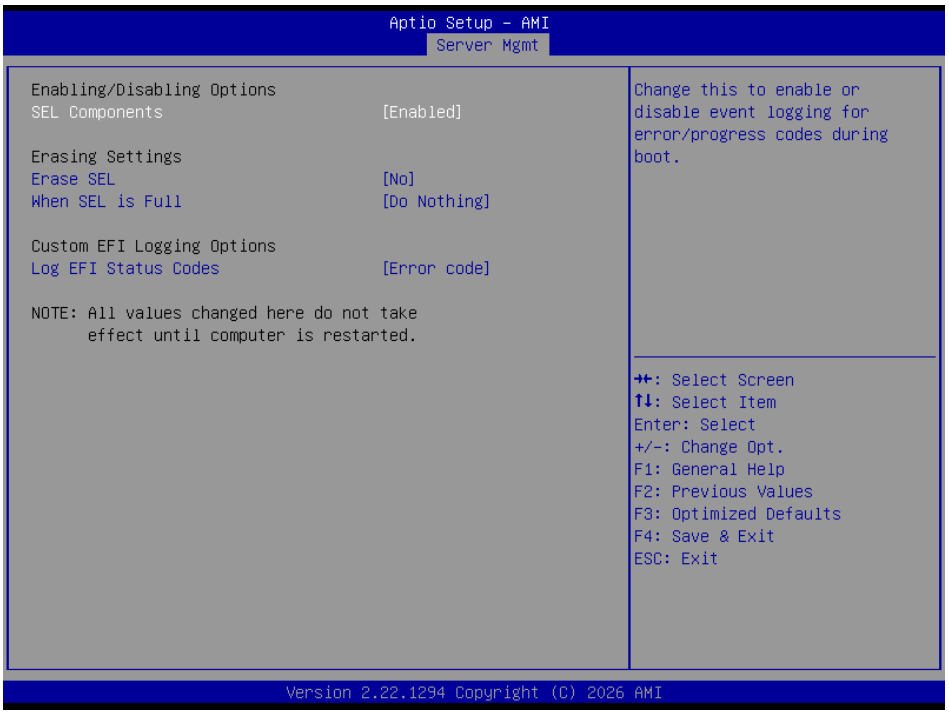




Item	Options	Description
BMC Support	Enabled**[Default]** Disabled	Enable/Disable interfaces to communicate with BMC.
IPMI Interface Type	Kcs Interface**[Default]** Ssif Interface Ipmb Interface Usb Interface Oem1 Interface Oem2 Interface	Type of Interface to communicate BMC from HOST.
Wait For BMC	Enabled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

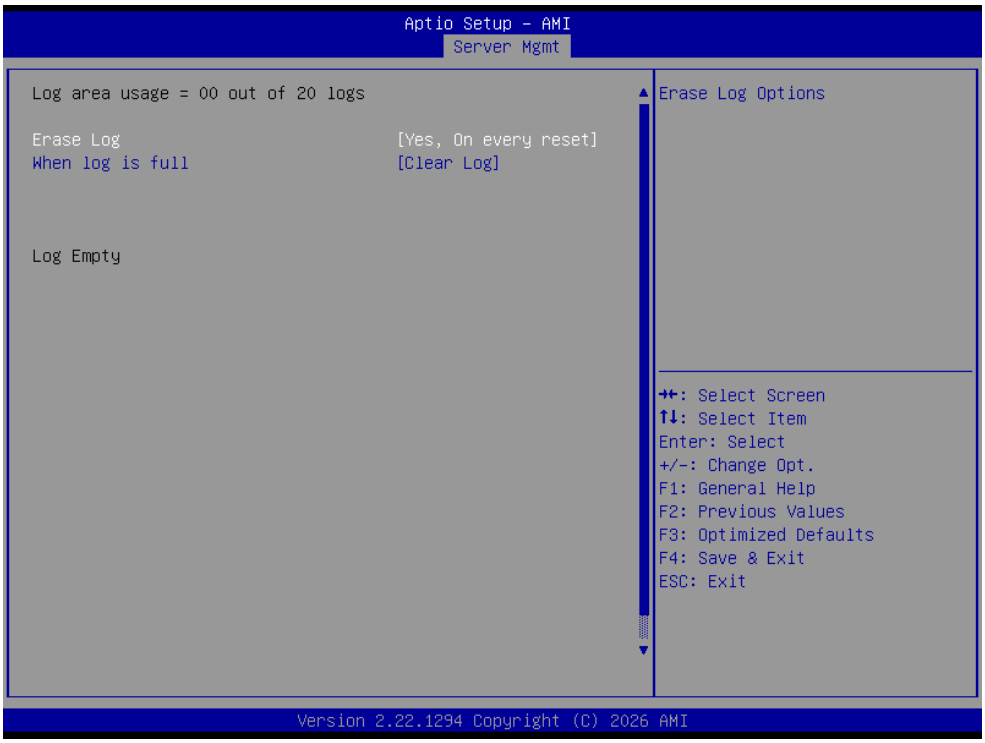
5.6.5.1 System Event Log



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	Disable the logging of EFI Status Codes or log only error code or only progress code or both.

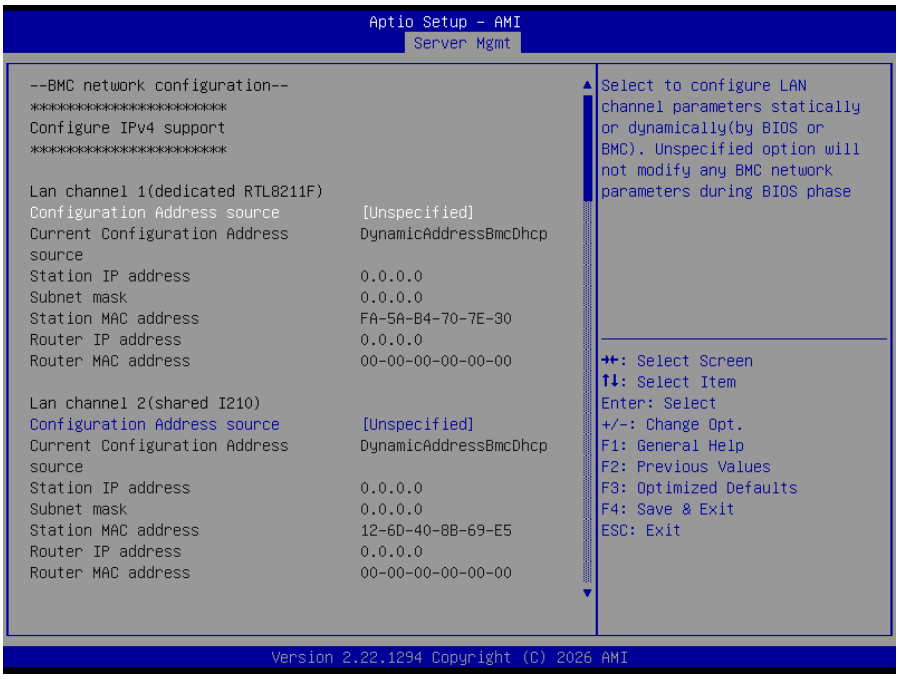
	Error code**[Default]** Progress code	

5.6.5.2 Bmc self test log



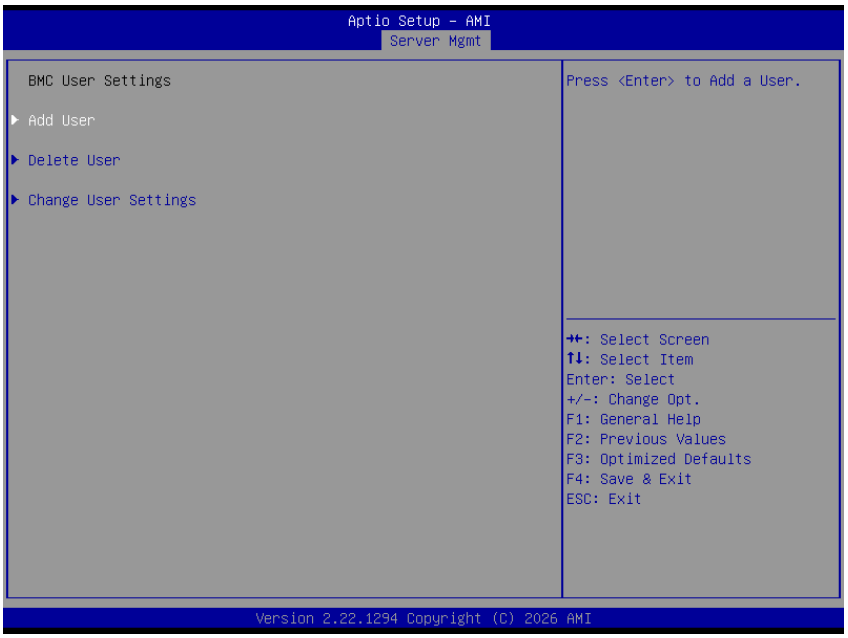
Item	Option	Description
Erase Log	Yes, On every reset**[Default]** No	Erase Log Options.
When log is full	Clear Log**[Default]** Do not log any more	Select the action to be taken when log is full.

5.6.5.3 BMC network configuration

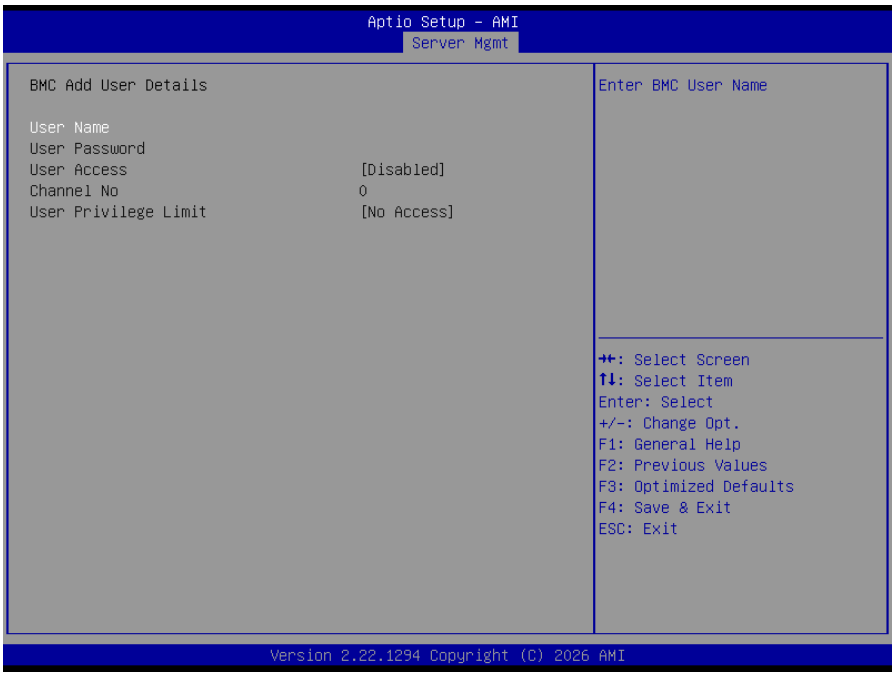


Item	Option	Description
Configuration Address source	Unspecified**[Default]** Static DynamicBmcDhcp DynamicBmcNonDhcp	Select configure LAN channel parameters statically or dynamically(by BIOS or BMC). Unspecified option will not modify any BMC network parameters during BIOS phase.
Configuration Address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

5.6.5.4 BMC User Settings

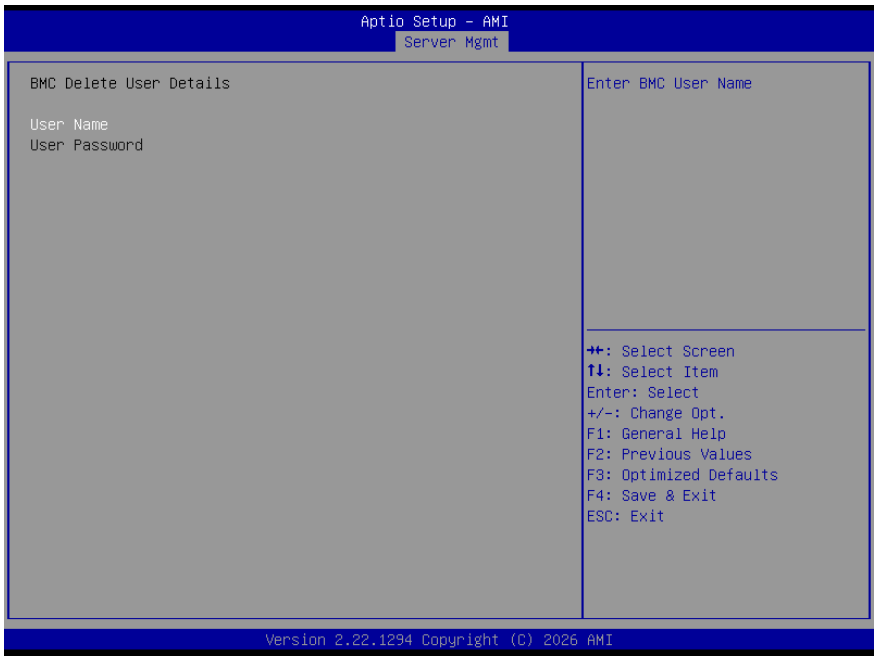


5.6.5.4.1 BMC Add User Details



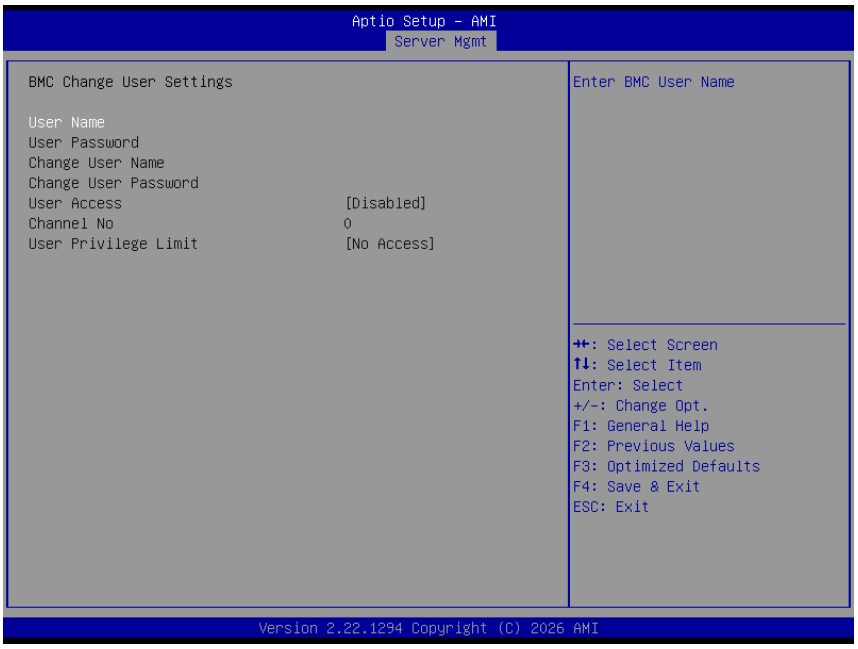
Item	Description
User Name	Enter BMC User Name.

5.6.5.4.2 BMC Delete User Details



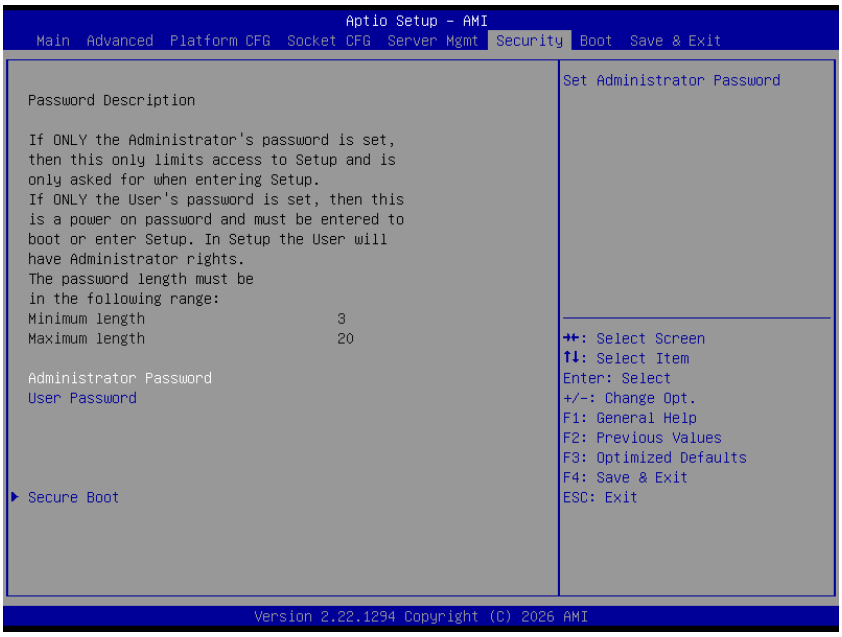
Item	Description
User Name	Enter BMC User Name.

5.6.5.4.3 BMC Change User Settings



Item	Description
User Name	Enter BMC User Name.

5.6.6 Security



- **Administrator Password**

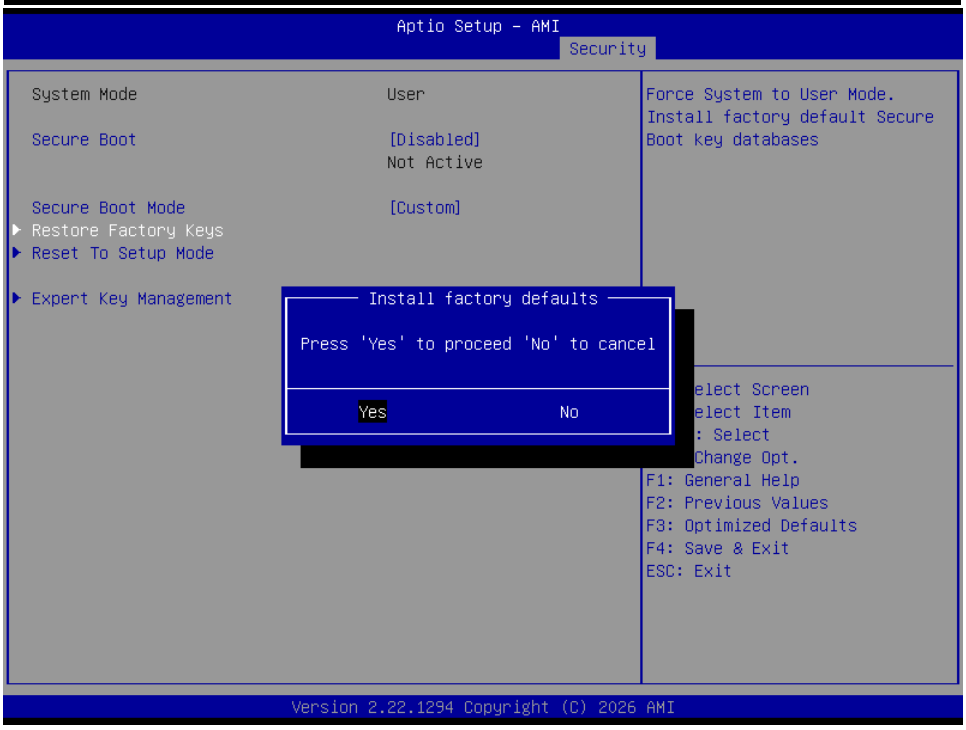
Set setup Administrator Password

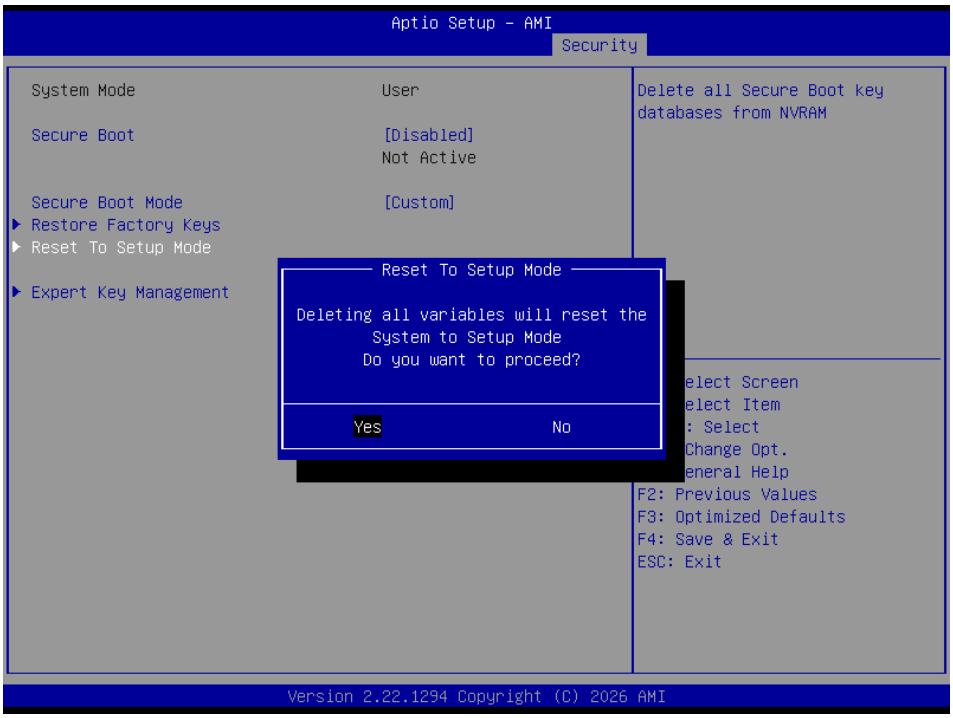
- **User Password**

Set User Password

5.6.6.1 Secure Boot

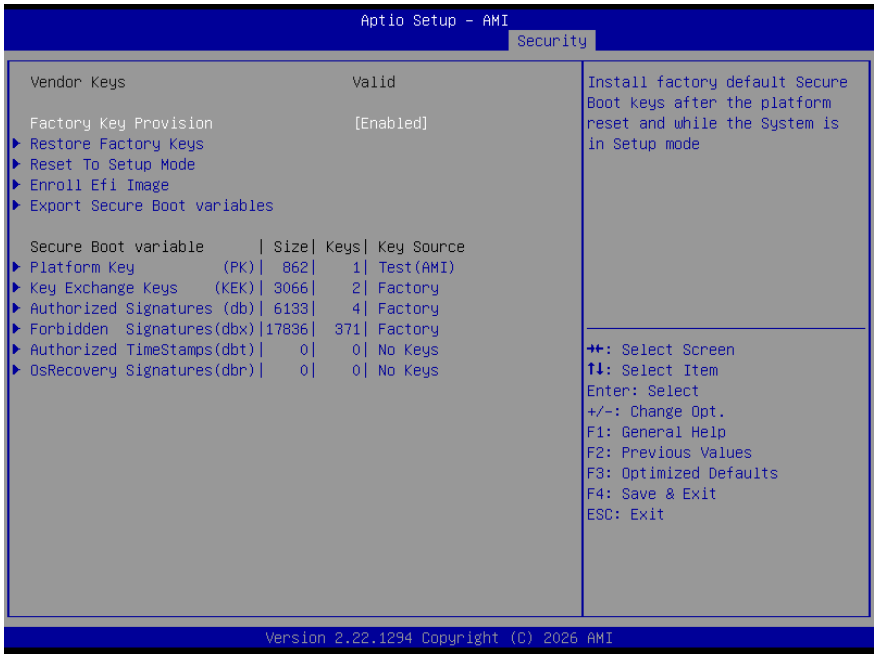






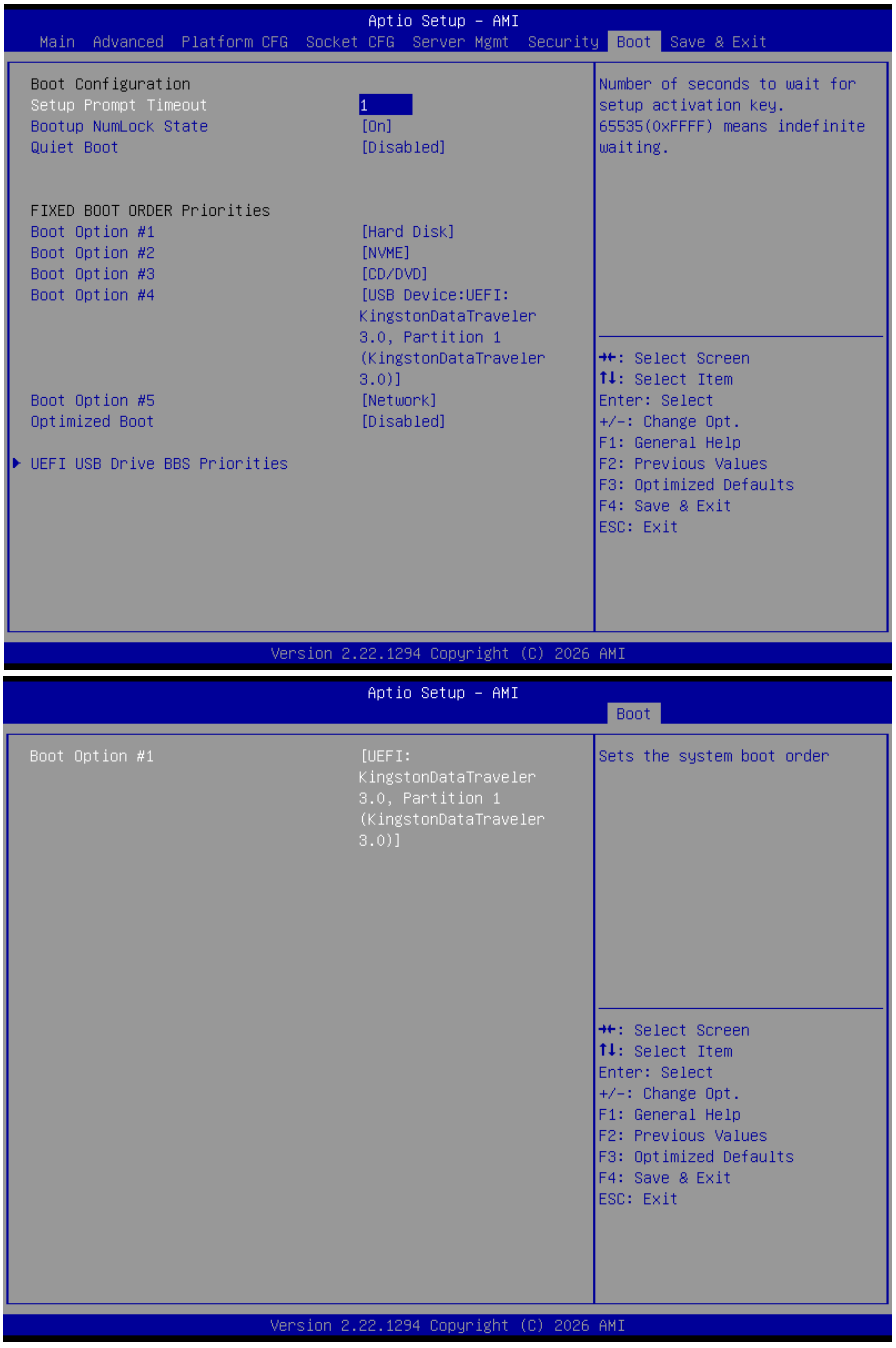
Item	Option	Description
Secure Boot	Disabled**[Default]** Enabled	Secure Boot feature is Active if Secure Boot is Enabled, Platform Key(PK) is enrolled and the System is in User mode. The mode change requires platform reset.
Secure Boot Mode	Standard**[Default]** Custom	Secure Boot mode options: Standard or Custom. In Custom mode, Secure Boot Policy variables can be configured by a physically present user without full authentication.

5.6.6.1.1 Expert Key Management



Item	Option	Description
Factory Key Provision	Disabled**[Default]** Enabled	Install factory default Secure Boot keys after the platform reset and while the Sysstem is in Setup mode.

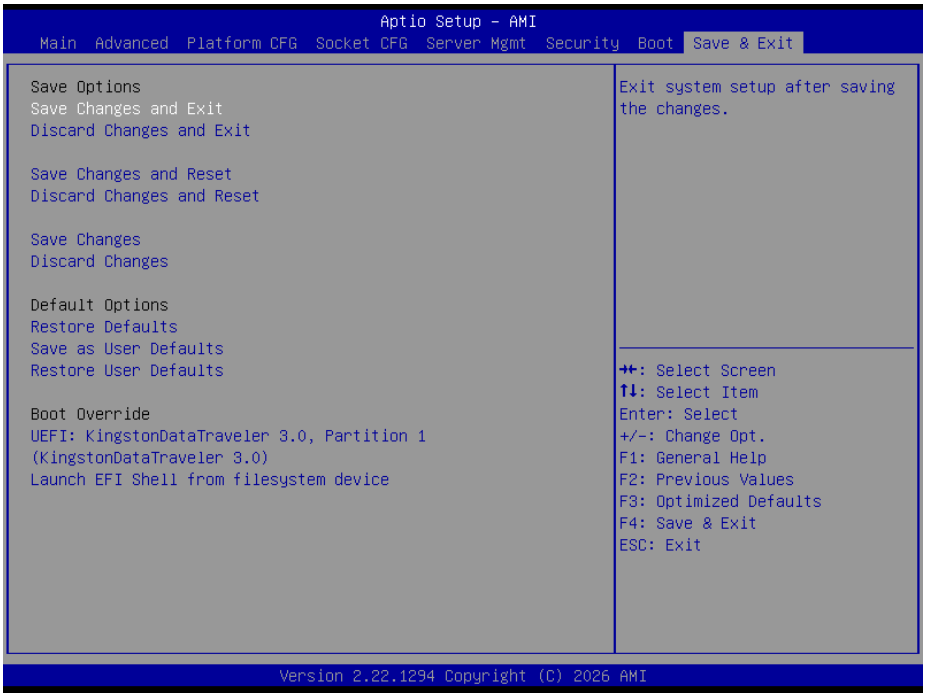
5.6.7 Boot

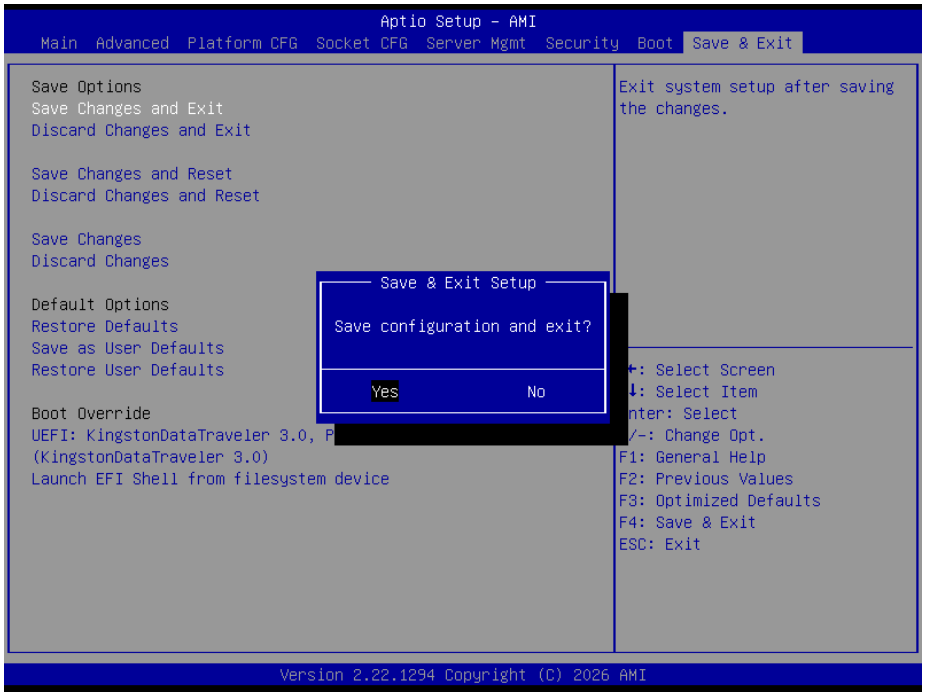


Item	Option	Description
Setup Prompt Timeout	1~ 65535	Set the default timeout before system boot. A value of 65535 will disable the timeout completely.
Bootup NumLock State	On**[Default]** Off	Select the keyboard NumLock state

Quiet Boot	Disabled**[Default]** Enabled	Enables or disables Quiet Boot option
Boot Option #1	Hard Disk**[Default]** NVME CD/DVD SD USB Device Network	Set the system boot order.
Boot Option #2	Hard Disk NVME**[Default]** CD/DVD SD USB Device Network	Set the system boot order.
Boot Option #3	Hard Disk NVME CD/DVD**[Default]** SD USB Device Network	Set the system boot order.
Boot Option #4	Hard Disk NVME CD/DVD SD**[Default]** USB Device Network	Set the system boot order.
Boot Option #5	Hard Disk NVME CD/DVD SD USB Device Network**[Default]**	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.

5.6.8 Save and exit





5.6.8.1 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.

5.6.8.2 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.

5.6.8.3 Save Changes and Reset

Reset the system after saving the changes.

5.6.8.4 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.

5.6.8.5 Save Changes

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

5.6.8.6 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.

5.6.8.7 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.

5.6.8.8 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.

5.6.8.9 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.