# FT65T-B8050

# Tower Server Engineer's Manual

## Copyright



Version 1.0f

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# ● FCC Declaration

**Notice for the USA**

Compliance Information Statement (Supplier's Declaration of Conformity, SDoC) FCC Part 15: This device complies with part 15 of the FCC Rules.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following conditions:

- This device may not cause harmful interference.
- 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 B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

—Reorient or relocate the receiving antenna.

—Increase the separation between the equipment and receiver.

—Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

—Consult the dealer or an experienced radio/TV technician for help.

**Notice for Canada**

This Class B digital apparatus complies with Canadian ICES-003. Cet appareil numérique de la Classe B est conforme à la norme NMB-003 du Canada.

## ● Notice for Europe(CE Mark)

This product is in conformity with the Council Directive 2014/30/EU and 2014/35/EU.

**●VCCI**

この装置は、クラスＢ情報技術装置です。この装置は、家庭環境で使用することを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用されると、受信障害を引き起こすことがあります。

取扱説明書に従って正しい取り扱いをして下さい。

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**●Regulatory Compliance**

This equipment is compliant with CB/LVD of Safety: IEC/EN 62368-1.

**About this Manual**

This manual is intended for trained service technician/personnel with hardware knowledge of computers. Components inside the compartments should be serviced only by a trained service technician/personnel. This manual is aimed to provide you with instructions on installing your TYAN FT65T-B8050.

## How this guide is organized

This guide contains the following parts:

**Chapter 1: Overview**

This chapter provides an introduction to the TYAN FT65T-B8050 barebones and standard parts list, describes the external components, gives an overview of the product from different angles.

**Chapter 2: Setting Up**

This chapter covers procedures on installing the processors, memory modules, hard drivers and other optional parts.

**Chapter 3: Installing the GPU Cards**

This chapter covers procedures on installing GPU cards.

**Chapter 4: Replacing the Pre-installed Components**

This chapter covers the removal and replacement procedures for pre-installed components.

**Chapter 5: Motherboard Information**

This chapter lists the hardware setup procedures that you need to abide by when installing system components. It includes description of the jumpers and connectors on the motherboard.

**Chapter 6: BIOS Setup**

This chapter tells how to change system settings through the BIOS setup menu. Detailed descriptions of the BIOS parameters are also provided.

**Chapter 7: Diagnostics**

This chapter introduces some BIOS codes and technical terms to provide better service for the customers.

**Appendix:**

This chapter provides the cable connection table, the FRU parts list for reference of system setup, and technical support in case a problem arises with your system.

# Safety and Compliance Information (English)

### Safety Information

Retain and follow all safety and operating instructions provided with your equipment. In the event of a conflict between the instructions in this guide and the instructions in equipment documentation, follow the guidelines in the equipment documentation.

Observe all warnings on the product and in the operating instructions. To reduce the risk of bodily injury, electric shock, fire, and damage to the equipment, observe all precautions included in this guide.

You must become familiar with the safety information in this guide before you install, operate, or service Tyan products.

## Symbols on Equipment

| | |
|---|---|
|  | **CAUTION:** There is a risk of personal injury and equipment damage. Follow the instructions provided in the Tyan product documentation or displayed on the product. |
|  | Read the e-manual.<br>https://www.tyan.com/ |
|  | **CAUTION:** Hazardous moving parts. Keep body parts away from moving fan blades. |
|  | **CAUTION:** Hot surface. Avoid contact. Surfaces are hot and may cause personal injury if touched. To reduce risk of injury from Hot component, allow the surface to cool before touching. |
|  | **CAUTION:** Hazardous voltages are present. To reduce the risk of electric shock and danger to personal health, follow the instructions. |
|  | **CAUTION:** Multiple power connections. Prior to servicing, disconnect all power cords. |

**General Precautions**

- Follow all caution and warning instructions marked on the equipment and explained in the accompanying equipment documentation.
- Do not directly connect this equipment to outdoor power cables.
- This equipment is not intended for use in the immediate or direct visual field of the display work place. To avoid disturbing reflections on the display work place, this product should not be placed in the immediate or direct field of vision.
- This equipment is not suitable for use in locations where children are likely to be present.

**Machine Room Environment**

- This equipment is for use only in a machine room or IT room.
- Make sure that the area in which you install the equipment is properly ventilated and climate controlled.
- Ensure that the voltage and frequency of your power source match the voltage and frequency inscribed on the electrical rating label of the equipment.
- Do not install the equipment in or near a plenum, air duct, radiator, or heat register.
- Never use the equipment in a wet location.

**Chassis**

- Do not block or cover the openings to the equipment.
- Never push objects of any kind through openings in the equipment. Dangerous voltages might be present.
- Conductive foreign objects can produce a short circuit and cause fire, electric shock, or damage to your equipment.
- Lift equipment using both hands and with your knees bent.

**Equipment Racks**

To avoid injury or damage to the equipment:

- Observe local occupational health and safety requirements and guidelines for manual materials handling.
- Do not attempt to move a rack by yourself; at least two people are needed to move a rack.
- Do not attempt to move a fully loaded rack. Remove equipment from the rack before moving the rack.
- Do not attempt to move a rack on an incline that is greater than 10 degrees from the horizontal.
- Make sure the rack is properly secured to the floor or ceiling.
- Make sure the stabilizing feet are attached to the rack if it is a single-rack installation.
- Make sure racks are coupled together if it is a multiple-rack installation.
- Make sure the rack is level and stable before installing an equipment in the rack.
- Make sure the leveling jacks are extended to the floor.
- Make sure the full weight of the rack rests on the leveling jacks.
- Always load the rack from the bottom up. Load the heaviest component in the rack first.
- Make sure the rack is level and stable before pulling a component out of the rack.
- Make sure only one component is extended at a time. A rack might become unstable if more than one component is extended.

To avoid damage to the equipment:

- The rack width and depth must allow for proper serviceability and cable management.
- Ensure that there is adequate airflow in the rack. Improper installation or restricted airflow can damage the equipment.
- The rack cannot have solid or restricted airflow doors. You must use a mesh door on the front and back of the rack or remove the doors to ensure adequate air flow to the system.
- Make sure the equipment is properly secured to the rails. Equipment that is improperly secured to the rails might be unstable.

- Verify that the AC power supply branch circuit that provides power to the rack is not overloaded. Proper power reduces the risk of personal injury, fire, or damage to the equipment. The total rack load should not exceed 80 percent of the branch circuit rating. Consult the electrical authority having jurisdiction over your facility wiring and installation requirements.

**Power Cords**

- Use only the power cords and power supply units provided with your equipment. The equipment might have one or more power cords.
- Plug the power cord into a grounded (earthed) electrical outlet that is easily accessible at all times.
- Ensure to connect the power cord to a socket-outlet with earthing connection.
- In all European electrical environments, you must ground the Green/Yellow tab on the power cord. If you do not ground the Green/Yellow tab, it can cause an electrical shock due to high leakage currents.
- Do not place objects on AC power cords or cables. Arrange them so that no one might accidentally step on or trip over them.
- Do not pull on a cord or cable. When unplugging from the electrical outlet, grasp the cord by the plug.
- To reduce the risk of electrical shock, disconnect all power cords before servicing the equipment.

**Batteries**

- The equipment battery contains lithium manganese dioxide. If the battery pack is not handled properly, there is risk of fire and burns.
- Do not disassemble, crush, puncture, short external contacts, or dispose of the battery in fire or water.
- Do not expose the battery to temperatures higher than 60°C (140°F).
- Do not attempt to recharge the battery.
- Dispose of used batteries according to the instructions of the manufacturer. Do not dispose of batteries with the general office waste. For recycling or proper disposal, use a public collection site or return them to Tyan, your authorized Tyan partner, or their agents.

**CAUTION:** Risk of explosion if battery is replaced by an incorrect type. Replace the battery only with a spare designated for your equipment.

**Modifications to Equipment**

- Do not make mechanical or electrical modifications to the equipment. Tyan is not responsible for regulatory compliance of a modified Tyan product.

**Equipment Repairs and Servicing**

- The installation of internal options and routine maintenance and service of this equipment should be performed by technicians, authorized service personnel or trained hardware service personnel who are knowledgeable about the procedures, precautions, and hazards associated with equipment containing hazardous energy levels.
- Do not exceed the level of repair specified in the procedures in the product documentation. Improper repairs can create a safety hazard.
- Remove all watches, rings, or loose jewelry when working before removing covers and touching internal components.
- Do not use conductive tools that could bridge live parts.
- Use gloves when you remove or replace internal components; they can become hot to the touch.
- If the equipment sustains damage requiring service, disconnect the equipment from the AC electrical outlet and refer servicing to an authorized service provider. Examples of damage requiring service include:
  - The power cord, extension cord, or plug has been damaged.
  - Liquid has been spilled on the equipment or an object has fallen into the product.
  - The equipment has been exposed to rain or water.
  - The equipment has been dropped or damaged.
  - The equipment does not operate normally when you follow the operating instructions.
- Ensure to replace the cover prior to power-on the system.

**CAUTION:** To reduce the risk of electrical shock, disconnect all power cords before servicing the equipment.

**CAUTION:** Do not operate Tyan products without the cover in place. Failure to take this precaution may result in personal injury and equipment damage.

**CAUTION:** If your equipment is equipped with rack handles, refrain from utilizing them for lifting or transporting the equipment.

**Elevated Operating Ambient Temperature**

- If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than the room ambient temperature. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum ambient operating temperature (TMA) specified by the manufacturer.

**Reduced Airflow**

- Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.

**Mechanical Loading**

- Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.

**Circuit Overloading**

- Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on over-current protection and supply wiring. Use appropriate consideration of equipment name-plate ratings when addressing this concern.

**Redundant Power Supply**

- To provide a fully redundant power supply, connect each power cord to a separate AC circuit. Each power cord requires properly grounded (earthed) connections.

**Reliable Earthing**

- Reliable earthing of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (for example, use of power strips).

# Safety and Compliance Information (Spanish)

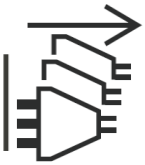
**Información sobre seguridad**

Conserve y siga todas las instrucciones de seguridad y operación del producto que se suministran junto con el equipo. En caso de que las instrucciones de esta guía y las suministradas en la documentación del equipo no coincidan, siga las instrucciones suministradas en la documentación del equipo.

Respete todas las advertencias incluidas en el producto y en las instrucciones de operación. Para reducir el riesgo de lesiones, choque eléctrico, incendios y daños en el equipo, respete todas las precauciones incluidas en esta guía.

Debe familiarizarse con la información sobre seguridad de esta guía antes de instalar, utilizar o reparar los productos Tyan.

**Símbolos presentes en el equipo**

| | |
|---|---|
|  | **Precaución:** Existe el riesgo de que se produzcan daños personales y en el equipo. Siga las instrucciones que se proporcionan en la documentación del producto Tyan o las que se muestran en el producto. |
|  | Lea el e-manual.<br>https://www.tyan.com/ |
|  | **Precaución:** Piezas móviles peligrosas. Manténgase alejado de las aspas de ventiladores en movimiento. |
|  | **Precaución:** Superficie caliente. Evite todo contacto. Las superficies están calientes y pueden causar lesiones personales si se tocan. Para reducir el riesgo de lesiones, deje que la superficie se enfríe antes de tocarla. |
|  | **Precaución:** Voltaje peligroso. Para reducir el riesgo de descargas eléctricas y daños personales, siga las instrucciones. |
|  | **Precaución:** Conexiones de alimentación múltiples. Antes de realizar el mantenimiento, desconecte todos los cables de alimentación. |

**Precauciones generales**

- Siga todas las instrucciones de las notas de precaución y de advertencia presentes en el equipo cuya explicación se suministra en la documentación del equipo.
- No conecte este producto con cables de alimentación para uso en exteriores directamente.
- Este equipo no debe utilizarse en el campo visual directo o inmediato con respecto al espacio de trabajo. Para evitar reflejos molestos en el especio de trabajo, este producto no debe ubicarse en el campo visual directo o inmediato.
- Este equipo no es adecuado para su uso en lugares donde es probable que haya niños presentes.

**Entorno de la sala de máquinas**

- Este equipo solamente se debe utilizar en una sala de máquinas o equipos informáticos.
- Asegúrese de que el área en la que se instale el equipo esté correctamente ventilada y climatizada.
- Asegúrese de que la tensión y la frecuencia de la fuente de alimentación coincidan con las indicadas en la etiqueta de especificaciones eléctricas del equipo.
- No instale el equipo cerca ni dentro de una cámara de distribución, conducto de aire, radiador o rejilla de calefacción.
- No use nunca el equipo en una sala húmeda.

**Chasis**

- No obstruya ni cubra las aberturas del equipo.
- No introduzca objetos de ningún tipo a través de las aberturas del equipo. Puede haber niveles de tensión peligrosos.
- Algunos objetos extraños que sean conductores pueden producir cortocircuitos y provocar incendios, choques eléctricos o daños en el equipo.
- Para levantar el equipo, utilice ambas manos y flexione las rodillas.

**Bastidores para equipos**

Para evitar lesiones personales o daños en el equipo:

- Cumpla con los requisitos de salud y seguridad en el trabajo y con las instrucciones para la manipulación de materiales.
- No intente mover el bastidor sin ayuda; se necesitan al menos dos personas para moverlo.
- Tampoco intente mover un bastidor cargado. Antes de mover el bastidor, retire el equipo.
- No intente mover el bastidor si la inclinación del piso supera los 10 grados respecto de la horizontal.
- Asegúrese de que el bastidor esté correctamente fijado al piso o al techo.
- Asegúrese de que las patas estabilizadoras estén fijadas al bastidor si se trata de una instalación de un solo bastidor.
- Asegúrese de que los bastidores estén unidos entre sí, en el caso de una instalación de varios bastidores.
- Asegúrese de que el bastidor esté nivelado y estable antes de instalar un equipo en él.
- Asegúrese de que los niveladores estén bien extendidos sobre el piso.
- Asegúrese de que todo el peso del bastidor descanse sobre los niveladores.
- Siempre cargue el bastidor de abajo hacia arriba. Cargue primero los componentes más pesados.
- Asegúrese de que el bastidor esté nivelado y estable antes de retirar algún componente.
- Asegúrese de que haya un solo componente extendido por vez. El bastidor puede perder estabilidad si hay más de un componente extendido.

Para evitar daños en el equipo:

- El ancho y la profundidad del bastidor deben permitir la realización de tareas de servicio técnico y tendido de cables con comodidad.
- Asegúrese de que haya una correcta circulación del aire en el bastidor. Una instalación incorrecta o una circulación de aire restringida pueden dañar el equipo.
- Las puertas del bastidor no deben ser sólidas ni tener las rejillas de ventilación obstruidas. Se debe usar una puerta mallada en las partes frontal y trasera o bien, se deben retirar las puertas para asegurar una correcta circulación del aire en el sistema.
- Asegúrese de que el equipo esté correctamente fijado a los rieles. Si el equipo no está correctamente fijado, es posible que quede inestable.
- Verifique que el circuito de bifurcación de CA que alimenta al bastidor no

esté sobrecargado. De este modo se reduce el riesgo de lesiones, incendio o daños en el equipo. La carga total del bastidor no debe superar el 80 por ciento de la capacidad nominal del circuito de bifurcación. Consulte con la autoridad en materia de electricidad con jurisdicción sobre sus instalaciones para conocer los requisitos de cableado e instalación.

**Cables de alimentación**

- Use únicamente los cables y las unidades de alimentación provistos con el equipo. El equipo puede tener uno o más cables de alimentación.
- Enchufe el cable de alimentación en un tomacorriente con descarga a tierra que sea de fácil acceso en todo momento.
- Asegúrese de conectar el cable de alimentación a una toma de corriente con conexión a tierra.
- En todos los entornos eléctricos europeos, debe conectar a tierra la lengüeta verde o amarilla del cable de alimentación. De lo contrario, se podría producir un choque eléctrico como consecuencia de las altas corrientes de fuga.
- No coloque objetos sobre los cables de alimentación de CA. Disponga los cables de modo que nadie se tropiece con ellos ni los pise accidentalmente.
- No tire de los cables. Para desenchufar los cables del tomacorriente, tómelos por el enchufe.
- Para reducir el riesgo de choque eléctrico, desconecte todos los cables de alimentación antes de realizar el servicio técnico del equipo.

**Baterías**

- La batería del equipo contiene dióxido de manganeso de litio. Si la batería no se manipula correctamente, se corre el riesgo de incendio y quemaduras.
- No desarme, aplaste, perfore, conecte en corto los contactos externos ni deseche la batería en el fuego ni en el agua.
- No exponga la batería a temperaturas superiores a los 60°C (140°F).
- No intente recargar la batería.

- Deseche las baterías usadas según las instrucciones del fabricante. No deseche las baterías junto con los residuos comunes de la oficina. Para enviarlas a un centro de reciclaje o desecharlas, utilice el sistema público de recolección o bien, envíelas a Tyan, al socio autorizado de Tyan o a sus agentes.

**Precaución:** Existe el riesgo de explosión si reemplaza la batería por un tipo incorrecto. Utilice únicamente la batería de repuesto designada para el equipo.

**Modificaciones del equipo**

- No realice modificaciones de tipo mecánico ni eléctrico en el equipo. Tyan no se hace responsable del cumplimiento de la normativa en caso de que un producto Tyan se haya modificado.

**Reparación y servicio técnico del equipo**

- La instalación de opciones internas y el mantenimiento y servicio técnico de rutina de este equipo deben ser realizados por técnicos, personal de servicio autorizado o personal de servicio de hardware capacitado que conozcan a fondo los procedimientos, precauciones y riesgos relacionados con equipos que contienen niveles de energía peligrosos.
- No exceda el nivel de reparación indicado en los procedimientos descritos en la documentación del producto. Las reparaciones incorrectas pueden crear riesgos de seguridad.
- Quítese el reloj, anillos y bisutería colgante antes de retirar las tapas y tocar los componentes internos.
- No utilice herramientas conductoras que puedan crear puentes con piezas conductoras de corriente.
- Utilice guantes para retirar o volver a colocar componentes internos; es posible que estas piezas estén calientes.
- Si el equipo se avería y debe repararse, desconéctelo del tomacorriente de CA y encargue la reparación al personal de servicio técnico autorizado. A continuación, encontrará unos ejemplos de daños que exigen servicio técnico:
  - Daños en el cable de alimentación, el cable prolongador o el enchufe.
  - Derrame de líquido sobre el equipo o la caída de un objeto dentro de este.
  - Exposición del equipo a la lluvia o al agua.
  - Daño o caída del equipo.
  - El equipo no funciona normalmente aun cuando se siguen las

instrucciones de operación.

- Asegúrese de volver a colocar la cubierta antes de encender el sistema.

**Precaución:** Para reducir el riesgo de choque eléctrico, desconecte todos los cables de alimentación antes de realizar el servicio técnico del equipo.

**Precaución:** No ponga en funcionamiento los productos Tyan que no tengan colocada la cubierta. De lo contrario, puede sufrir lesiones personales y ocasionar daños en el equipo.

**Precaución:** Si su equipo tiene instaladas asas de rack, no levante ni transporte el equipo por las asas de rack.

**Temperatura ambiente de funcionamiento elevada**

- Si se instala en un conjunto de bastidores cerrado o de varias unidades, la temperatura ambiente de funcionamiento del entorno de bastidores puede ser superior a la temperatura ambiente de la habitación. Por lo tanto, es conveniente instalar el equipo en un entorno compatible con la temperatura ambiente de funcionamiento máxima (Tam) especificada por el fabricante.

**Circulación reducida del aire**

- La instalación del equipo en un bastidor no debe afectar la cantidad necesaria de aire que debe circular para el funcionamiento seguro del equipo.

**Carga mecánica**

- Durante el montaje del equipo en el bastidor se debe evitar llegar a una condición peligrosa debido a un desequilibrio en la carga mecánica.

**Sobrecarga del circuito**

- Debe estudiarse la conexión del equipo al circuito de alimentación y el efecto que pueda tener la sobrecarga de los circuitos sobre el dispositivo de protección de máximo de corriente y sobre el cableado de alimentación. Deben estudiarse detenidamente las clasificaciones de la placa de identificación del equipo al tratar este asunto.

**Fuente de alimentación redundante**

- T Para proporcionar una fuente de alimentación totalmente redundante, conecte cada cable de alimentación a un circuito de CA independiente. Cada cable de alimentación necesita conexiones con una adecuada descarga a tierra.

**Puesta a tierra fiable**

- Se debe mantener la puesta a tierra fiable del equipo montado en el bastidor. Se debe prestar especial atención a las conexiones de alimentación distintas de las conexiones directas al circuito de bifurcación (por ejemplo, al uso de zapatillas eléctricas).

# Safety and Compliance Information (German)

**Sicherheits informationen**

Folgen Sie den beiliegenden Sicherheits- und Betriebsanweisungen. Falls die Anweisungen in diesen Richtlinien und die Anweisungen in der Produktdokumentation Unterschiede aufweisen, folgen Sie den Anweisungen in der Produktdokumentation.

Beachten Sie die Warnungen in der Produktdokumentation und den Betriebsanweisungen. Halten Sie die angegebenen Vorsichtsmaßnahmen ein, um das Risiko von Verletzungen, elektrischen Stromschlägen und Beschädigungen des Geräts zu verringern.

Machen Sie sich mit den Sicherheitsinformationen in diesen Richtlinien vertraut, bevor Sie ein Tyan-Produkt installieren, betreiben oder warten.

**Gerätesymbole**

| | |
|---|---|
|  | **Vorsicht:** Gefahr von Verletzung und Geräteschaden. Befolgen Sie die in der Dokumentation zum Tyan-Produkt bereitgestellten bzw. auf dem Produkt angegebenen Anweisungen. |
|  | Lesen Sie das E-Handbuch.<br>https://www.tyan.com/ |
|  | **Vorsicht:** Gefährliche bewegliche Teile. Von Lüfterschaufeln fernhalten. |
|  | **Vorsicht:** Heiße Oberfläche. Nicht berühren, da Verletzungsgefahr durch heiße Oberfläche besteht. Um das Risiko einer Verletzung zu verringern, lassen Sie die Oberfläche abkühlen, bevor Sie diese berühren. |
|  | **Vorsicht:** Gefährliche Spannungen. Befolgen Sie die Anweisungen, um Stromschläge und Verletzungen zu vermeiden. |
|  | **Vorsicht:** Mehrere Stromanschlüsse. Ziehen Sie vor der Wartung alle Netzkabel ab. |

**Allgemeine Vorsichtsmaßnahmen**

- Beachten Sie alle Warnhinweise auf den Geräten und in der beigefügten Produktdokumentation.
- Schließen Sie dieses Gerät nicht direkt an Stromkabel im Freien an.
- Dieses Gerät ist nicht für die Verwendung im unmittelbaren Gesichtsfeld am Bildschirmarbeitsplatz vorgesehen. Um störende Reflexionen am Bildschirmarbeitsplatz zu vermeiden, darf dieses Produkt nicht im unmittelbaren Gesichtsfeld platziert werden.
- Dieses Gerät ist nicht für den Einsatz an Orten geeignet, an denen wahrscheinlich Kinder anwesend sind.

**Maschinenraum Umgebung**

- Dieses Gerät ist zur ausschließlichen Verwendung in einem Geräte- oder IT-Raum vorgesehen.
- Stellen Sie sicher, dass der Raum, in dem das Gerät installiert wird, ausreichend belüftet ist und die richtige Temperatur hat.
- Stellen Sie außerdem sicher, dass die Spannung und Frequenz der Stromquelle mit den Angaben auf dem Typenschild des entsprechenden Geräts übereinstimmen.
- Installieren Sie das Gerät nicht in oder in der Nähe einer Luftkammer, einer Luftleitung, eines Heizkörpers oder einer Wärmeleitung.
- Verwenden Sie das Gerät niemals an einem nassen Ort.

**Gehäuse**

- Die Öffnungen des Geräts dürfen weder versperrt noch abgedeckt werden.
- Führen Sie keine Gegenstände in die Geräteöffnungen ein, da möglicherweise gefährliche Spannungen vorliegen.
- Leitende Gegenstände können einen Kurzschluss verursachen und zu Feuer, Stromschlag oder Beschädigungen des Geräts führen.
- Heben Sie das Gerät immer mit beiden Händen und gebeugten Knien an.

**Gerätehalterungen**

So vermeiden Sie Verletzungen oder Beschädigungen des Geräts:

- Beachten Sie die lokalen Arbeitsschutzanforderungen und Richtlinien für die Handhabung von Lasten.
- Verschieben Sie Racks nicht alleine, da hierzu mindestens zwei Personen erforderlich sind.
- Versuchen Sie nicht, ein vollständig besetztes Rack zu verschieben.

Entfernen Sie das Gerät vor dem Verschieben aus dem Rack.

- Verschieben Sie Racks nicht mit einer Neigung von mehr als 10 Grad.
- Stellen Sie sicher, dass das Rack ordnungsgemäß am Boden oder an der Decke befestigt ist.
- Stellen Sie sicher, dass die Stabilisierungsfüße am Rack angebracht sind, wenn es sich um eine Einzelrack-Installation handelt.
- Stellen Sie sicher, dass die Racks miteinander verbunden sind, wenn es sich um eine Mehrfachrack Installation handelt.
- Stellen Sie sicher, dass das Rack gerade und stabil steht, bevor Sie ein Gerät im Rack anbringen.
- Stellen Sie sicher, dass die Nivellierfüße den Boden berühren.
- Stellen Sie sicher, dass das gesamte Gewicht des Racks auf den Nivellierfüßen ruht.
- Bestücken Sie Racks immer von unten nach oben. Bauen Sie die schwerste Komponente zuerst ein.
- Stellen Sie sicher, dass das Rack gerade und stabil steht, bevor Sie ein Gerät aus dem Rack herausnehmen.
- Stellen Sie sicher, dass immer nur eine Komponente herausgezogen wird. Das Rack kann instabil werden, wenn mehrere Komponenten gleichzeitig herausgezogen werden.

So vermeiden Sie Beschädigungen des Geräts:

- Das Rack muss breit und tief genug für Wartungsarbeiten und die Kabelführung sein.
- Stellen Sie sicher, dass ausreichend Luft im Rack zirkulieren kann. Die unsachgemäße Installation oder nicht ausreichende Luftzirkulation kann zu Beschädigungen des Geräts führen.
- Das Rack darf keine undurchlässigen oder blockierten Luftöffnungen haben. Verwenden Sie an der Vorder und Rückseite des Racks eine Maschenabdeckung oder entfernen Sie die Abdeckungen, um eine ausreichende Luftzirkulation sicherzustellen.
- Stellen Sie sicher, dass das Gerät ordnungsgemäß auf den Schienen gesichert ist. Nicht ordnungsgemäß gesicherte Geräte können instabil sein..

- Stellen Sie sicher, dass die Stromversorgung zum Rack nicht überlastet ist. Dadurch wird das Risiko von Verletzungen, Feuer oder Beschädigungen der Geräte verringert. Die Gesamtlast des Racks sollte 80 Prozent der Leistung des Zweigstromkreises nicht überschreiten. Wenden Sie sich an den Elektriker, der für die Verkabelung und die Installationsanforderungen Ihres Gebäudes verantwortlich ist.

**Stromkabel**

- Verwenden Sie ausschließlich die Stromkabel und Netzgeräte, die mit dem Gerät geliefert werden. Das Gerät ist möglicherweise mit mehreren Stromkabeln ausgestattet.
- Stecken Sie das Stromkabel in eine geerdete Steckdose, die jederzeit einfach zugänglich ist.
- Stellen Sie sicher, dass das Netzkabel an eine Steckdose mit Erdungsanschluss angeschlossen ist.
- In allen europäischen Ländern muss der grün-gelbe Schutzleiter des Stromkabels geerdet werden. Wenn der grün-gelbe Schutzleiter nicht geerdet ist, kann es aufgrund von Leckstrom zu einem Stromschlag kommen.
- Stellen Sie keine Gegenstände auf die Stromkabel. Bringen Sie die Kabel so an, dass niemand versehentlich auf diese tritt oder darüber stolpert.
- Ziehen Sie nicht am Kabel. Halten Sie das Kabel am Stecker fest, wenn Sie es aus der Steckdose ziehen.
- Stecken Sie vor dem Warten des Geräts die Stromkabel aus, um das Risiko eines Stromschlags zu verhindern.

**Batterien**

- Die Batterie des Geräts enthält Lithium-Mangandioxid. Wenn die Batterien nicht ordnungsgemäß gehandhabt werden, besteht Feuer- und Verbrennungsgefahr.
- Demontieren, zerquetschen, durchlöchern und entsorgen Sie die Batterie nicht in Feuer oder Wasser.
- Setzen Sie die Batterie keinen Temperaturen über 60° C aus.
- Versuchen Sie nicht, die Batterie aufzuladen..

- Entsorgen Sie gebrauchte Batterien gemäß den Anweisungen des Herstellers. Entsorgen Sie Batterien nicht im Haushaltsmüll. Um Batterien zu recyceln oder ordnungsgemäß zu entsorgen, bringen Sie diese zu einer öffentlichen Sammelstelle oder geben Sie sie an Tyan oder einen autorisierten Tyan-Händler zurück.

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**Vorsicht:** Wenn die Batterie durch einen falschen Typ ersetzt wird, besteht Explosionsgefahr. Ersetzen Sie die Batterie nur durch eine speziell für das Gerät hergestellte Batterie.

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**Geräte Modifikationen**

- Nehmen Sie keine elektrischen oder mechanischen Gerätemodifikationen vor. Tyan ist für die Einhaltung der Sicherheitsvorschriften von modifizierten Tyan-Produkten nicht haftbar.

**Reparatur und Wartung**

- Die Installation interner Optionen sowie die routinemäßige Wartung und Instandhaltung dieses Geräts sollten von Technikern, autorisiertem Servicepersonal oder geschultem Hardware-Servicepersonal durchgeführt werden, die mit den Verfahren, Vorsichtsmaßnahmen und Gefahren im Zusammenhang mit Geräten mit gefährlichen Energieniveaus vertraut sind.
- Nehmen Sie keine Reparaturen vor, die über die in der Produktdokumentation beschriebenen Verfahren hinausgehen. Unsachgemäße Reparaturen stellen ein Sicherheitsrisiko dar.
- Entfernen Sie Uhren, Ringe oder Schmuck, bevor Sie die Abdeckungen entfernen und interne Komponenten berühren.
- Verwenden Sie keine leitenden Werkzeuge, die stromführende Teile überbrücken könnten.
- Tragen Sie Handschuhe, wenn Sie Systemkomponenten entfernen oder ersetzen, da diese möglicherweise heiß sind..
- IWenn Beschädigungen am Gerät Wartungsarbeiten erfordern, stecken Sie das Gerät aus und wenden Sie sich an einen autorisierten Dienstanbieter. Beispiele von Beschädigungen, die eine Wartung erfordern:
  - Das Stromkabel, das Verlängerungskabel oder der Stecker ist beschädigt.

– In das Gerät wurde Flüssigkeit geschüttet oder ein Gegenstand ist in das Produkt gefallen.
– Das Gerät wurde Regen oder Wasser ausgesetzt.
– Das Gerät wurde fallen gelassen oder beschädigt.
– Das Gerät funktioniert nicht normal, obwohl Sie den Betriebsanweisungen folgen.

- Stellen Sie sicher, dass Sie die Abdeckung wieder anbringen, bevor Sie das System einschalten.

**Vorsicht:** Trennen Sie vor dem Warten das Stromkabel des Geräts vom Netzanschluss, um das Risiko eines Stromschlags zu verhindern.

**Vorsicht:** Nehmen Sie Tyan-Geräte nicht ohne Abdeckung in Betrieb. Die Nichtbeachtung dieses Warnhinweises kann Verletzungen oder Geräteschaden zur Folge haben.

**Vorsicht:** Wenn Ihr Gerät mit Rack-Griffen ausgestattet ist, dürfen Sie es nicht an den Rack-Griffen anheben oder tragen.

**Erhöhte Betriebsumgebungstemperatur**

- Bei Installation in einem geschlossenen oder mehrere Einheiten umfassenden Racksystem kann die Betriebstemperatur der Rackumgebung über der Raumumgebungstemperatur liegen. Daher ist darauf zu achten, dass das Gerät in einer Umgebung installiert wird, in der die vom Hersteller angegebene maximale Umgebungstemperatur (TMA) nicht überschritten wird.

**Geringe Luftzirkulation**

- Die Installation des Geräts in einem Rack muss so durchgeführt werden, dass die für den sicheren Betrieb des Geräts erforderliche Luftzuführung nicht behindert wird.

**Mechanische Belastung**

- Der Einbau des Geräts in einem Rack muss unter Berücksichtigung gefährlicher Bedingungen geschehen, die durch eine ungleichmäßige Belastung entstehen können.

**Stromkreis Überlastung**

- Beim Anschluss des Geräts an das Versorgungsnetz müssen die Auswirkungen beachtet werden, die durch eine Überbelastung des Stromkreises an Überstromschutz und Versorgungskabel entstehen können. Angaben dazu finden Sie auf dem Typenschild des Geräts.

**Redundante Stromversorgung**

- Verbinden Sie jedes Stromkabel mit einem separaten AC-Stromkreislauf, um eine vollständig redundante Stromversorgung zu gewährleisten. Jedes Stromkabel erfordert ordnungsgemäß geerdete Anschlüsse.

**Zuverlässige Erdung**

- Für die in einem Rack installierten Geräte muss eine zuverlässige Erdung gewährleistet werden. Achten Sie dabei besonders auf Versorgungsanschlüsse, die nicht direkt an den Abzweigstromkreis angeschlossen sind (z. B. bei der Verwendung von Mehrfachsteckdosen).

# Safety and Compliance Information (French)

**Informations relatives à la sécurité**

Observez et conservez toutes les instructions relatives à l'utilisation et à la sécurité fournies avec votre équipement. En cas de conflit entre les instructions de ce guide et celles comprises dans la documentation de l'équipement, veuillez suivre les directives de la documentation de l'équipement.

Tenez compte de tous les avertissements figurant sur le produit et dans les instructions d'utilisation. Pour réduire les risques de lésions corporelles, de choc électrique, d'incendie et d'endommagement de l'équipement, veuillez respecter toutes les précautions décrites dans ce guide.

Avant d'installer, d'utiliser ou d'effectuer la maintenance des produits Tyan, nous vous prions de bien vous familiariser avec les informations relatives à la sécurité contenues dans ce guide.

**Symboles figurant sur l'équipement**

| | |
|---|---|
|  | **Précaution:** Vous risquez d'endommager le matériel ou de vous blesser. Suivez les instructions fournies dans la documentation du produit Tyan. |
|  | Lire le manuel électronique.<br>https://www.tyan.com/ |
|  | **Précaution:** Pièces mobiles dangereuses. Tenez-vous éloigné des pales du ventilateur lorsqu'elles sont en mouvement. |
|  | **Précaution:** Surfaces brûlantes. Evitez tout contact. Les surfaces sont brûlantes. Vous risquez de vous blesser si vous les touchez. Pour réduire les risques de brûlures occasionnées par un composant chaud, laissez refroidir la surface avant de la toucher. |
|  | **Précaution:** Tensions dangereuses. Pour réduire les risques de décharge électrique et de danger physique, observez les consignes indiquées. |
|  | **Précaution:** Connexions d’alimentation multiples. Avant toute intervention, débranchez tous les cordons d'alimentation. |

**Précautions générales**

- Veuillez tenir compte de tous les messages de précaution et d'avertissement figurant sur l'équipement et dans la documentation qui l'accompagne.
- Ne connectez pas directement ce produit à des câbles électriques situés à l'extérieur.
- Cet équipement n'est pas conçu pour être utilisé à proximité d'un écran. Pour éviter les réflexions gênantes dans un lieu de travail où sont installés des écrans, ne placez pas ce produit à proximité d'un écran.
- Cet équipement ne convient pas à une utilisation dans des endroits où des enfants sont susceptibles d'être présents.

**Environnement de salle des machines**

- Cet équipement doit être utilisé uniquement dans une salle des machines ou une salle informatique.
- Vérifiez que l'endroit dans lequel vous installez l'équipement est correctement ventilé et climatisé
- Vérifiez que la tension et la fréquence de votre source d'alimentation électrique correspondent à la tension et à la fréquence indiquées sur l'étiquette des caractéristiques électriques de l'équipement.
- N'installez pas l'équipement dans ou près d'une chambre de distribution, une conduite d'air, un radiateur ou un registre de chaleur.
- N'utilisez jamais l'équipement dans un endroit humide.

**Châssis**

- N'obstruez pas les orifices de l'équipement.
- N'enfoncez aucun objet dans les ouvertures. Présence de tensions dangereuses possible.
- Des corps étrangers conducteurs peuvent créer un court-circuit et, par conséquent, un incendie, un choc électrique ou un endommagement de votre installation.
- Levez l'installation à deux mains en pliant les genoux.

**Racks de l'équipement**

Pour éviter toute lésion corporelle et l'endommagement de l'équipement:

- Respectez les exigences locales en matière de protection sanitaire et de sécurité au travail, ainsi que les consignes de manutention des matériaux.

- N'essayez pas de déplacer un rack tout seul ; cette opération nécessite au minimum deux personnes.
- Ne tentez pas de déplacer un rack chargé. Retirez les équipements du rack avant de déplacer le rack.
- N'essayez pas de déplacer un rack sur un plan incliné à plus de 10 degrés.
- Vérifiez que le rack est bien fixé au sol ou au plafond.
- Vérifiez que les pieds de stabilisation sont fixés au rack s'il s'agit d'une installation qui n'en contient qu'un seul.
- Vérifiez que les racks sont bien couplés en cas d'installation à plusieurs racks.
- Vérifiez que le rack est de niveau et stable avant d'installer un équipement dans le rack.
- Vérifiez que les vérins de mise à niveau sont déployés jusqu'au sol.
- Vérifiez que le poids total du rack repose sur les vérins de mise à niveau.
- Chargez toujours le rack du bas vers le haut. Chargez le composant le plus lourd en premier.
- Vérifiez que le rack est de niveau et stable avant d'extraire un composant du rack.
- Vérifiez qu'un seul composant à la fois est sorti. Un rack peut devenir instable si plusieurs composants sont sortis.

Pour éviter l'endommagement de l'équipement :

- La largeur et la profondeur du rack doivent permettre une facilité d'entretien et une gestion des câbles appropriées.
- Vérifiez que la circulation de l'air est adaptée dans le rack. Une installation incorrecte ou une circulation de l'air limitée peut endommager l'installation.
- Le rack ne peut pas être équipé de portes pleines ou à circulation d'air limitée. Vous devez utiliser une porte en maille à l'avant et à l'arrière, ou enlever les portes pour assure une circulation d'air adéquate dans le système.
- Vérifiez que l'équipement est bien fixé aux rails. Un équipement mal fixé aux rails peut devenir instable.

- Vérifiez que le circuit secteur qui alimente le rack n'est pas en surcharge. Une alimentation correcte permet de réduire le risque de blessures, d'incendie et d'endommagement de l'équipement. La charge totale du rack ne doit pas dépasser 80 % de la capacité du circuit. Consultez les personnes compétentes en matière de normes de câblage et d'installation à respecter dans vos locaux.

**Câbles d'alimentation**

- Utilisez uniquement les câbles d'alimentation et les blocs d'alimentation livrés avec votre équipement. L'équipement peut être équipé d'un ou plusieurs câbles d'alimentation électrique.
- Branchez le câble d'alimentation dans une prise électrique mise à la masse (mise à la terre) à laquelle il est facile d'accéder à tout moment.
- Veillez à cordon d'alimentation connecté à un socle de prises de courant avec connexion à la terre.
- Pour tous les environnements électriques européens, vous devez mettre à la terre la languette verte/ jaune sur le cordon d'alimentation. Si vous ne le faites pas, cela peut provoquer des décharges électriques en raison de courants de décharge élevés.
- Ne placez aucun objet sur les câbles ou fils d'alimentation électrique. Disposez-les de manière à ce qu'il soit impossible de marcher ou de trébucher dessus.
- Ne tirez jamais sur les fils ou câbles d'alimentation. Pour débrancher un câble d'une prise, tenez la fiche du câble et tirez.
- Pour réduire les risques de choc électrique, débranchez tous les câbles d'alimentation avant de procéder à la maintenance de l'équipement.

**Batteries**

- La batterie de l'équipement contient du dioxyde de manganèse au lithium. La manipulation inadéquate du bloc de batterie risque d'entraîner un incendie et des brûlures.
- Veuillez ne pas démonter les piles, les écraser, les percer, en court-circuiter les contacts externes ou les jeter au feu ou à l'eau.
- Veuillez ne pas exposer la batterie à une température supérieure à 60 °C (140 °F).
- Ne tentez pas de recharger la batterie.

- Mettez les batteries usagées au rebut en respectant les instructions du fabricant. Ne jetez pas les batteries dans le conteneur d'ordures ménagères du bureau. Pour un recyclage ou une élimination adaptés, allez dans une déchetterie publique ou retournez les batteries à Tyan, à votre partenaire Tyan agréé ou à l'un de ses agents.

**Précaution:** Risque d'explosion si vous remplacez la batterie par un modèle inapproprié. Remplacez uniquement la batterie par une pièce conçue pour fonctionner avec votre équipement.

**Modifications apportées à l'équipement**

- N'apportez aucune modification mécanique ou électrique au matériel. Tyan décline toute responsabilité quant à la non-conformité éventuelle d'un produit Tyan modifié.

**Réparations et maintenance de l'équipement**

- Confiez l'installation des composants internes et l'entretien ordinaire de cet équipement à des techniciens, personnel de service autorisé ou personnel de service matériel formé qui connaissent les procédures, les précautions à prendre et les dangers associés aux équipements présentant des niveaux d'énergie dangereux.
- Limitez-vous aux réparations spécifiées dans les procédures de la documentation qui accompagne le produit. Toute réparation inappropriée peut entraîner un risque de sécurité.
- Retirez toutes montres, bagues ou autres bijoux avant d'enlever les couvercles du produit et toucher les composants internes.
- N'utilisez pas d'outils conducteurs qui pourraient servir de ponts entre les parties sous tension.
- Mettez des gants lorsque vous retirez ou remplacez des composants internes. Ils peuvent être chauds.
- Si l'équipement subit des dommages nécessitant une réparation, débranchez-le de la prise murale et confiez la réparation à un professionnel agréé. Exemples de dommages nécessitant une intervention:
  - Le cordon d'alimentation, la rallonge ou la prise est endommagé.
  - Du liquide s'est déversé sur l'équipement ou un objet est tombé à l'intérieur du produit.
  - L'équipement a été exposé à la pluie ou à de l'eau.
  - L'équipement est tombé ou a été endommagé.

– L'équipement ne fonctionne pas normalement alors que vous suivez les instructions d'utilisation.

- Veillez à remettre le couvercle en place avant de mettre le système sous tension.

**Précaution:** Pour réduire les risques de choc électrique, débranchez tous les câbles d'alimentation avant de procéder à la maintenance de l'équipement.

**Précaution:** Ne mettez jamais des produits Tyan sous tension si leur couvercle supérieur n'est pas mis en place. Si vous ne prenez pas ces précautions, vous risquez de vous blesser ou d'endommager le équipement.

**Précaution:** Si votre équipement est équipé de poignées de rack, ne le soulevez pas et ne le transportez pas par ces poignées.

**Température ambiante de fonctionnement élevée**

- En cas d'installation dans un endroit fermé ou avec plusieurs racks, la température ambiante de fonctionnement de l'environnement en rack peut être supérieure à la température de la pièce. Dans ce cas de figure, réfléchissez avant d'installer l'équipement. L'environnement d'installation doit être adapté à la température ambiante maximale de fonctionnement (TMA) indiquée par le fabricant.

**Circulation d'air réduite**

- Si l'équipement est installé dans un rack, vérifiez que la circulation d'air est suffisante pour qu'il puisse fonctionner correctement et sans danger.

**Chargement mécanique**

- Le montage de l'équipement dans le rack doit être étudié de sorte à ne pas provoquer de chargement mécanique inégal.

**Surcharge du circuit**

- Soyez également vigilant lorsque vous connectez l'équipement au circuit secteur et à l'effet de surcharge que les circuits peuvent provoquer sur la protection contre les surintensités et le câblage d'alimentation. En cas de problème, utilisez bien le nom de l'équipement et l'étiquette comportant ses caractéristiques électriques.

**Alimentation électrique redondante**

- Pour fournir une alimentation électrique complète, raccordez chaque cordon d'alimentation à un circuit CA séparé. Chaque cordon d'alimentation nécessite des connexions de mise à la terre (mise à la masse) appropriées.

**Mise à la terre conforme**

- La mise à la terre conforme des équipements montés en racks doit être assurée. Une attention toute particulière doit être accordée aux connexions qui ne sont pas directement branchées sur le circuit de dérivation (utilisation de rallonge multiprise par exemple).

# Safety and Compliance Information (Italian)

## Informazioni sulla sicurezza

Conservare e attenersi a tutte le istruzioni sulla sicurezza e sull'utilizzo fornite con l'apparecchiatura. In caso di conflitto tra le istruzioni contenute in questa guida e quelle all'interno della documentazione dell'apparecchiatura, attenersi a queste ultime.

Osservare tutte le avvertenze riportate sul prodotto e incluse nelle istruzioni di utilizzo. Per ridurre il rischio di lesioni fisiche, scariche elettriche, incendi e danni all'apparecchiatura, osservare tutte le precauzioni riportate nella presente guida.

Prima di installare, utilizzare o riparare i prodotti Tyan, è necessario acquisire familiarità con le informazioni sulla sicurezza contenute nella presente guida.

**Simboli sull'apparecchiatura**

| | |
|---|---|
|  | **Attenzione:** Rischio di danni alle persone o alle apparecchiature. Seguire le istruzioni fornite nella documentazione del prodotto Tyan o disponibili sul prodotto. |
|  | Leggete il manuale elettronico.<br>https://www.tyan.com/ |
|  | **Attenzione:** Parti mobili pericolose. Tenere lontano dalle pale in movimento del ventilatore. |
|  | **Attenzione:** Superficie molto calda. Evitare il contatto. Le superfici sono molto calde e, in caso di contatto, possono provocare ustioni. Per ridurre il rischio di lesioni causate da un componente molto caldo, consentire alla superficie di raffreddarsi prima di toccarla. |
|  | **Attenzione:** Componenti attraversati da alta tensione. Per ridurre il rischio di scosse elettriche e per garantire l'incolumità personale, attenersi alle istruzioni. |
|  | **Attenzione:** Collegamenti di alimentazione multipli. Prima di effettuare la manutenzione, scollegare tutti i cavi di alimentazione. |

**Precauzioni generali**

- Attenersi a tutte le istruzioni associate ai simboli di attenzione e avvertenza riportate sull'apparecchiatura e dettagliate nella relativa documentazione.
- Non collegare direttamente il prodotto a cavi di alimentazione esterni.
- Questa apparecchiatura non è destinata all'uso nel campo visivo immediato o diretto della postazione di lavoro display. Per evitare riflessi disturbanti sulla postazione di lavoro display, il prodotto non deve essere collocato nel campo visivo immediato o diretto.
- Questa apparecchiatura non è adatta per l'uso in luoghi in cui è probabile che siano presenti bambini.

**Ambiente di sala macchine**

- Questa apparecchiatura può essere utilizzata solo in un'area dedicata ai computer o in un'area IT.
- Assicurarsi che l'area in cui viene installata l'apparecchiatura sia climatizzata e sufficientemente ventilata.
- Assicurarsi che la tensione e la frequenza della fonte di alimentazione corrispondano ai valori riportati sull'etichetta contenente i requisiti elettrici dell'apparecchiatura.
- Non installare l'apparecchiatura nelle vicinanze o sopra plenum, condotti d'aria, radiatori o bocchettoni di riscaldamento.
- Non utilizzare mai l'apparecchiatura in un ambiente umido.

**Telaio**

- Non ostruire o coprire le aperture dell'apparecchiatura.
- Non introdurre in alcun caso oggetti di qualsiasi tipo nelle aperture dell'apparecchiatura, in quanto potrebbero essere presenti tensioni pericolose.
- La presenza di oggetti conduttivi estranei potrebbe essere causa di cortocircuiti, incendi, scariche elettriche o danni all'apparecchiatura.
- Sollevare l'apparecchiatura con entrambe le mani, partendo con le ginocchia piegate.

**Rack dell'apparecchiatura**

Per evitare lesioni personali o danni all'apparecchiatura, osservare le seguenti indicazioni.

- Per operazioni di spostamento manuale rispettare i requisiti e le disposizioni di legge locali relative alla sicurezza e alla salute sul posto di lavoro.
- Non tentare di spostare il rack da soli, in quanto questa operazione richiede almeno due persone.
- Non tentare di spostare un rack completamente carico. Rimuovere le apparecchiature dal rack prima di spostarlo.
- Non tentare di spostare un rack lungo un piano con un'inclinazione superiore a 10 gradi.
- Assicurarsi che il rack sia correttamente fissato al pavimento o al soffitto.
- Per le installazioni di un rack singolo, assicurarsi di avere fissato i piedi di stabilizzazione del rack.
- Per le installazioni di più rack, assicurarsi che i rack siano fissati tra di loro.
- Assicurarsi che il rack sia livellato e stabile prima di installarvi qualsiasi apparecchiatura.
- Assicurarsi che le cricche di livello siano estese fino a toccare il pavimento.
- Assicurarsi che tutto il peso del rack sia appoggiato sulle cricche di livello.
- Inserire i componenti nel rack sempre partendo dal basso verso l'alto. Inserire sempre prima i componenti più pesanti.
- Assicurarsi che il rack sia livellato e stabile prima di estrarre un componente.
- Assicurarsi di estendere un solo componente alla volta, in quanto la stabilità del rack potrebbe venire compromessa se si estende più di un componente alla volta.

Per evitare danni all'apparecchiatura, osservare le seguenti indicazioni:

- La larghezza e la profondità del rack devono essere tali da consentire un accesso agevole ai cavi e facilitare gli interventi di manutenzione.
- Assicurarsi che il flusso di aria nel rack sia sufficiente. Un'installazione incorretta o un flusso di aria insufficiente può essere causa di danni all'apparecchiatura.

- Sul rack non devono essere montati sportelli pieni o che impediscano il flusso di aria. Montare uno sportello traforato sulla parte frontale e posteriore del rack oppure rimuovere gli sportelli per garantire il flusso di aria appropriato.
- Assicurarsi che l'apparecchiatura sia correttamente fissata alle guide. Un'apparecchiatura fissata in modo errato alle guide potrebbe essere instabile.
- Verificare che il circuito di alimentazione CA di derivazione che fornisce tensione al rack non sia sovraccarico, al fine di ridurre il rischio di lesioni personali, incendi o danni all'apparecchiatura. Il carico totale del rack non deve superare l'80% del valore nominale del circuito di derivazione. Per informazioni sui requisiti di cablaggio e installazione presso la propria sede, consultare l'autorità preposta nella propria giurisdizione.

**Cavi di alimentazione**

- Utilizzare solo i cavi di alimentazione e gli alimentatori forniti con l'apparecchiatura. L'apparecchiatura potrebbe essere fornita con uno o più cavi di alimentazione.
- Inserire il cavo di alimentazione in una presa elettrica con messa a terra che sia facilmente accessibile in qualsiasi momento.
- Assicurarsi di collegare il cavo di alimentazione a una presa con collegamento a terra.
- Per tutti gli ambienti con impianto elettrico europeo, è richiesta la messa a terra del conduttore giallo-verde presente sul cavo di alimentazione. In caso contrario, può sussistere il rischio di scosse elettriche causate da forti correnti di dispersione.
- Non appoggiare oggetti sui cavi di alimentazione CA o sui cavi dei dati. Disporre i cavi in modo che non sia possibile calpestarli o inciamparvi accidentalmente.
- Non tirare il cavo di alimentazione o il cavo dei dati. Afferrare il cavo di alimentazione dalla spina per disinserirlo dalla presa elettrica.
- Prima di procedere alla manutenzione dell'apparecchiatura, scollegare tutti i cavi di alimentazione per ridurre il rischio di scariche elettriche.

**Batterie**

- La batteria dell'apparecchiatura contiene litio e biossido di manganese. La batteria potrebbe essere causa di incendi o ustioni se non viene maneggiata correttamente.
- Non disassemblare, schiacciare o bucare la batteria, non cortocircuitarne i terminali esterni e non gettarla nel fuoco o nell'acqua.
- Non esporre la batteria a temperature superiori a 60°C (140°F).

- Non tentare di ricaricare la batteria.
- Smaltire le pile usate attenendosi alle istruzioni del produttore. Non gettare le batterie insieme ai normali rifiuti domestici. Per il riciclo o il corretto smaltimento delle batterie utilizzare il sistema di raccolta pubblico o restituirle a Tyan, al partner autorizzato Tyan o a uno dei loro agenti.

**Attenzione:** Sostituendo la batteria con una di tipo non appropriato esiste un rischio di esplosione. Sostituire la batteria esclusivamente con una progettata per il prodotto.

**Modifiche all'apparecchiatura**

- Non modificare i componenti elettrici o meccanici dell'apparecchiatura. Tyan non sarà responsabile della conformità ai regolamenti di un prodotto Tyan modificato.

**Riparazione e manutenzione delle apparecchiature**

- L'installazione di componenti opzionali interni, la manutenzione ordinaria e l'assistenza di questa apparecchiatura devono essere eseguite da technicians, authorized service personnel or trained hardware service personnel, con le conoscenze necessarie delle procedure, delle precauzioni e dei rischi associati ad apparecchiature che utilizzano livelli pericolosi di corrente.
- Non superare il livello di riparazioni specificato nelle procedure all'interno della documentazione del prodotto. Riparazioni inappropriate possono rappresentare un pericolo per la sicurezza.
- Rimuovere orologi, anelli e altri gioielli prima di procedere alla rimozione dei coperchi e di toccare i componenti interni.
- Non utilizzare strumenti conduttivi che potrebbero cortocircuitare parti sotto carico.
- Utilizzare i guanti quando si rimuovono o sostituiscono componenti interni, in quanto potrebbero essere caldi.
- Se l'apparecchiatura subisce un danno che richiede l'intervento dell'assistenza, scollegarla dalla presa elettrica CA e contattare un centro di assistenza autorizzato. Esempi di danni che richiedono l'intervento dell'assistenza includono:

– Il cavo di alimentazione, il cavo di prolunga o la spina è danneggiato.
– È stato versato del liquido sull'apparecchiatura o un oggetto è caduto all'interno del prodotto.
– L'apparecchiatura è rimasta esposta a pioggia o acqua.
– L'apparecchiatura è caduta o è stata danneggiata.
– Sebbene vengano osservate le istruzioni di utilizzo, l'apparecchiatura non funziona normalmente.

● Assicurarsi di riposizionare il coperchio prima di accendere il sistema.

**Attenzione:** Prima di procedere alla manutenzione dell'apparecchiatura, scollegare tutti i cavi di alimentazione per ridurre il rischio di scariche elettriche.

**Attenzione:** Non utilizzare mai i prodotti Tyan senza l'apposita copertura. La mancata osservanza di questa precauzione può causare danni alle persone o al apparecchiature.

**Attenzione:** Se l'apparecchiatura è dotata di maniglie del rack, non sollevarla o trasportarla per le maniglie del rack.

**Ambiente operativo a temperatura elevata**

● Se l'installazione è in un gruppo rack chiuso o a più unità, la temperatura ambiente di funzionamento dell'ambiente rack può essere superiore alla temperatura ambiente. È quindi opportuno valutare l'installazione dell'apparecchiatura in un ambiente compatibile con la massima temperatura ambiente (MTA) specificata dal produttore.

**Flusso di aria ridotto**

● L'installazione dell'apparecchiatura in un rack deve essere effettuata in modo che il flusso di aria necessario al buon funzionamento dell'apparecchiatura non risulti compromesso.

**Caricamento meccanico**

- Il montaggio dell'apparecchiatura in un rack deve avvenire in modo tale che non si verifichino situazioni di rischio dovute a un carico meccanico irregolare.

**Sovraccarico del circuito**

- Prestare attenzione al collegamento dell'apparecchiatura al circuito di alimentazione e agli effetti che un sovraccarico dei circuiti potrebbe avere sulla protezione da sovraccarico di corrente e sui cavi di alimentazione. Per risolvere tale problema, è necessario tenere conto delle valutazioni presenti sulla targhetta indicatrice dell'attrezzatura.

**Alimentazione ridondante**

- Per fornire un'alimentazione completamente ridondante, ciascun cavo di alimentazione deve essere collegato a un circuito in CA separato. Ciascun cavo di alimentazione deve presentare una corretta messa a terra.

**Messa a terra affidabile**

- È necessario garantire che l'apparecchiatura montata in un rack disponga di una messa a terra affidabile. Prestare particolare attenzione ai collegamenti di alimentazione diversi dal collegamento diretto al circuito derivato (ad esempio, l'uso di prese multiple).

# Nordic Grounded Socket Cautions

**English**

**Caution:** The appliance must be connected to a grounded socket.

**Norge**

**Caution:** Apparatet må tilkoples jordet stikkontakt.

**Sverige**

**Caution:** Apparaten skall anslutas till jordat uttag.

**Suomi**

**Caution:** Laite on liitettävä suojamaadoitus koskettimilla varustettuun pistorasiaan.

**Danmark**

**Caution:** Apparatets stikprop skal tilstuttes en stikkontakt med jord som giver forbindelse til stikproppens jord.

# Safety and Compliance Information (Traditional Chinese)

**安全資訊**

保留並遵循隨設備提供的所有安全操作說明。若本指南中的說明和設備文件中的說明有所衝突，請遵循設備文件中的指示。

仔細查看產品上和操作說明中的所有警告。為降低人身傷害、電擊、火災和造成設備損壞的風險，請遵守本指南中的所有安全注意事項。

安裝、操作或維修產品之前，必須先熟悉本指南中的安全資訊。

**設備上的符號**

| | |
|---|---|
|  | **警告:** 有對人體造成傷害並損壞設備的風險。請遵照產品文件所提供或產品上所顯示的指示操作。 |
|  | 請於以下網站讀取電子手冊。<br>https://www.tyan.com/ |
|  | **警告:** 危險的轉動扇葉片，請與轉動中的扇葉片保持距離。 |
|  | **警告:** 灼熱部件。請勿碰觸。表面溫度很高，碰觸可能對人體造成傷害。請在接觸之前先讓表面溫度冷卻下來。 |
|  | **警告:** 存在危險的電壓。為降低觸電和危害人身健康的風險，請遵照說明操作。 |
|  | **警告:** 本設備包括多個電源連接，再進行維修前，應斷開所有電源線。 |

**一般注意事項**

- 請遵循設備上標註以及隨附設備文件中說明的所有注意事項和警告資訊。
- 請勿將本設備直接連接至室外電纜。
- 本設備並非適用於顯示器工作中心的直接視場中。為避免在顯示器工作中心產生反射，本產品不可置於直接視場中。
- 本設備不適合在兒童可能會出現的場所使用。

**機房環境**

- 本設備僅適用於機房或資訊室。
- 確保系統安裝的區域通風良好，溫度和濕度等可控制。
- 確保機房電源的電壓和頻率與設備電力標籤上標示的電壓和頻率相符。
- 請勿將設備安裝於或靠近高壓、通風管、散熱器的地方。
- 請勿在潮濕的環境中使用本設備。

**機殼**

- 請勿堵塞或蓋住設備的開孔。
- 請勿將任何物體插入設備的開孔。內部可能存在危險電壓。

- 導電的異物可能造成短路並引起火災、電擊或設備損壞。
- 雙膝彎曲，用雙手提起設備。

**設備機架**

為避免人身傷害或設備損壞：

- 遵守當地的職業健康和安全規定以及人力搬運物料的指導原則。
- 請勿嘗試獨自搬動機架，搬動機架至少需要兩人。
- 請勿嘗試搬動滿載的機架。先將設備從機架上卸下後再搬動機架。
- 請勿嘗試在大於 10 度的斜坡上搬動機架。
- 確保機架已正確固定到地板或天花板。
- 如果是單機架安裝，確保穩定支腳已裝到機架。

- 如果是多機架安裝，確保各機架已連接在一起。
- 將設備安裝到機架之前，確保機架保持水平與穩定。
- 確保承重腳已伸展至地板。
- 確保機架的全部重量放在承重腳上。
- 務必由下而上裝入機架。先將最重的元件裝入機架中。
- 從機架中拉出元件之前，確保機架保持水平和穩定。
- 確保一次只伸展一個元件。如果一次伸展一個以上的元件，機架可能會不穩定。

為避免設備損壞：

- 機架寬度和深度必須能夠適當地進行維修和排列纜線。
- 確保機架內的通風良好。安裝不當或通風不良可能會損壞設備。
- 機架不能有實心或受限制的通風門。您必須在機架前後使用絲網門，或者將門卸下以確保系統的通風良好。
- 確保設備已妥善固定到導軌上。設備若未妥善固定到導軌上可能會不穩。
- 確認為機架供電的交流電源分支電路沒有過載，以降低人身傷害、火災及設備損壞的風險。機架總負載不應超過分支電路額定值的 80%。請向對您的設備配線和安裝規定具有管轄權限的電力部門查詢。

**電源線**

- 僅使用隨設備提供的電源線和電源裝置。 設備可能配有一條或多條電源線。
- 將電源線插入到能隨時方便接觸到的接地電源插座。
- 確保將電源線連接到具有接地連接的插座。
- 在歐洲供電環境中，您必須將電源線上的綠色/ 黃色接頭接地。如果未將綠色/ 黃色接頭接地，可能會由於大量電流洩漏而造成電擊。

- 請勿在交流電源線或纜線上放置物體。將電源線或纜線放在人們不易踩到或被絆倒的地方。
- 請勿拉扯電源線或纜線。從電源插座拔下電源線時，應抓住電源線插頭。
- 為降低電擊風險，請在維修設備之前，拔除所有電源線。

**電池**

- 本設備使用鋰錳電池。如果電池組處理不當，則會有起火的風險。
- 請勿拆解、擠壓、穿刺電池，將其投入火中或水中，或使其與外部短路接觸。
- 請勿將電池置於 60°C (140°F) 以上的高溫環境中。
- 請勿嘗試為電池充電。
- 按照製造商的指示處置使用過的電池。切勿將電池當作一般辦公室垃圾處理。若要回收或正確處置電池，請利用公共收集系統，或將其送回授權合作夥伴或其代理。

**警告:** 若置換不同型式之電池有起火或爆炸風險。請換上專為本產品指定的備用電池。

**設備改造**

- 請勿對設備統進行機械或電氣改造。對於被改造之產品是否符合法規概不負責。

**設備維修與維護**

- 本設備的內部選配的安裝和日常維護和維修應由熟悉程序、預防措施及相關設備內危險的技術人員、被授權的維修人員或受過訓練的硬體維修人員執行。

- 請勿超出產品文件中所述程序指定的維修等級。不當的維修可能會在安全上造成危險。
- 卸下機蓋和接觸內部元件之前進行工作時，應取下手錶、戒指或未鑲嵌的珠寶等物品。
- 請勿使用可能會橋接執行中部件的導電工具。
- 卸下或更換內部元件時，請戴上手套，以免被高溫的元件表面燙傷。
- 如果設備損壞而需要維修，請從交流電源插座拔除與設備的連接，並交由授權的服務供應商進行維修。損壞而需要維修的情況包括：
  - 電源線、延長線或插頭損壞。
  - 有液體濺到設備上，或異物掉入產品內。
  - 設備遭到雨淋或進水。
  - 設備掉落或損壞。
  - 在您按照操作說明使用時設備未正常運作。
- 請務必先裝好外殼，再開啟系統電源。

**警告:** 為降低電擊風險，請在維修設備之前，拔除所有電源線。

**警告:** 外殼未放回原處時, 切勿操作產品。 違反此防範措施可能會導致人體傷害及設備損壞。

**警告:** 若設備有安裝機架把手，請勿透過機架把手提起或搬運設備。

**操作環境溫度升高**

- 如果將此設備安裝在封閉式或具有多個設備的機架上，機架的操作環境溫度可能會高於設備房間的溫度。因此，在安裝此設備時必須考慮滿足生產廠商規定的最高操作環境溫度 (Tma) 要求。

**通風不夠**

- 將設備安裝於機架上要注意不會有造成安全操作設備所需的通風出現不良的狀況。

**機械負載**

- 將設備安裝於機架上要注意不會有因為機械負載不均而出現危險的狀況。

**電路過載**

- 將設備連接到供電電路時必須考量一些狀況，還有電路過載可能對過流防護及供電線路的影響。對於這類疑慮，必須妥善考量設備標示牌上的額定值。

**備援式電源供應**

- 為提供完整的備援電源供應，請將每條電源線分別連接到各的交流電路。每條電源線需要適當地接地。

**可靠的接地**

- 安裝於機架上的設備必須保有可靠的接地連接。請特別注意未直接連接分支電路的電源供應 (例如使用延長線)。

連絡方式

製造商: 神雲科技股份有限公司

地址: 新竹科學園區新竹縣研發二路 1 號 3 樓

電話: 886-3-3275988

# Taiwan BSMI RoHS Declaration

| 設備名稱：伺服器 / 型號（型式）：FT65T-B8050<br>Equipment Name: Server / Type: FT65T-B8050 | | | | | | |
|---|---|---|---|---|---|---|
| 單位<br>Unit | 限用物質及其化學符號<br>Restricted substances and its chemical symbols | | | | | |
| | 鉛<br>Lead<br>(Pb) | 汞<br>Mercury<br>(Hg) | 鎘<br>Cadmium<br>(Cd) | 六價鉻<br>Hexavalent Chromium<br>($Cr^{+6}$) | 多溴聯苯<br>Polybrominated biphenyls<br>(PBB) | 多溴二苯醚<br>Polybrominated diphenyl ethers<br>(PBDE) |
| 印刷電路板總成<br>Printed Circuit Board Assembly | — | ○ | ○ | ○ | ○ | ○ |
| 機械組件<br>Mechanical Assemblies | ○ | ○ | ○ | ○ | ○ | ○ |
| 風扇<br>Fans | — | ○ | ○ | ○ | ○ | ○ |
| 散熱器<br>Heat sink | ○ | ○ | ○ | ○ | ○ | ○ |
| 電源線<br>Power Cord | — | ○ | ○ | ○ | ○ | ○ |
| 電源供應器<br>Power Supply | — | ○ | ○ | ○ | ○ | ○ |

**備考 1.** 〝○〞係指該項限用物質之百分比含量未超出百分比含量基準值。
**Note 1.** "○ " indicates that the percentage content of the restricted substance does not exceed the percentage of reference value of presence.
**備考 2.** 〝–〞係指該項限用物質為排除項目。
**Note 2.** "—" indicates that the restricted substance corresponds to the exemption.

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# Chapter 1: Overview

## 1.1 About the TYAN FT65T-B8050

Congratulations on your purchase of the TYAN® FT65T-B8050, a highly optimized Tower Server barebone system. The FT65T-B8050 is designed to support single AMD® EPYC™ 9004 Series Processors and up to 2,048GB RDIMM / 3DS RDIMM DDR5 4800 memory, providing a rich feature set and incredible performance. Leveraging advanced technology from AMD®, the FT65T-B8050 Tower Server system is capable of offering scalable 32 and 64-bit computing, high bandwidth memory design, and lightning-fast PCI-E bus implementation. The FT65T-B8050 not only empowers your company in nowadays IT demand but also offers a smooth path for future application usage.

TYAN® also offers the FT65T-B8050 in a version that can support up to eight 3.5”/2.5” hot-swap SSD/HDDs and two 2.5” hot-swap NVMe SSD/HDDs. The FT65T-B8050 uses TYAN’s latest chassis featuring a robust structure and a solid mechanical enclosure. All of this provides FT65T-B8050 the power and flexibility to meet the needs of nowadays server application.

## 1.2 Product Models

The system board within the Tyan Barebone is defined by the following models:

- **B8050F65TV8E2H-2T-N**: AMD-based platform
- **B8050F65TV8E2H-N**: AMD-based platform
- **B8050F65TV8E2H-G**: AMD-based platform

### SKU Differences

| Model Name | FT65T-B8050 | | |
|---|---|---|---|
| **SKU Name** | **B8050F65TV8E2H-2T-N** | **B8050F65TV8E2H-N** | **B8050F65TV8E2H-G** |
| Rear FANs | Yes | Yes | No |
| LAN Ports | 5 | 3 | 3 |
| MB | S8050GM4NE-2T | S8050GM2NE | S8050GM2NE |

**NOTE:** Rear FANs is only for Tesla Passive GPU cards

## 1.3 Features

### B8050F65TV8E2H-G Specifications

| | | |
|---|---|---|
| System | Form Factor | 4U Tower |
| | Chassis Model | FT65T |
| | Dimension (D x W x H) | 25.5” x 16.8” x 6.9” (650 x 427 x 176mm) |
| | Motherboard Name | S8050GM2NE |
| | Board Dimension | CEB, 12"x10.5" (305x267mm) |
| Front Panel | Buttons | (1) ID / (1) PWR w/ LED / (1) RST |
| | LEDs | (1) HDD / (1) ID / (2) LAN / (1) System Event |
| | I/O Ports | (2) USB 3.0 ports |
| External Drive Bay | Q'ty / Type | (2) 2.5" Hot-Swap NVMe HDD/SSDs /<br>(8) 3.5" Hot-swap HDD/SSDs |
| | Front Drive Bay Interface | (2) SATA 6Gb/s / NVMe /<br>(8) SATA 6Gb/s / SAS 12Gb/s |
| | Front HDD Backplane Support | SAS 12Gb/s /SATA 6Gb/s /NVMe |
| | Notification | The SAS/SATA HDD backplane is connected to onboard SATA connection by default. Please contact Tyan technical support if a discrete SAS HBA/RAID adapter is required. |
| System Cooling Configuration | Fan | (3) easy-swap 12038 fans |
| Power Supply | Type | ATX |
| | Input Range | AC 100~240V/15-12A |
| | Frequency | 50-60 Hz |
| | Output Watts | 1,200 Watts (110-115Vac input) /<br>1,500 Watts (115-200Vac input) /<br>2,000 Watts (200-240Vac) |
| | Efficiency | 80 plus Gold (200-240Vac, 2,000W) ) /<br>80 plus Platinum (100-240Vac, 1,500W) |
| Processor | Q'ty / Socket Type | (1) AMD Socket SP5 |
| | Supported CPU Series | (1) AMD EPYC™ 9004 Series Processor |
| | Thermal Design Power Wattage | Max up to 320W (cTDP) |
| Memory | Supported DIMM Qty | (8) DIMM slots |
| | DIMM Type / Speed | RDDR5 4800 w/ ECC (1.1V) when 1DPC<br>3DS RDDR5 4800 w/ ECC (1.1V) when 1DPC |
| | Capacity | Up to 2,048GB RDIMM / 3DS RDIMM DDR5 4800 |
| | Memory channel | 8 Channels per CPU |
| | Memory voltage | 1.1V |
| Expansion Slots | PCIe | (5) PCIe Gen.5 x16 slot |
| | Physical Dimension Abbreviation | FH/10.5"L (Full-height / 10.5" in length ):<br>4.4" x 10.5" (111.2 x 266.7mm) |
| LAN | Q'ty / Port | (2) GbE ports + (1) GbE dedicated for IPMI |
| | Controller | Intel I210-AT |
| | PHY | Realtek RTL8211F |

| | | |
|---|---|---|
| Storage SATA | Connector | (10) SATA |
| | Controller | Direct from AMD EPYC CPU |
| | Speed | 6Gb/s |
| | RAID | N/A |
| Storage NVMe | Connector (M.2) | (2) 22110/2280 (by PCIe Gen.4 interface) |
| | Connector (U.2) | (2) 2.5"NVMe SSD |
| Graphic | Connector type | D-Sub 15-pin |
| | Resolution | Up to 1920x1200 |
| | Chipset | Aspeed AST2600 |
| I/O Ports | USB | (2) USB3.0 ports (@ rear) |
| | COM | (1) DB-9 COM port |
| | VGA | (1) D-Sub 15-pin port |
| | RJ-45 | (2) GbE ports + (1) dedicated GbE for IPMI |
| | Button | ID Button |
| TPM (Optional) | TPM Support | Please refer to our TPM supported list. |
| | Interface | SPI |
| System Monitoring | Chipset | Aspeed AST2600 |
| | Temperature | Monitors temperature for CPU & memory & system environment |
| | Voltage | Monitors voltage for CPU, memory, chipset & power supply |
| | LED | Over temperature warning indicator / Over voltage warning indicator |
| | Others | Watchdog timer support |
| Server Management | Onboard Chipset | Onboard Aspeed AST2600 |
| | AST2600 iKVM Feature | 24-bit high quality video compression / Supports storage over IP and remote platform-flash / USB 2.0 virtual hub |
| | AST2600 IPMI Feature | IPMI 2.0 compliant baseboard management controller (BMC) / 10/100/1000 Mb/s MAC interface |
| BIOS | Brand / ROM size | AMI / 256MB |
| | Feature | Hardware Monitor / FAN speed control automatic / Boot from USB device/PXE via LAN/Storage / Console Redirection / SMBIOS 3.0/PnP/Wake on LAN / ACPI sleeping states S0, S5 |
| Operating System | OS supported list | Please refer to our AVL support lists. |
| Regulation | FCC (SDoC) | Class B |
| | CE (DoC) | Class B |
| | VCCI | Class B |
| | RCM | Class B |
| Operating Environment | Operating Temp. | 10° C ~ 35° C (50° F~ 95° F) |
| | Non-operating Temp. | - 40° C ~ 70° C (-40° F ~ 158° F) |
| | In/Non-operating Humidity 90 | 90%, non-condensing at 35° C |
| Package Contains | Barebone | (1) FT65T-B8050 Barebone |

| | | |
|---|---|---|
| | **Manual** | (1) Quick Installation Guide |
| **RoHS** | **RoHS 6/6 Compliant** | Yes |

## B8050F65TV8E2H-2T-N Specifications

| | | |
|---|---|---|
| System | Form Factor | 4U Tower |
| | Chassis Model | FT65T |
| | Dimension (D x W x H) | 25.5" x 16.8" x 6.9" (650 x 427 x 176mm) |
| | Motherboard Name | S8050GM4NE-2T |
| | Board Dimension | CEB, 12"x10.5" (305x267mm) |
| Front Panel | Buttons | (1) ID / (1) PWR w/ LED / (1) RST |
| | LEDs | (1) HDD / (1) ID / (2) LAN / (1) System Event |
| | I/O Ports | (2) USB 3.0 ports |
| External Drive Bay | Q'ty / Type | (2) 2.5" Hot-Swap NVMe HDD/SSDs /<br>(8) 3.5" Hot-swap HDD/SSDs |
| | Front Drive Bay Interface | (2) SATA 6Gb/s / NVMe / (8) SATA 6Gb/s / SAS 12Gb/s |
| | Front HDD Backplane Support | SAS 12Gb/s /SATA 6Gb/s /NVMe |
| | Notification | The SAS/SATA HDD backplane is connected to onboard SATA connection by default. Please contact Tyan technical support if a discrete SAS HBA/RAID adapter is required. |
| System Cooling Configuration | Fan | (2) 8038 exhausted fans module at rear /<br>(3) easy-swap 12038 fans |
| Power Supply | Type | ATX |
| | Input Range | AC 100~240V/15-12A |
| | Frequency | 50-60 Hz |
| | Output Watts | 1,200 Watts (110-115Vac input) /<br>1,500 Watts (115-200Vac input) /<br>2,000 Watts (200-240Vac) |
| | Efficiency | 80 plus Gold (200-240Vac, 2,000W) ) /<br>80 plus Platinum (100-240Vac, 1,500W) |
| Processor | Q'ty / Socket Type | (1) AMD Socket SP5 |
| | Supported CPU Series | (1) AMD EPYC™ 9004 Series Processor |
| | Thermal Design Power Wattage | Max up to 320W (cTDP) |
| Memory | Supported DIMM Qty | (8) DIMM slots |
| | DIMM Type / Speed | RDDR5 4800 w/ ECC (1.1V) when 1DPC<br>3DS RDDR5 4800 w/ ECC (1.1V) when 1DPC |
| | Capacity | Up to 2,048GB RDIMM / 3DS RDIMM DDR5 4800 |
| | Memory channel | 8 Channels per CPU |
| | Memory voltage | 1.1V |
| Expansion Slots | PCIe | (5) PCIe Gen.5 x16 slot |
| | Physical Dimension Abbreviation | FH/10.5"L (Full-height / 10.5" in length ): 4.4" x 10.5" (111.2 x 266.7mm) |
| LAN | Q'ty / Port | (2) 10GbE ports + (2) GbE ports + (1) GbE dedicated for IPMI |
| | Controller | Intel I210-AT / Intel X710-AT2 |
| | PHY | Realtek RTL8211F |
| Storage SATA | Connector | (10) SATA |

| | | |
|---|---|---|
| | **Controller** | Direct from AMD EPYC CPU |
| | **Speed** | 6Gb/s |
| | **RAID** | N/A |
| **Storage NVMe** | **Connector (M.2)** | (2) 22110/2280 (by PCIe Gen.4 interface) |
| | **Connector (U.2)** | (2) 2.5"NVMe SSD |
| **Graphic** | **Connector type** | D-Sub 15-pin |
| | **Resolution** | Up to 1920x1200 |
| | **Chipset** | Aspeed AST2600 |
| **I/O Ports** | **USB** | (2) USB3.0 ports (@ rear) |
| | **COM** | (1) DB-9 COM port |
| | **VGA** | (1) D-Sub 15-pin port |
| | **RJ-45** | (2) 10GbE ports + (2) GbE ports +<br>(1) dedicated GbE for IPMI |
| | **Button** | ID Button |
| **TPM (Optional)** | **TPM Support** | Please refer to our TPM supported list. |
| | **Interface** | SPI |
| **System Monitoring** | **Chipset** | Aspeed AST2600 |
| | **Temperature** | Monitors temperature for CPU & memory & system environment |
| | **Voltage** | Monitors voltage for CPU, memory, chipset & power supply |
| | **LED** | Over temperature warning indicator / Over voltage warning indicator |
| | **Others** | Watchdog timer support |
| **Server Management** | **Onboard Chipset** | Onboard Aspeed AST2600 |
| | **AST2600 iKVM Feature** | 24-bit high quality video compression / Supports storage over IP and remote platform-flash / USB 2.0 virtual hub |
| | **AST2600 IPMI Feature** | IPMI 2.0 compliant baseboard management controller (BMC) / 10/100/1000 Mb/s MAC interface |
| **BIOS** | **Brand / ROM size** | AMI / 256MB |
| | **Feature** | Hardware Monitor / FAN speed control automatic / Boot from USB device/PXE via LAN/Storage / Console Redirection / SMBIOS 3.0/PnP/Wake on LAN / ACPI sleeping states S0, S5 |
| **Operating System** | **OS supported list** | Please refer to our AVL support lists. |
| **Regulation** | **FCC (SDoC)** | Class B |
| | **CE (DoC)** | Class B |
| | **VCCI** | Class B |
| | **RCM** | Class B |
| **Operating Environment** | **Operating Temp.** | 10° C ~ 35° C (50° F~ 95° F) |
| | **Non-operating Temp.** | - 40° C ~ 70° C (-40° F ~ 158° F) |
| | **In/Non-operating Humidity 90** | 90%, non-condensing at 35° C |
| **Package Contains** | **Barebone** | (1) FT65T-B8050 Barebone |
| | **Manual** | (1) Quick Installation Guide |

| | | |
|---|---|---|
| RoHS | RoHS 6/6 Compliant | Yes |

## B8050F65TV8E2H-N Specifications

| | | |
|---|---|---|
| System | Form Factor | 4U Tower |
| | Chassis Model | FT65T |
| | Dimension (D x W x H) | 25.5" x 16.8" x 6.9" (650 x 427 x 176mm) |
| | Motherboard Name | S8050GM2NE |
| | Board Dimension | CEB, 12"x10.5" (305x267mm) |
| Front Panel | Buttons | (1) ID / (1) PWR w/ LED / (1) RST |
| | LEDs | (1) HDD / (1) ID / (2) LAN / (1) System Event |
| | I/O Ports | (2) USB 3.0 ports |
| External Drive Bay | Q'ty / Type | (2) 2.5" Hot-Swap NVMe HDD/SSDs /<br>(8) 3.5" Hot-swap HDD/SSDs |
| | Front Drive Bay Interface | (2) SATA 6Gb/s / NVMe / (8) SATA 6Gb/s /<br>SAS 12Gb/s |
| | Front HDD Backplane Support | SAS 12Gb/s /SATA 6Gb/s /NVMe |
| | Notification | The SAS/SATA HDD backplane is connected to onboard SATA connection by default. Please contact Tyan technical support if a discrete SAS HBA/RAID adapter is required. |
| System Cooling Configuration | Fan | (2) 8038 exhausted fans module at rear /<br>(3) easy-swap 12038 fans |
| Power Supply | Type | ATX |
| | Input Range | AC 100~240V/15-12A |
| | Frequency | 50-60 Hz |
| | Output Watts | 1,200 Watts (110-115Vac input) / 1,500 Watts (115-200Vac input) / 2,000 Watts (200-240Vac) |
| | Efficiency | 80 plus Gold (200-240Vac, 2,000W) ) /<br>80 plus Platinum (100-240Vac, 1,500W) |
| Processor | Q'ty / Socket Type | (1) AMD Socket SP5 |
| | Supported CPU Series | (1) AMD EPYC™ 9004 Series Processor |
| | Thermal Design Power Wattage | Max up to 320W (cTDP) |
| Memory | Supported DIMM Qty | (8) DIMM slots |
| | DIMM Type / Speed | RDDR5 4800 w/ ECC (1.1V) when 1DPC<br>3DS RDDR5 4800 w/ ECC (1.1V) when 1DPC |
| | Capacity | Up to 2,048GB RDIMM / 3DS RDIMM DDR5 4800 |
| | Memory channel | 8 Channels per CPU |
| | Memory voltage | 1.1V |
| Expansion Slots | PCIe | (5) PCIe Gen.5 x16 slot |
| | Physical Dimension Abbreviation | FH/10.5"L (Full-height / 10.5" in length ): 4.4" x 10.5" (111.2 x 266.7mm) |
| LAN | Q'ty / Port | (2) GbE ports + (1) GbE dedicated for IPMI |
| | Controller | Intel I210-AT |
| | PHY | Realtek RTL8211F |
| Storage SATA | Connector | (10) SATA |
| | Controller | Direct from AMD EPYC CPU |
| | Speed | 6Gb/s |

| | | |
|---|---|---|
| | **RAID** | N/A |
| **Storage NVMe** | **Connector (M.2)** | (2) 22110/2280 (by PCIe Gen.4 interface) |
| | **Connector (U.2)** | (2) 2.5"NVMe SSD |
| **Graphic** | **Connector type** | D-Sub 15-pin |
| | **Resolution** | Up to 1920x1200 |
| | **Chipset** | Aspeed AST2600 |
| **I/O Ports** | **USB** | (2) USB3.0 ports (@ rear) |
| | **COM** | (1) DB-9 COM port |
| | **VGA** | (1) D-Sub 15-pin port |
| | **RJ-45** | (2) GbE ports + (1) dedicated GbE for IPMI |
| | **Button** | ID Button |
| **TPM (Optional)** | **TPM Support** | Please refer to our TPM supported list. |
| | **Interface** | SPI |
| **System Monitoring** | **Chipset** | Aspeed AST2600 |
| | **Temperature** | Monitors temperature for CPU & memory & system environment |
| | **Voltage** | Monitors voltage for CPU, memory, chipset & power supply |
| | **LED** | Over temperature warning indicator / Over voltage warning indicator |
| | **Others** | Watchdog timer support |
| **Server Management** | **Onboard Chipset** | Onboard Aspeed AST2600 |
| | **AST2600 iKVM Feature** | 24-bit high quality video compression / Supports storage over IP and remote platform-flash / USB 2.0 virtual hub |
| | **AST2600 IPMI Feature** | IPMI 2.0 compliant baseboard management controller (BMC) / 10/100/1000 Mb/s MAC interface |
| **BIOS** | **Brand / ROM size** | AMI / 256MB |
| | **Feature** | Hardware Monitor / FAN speed control automatic / Boot from USB device/PXE via LAN/Storage / Console Redirection / SMBIOS 3.0/PnP/Wake on LAN / ACPI sleeping states S0, S5 |
| **Operating System** | **OS supported list** | Please refer to our AVL support lists. |
| **Regulation** | **FCC (SDoC)** | Class B |
| | **CE (DoC)** | Class B |
| | **VCCI** | Class B |
| | **RCM** | Class B |
| **Operating Environment** | **Operating Temp.** | 10° C ~ 35° C (50° F~ 95° F) |
| | **Non-operating Temp.** | - 40° C ~ 70° C (-40° F ~ 158° F) |
| | **In/Non-operating Humidity 90** | 90%, non-condensing at 35° C |
| **Package Contains** | **Barebone** | (1) FT65T-B8050 Barebone |
| | **Manual** | (1) Quick Installation Guide |
| **RoHS** | **RoHS 6/6 Compliant** | Yes |

## 1.4 Standard Parts List

This section describes FT65T-B8050 package contents and accessories. Open the box carefully and ensure that all components are present and undamaged. The product should arrive packaged as illustrated below.

### 1.4.1 Box Contents

**FT65T-B8050 Box Content**

- 4U Chassis
- (1) 2000W PSU 80+gold
- (1) M1309F65T-BP12-8 HDD Backplane
- (1) M1318T65-BP12E-2 HDD Backplane
- (1) M7129F83A-L16 Riser Card
- (3) System Fan + (2) Rear Fan for -N SKU
- (3) System Fan for -G SKU
- (1) M1713F65T-FPB Front Panel Board
- (1) S8050 R03 MB

**FT65T-B8050 Accessories**

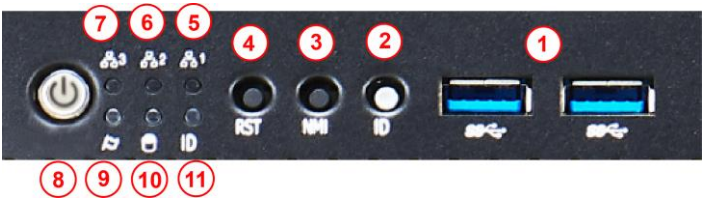
- (1) CPU Heatsink
- (1) US power cord
- (1) EU power cord
- (3) Screw pack
- (3) GPU Holder BKT
- (2) M.2 Latch
- (1) Rail kit and Screw (optional part)
- (1) Quick Installation Guide

## 1.5 About the Product

The following views show you the product.

### 1.5.1 System Front View

## Front Control Panel (M1713F65T-FPB pre-installed)




| | |
|---|---|
| 1 | USB 3.1 Ports |
| 2 | ID Button |
| 3 | NMI Button |
| 4 | Reset Button |
| 5 | LAN1 LED |
| 6 | LAN2 LED |
| 7 | LAN3 LED |
| 8 | Power on/off Button with LED |
| 9 | IPMI LED/Fault LED |
| 10 | HDD LED |
| 11 | ID LED |

## M1713F65T-FPB Front Panel Board

Switch and LED Indication

| M1713F65T-FPB R01 LED Definitions | | | |
|---|---|---|---|
| **LED** | **STATE** | **COLOR** | **DESCRIPTION** |
| Power LED | On | Green | system is turn on |
| | On | Green | system is under S1 or S3 state |
| | Off | Off | power off |
| NIC1 | Blinking | Green | LAN active |
| | On | Green | LAN linked |
| | Off | Off | LAN not linked |
| NIC2 | Blinking | Green | LAN active |
| | On | Green | LAN linked |
| | Off | Off | LAN not linked |
| NIC3 | Blinking | Green | LAN active |

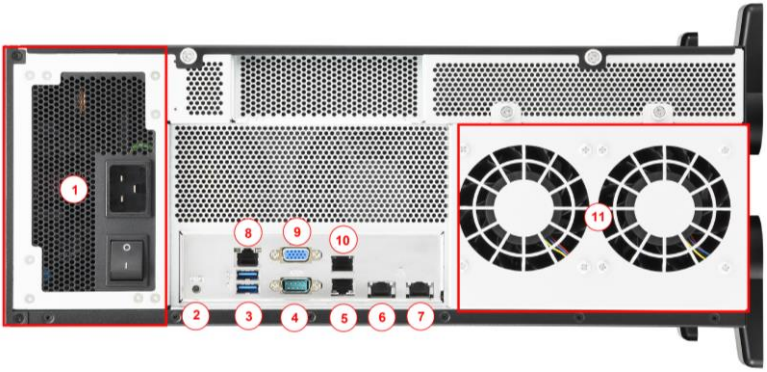
| | | | |
|---|---|---|---|
| (NO function, Reserved for OEM customer) | On | Green | LAN linked |
| | Off | Off | LAN not linked |
| HDD LED | On | Green | HDD accessed |
| | Off | Off | NO HDD access |
| ID LED | On | Blue | system identified |
| | Off | Off | system no identified |
| BMC LED | On | Amber | Fan fail/Over temperature/Over voltage/PSU fail |
| | On | Amber | PSU alert |
| | Off | Off | No failure |
| **Button Indication** | | | |
| Power On/Off | Power up and power off the system(Use a pin) | | |
| ID(UID) | Press ID button when the system is AC (Alternating Current) on, then ID LED will show the system is identified with emitting blue light. Users from remote site could also activate ID LED by input a few commands in IPMI, detailed software support please visit **http://www.tyan.com** for latest AST2600 user guide. | | |
| RST | Press to reset the system. | | |

## HDD LED Definitions


| Drive State | Active LED (Green) | Failure LED (Red) |
|---|---|---|
| Drive present, no activity | Green Solid On | Off |
| Drive present, with activity | Green Blinking | Off |
| Drive Failed | | Red Solid On |
| Drive dentify | | Red Blinking @1 Hz |
| Drive Rebuild | | Red Blinking @4 Hz |

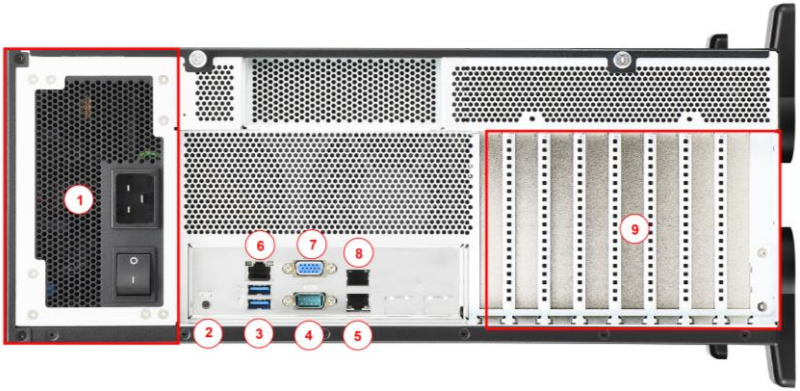
### 1.5.2 System Rear View

**B8050F65TV8E2H-2T-N**



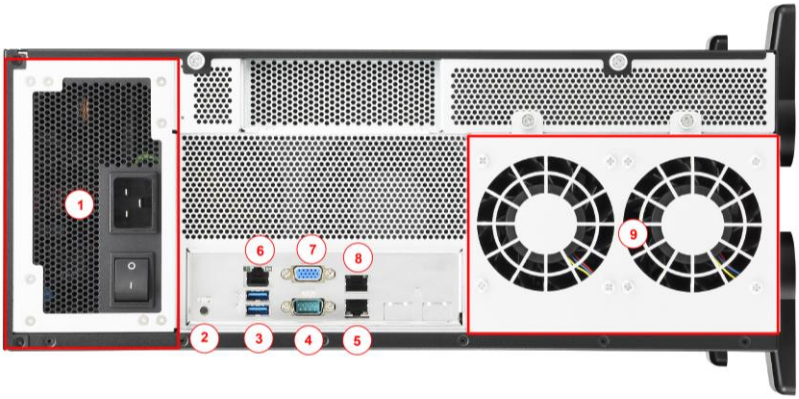

| | | | |
|---|---|---|---|
| 1 | PSU | 7 | RJ45 LAN Port#2(LAN2) 10GbE |
| 2 | ID Button | 8 | RJ45 LAN Port#5(LAN5) Dedicated IPMI |
| 3 | USB 3.2 Gen1 Ports x2 | 9 | VGA Port |
| 4 | COM Port | 10 | RJ45 LAN Port#4(LAN4) 1GbE |
| 5 | RJ45 LAN Port#3(LAN3) 1GbE | 11 | Rear Fans(80*80*38 FAN)x2 |
| 6 | RJ45 LAN Port#1(LAN1) 10GbE | | |

**B8050F65TV8E2H-G**



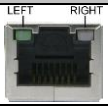

| | | | |
|---|---|---|---|
| 1 | PSU | 6 | RJ45 LAN Port#3(LAN3)Dedicated IPMI |
| 2 | ID Button | 7 | VGA Port |
| 3 | USB 3.2 Gen1 Ports x2 | 8 | RJ45 LAN Port#2(LAN2) 1GbE |
| 4 | COM Port | 9 | Expansion Slots |
| 5 | RJ45 LAN Port#1(LAN1) 1GbE | | |

**B8050F65TV8E2H-N**




| | | | |
|---|---|---|---|
| 1 | PSU | 6 | RJ45 LAN Port#3(LAN3)Dedicated IPMI |
| 2 | ID Button | 7 | VGA Port |
| 3 | USB 3.2 Gen1 Ports x2 | 8 | RJ45 LAN Port#2(LAN2) 1GbE |
| 4 | COM Port | 9 | Rear Fans(80*80*38 FAN)x2 |
| 5 | RJ45 LAN Port#1(LAN1) 1GbE | | |

The five (5) onboard Ethernet ports have green and yellow LEDs to indicate LAN status. The chart below illustrates the different LED states.

| **10Mbps/100Mbps/1Gbps/10Gbps LAN Link/Activity LED Scheme** | | | |
|---|---|---|---|
|  | | **Left LED** | **Right LED** |
| **No Link** | | Off | Off |
| **10Mbps** | **Link** | Green | Off |
| | **Active** | Blinking Green | Off |
| **100Mbps** | **Link** | Green | Solid Green |
| | **Active** | Blinking Green | Solid Green |
| **1Gbps** | **Link** | Green | Solid Yellow |
| | **Active** | Blinking Green | Solid Yellow |
| **10Gbps** | **Link** | Yellow | Solid Yellow |
| | **Active** | Blinking Yellow | Solid Yellow |

**NOTE:** “Left” and “Right” are viewed from the rear panel.

## ID LED Definition

| LED | State | Color | Description |
|---|---|---|---|
| ID LED | On | Blue | System identified |
| | Off | Off | System not identified |

**NOTE:**
Press the ID button when the system AC (Alternating Current) is on, then the ID LED will light blue if the system is identified. Users from remote sites can also activate the ID LED by entering a few commands in IPMI. For detailed software support, please visit http://www.tyan.com for the latest AST2600 user guide.

## Power Supply

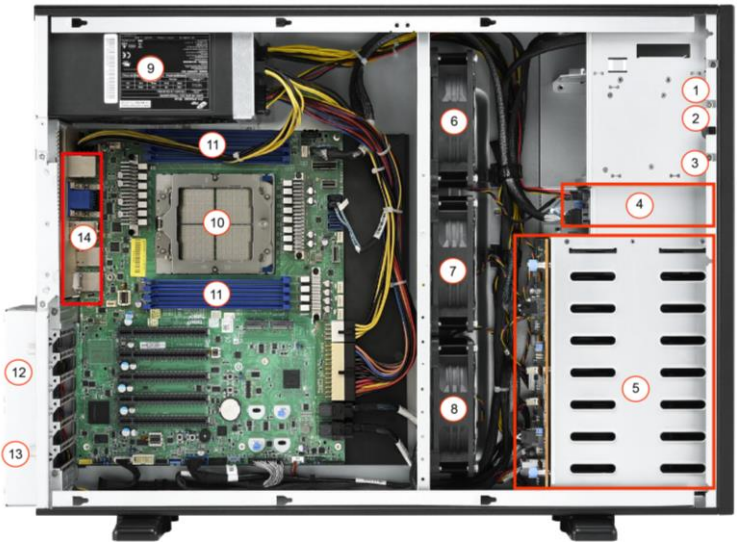
## System PSU Output Power Limit

The system total output power limit varies in accordance with PSU redundancy and AC input range. Please refer to the following table for details.

| AC input | 100-240V~ 15-12A 60-50Hz | | | | |
|---|---|---|---|---|---|
| DC Output | +3.3V | +5V | +12V | -12V | +5Vsb |
| Max Output Current | 25A | 25A | 166.6A | 0.3A | 4A |
| Max Combined Power | 150W | | 2000W | 6W | 20W |
| Total Power | 2000W@200-240Vac<br>1500@115-200Vac<br>1200@100-115Vac | | | | |

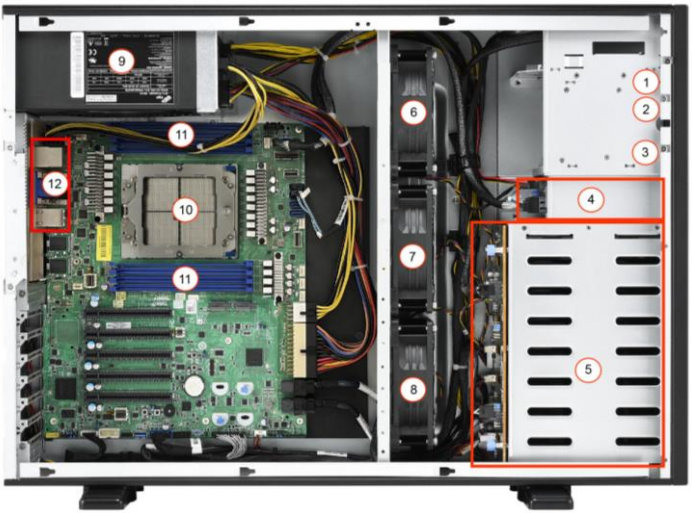
### 1.5.3 System Top View

**B8050F65TV8E2H-2T-N**



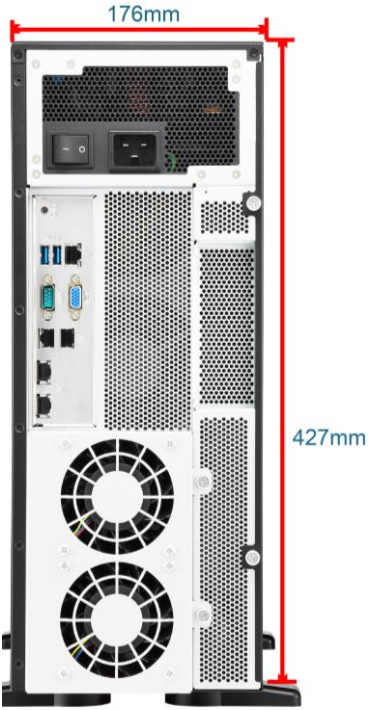

| | | | |
|---|---|---|---|
| 1. | M1713F65T-FPB Front Panel Board pre-installed | 8 | FAN3 |
| 2. | Reserved space for slim CD dummy | 9 | Power supply |
| 3. | Reserved space for 2.5” HDD trays | 10. | CPU Socket |
| 4. | (2) 2.5”HDD trays (M1318T65-BP12E-2 HDD Backplane pre-installed) | 11. | Memory Slots |
| 5. | (8) 3.5”HDD trays (M1309F65T-BP12-8 HDD Backplane pre-installed) | 12. | FAN4 |
| 6. | FAN1 | 13. | FAN5 |
| 7. | FAN2 | 14. | IO Ports(with 5 LAN) |

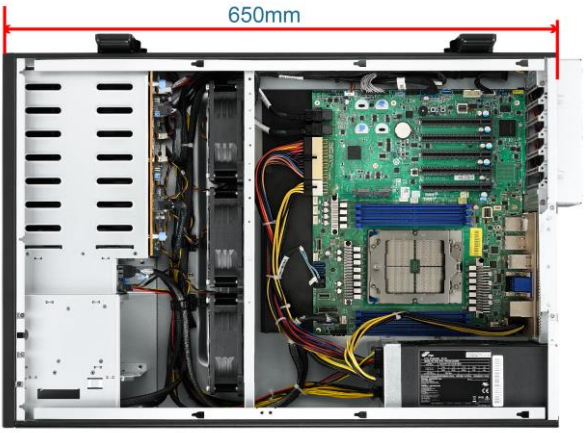
**B8050F65TV8E2H-G**




| | | | |
|---|---|---|---|
| 1. | M1713F65T-FPB Front Panel Board pre-installed | 7. | FAN2 |
| 2. | Reserved space for slim CD dummy | 8 | FAN3 |
| 3. | Reserved space for 2.5” HDD trays | 9 | Power supply |
| 4. | (2) 2.5”HDD trays (M1318T65-BP12E-2 HDD Backplane pre-installed) | 10. | CPU Socket |
| 5. | (8) 3.5”HDD trays (M1309F65T-BP12-8 HDD Backplane pre-installed) | 11. | Memory Slots |
| 6. | FAN1 | 12. | IO Ports(with 3 LAN) |

### 1.5.4 Chassis Dimensions



### 2.0.1 Before you Begin

This chapter explains how to install the CPUs, CPU heatsinks, memory modules, and SSD/HDD. Instructions on inserting add on cards are also given.

### 2.0.2 Work Area

Make sure you have a stable, clean working environment. Dust and dirt can get into components and cause malfunctions. Use containers to keep small components separated. Putting all small components in separate containers prevents them from becoming lost. Adequate lighting and proper tools can prevent you from accidentally damaging the internal components.

### 2.0.3 Tools

The following procedures require only a few tools, including the following:

- A cross head (Phillips) screwdriver
- A grounding strap or an anti-static pad
- A T20 Security Torx screwdriver

Most of the electrical and mechanical connections can be disconnected with your hands. It is recommended that you do not use pliers to remove connectors as it may damage the soft metal or plastic parts of the connectors.

**Caution!**

1. To avoid damaging the motherboard and associated components, do not use torque force greater than **5~7 kgf/cm (4.35 ~ 6.09 lb/in)** on each mounting screw for motherboard installation.
2. Do not apply power to the board if it has been damaged.

### 2.0.4 Precautions

Components and electronic circuit boards can be damaged by discharges of static electricity. Working on a system that is connected to a power supply can be extremely dangerous. Follow the guidelines below to avoid damage to FT65T-B8050 or injury to yourself.

- Ground yourself properly before removing the top cover of the system. Unplug the power from the power supply and then touch a safely grounded object to release static charge (i.e. power supply case). If available, wear a grounded wrist strap. Alternatively, discharge any static electricity by touching the bare metal chassis of the unit case, or the bare metal body of any other grounded appliance.
- Avoid touching motherboard components, IC chips, connectors, memory modules, and leads.
- The motherboard is pre-installed in the system. When removing the motherboard, always place it on a grounded anti-static surface until you are ready to reinstall it.
- Hold electronic circuit boards by the edges only. Do not touch the components on the board unless it is necessary to do so. Do not flex or stress circuit boards.
- Leave all components inside the static-proof packaging that they ship with until they are ready for installation.
- After replacing optional devices, make sure all screws, springs, or other small parts are in place and are not left loose inside the case. Metallic parts or metal flakes can cause electrical shorts.

**CAUTION:** Please note that the following illustrations may not look exactly like the rackmount server you purchased. Therefore, the illustrations should be held for your reference only.

## 2.1 Installing Motherboard Components

This section describes how to install components on to the motherboard, including CPUs, memory modules, SSD/HDD and PCI-E cards.

### 2.1.1 Removing the Chassis Cover

Follow these instructions to remove the FT65T-B8050 chassis cover.

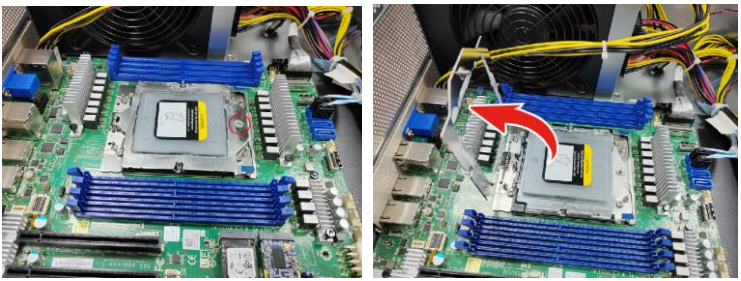
1. Loosen one screw and two thumb screws to slide the top cover off.


**NOTE:** When installing the top cover, pay attention to the diagonal direction as Shown by the arrow can easily buckle the top cover.

### 2.1.2 Installing the CPU and Heatsink

Follow the steps below to install the processors and heat sinks.
Please note that the illustrations are based on socket which may not look exactly like the motherboard you purchased. Therefore, the illustrations should be held for your reference only.
**NOTE:** Please save and replace the flip CPU protection cap when returning for service.

1. Use a T20 Torx screwdriver to loosen the screws securing the force frame. **NOTE**: The force frame will automatically eject after the captive screws are being released.



2. By placing your both index fingers on the sides on the metal handle, pull to release the rail frame. Then lift the rail frame to its fully open position.

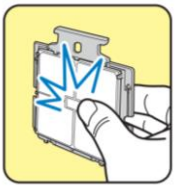
3. Remove the external cap from the rail frame.

4. Align and install the carrier frame with package into the slot on the rail frame.

   **NOTE:** During installation, observe the following:

   →make sure to push the carrier frame with package towards the end of the rail frame until it clicks in place.

   →do not drop the carrier frame or touch the package pad to avoid component damage.



5. Carefully close the rail frame with the installed package. Then push both edges of the rail frame firmly until it locks in place.

6. Close the force frame. Then use a T20 Torx screwdriver to tighten the screw to secure the force frame.


7. Align and install the CPU heatsink onto the top of the CPU socket.

8. Use a T20 Torx screwdriver to tighten the heatsink screws.

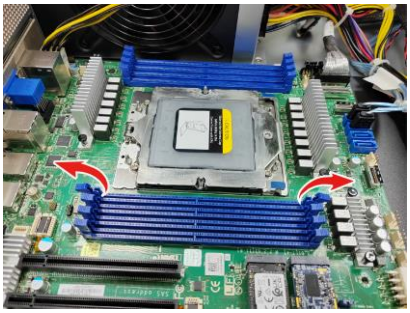
9. Connect the heatsink power cable to the mainboard connector.

**NOTE:** Always check with the manufacturer of the heat sink & processor to ensure that the thermal interface material is compatible with the processor and meets the manufacturer's warranty requirements.

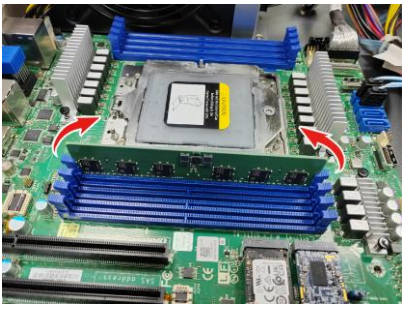
### 2.1.3 Installing the Memory

Follow these instructions to install the memory modules onto the motherboard.

1. Locate the memory slots on the motherboard.
2. Press the memory slot locking levers in the direction of the arrows as shown in the following illustration.



3. Align the memory module with the slot. When inserted properly, the memory slot locking levers lock automatically onto the indentations at the ends of the module. Follow the recommended memory population table to install the other memory modules.



### 2.1.4 Installing Hard Drives

The FT65T-B8050 can support up to eight (8) 3.5”/2.5” SSD/HDD，two (2) 2.5” NVMe HDD. Follow these instructions to install a hard drive.

| |
|---|
| Warning!!! Always install the hard disk drive to the chassis after the chassis is secured on the rack. |

**Installing 3.5” Hot-Swap Hard Drives**

Follow these instructions to install the 3.5” HDDs into the chassis.

1. Press the locking lever latch and pull the locking lever open.

2. Slide the HDD tray out.

3. Place a 3.5" SSD/HDD into the HDD tray.


4. Reinsert the HDD tray into the chassis and press the locking lever to secure the tray. Close the front bezel.

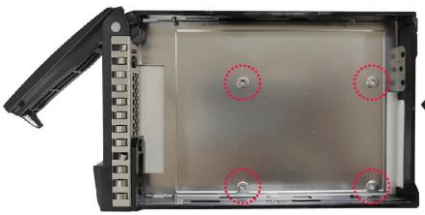
**Installing 2.5” Hot-Swap Hard Drives**

Follow these instructions to install the 2.5” HDDs into the chassis.

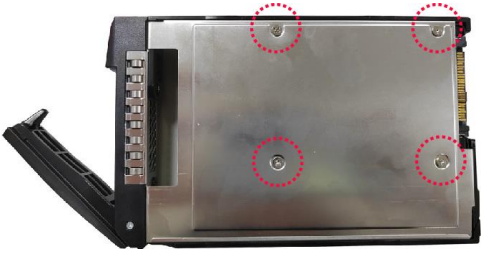
1. Press the locking lever latch and pull the locking lever open.

2. Slide the HDD tray out.

3. Place the 2.5” HDD/SSD into the HDD tray and align the 2.5” HDD/SSD with its hole.



4. Turn over the HDD tray and secure the HDD/SSD to the tray using 4 screws.



5. Reinsert the HDD tray into the chassis and press the locking lever to secure the tray. Close the front bezel.

**Installing 2.5” Hot-Swap NVMe Hard Drives**

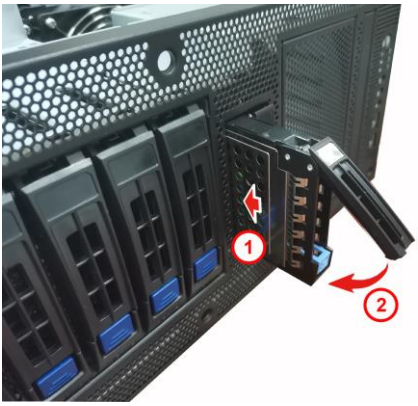
Follow these instructions to install the 2.5” NVMe HDDs into the chassis.

1. Press the locking lever latch and pull the locking lever open.

2. Slide the HDD tray out.

3. Open the lock to place the 2.5” NVMe hard disk drive into the NVMe HDD tray.


4. Reinsert the NVMe HDD tray into the chassis and press the locking lever to secure the tray. Close the front bezel.




**NOTE:** When installing a 2.5” NVMe HDD, the tray must be push to the end and then press down the lever locking the tray. If the tray is not pushed to the end and pull down the lever, the tray cannot be installed in the place.

## 2.2 Rack Mounting

After installing the necessary components, the TYAN FT65T-B8050 can be mounted in a rack using the supplied rack mounting kit

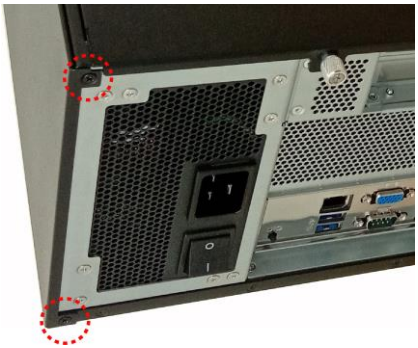
### 2.2.1 Installing the FT65T-B8050 chassis in a Rack

Follow these instructions to mount the TYAN FT65T-B8050 into an industry standard 19" rack.

**NOTE**: Before mounting the TYAN FT65T-B8050 in a rack, ensure that all internal components have been installed and that the unit has been fully tested. However, to make the installation easier, we suggest that you remove all HDD trays before you insert the chassis to the rack.

**Installing the Inner Rails to the Unit**

1. Unscrew to remove the side cover.



2. Push the side cover in the direction to step one and take off the side cover.

3. Screw the mounting ears to the FT65T-B8050 as shown using six #6-32 screws (silver).

**Left**

**Right**

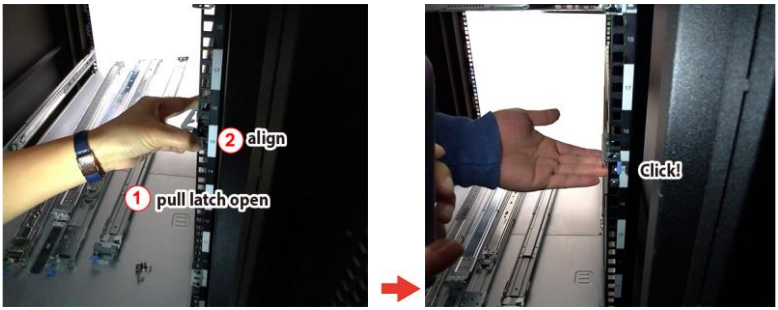
4. Press the latch to draw out the inner rails from each rail assembly.

5. Install the inner sliding rail to each side of the server using four M4-L5 screws.

**Installing the Outer Rails to the Rack**

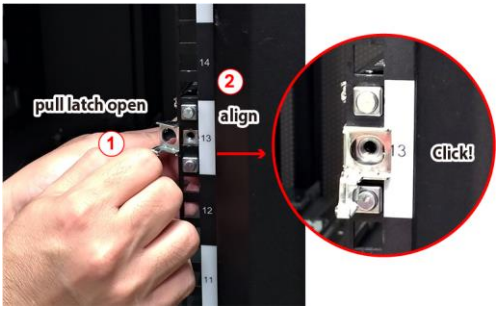
1. Attach the outer rail to the rack. Pull the latch open and align the square stud with the square hole on the rack rail. Please note that the square stud must be fully attached inside the square hole and then close the latch to lock.

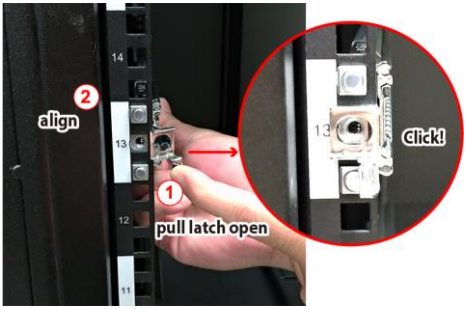
**Rear**

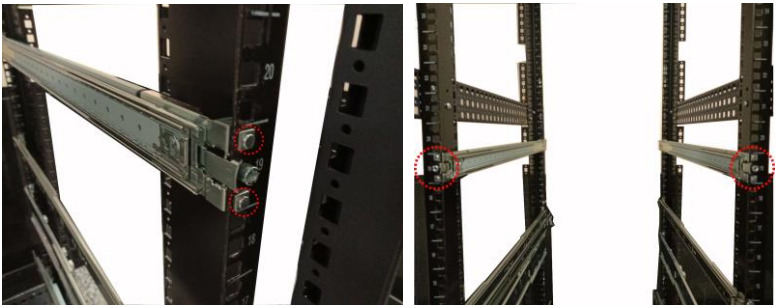



2
align
1
pull latch open
Click!

**Front**


pull latch open
1
2
align
Click!


2
align
1
pull latch open
Click!



### 2.2.2 Rack Mounting the Server

1. Lift the unit and then insert the inner slide rails into the middle rails.

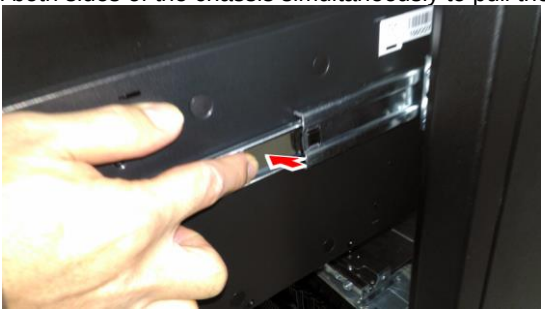
2. Push the whole system in.

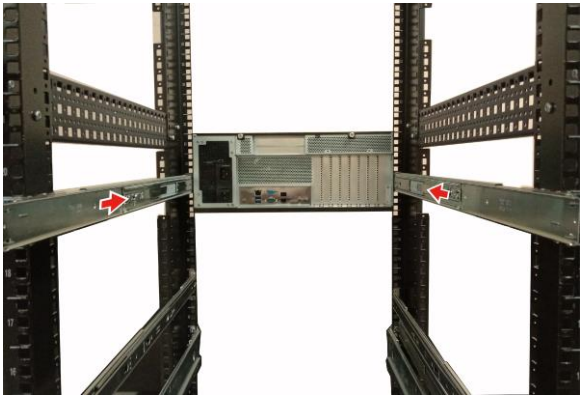
3. Secure the mounting screw to the rack.

### 2.2.3 Removing the Server from Rack

1. Use a screw driver to unscrew the chassis.

2. Push the latch on both sides of the chassis simultaneously to pull the system out.





3. Pull out the chassis half way to the lock position. Push the white locking tabs forwards to slide the chassis all out from the rack. **Caution:** Remove the server from the rack carefully. Must be done with at least 2 people.

# Chapter 3: Installing GPU Cards (optional)

In this chapter we will show how to install a GPU card.

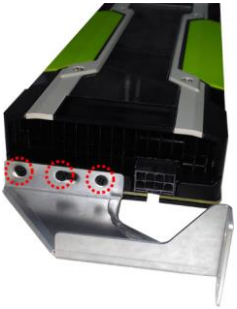
**NOTE:**

1. FT65T-B8050 chassis support A100/RTX3090/ RTX A6000 GPU cards.
2. FT65T-B8050 support a maximum of four GPU Cards.

## 3.1 Installing the GPU Card

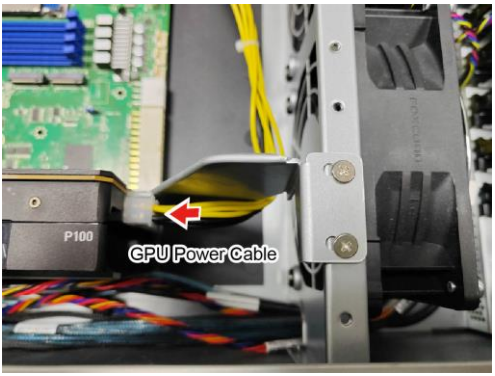
1. Locate the PCI-E Gen.5 slots on the motherboard. Unscrew to take out the dummy brackets.

2. Screw the GPU bracket to the GPU card.



3. Insert the GPU card into the PCIE slot and screw the GPU card to the chassis.

4. Connect the GPU Power cable.




GPU Power Cable

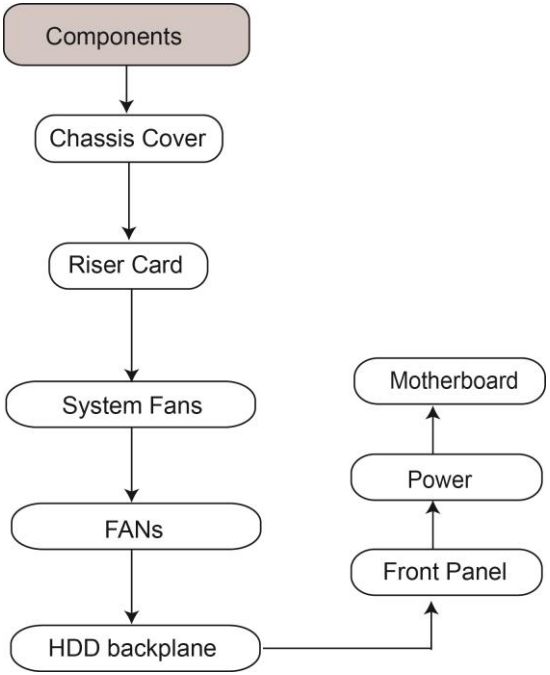
# Chapter 4: Replacing Pre-Installed Components

### 4.0.1 Introduction

This chapter explains how to replace the pre-installed components, including the S8050 Motherboard, M1713F65T-FPB Front Panel Board, M1309F65T-BP12-8/ M1318T65-BP12E-2 HDD Backplane, System Fan and Power Supply Unit etc.

### 4.0.2 Disassembly Flowchart

The following flowchart outlines the disassembly procedures.



## 4.1 Removing the Cover

Before replacing any parts you must remove the chassis cover. Follow Section ***2.1.1 Removing the Chassis Cover*** (page ***80***) to remove the cover of the FT65T-B8050.

## 4.2 Replacing Motherboard Components

Follow these instructions to replace motherboard components, including the motherboard.

### 4.2.1 Replacing the System Fan

Follow these instructions to replace the system fan.

1. Take out the failed fans.

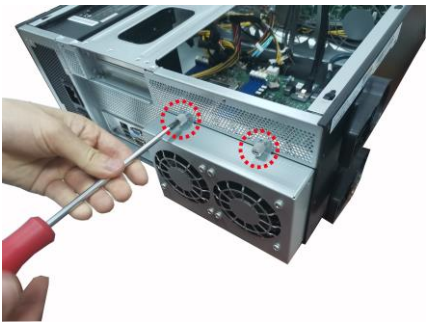
2. Unscrew to replace a new fan.

3. Prepare new fans and insert them into the fan cage.

### 4.2.2 Replacing Rear Fans

Follow these instructions to replace the system fan.

1. Release two thumb screws with the screwdriver.



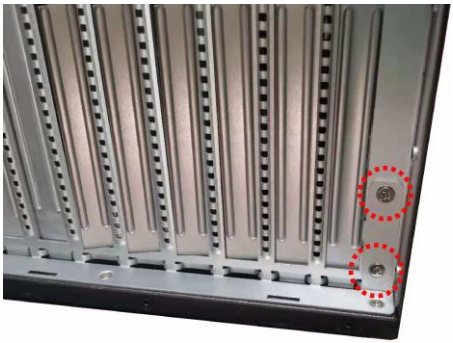
2. Turn over the rear fan module.

3. Disconnect the fans cables.


4. Release the eight screws of the fans module.

5. Take out the fans.

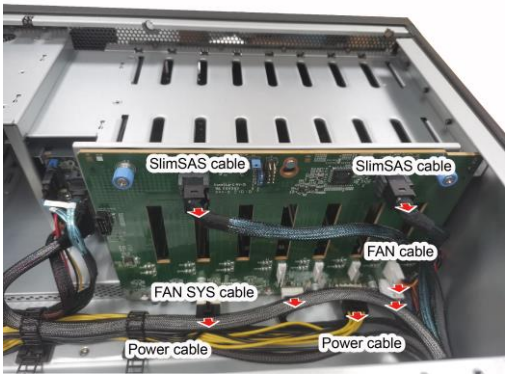
1. Follow the steps described earlier in reverse to reinstall a new fan. Tighten the thumb screws of rear fan module with a screwdriver after rear fans are replaced.
2. Install a small piece of iron to block the loophole of the fan cable.



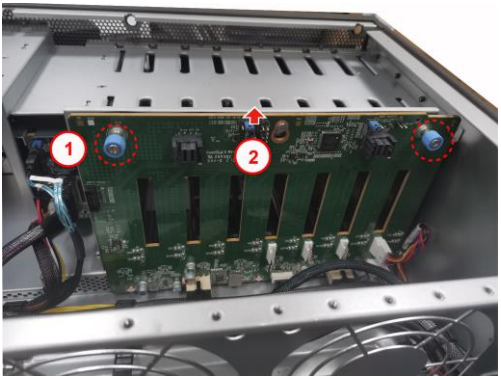
## 4.3 Replacing the HDD Backplane Board

Follow these instructions to replace the M1309F65T-BP12-8 HDD Backplane Board.

1. Disconnect all cables attached to the HDD BP Board.



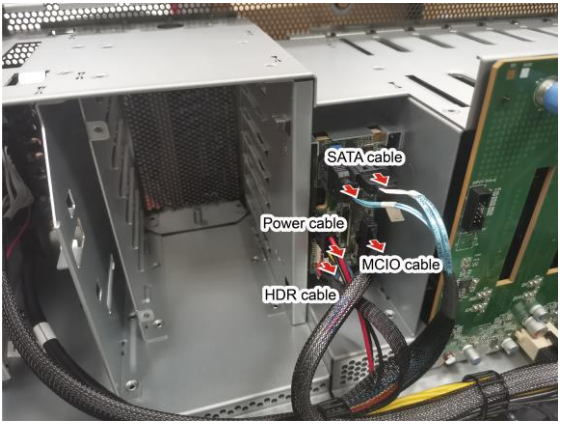

2. Unscrew to take it out.



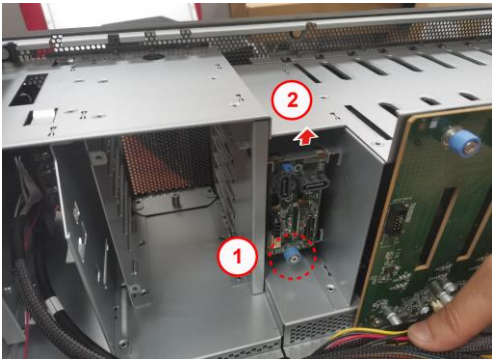

3. Prepare a new HDD BP Board and reinstall it into the chassis following the steps in reverse.

Follow these instructions to replace the M1318T65-BP12E-2 HDD Backplane Board.

1. Disconnect all cables attached to the HDD BP Board.




2. Unscrew to take it out.

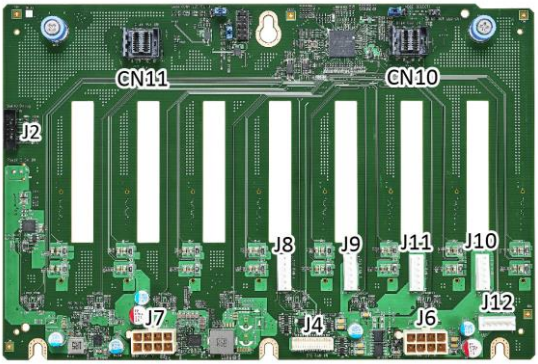



3. Prepare a new HDD BP Board and reinstall it into the chassis following the steps in reverse.

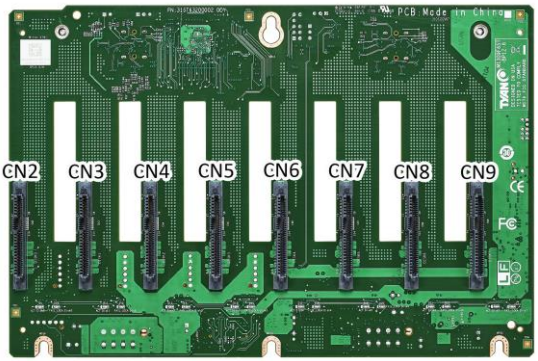
### 4.3.1 HDD BP Board Features

Here shows the M1309F65T-BP12-8 HDD Backplane Board in details.

**Front view:**




**Rear view:**




| M1309F65T-BP12-8 HDD Backplane Board | |
|---|---|
| **Specifications** | (2) Mini SAS HD Connectors (CN10/CN11)<br>(1) FAN System Connector (J4)<br>(8) SATA HDD Connector (CN2/CN3/CN4/CN5/CN6/CN7/CN8/CN9)<br>(5) FAN Connectors (J8/J9/J10/J11/J12)<br>(2) Power Connector (J6/J7)<br>(1) SGPIO Debug Connector (J2) |

### 4.3.2 Connector Pin Definitions

**CN2/CN3/CN4/CN5/CN6/CN7/CN8/CN9: Pin Out (connector to SATA HD)**

| DEFAULT | PIN | PIN | DEFAULT |
|---|---|---|---|
| | E7 | S1 | GND |
| | E8 | S2 | SAS[0…7]_TX_DP0 |
| | E9 | S3 | SAS[0…7]_TX_DN0 |
| | E10 | S4 | GND |
| | E11 | S5 | SAS[0…7]_RX_DN0 |
| | E12 | S6 | SAS[0…7]_RX_DP0 |
| | E13 | S7 | GND |
| GND | S8 | E4 | |
| NC | S9 | E5 | |
| NC | S10 | E6 | |
| GND | S11 | P1 | NC |
| NC | S12 | P2 | NC |
| NC | S13 | P3 | NC |
| GND | S14 | P4 | NC |
| | S15 | P5 | GND |
| | S16 | P6 | GND |
| | S17 | P7 | VDD_5_RUN(PRECHARGE) |
| | S18 | P8 | VDD_5_RUN |
| | S19 | P9 | VDD_5_RUN |
| | S20 | P10 | PRSNTN[0…7] |
| | S21 | P11 | RDYLED[0…7] |
| | S22 | P12 | GND |
| | S23 | P13 | VDD_12_RUN(PRECHARGE) |
| | S24 | P14 | VDD_12_RUN |
| | S25 | P15 | VDD_12_RUN |

**CN10/CN11" MiniSAS HD connector (BP to MB)**

| DEFAULT | PIN | PIN | DEFAULT |
|---|---|---|---|
| GND | B3 | D3 | GND |
| SAS[0/4]_TX_DP0 | B4 | D4 | SAS[0/4]_RX_DP0 |
| SAS[0/4]_TX_DN0 | B5 | D5 | SAS[0/4]_RX_DN0 |
| GND | A3 | C3 | GND |
| SAS[1/5]_TX_DP0 | A4 | C4 | SAS[1/5]_RX_DP0 |
| SAS[1/5]_TX_DN0 | A5 | C5 | SAS[1/5]_RX_DN0 |
| GND | A6 | C6 | GND |
| SGPIO_CLK_[A/B] | A1 | A2 | BMC_SDA3_SAS[03/47] |
| SGPIO_LOAD_[A/B] | B1 | B2 | NC |
| NC | C1 | C2 | SGPIO_DATAOUT_[A/B] |
| BMC_SCL3_SAS[03/47] | D1 | D2 | SGPIO_DATAIN_[A/B] |
| GND | B6 | D6 | GND |
| SAS[2/6]_TX_DP0 | B7 | D7 | SAS[2/6]_RX_DP0 |
| SAS[2/6]_TX_DN0 | B8 | D8 | SAS[2/6]_RX_DN0 |
| GND | B9 | D9 | GND |
| SAS[3/7]_TX_DP0 | A7 | C7 | SAS[3/7]_RX_DP0 |
| SAS[3/7_TX_DN0 | A8 | C8 | SAS[3/7]_RX_DN0 |
| GND | A9 | C9 | GND |

**J4: SYSTEM FAN connector (BP to MB)**

| DEFAULT | PIN | PIN | DEFAULT |
|---|---|---|---|
| FAN_TACH1 | 1 | 2 | FAN_TACH6 |
| FAN_TACH2 | 3 | 4 | FAN_TACH7 |
| FAN_TACH3 | 5 | 6 | FAN_TACH8 |
| FAN_TACH4 | 7 | 8 | FAN_TACH9 |
| FAN_TACH5 | 9 | 10 | FAN_TACH10 |
| GND | 11 | 12 | GND |
| CON_PWM2 | 13 | 14 | CON_PWM1 |
| FAN_TACH11 | 15 | 16 | BMC_FAN_SDA |
| FAN_TACH12 | 17 | 18 | BMC_FAN_SCL |
| V3V3_AUX | 19 | 20 | CON_PWM3 |
| V3V3_AUX | 21 | 22 | GND |
| FAN_TACH13 | 23 | 24 | FAN_TACH15 |
| FAN_TACH14 | 25 | 26 | FAN_TACH16 |
| CON_PWM4 | 27 | 28 | CON_PWM5 |
| CON_PWM0 | 29 | 30 | GND |

**J8/J9/J11/J10/J12: FAN connector (BP to FAN)**

| DEFAULT | PIN |
|---|---|
| VDD_12_[FAN/FAN1] | 1 |
| GND | 2 |
| FAN[1…5]_PWM_R | 3 |
| FAN_TACH[1…5] | 4 |
| VDD_12_[FAN/FAN1] | 5 |
| GND | 6 |

**J1: FPGA JTAG Pin Header**

| DEFAULT | PIN | PIN | DEFAULT |
|---|---|---|---|
| FPGA_JTAG_TCK | 1 | 2 | GND |
| FPGA_JTAG_TDO | 3 | 4 | VCC3_AUX |
| FPGA_JTAG_TMS | 5 | 6 | NC |
| NC | 7 | 8 | KEY pin |
| FPGA_JTAG_TDI | 9 | 10 | GND |

**J2: DEBUG SGPIO Pin Header**

| DEFAULT | PIN | PIN | DEFAULT |
|---|---|---|---|
| DBG_BMC_SMB_SCL | 1 | 2 | DBG_SGPIO_DOUT1 |
| DBG_BMC_SMB_SDA | 3 | 4 | DBG_SGPIO_DOUT0 |
| GND | 5 | 6 | DBG_SGPIO_LOAD |
| KEY pin | 7 | 8 | DBG_SGPIO_CLK |
| 3V_AUX | 9 | 10 | HD_ERR_LED |

**J3: MODE SELECT1 Jump setup Header. (SGPIO Mode Intel/AMD)**

| DEFAULT | PIN |
|---|---|
| NC | 1 |
| INTEL_AMD#_SEL | 2 |
| GND | 3 |
| **1_2 : INTEL MODE** **2_3 : AMD MODE** | |

**J5: I2C SETUP FROM Jump setup Header. (I2C setup from SAS/SYSTEM FAN connector)**

| DEFAULT | PIN |
|---|---|
| VCC_AUX | 1 |
| CKB_SELECT | 2 |
| GND | 3 |
| **1_2 : BY SAS CONN** **2_3 : BY SYSTEM FAN CONN** | |

**J13: SATA CONN I2C SETUP Jump setup Header. (I2C setup from SATA CONN connector)**

| DEFAULT | PIN |
|---|---|
| VCC_AUX | 1 |
| CKB_SELECT | 2 |
| GND | 3 |
| **1_2: BY SAS03 CONN(CN10)**<br>**2_3: BY SAS03 CONN(CN11)** | |

**J7: ATX Power connector. (Power supply to BP)**

| DEFAULT | PIN | PIN | DEFAULT |
|---|---|---|---|
| VDD_12_RUN | 5 | 1 | GND |
| VDD_12_RUN | 6 | 2 | GND |
| VDD_12_RUN | 7 | 3 | GND |
| VDD_12_RUN | 8 | 4 | GND |

**J6: ATX Power connector. (Power supply to BP)**

| DEFAULT | PIN | PIN | DEFAULT |
|---|---|---|---|
| VDD_12_FAN | 5 | 1 | GND |
| VDD_12_FAN | 6 | 2 | GND |
| VDD_12_FAN | 7 | 3 | GND |
| VDD_12_FAN | 8 | 4 | GND |

**J14: SATA HDD ACT LED OUT.**

| DEFAULT | PIN |
|---|---|
| HDD_BP_ACT_LED_OUT | 1 |
| GND | 2 |

Here shows the M1318T65-BP12E-2 HDD Backplane Board in details.

**Front View**


**Rear View**


| | |
|---|---|
| **PCB Dimensions:** | 76mm*33.5mm*3mm |
| **Thickness:** | 3mm |
| **Layer:** | 8 layers |
| **Integrated I/O** | MCIO Connector (J1)<br>SATA + NVMe Connector(NVME0)<br>SATA + NVMe Connector(NVME1)<br>SATA Connector(SATA0) SATA Connector(SATA1)<br>4P Power CON (PW1)<br>Header for PCA9544 SMBUS address Select (3PHD-1) |
| The rear 2 SATA SSDs/HDDs (SATA0 & SATA1) are not available when AMD EPYC™ 9004 Series Processors deployed in all configurations. Please contact Tyan Technical Support for more details. | |

## 4.4 Replacing the Front Panel Board

Follow these instructions to replace the M1713F65T-FPB Front Panel Control Board.

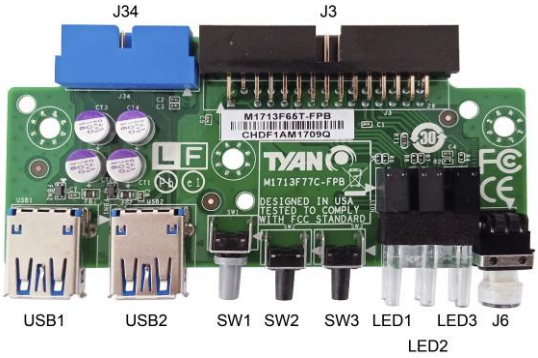
1. Unscrew the front panel unit.

2. Slide the LED control board unit out of the chassis.

3. Disconnect the cables and remove three screws securing the mylar and LED control board to the bracket.

4. After replacement, insert the unit into the chassis following the above procedures in reverse.

### 4.4.1 Front Panel Board Features




| | |
|---|---|
| **Integrated I/O** | ● 10*2 USB3.0 Header connect to MB<br>● 15*2 Header connect to MB<br>● (2) USB3.0 connector |
| | |
| **LEDs** | ● 1 GREEN/BLUE LED for LAN1 and ID<br>● 1 GREEN/GREEN LED for LAN2 and HDD<br>● 1 GREEN/AMBER LED for LAN3 and BMC<br>● 1 power LED |
| | |
| **Board size** | ● 97*45.2MM |

### 4.4.2 Pin Definition

**J34: USB3.0 Header**

| Definition | Pin | Pin | Definition |
|---|---|---|---|
| VCC_USB | 1 | 2 | FP_USB3_RX_N0 |
| FP_USB3_RX_P0 | 3 | 4 | GND |
| FP_USB3_TX_N0 | 5 | 6 | FP_USB3_TX_P0 |
| GND | 7 | 8 | USB0- |
| USB0+ | 9 | 10 | NC |
| USB1+ | 11 | 12 | USB1- |
| GND | 13 | 14 | FP_USB3_TX_P1 |
| FP_USB3_TX_N1 | 15 | 16 | GND |
| FP_USB3_RX_P1 | 17 | 18 | FP_USB3_RX_N1 |
| VCC_USB | 19 | 20 | key |

**J3: 15*2 Header**

| Definition | Pin | Pin | Definition |
|---|---|---|---|
| PW_LED+ | 1 | 2 | VCC |
| key | 3 | 4 | ID_LED+ |
| PW_LED- | 5 | 6 | ID_LED- |
| HDD_LED+ | 7 | 8 | SYS_FAULT1- |
| HDD_LED- | 9 | 10 | SYS_FAULT2- |
| PWR_SW- | 11 | 12 | LAN1_LED+ |
| GND | 13 | 14 | LAN1_LED- |
| RESET- | 15 | 16 | ICH_SMBDAT |
| GND | 17 | 18 | ICH_SMBCLK |
| ID_SW- | 19 | 20 | INTRU# |
| TEMP_SENSOR | 21 | 22 | LAN2_LED+ |
| NMI_SW | 23 | 24 | LAN2_LED- |
| NC | 25 | 26 | NC |
| LAN3_LED+ | 27 | 28 | LAN3_LED- |
| NC | 29 | 30 | NC |

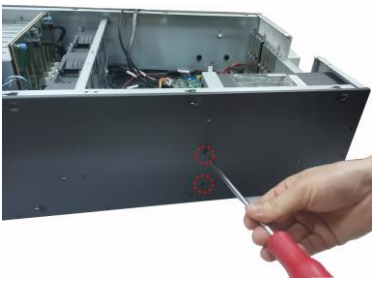
## 4.5 Replacing the Power Supply

The system has one pre-installed Power Supply Units. Please unplug the power cord before you follow these instructions to replace the power supply units.

1. Disconnect the power supply cable.

2. Unscrew to release the power supply unit.

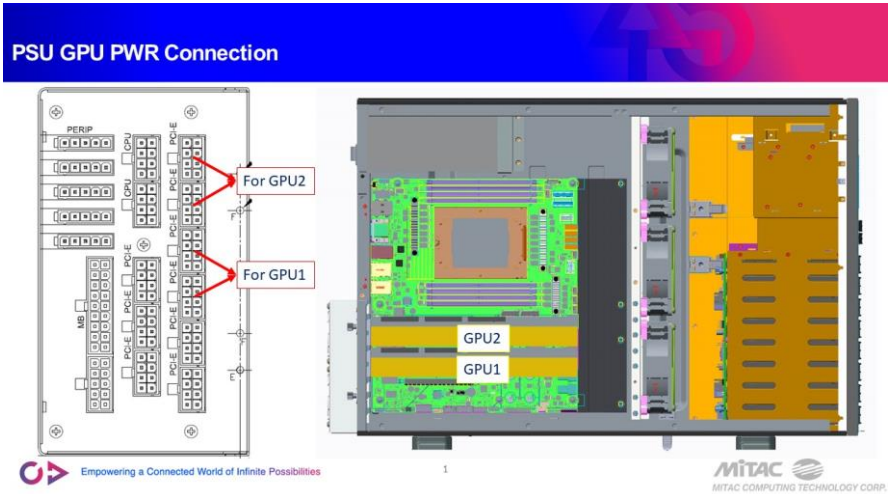
3. Unscrew to release the power supply unit.

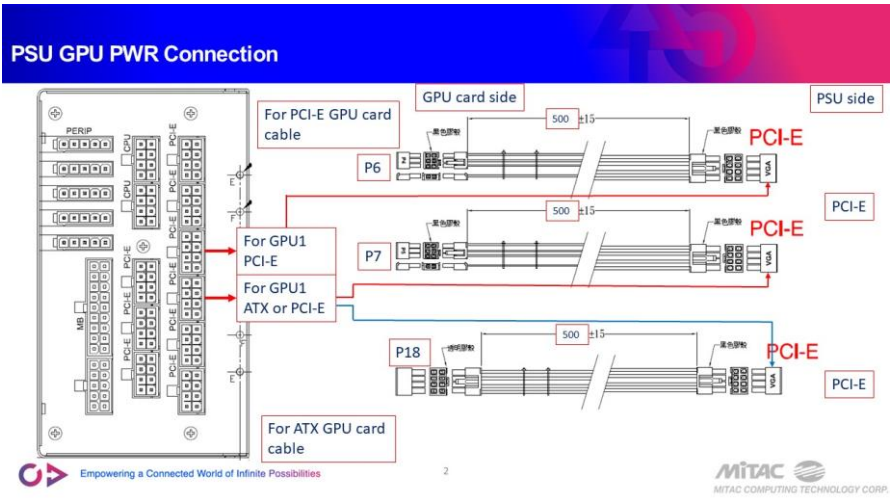


4. Take out the power supply unit.

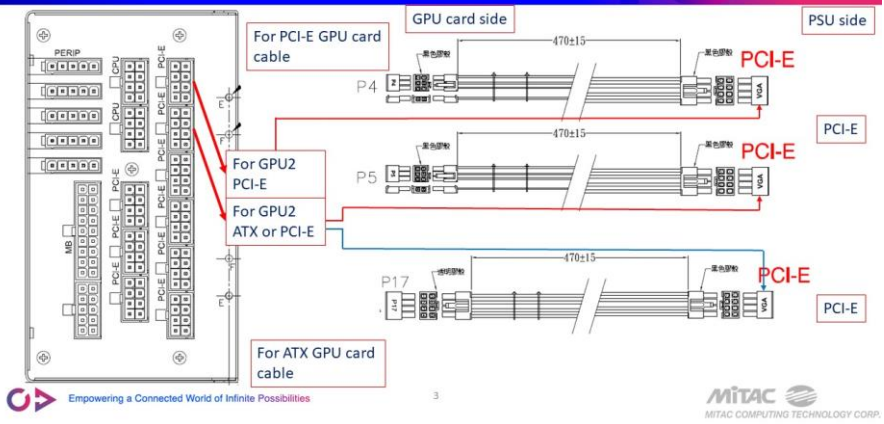
5. To replace a new power supply. And follow the procedures in reverse order to install a new power supply.

## Power supply Unit GPU PWR Connection



## PSU GPU PWR Connection



# NOTE

# Chapter 5: Motherboard Information

You are now ready to install your motherboard.

**How to install our products right… the first time**

The first thing you should do is read this user's manual. It contains important information that will make configuration and setup much easier. Here are some precautions you should take when installing your motherboard:

(1) Ground yourself properly before removing your motherboard from the antistatic bag. Unplug the power from your computer power supply and then touch a safely grounded object to release static charge (i.e. power supply case). For the safest conditions, MiTAC recommends wearing a static safety wrist strap.
(2) Hold the motherboard by its edges and do not touch the bottom of the board, or flex the board in any way.
(3) Avoid touching the motherboard components, IC chips, connectors, memory modules, and leads.
(4) Place the motherboard on a grounded antistatic surface or on the antistatic bag that the board was shipped in.
(5) Inspect the board for damage.

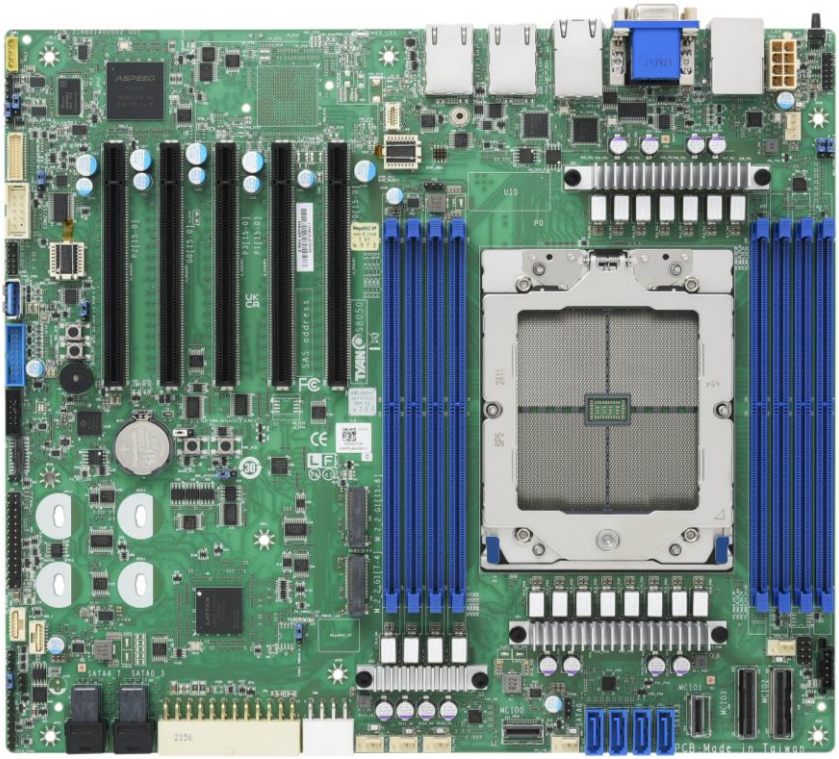
The following pages include details on how to install your motherboard into your chassis, as well as installing the processor, memory, disk drives and cables.

**Caution!**

**1.** To avoid damaging the motherboard and associated components, do not use torque force greater than 7kgf/cm (6.09 lb/in) on each mounting screw for motherboard installation.

**2.** Do not apply power to the board if it has been damaged.

## 5.1 Board Image

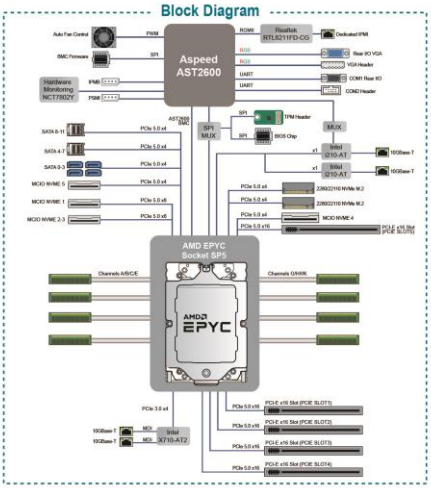


**S8050GM2NE-2T**

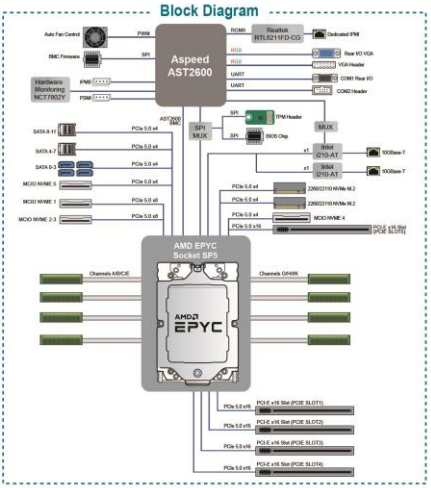
This picture is representative of the latest board revision available at the time of publishing. The board you receive may not look exactly like the above picture.

## 5.2 Block Diagram

S8050GM4NE-2T

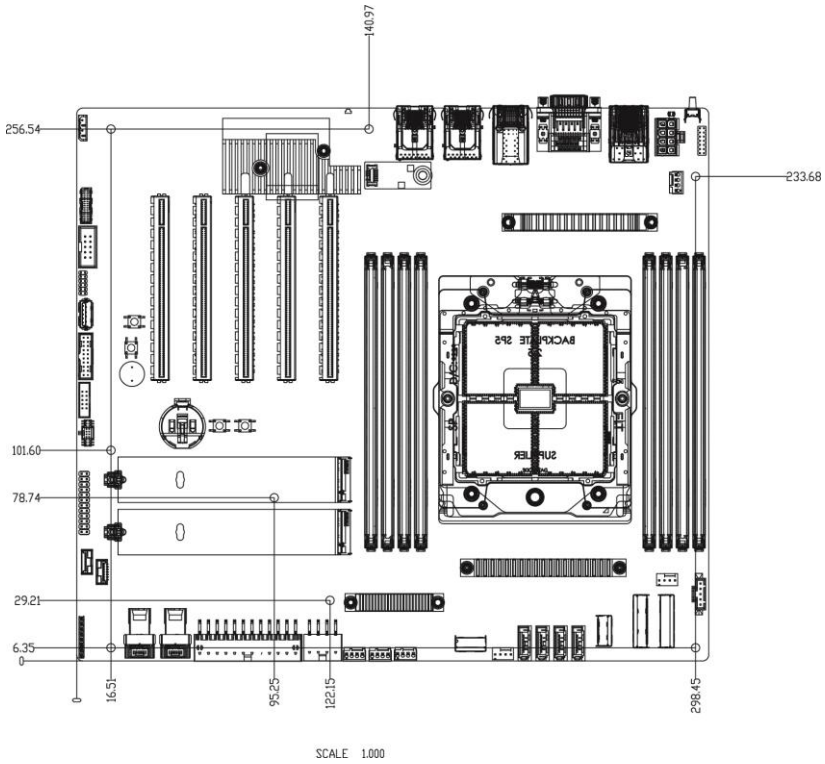



S8050GM2NE

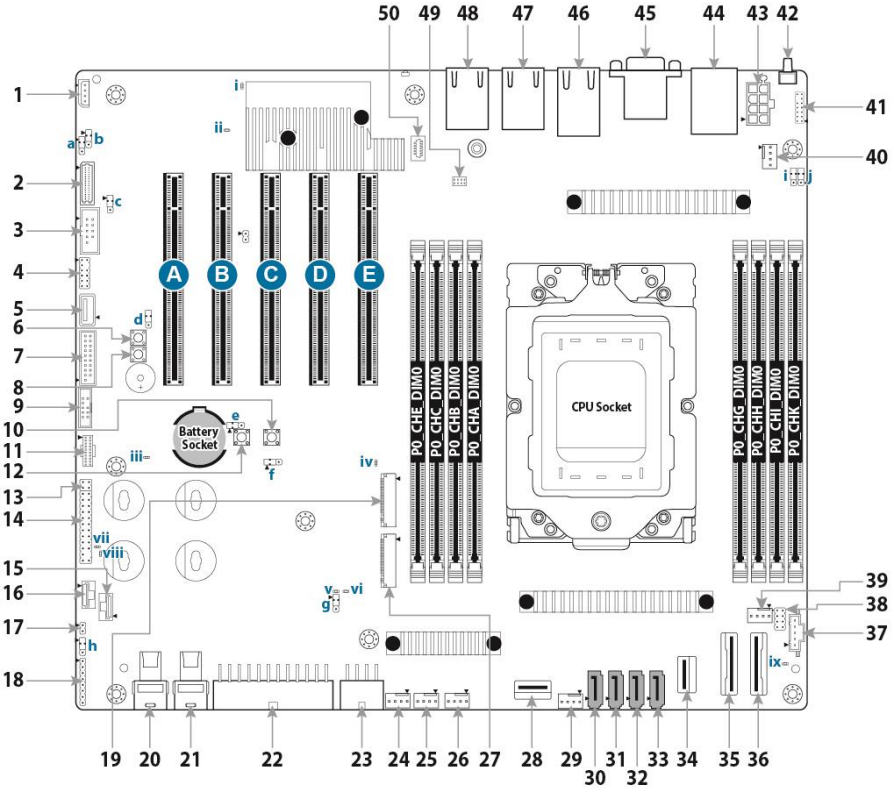



**S8050 Block Diagram**

## 5.3 Motherboard Mechanical Drawing



## 5.4 Board Parts, Jumpers and Connectors




This diagram is representative of the latest board revision available at the time of publishing. The board you receive may not look exactly like the above diagram. The DIMM slot numbers shown above can be used as a reference when reviewing the DIMM population guidelines shown later in the manual. For the latest board revision, please visit our web site at **http://www.tyan.com.**

## Jumpers & Connectors

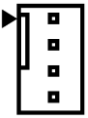
| Connectors | |
|---|---|
| 1. IPMB Connector (IPMB1) | 26. 4-pin Fan Connector (SYS_FAN_2) |
| 2. Front Fan Header(FAN_HD1) | 27. M.2 Connector (CN1) PCIE only |
| 3. COM2 Port Header(COM2) | 28. MCIOx4 SATA/NVME (CN10) |
| 4. TYAN Module Header(J62) | 29. 4-pin Fan Connector (SYS_FAN_1) |
| 5. TYPE A USB3.2 Gen1 Header(TYPEA_USB1) | 30. 7p SATA Connector (J15) |
| 6. NMI Button (SW5) | 31. 7p SATA Connector (J16) |
| 7. USB3.2 Gen1 Header (USB3_FPIO1) | 32. 7p SATA Connector (J18) |
| 8. COLD RST Button (SW2) | 33. 7p SATA Connector (J19) |
| 9. SGPIO0 Header (SGPIO0) | 34. MCIOx4 SATA/NVME (CN11) |
| 10. PWR Button (SW1) | 35. MCIOx8 NVME (CN6) |
| 11. HDT Header(J1) | 36. MCIOx8 NVME (CN5) |
| 12. WARM_RST Button (SW12) | 37. PSMI Header (PSMI_HD1) |
| 13. I210 LAN LED Header (J29) | 38. SVI Header (J17) |
| 14. Front Panel Header (FPIO_2) | 39. 4-pin Fan Connector (CPU0_FAN) |
| 15. HDD BP Smbus Header(HDR_2) | 40. 4-pin Fan Connector (SYS_FAN_5) |
| 16. HDD BP Smbus Header(HDR_1) | 41. VGA Header (VGA1) |
| 17. Intrusion Header(J66) | 42. ID Button (ID_BTN) |
| 18. CPLD JTAG Header (J12) | 43. CPU and Memory Power Connector (PW3) |
| 19. M.2 Connector (CN3)PCIE Only | 44. IPMI LAN USB3.0 Connector (LAN5) |
| 20. Mini SAS Connector (J26) | 45. VGA and COM1 Port Header (VGA_COM1) |
| 21. Mini SAS Connector (J25) | 46. RJ45 LAN Port (LAN3/LAN4) |
| 22. Power Connector (PW1) | 47. RJ45 LAN Port (LAN1) |
| 23. CPU and Memory Power Connector (PW2) | 48. RJ45 LAN Port (LAN2) |
| 24. 4-pin Fan Connector (SYS_FAN_4) | 49. BIOS Debug (BIOS_DBG1) |
| 25. 4-pin Fan Connector (SYS_FAN_3) | 50. SPI TPM Connector (J56) |
| **Slots** | |
| A. PCIE#3 x16 (PESLOT3) | D. PCIE#2 x16 (PESLOT2) |
| B. PCIE#5 x16 (PESLOT5) | E. PCIE#1 x16 (PESLOT1) |
| C. PCIE#4 x16 (PESLOT4) | |
| **Jumpers** | |
| a. COM2 Switch Jumper(J6) | f. BMC Header (J2) |
| b. COM2 Switch Jumper (J7) | g. CPLD PowerOn Jumper (J3) |
| c. RESET Switch Jumper (J33) | h. VRM SMBUS SEL Jumper (3PHD1) |
| d. NCSI Switch Jumper (J4) | i. COM1 Switch Jumper (J9) |

| | |
|---|---|
| e. CLEAR CMOS Jumper (J75) | j. COM1 Switch Jumper (J8) |
| **LEDS** | |
| I PROCHOT LED | VI PWROK LED |
| II BMC heartbeat LED | VII BMC ALERT LED |
| III CPU RESET LED | VIII SYS_PWROK LED |
| IV SATA & M.2 LED | IX PSU_ALERT LED |
| V PWR_GOOD LED | |

**Jumper Legend**

| | | |
|---|---|---|
|  | **OPEN - Jumper OFF** | Without jumper cover |
|  | **CLOSED - Jumper ON** | With jumper cover |

**CPU0_FAN, SYS_FAN_1~5: 4-pin FAN Connector**



| Pin | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Signal | GND | P12V | FAN_TACH | FAN_PWM |
| Use this header to connect the cooling fan to your motherboard to keep the system stable and reliable. | | | | |

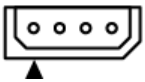
**FPIO_2: Front Panel Connector**

| Signal | Pin | Pin | Signal |
|---|---|---|---|
| PWRLED+ | 1 | 2 | VDD_33_DUAL |
| KEY | 3 | 4 | IDLED+ |
| PWRLED- | 5 | 6 | IDLED- |
| HDDLED+ | 7 | 8 | SYS_FAULT1- |
| HDDLED- | 9 | 10 | SYS_FAULT2- |
| PWR_SW# | 11 | 12 | LAN1LED+ |
| GND | 13 | 14 | LAN1LED- |
| RESET_SW# | 15 | 16 | SMBDATA |
| GND | 17 | 18 | SMBCLK |
| IDLED_SW# | 19 | 20 | INTRUSION# |
| NC | 21 | 22 | LAN2LED+ |
| NMI_SW# | 23 | 24 | LAN2LED- |

**PSMI_HD1: PSMI Header**

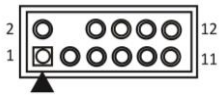
| Pin | Signal |
|---|---|
| 1 | SMB_CLK |
| 2 | SMB_DAT |
| 3 | PSU_SMBALERT_N |
| 4 | GND |
| 5 | V3.3 |

**IPMB_HD1: 4-pin IPMB Connector**



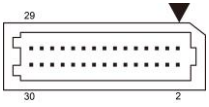
| Pin | Signal |
|---|---|
| 1 | IPMB_DAT |
| 2 | GND |
| 3 | IPMB_CLK |
| 4 | VCC3_AUX |

**J62: TYAN Module Header**



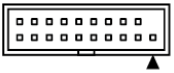

| Signal | Pin | Pin | Signal |
|---|---|---|---|
| VDD_33_DUAL | 1 | 2 | ESPI_CS1 |
| IO0 | 3 | 4 | KEY |
| IO1 | 5 | 6 | RESET# |
| IO2 | 7 | 8 | GND |
| IO3 | 9 | 10 | CLK |
| ALERT | 11 | 12 | GND |

**FAN_HD1: Front Fan Connector (Reserved for Barebone)**



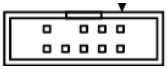

| Signal | Pin | Pin | Signal |
|---|---|---|---|
| TACH1 | 1 | 2 | TACH6 |
| TACH2 | 3 | 4 | TACH7 |
| TACH3 | 5 | 6 | TACH8 |
| TACH4 | 7 | 8 | TACH9 |
| TACH5 | 9 | 10 | TACH10 |
| GND | 11 | 12 | GND |
| PWM3 | 13 | 14 | PWM2 |
| TACH11 | 15 | 16 | SDA |
| TACH12 | 17 | 18 | SCL |
| GND | 19 | 20 | PWM4 |
| GND | 21 | 22 | GND |
| TACH13 | 23 | 24 | TACH15 |
| TACH14 | 25 | 26 | TACH16 |
| PWM5 | 27 | 28 | PWM7 |
| PWM0 | 29 | 30 | GND |

**USB3_FPIO1: USB3.2 Gen1 Header**



| Signal | Pin | Pin | Signal |
|---|---|---|---|
| +5V | 1 | 20 | KEY |
| P0_RX_N | 2 | 19 | +5V |
| P0_RX_P | 3 | 18 | P1_RX_N |
| GND | 4 | 17 | P1_RX_P |
| P0_TX_N | 5 | 16 | GND |
| P0_TX_P | 6 | 15 | P1_TX_N |
| GND | 7 | 14 | P1_TX_P |
| P0_N | 8 | 13 | GND |
| P0_P | 9 | 12 | P1_N |
| OC_N | 10 | 11 | P1_P |

**SSATA_SGPIO0: SATA SGPIO Pin Header for SSATA0**

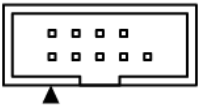


| Signal | Pin | Pin | Signal |
|---|---|---|---|
| SCL | 1 | 2 | NC |
| SDA | 3 | 4 | SDATA OUT- |
| GND | 5 | 6 | SLOAD |
| KEY | 7 | 8 | SCLOCK |
| VCC3_AUX | 9 | 10 | NC |

**VGA1: Front Panel VGA Header**

| Signal | Pin | Pin | Signal |
|---|---|---|---|
| GND | 1 | 2 | VGA2_5V |
| GND | 3 | 4 | HD_VGA_R |
| GND | 5 | 6 | HD_VGA_G |
| GND | 7 | 8 | HD_VGA_B |
| GND | 9 | 10 | HD_VGA_DAT |
| HD_VGA_HS | 11 | 12 | KEY |
| HD_VGA_CLK | 13 | 14 | HD_VGA_VS |

**COM2: COM Port Header**

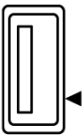


| Signal | Pin | Pin | Signal |
|---|---|---|---|
| COM2_DCD | 1 | 2 | COM2_DSR |
| COM2_RXD | 3 | 4 | COM2_RTS |
| COM2_TXD | 5 | 6 | COM2_CTS |
| COM2_DTR | 7 | 8 | COM2_NRI |
| GND | 9 | 10 | KEY |

**HDR_1/2: HDD BP Smbus Header**

| Signal | Pin | Pin | Signal |
|---|---|---|---|
| VCC3_AUX | 1 | 2 | HP0_SCK |
| HP0_SDA | 3 | 4 | CPU01_SMBALERT_N_C |
| NC | 5 | 6 | NC |
| GND | 7 | | |

**TYPEA_USB1: Vertical Type-A USB3.2 Gen1 Connector**



| Signal | Pin | Pin | Signal |
|---|---|---|---|
| USB3_N3_RX_TYPEA | 5 | 1 | VCC5 |
| USB3_P3_RX_TYPEA | 6 | 2 | USB2_N8_TYPE_A_R |
| GND | 7 | 3 | USB2_P8_TYPE_A_R |
| USB3_N3_TX_TYPEA | 8 | 4 | GND |
| USB3_P3_TX_TYPEA | 9 | | |

**IDLED_BTN1: Rear IO ID LED Button**

| Signal | Pin | Pin | Signal |
|---|---|---|---|
| FP_IDLED_BTN_N | 1 | 2 | GND |

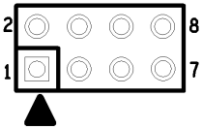
**PWR_BTN1: System Power Button**

| Signal | Pin | Pin | Signal |
|---|---|---|---|
| GND | 1,2 | 3,4 | PWR_BTN1 |

**RST_BTN1: COLD Reset Button**

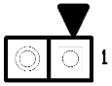
| Signal | Pin | Pin | Signal |
|---|---|---|---|
| GND | 1,2 | 3,4 | FP_RST_BTN_N |

**BIOS_DBG1: BIOS Debug Header**



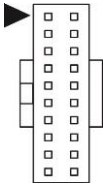

| Signal | Pin | Pin | Signal |
|---|---|---|---|
| SPI_CS# | 1 | 2 | VDD_33_DUAL |
| SPI_DO | 3 | 4 | SPI_HOLD# |
| SPI_WP# | 5 | 6 | SPI_CLK |
| GND | 7 | 8 | SPI_DI |

**J66: Intrusion Header**




| Pin | Signal |
|---|---|
| 1 | SCM_CHASSIS_INTR_L |
| 2 | GND |

**J1: HDT Header**

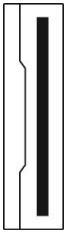


| Signal | Pin | Pin | Signal |
|---|---|---|---|
| P1V8_AUX | 1 | 2 | TCK |
| GND | 3 | 4 | TMS |
| GND | 5 | 6 | TDI |
| GND | 7 | 8 | TDO |
| TRST_N | 9 | 10 | PEROK |
| NC | 11 | 12 | RESET_N |
| NC | 13 | 14 | NC |
| NC | 15 | 16 | DBREQ_N |
| GND | 17 | 18 | NC |
| P1V8_AUX | 19 | 20 | NC |

**CN1/CN2: M.2 Connector**

| Signal | Pin | Pin | Signal |
|---|---|---|---|
| GND | 1 | 2 | VCC3 |
| GND | 3 | 4 | VCC3 |
| NC | 5 | 6 | NC |
| NC | 7 | 8 | VCC3_AUX |
| GND | 9 | 0 | M2_LED_N |
| NC | 11 | 12 | VCC3 |
| NC | 13 | 14 | VCC3 |
| GND | 15 | 16 | VCC3 |
| NC | 17 | 18 | VCC3 |
| NC | 19 | 20 | NC |
| GND | 21 | 22 | NC |
| NC | 23 | 24 | NC |
| NC | 25 | 26 | NC |
| GND | 27 | 28 | NC |
| PCH_PE1_M2_1_RX_N | 29 | 30 | NC |
| PCH_PE1_M2_1_RX_P | 31 | 32 | NC |
| GND | 33 | 34 | NC |
| PCH_PE1_M2_1_TX_N | 35 | 36 | NC |
| PCH_PE1_M2_1_TX_P | 37 | 38 | NC |
| GND | 39 | 40 | M2_SMB_CLK_R |
| PCH_PE0_M2_0_RX_N | 41 | 42 | M2_SMB_DAT_R |
| PCH_PE0_M2_0_RX_P | 43 | 44 | NC |
| GND | 45 | 46 | NC |
| PCH_PE0_M2_0_TX_N | 47 | 48 | NC |
| PCH_PE0_M2_0_TX_P | 49 | 50 | M2_PERST_N_R |
| GND | 51 | 52 | NC |
| CLK_100M_M2_DN | 53 | 54 | M2_2_PEWAKE_N |
| CLK_100M_M2_DP | 55 | 56 | NC |
| GND | 57 | 58 | NC |
| PE_M.2_DETECT_N | 67 | 68 | NC |
| NC | 69 | 70 | VCC3 |
| GND | 71 | 72 | VCC3 |
| GND | 73 | 74 | VCC3 |
| GND | 75 | 76 | GND |
| GND | 77 | | |

**CN5/6/10/11: MCIO0 Connector**

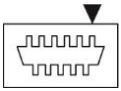


| Signal Name | Pin | Pin | Signal Name |
|---|---|---|---|
| GND | A1 | B1 | GND |
| CPU0_PE4_RX_DN<7> | A2 | B2 | CPU0_PE4_TX_DN<7> |
| CPU0_PE4_RX_DP<7> | A3 | B3 | CPU0_PE4_TX_DP<7> |
| GND | A4 | B4 | GND |
| CPU0_PE4_RX_DN<6> | A5 | B5 | CPU0_PE4_TX_DN<6> |
| CPU0_PE4_RX_DP<6> | A6 | B6 | CPU0_PE4_TX_DP<6> |
| GND | A7 | B7 | GND |
| PE4_TYPEA | A8 | B8 | CPU0_PE4_HDD0_SCL0 |
| WAKE_NVME_N0 | A9 | B9 | CPU0_PE4_HDD0_SDA0 |
| GND | A10 | B10 | GND |
| CLK_100M_DB2000_CPU0_NVME1_DP | A11 | B11 | RST_NVME0_CPU0_PERST_N |
| CLK_100M_DB2000_CPU0_NVME1_DN | A12 | B12 | FM_CPU0_PE4_PRSTNA_N |
| GND | A13 | B13 | GND |
| CPU0_PE4_RX_DN<5> | A14 | B14 | CPU0_PE4_TX_DN<5> |
| CPU0_PE4_RX_DP<5> | A15 | B15 | CPU0_PE4_TX_DP<5> |
| GND | A16 | B16 | GND |
| CPU0_PE4_RX_DN<4> | A17 | B17 | CPU0_PE4_TX_DN<4> |
| CPU0_PE4_RX_DP<4> | A18 | B18 | CPU0_PE4_TX_DP<4> |
| GND | A19 | B19 | GND |
| CPU0_PE4_RX_DN<3> | A20 | B20 | CPU0_PE4_TX_DN<3> |
| CPU0_PE4_RX_DP<3> | A21 | B21 | CPU0_PE4_TX_DP<3> |
| GND | A22 | B22 | GND |
| CPU0_PE4_RX_DN<2> | A23 | B23 | CPU0_PE4_TX_DN<2> |
| CPU0_PE4_RX_DP<2> | A24 | B24 | CPU0_PE4_TX_DP<2> |
| GND | A25 | B25 | GND |
| PE4_TYPEB | A26 | B26 | CPU0_PE4_HDD0_SCL1 |
| WAKE_NVME_N1 | A27 | B27 | CPU0_PE4_HDD0_SDA1 |
| GND | A28 | B28 | GND |
| CLK_100M_DB2000_CPU0_NVME2_DP | A29 | B29 | RST_NVME1_CPU0_PERST_N |
| CLK_100M_DB2000_CPU0_NVME2_DN | A30 | B30 | FM_CPU0_PE4_PRSTNB_N |
| GND | A31 | B31 | GND |
| CPU0_PE4_RX_DN<1> | A32 | B32 | CPU0_PE4_TX_DN<1> |
| CPU0_PE4_RX_DP<1> | A33 | B33 | CPU0_PE4_TX_DP<1> |
| GND | A34 | B34 | GND |
| CPU0_PE4_RX_DN<0> | A35 | B35 | CPU0_PE4_TX_DN<0> |
| CPU0_PE4_RX_DP<0> | A36 | B36 | CPU0_PE4_TX_DP<0> |
| GND | A37 | B37 | GND |

### J12: CPLD JTAG Connector (reserved)

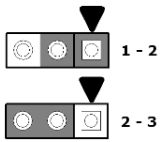
| Signal | Pin | Pin | Signal |
|---|---|---|---|
| VDD_33_DUAL | 1 | 2 | TDO |
| TDI | 3 | 4 | NC |
| NC | 5 | 6 | TMS |
| GND | 7 | 8 | TCK |

### J56: SPI TPM Header



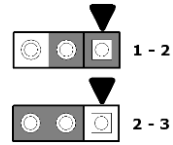
| Signal | Pin | Pin | Signal |
|---|---|---|---|
| SPI_TPM_CONN_CLK | 1 | 7 | P3V3_AUX |
| RST_PLTRST_TPM_CONN_N | 2 | 8 | FM_TPM_CONN_PRSNT_R_N |
| SPI_TPM_CONN_MOSI | 3 | 9 | IRQ_TPM_CONN_PIRQ_N |
| SPI_TPM_CONN_MISO | 4 | 10 | P3V3 |
| SPI_PCH_TPM_CONN_CS_N | 5 | 11 | GND |
| NC_TPM_PIN6 | 6 | | |

### J3: CPLD force pwron options SEL Connector



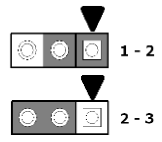

| Signal | Pin | Pin | Signal |
|---|---|---|---|
| NC | 1 | 2 | FORCE_PWRON_LVC3 |
| Rpu 1k | 3 | | |
| Pin1-2 closed: Normal Mode (Default)<br>Pin2-3 closed: POWER ON | | | |

### J4: NCSI SEL Connector



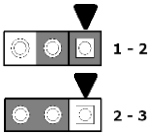

| Signal | Pin | Pin | Signal |
|---|---|---|---|
| NC | 1 | 2 | NCSI_X710_I210_EN |
| GND | 3 | | |
| Pin1-2 closed: NCSI to OCP (Default)<br>Pin2-3 closed: NCSI to X710 | | | |

### J33: reset SYS/BMC SEL Connector




| Signal | Pin | Pin | Signal |
|---|---|---|---|
| COLD_RST_BTN_L | 1 | 2 | FP_RST_BTN_JP_L |
| FP_BMC_RST_BTN_N | 3 | | |
| Pin1-2 closed: SYS RESET (Default)<br>Pin2-3 closed: BMC RESET | | | |

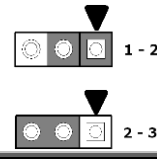
### J75: Clear CMOS Jumper




| Signal | Pin | Pin | Signal |
|---|---|---|---|
| VDD_RTC | 1 | 2 | P0_VDD_RTC |
| GND | 3 | | |

Pin1-2 closed: Normal Mode **(Default)**
Pin2-3 closed: Clear CMOS

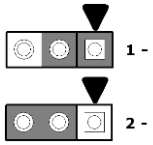
### 3PHD_1: VRM SMBUS SEL Connector




| Signal | Pin | Pin | Signal |
|---|---|---|---|
| NC | 1 | 2 | VR_I2C_CPU0_EN |
| GND | 3 | | |

Pin1-2 closed: VRM SMBus to BMC **(Default)**
Pin2-3 closed: BMC SMBus open（for Power FW update）

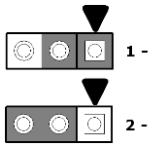
### J6/J7: COM2 Switch Jumper




| Signal | Pin | Pin | Signal |
|---|---|---|---|
| BMC_TXD2<br>BMC_RXD2 | 1 | 2 | TXD_OUT<br>RXD_OUT |
| BMC_TXD5<br>BMC_RXD5 | 3 | | |

Pin1-2 closed: Normal Mode **(Default)**
Pin2-3 closed: Debug Mode

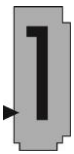
### J8/J9: COM1 Switch Header




| Signal | Pin | Pin | Signal |
|---|---|---|---|
| BMC_TXD1<br>BMC_RXD1 | 1 | 2 | TXD_OUT<br>RXD_OUT |
| FTDI_UART_RXD<br>FTDI_UART_TXD | 3 | | |

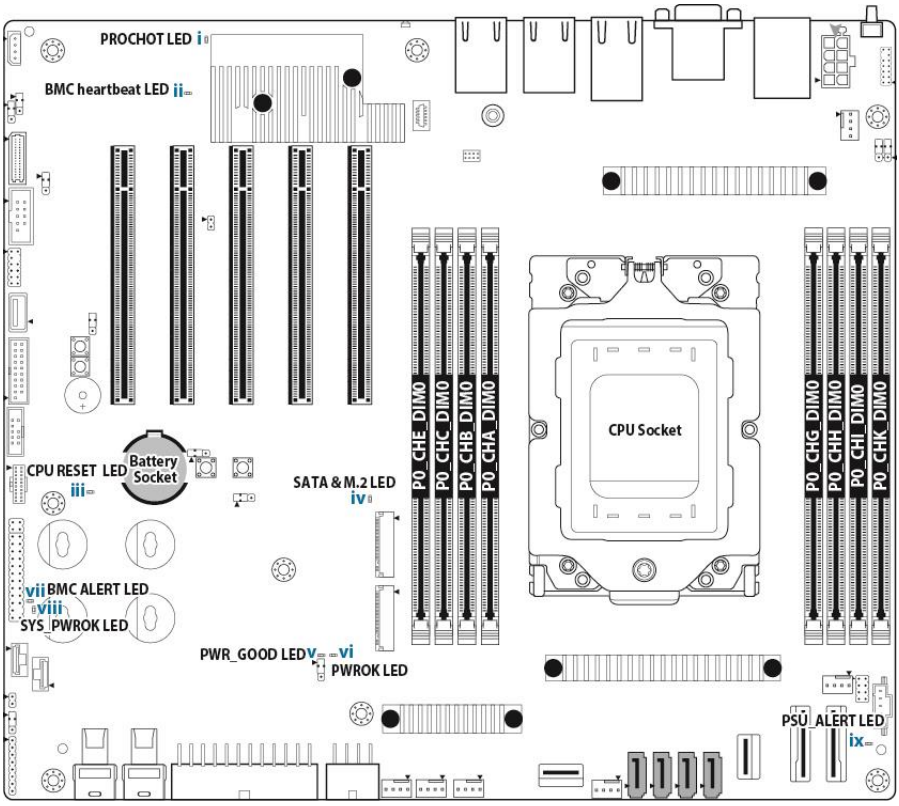
Pin1-2 closed: Normal Mode **(Default)**
Pin2-3 closed: Debug Mode

### J15/J16/J18/J19: 7-pin SATA 3.0 Connector



| Name | TYPE |
|---|---|
| 1 | GND |
| 2 | SATA TX DP |
| 3 | SATA TX DN |
| 4 | GND |
| 5 | SATA RX DN |
| 6 | SATA RX DP |
| 7 | GND |

## 5.5 LED Definitions



| | | | | |
|---|---|---|---|---|
| **1. D39** | SATA & M.2 LED | **Pin** | **Signal** | |
| | | + | VDD_33_DUAL | |
| | | - | HDD_ACT_LED_ALL_L | |
| | | **State** | **Description** | |
| | | OFF | OFF | HDD non-activity |
| | | ON | Blue | HDD activity |
| **2. D52** | PWR_GOOD LED | **Pin** | **Signal** | |
| | | + | VDD_5_DUAL | |
| | | - | P0_PWR_GOOD_LED- | |
| | | **State** | **Description** | |
| | | OFF | OFF | Power Off |
| | | ON | Green | System Power Good |
| **3. D57** | PWROK LED | **Pin** | **Signal** | |
| | | + | VDD_5_DUAL | |
| | | - | P0_PWROK_LED- | |
| | | **State** | **Description** | |
| | | OFF | OFF | CPU Power Off |
| | | ON | Green | CPU Power OK |
| **4. D58** | CPU RESET LED | **Pin** | **Signal** | |
| | | + | VDD_5_RUN | |
| | | - | P0_RESET_LED_L | |
| | | **State** | **Description** | |
| | | OFF | OFF | CPU Reset Normal |
| | | ON | RED | CPU Reset Not Send Out |
| **5. D26** | PROCHOT LED | **Pin** | **Signal** | |
| | | + | VDD_33_DUAL | |
| | | - | BMC_P0_PROCHOT_N | |
| | | **State** | **Description** | |
| | | OFF | OFF | Normal |
| | | ON | RED | SYSTEM PROCHOT OR BMC NOT ready |
| **6. D31** | PSU_ALERT LED | **Pin** | **Signal** | |
| | | + | VDD_33_DUAL | |
| | | - | PSMI_PSU_ALERT_LED_L | |
| | | **State** | **Description** | |
| | | OFF | OFF | Normal |
| | | ON | RED | PSU_ALERT |
| **7. D32** | SYS_PWROK LED | **Pin** | **Signal** | |
| | | + | VDD_33_DUAL | |
| | | - | SCM_SYS_PWROK- | |

| | | | | |
|---|---|---|---|---|
| | | **State** | **Description** | |
| | | OFF | OFF | Normal |
| | | ON | Green | System Power OK |
| **8. D1_2** | BMC heartbead LED | **Pin** | **Signal** | |
| | | + | VDD_33_DUAL | |
| | | - | BMC_HB_LED_L | |
| | | **State** | **Description** | |
| | | OFF | OFF | BMC Not Ready |
| | | ON | Green 1HZ | BMC Ready |
| **9. D18** | BMC ALERT LED | **Pin** | **Signal** | |
| | | + | VDD_33_DUAL | |
| | | - | BMC_HW_FAULT_L | |
| | | **State** | **Description** | |
| | | OFF | OFF | Normal |
| | | ON | Orange | BMC Alert |

## 5.6 Installing the Processor and Heatsink

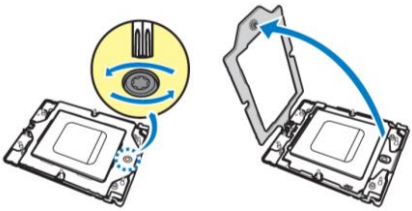
The types of processors supported by the S8050 are listed in the ***1.3 Features*** section on ***page 16***. Check our website at **http://www.tyan.com** for the latest list of validated **AMD**® processors for this specific motherboard.

> **NOTE:** MiTAC is not liable for damage as a result of operating an unsupported configuration.

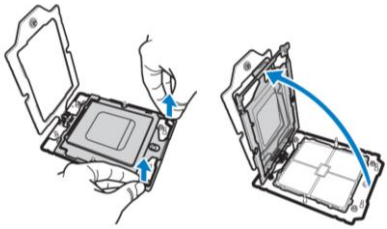
**Processor Installation (Single Socket / for AMD® EPYC™ 9004 Series CPU)**

Follow the steps below to install the processors and heat sinks.
Please note that the illustrations are based on socket which may not look exactly like the motherboard you purchased. Therefore, the illustrations should be held for your reference only.
**NOTE:** Please save and replace the flip CPU protection cap when returning for service.

1. Use a T20 Torx screwdriver to loosen the screws securing the force frame. **NOTE**: The force frame will automatically eject after the captive screws are being released.



2. By placing your both index fingers on the sides on the metal handle, pull to release the rail frame. Then lift the rail frame to its fully open position.



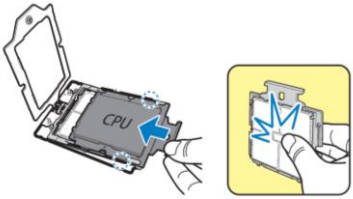
3. Remove the external cap from the rail frame.

4. Align and install the carrier frame with package into the slot on the rail frame.

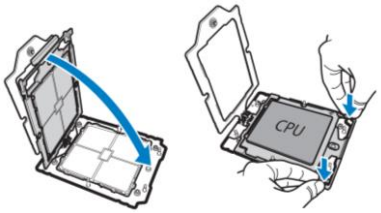
   **NOTE:** During installation, observe the following:

   →make sure to push the carrier frame with package towards the end of the rail frame until it clicks in place.

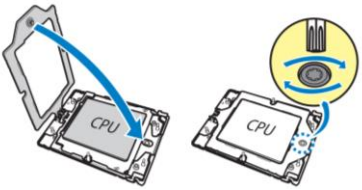
   →do not drop the carrier frame or touch the package pad to avoid component damage.




5. Carefully close the rail frame with the installed package. Then push both edges of the rail frame firmly until it locks in place.




6. Close the force frame. Then use a T20 Torx screwdriver to tighten the screw to secure the force frame.



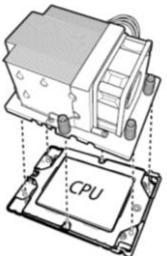
**Heat sink Installation**

After installing the processor, you will need to proceed to install the heat sink. The CPU heat sink will ensure that the processor do not overheat and continue to operate at maximum performance for as long as you own them. An overheated processor is dangerous to the motherboard. The processors will overheat within seconds, enter thermal protection, and shut down if heatsinks are not installed.
Caution：Take caution of the air flow must be in the direction which paralleled with memories.

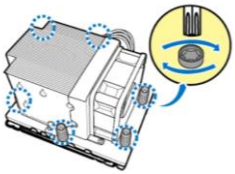
For the safest method of installation and information on choosing the appropriate heat sink, using heat sinks validated by **AMD**®. Please refer to the **AMD**® website: **http://www.amd.com**

The following diagram illustrates how to install the heatsink on the **AMD**® CPU Socket:

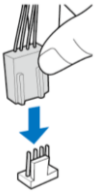
1. Align and install the CPU heatsink onto the top of the CPU socket.



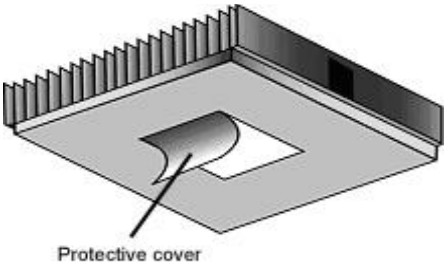

2. Use a T20 Torx screwdriver to tighten the heatsink screws.



3. Connect the heatsink power cable to the mainboard connector.

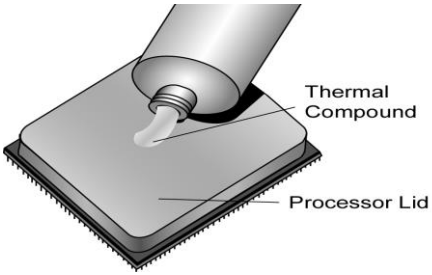


## 5.7 Thermal Interface Material




There are two types of thermal interface materials designed for use with the processors.

The most common material comes as a small pad attached to the heat sink at the time of purchase. There should be a protective cover over the material. Take care not to touch this material. Simply remove the protective cover and place the heat sink on the processor.

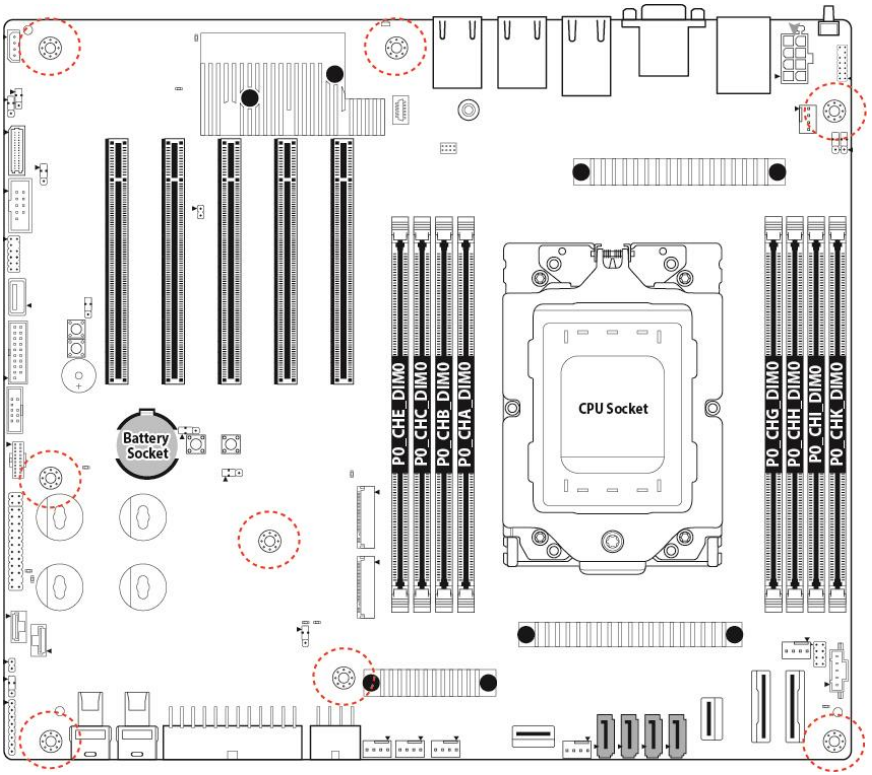



The second type of interface material is usually packaged separately. It is commonly referred to as 'thermal compound'. Simply apply a thin layer on to the CPU lid (applying too much will actually reduce the cooling).

**NOTE:** Always check with the manufacturer of the heat sink & processor to ensure that the thermal interface material is compatible with the processor and meets the manufacturer's warranty requirements.

## 5.8 Tips on Installing Motherboard in Chassis

Before installing your motherboard, make sure your chassis has the necessary motherboard support studs installed. These studs are usually metal and are gold in color. Usually, the chassis manufacturer will pre-install the support studs. If you are unsure of stud placement, simply lay the motherboard inside the chassis and align the screw holes of the motherboard to the studs inside the case. If there are any studs missing, you will know right away since the motherboard will not be able to be securely installed.

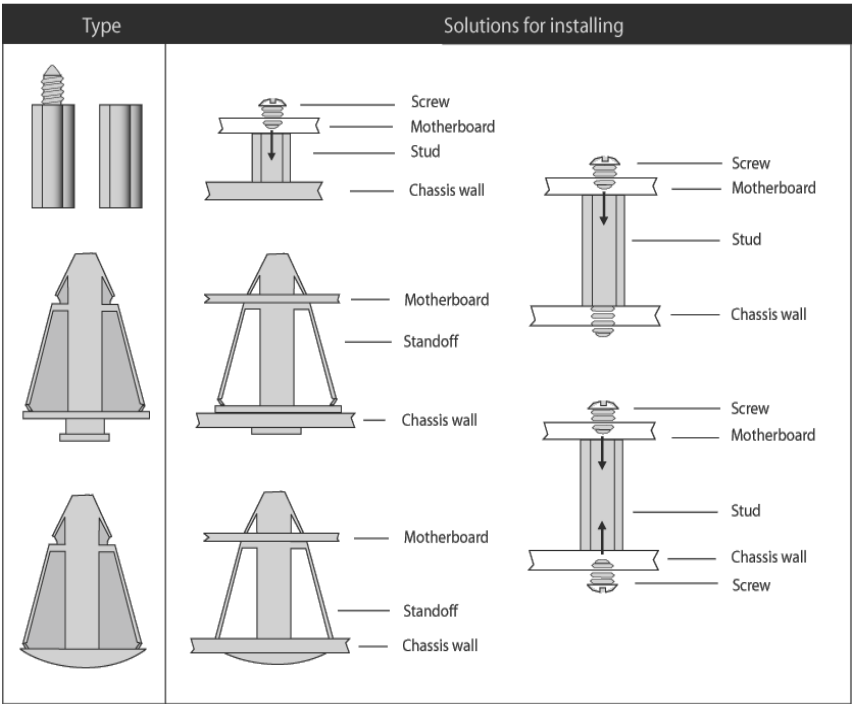



Note: Be especially careful to look for extra stand-offs. If there are any stand-offs present that are not aligned with a mounting hole on the motherboard, it will likely short components on the back of the motherboard when installed. This will cause malfunction and/or damage to your motherboard.

Some chassis include plastic studs instead of metal. Although the plastic studs are usable, MiTAC recommends using metal studs with screws that will fasten the motherboard more securely in place.

Below is a chart detailing what the most common motherboard studs look like and how they should be installed.

Mounting the Motherboard



## 5.9 Installing the Memory

Before installing memory, ensure that the memory you have is compatible with the motherboard and processor. Check the TYAN Web site at **http://www.tyan.com** for details of the type of memory recommended for your motherboard.

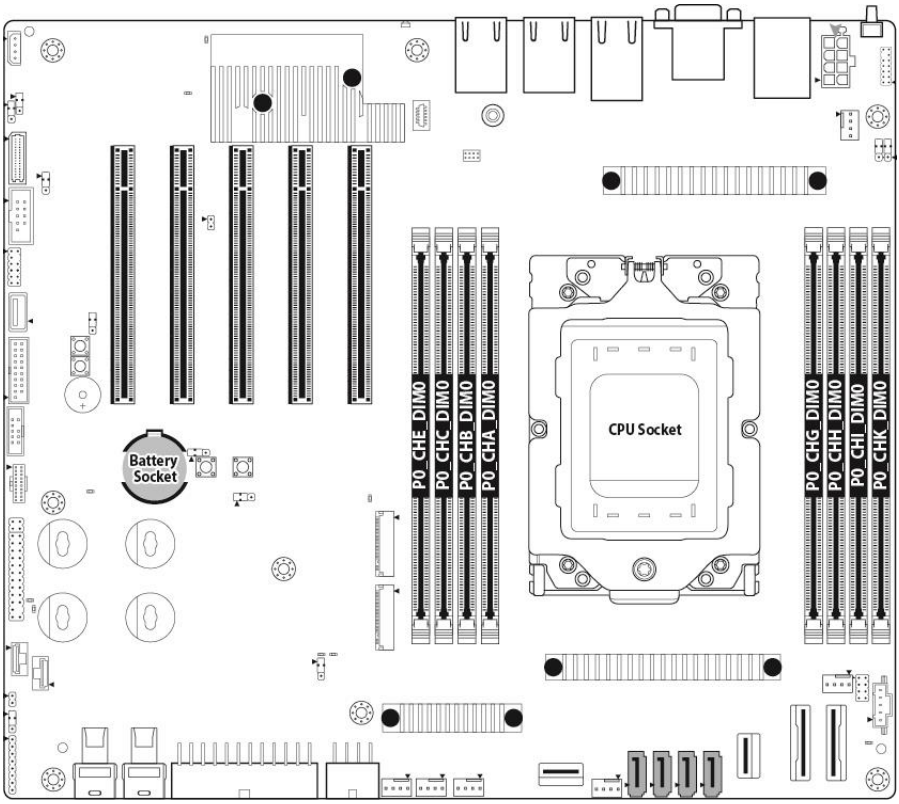


**Table 1. Recommended Memory Channels per Configuration**

| Number of Memory Channels Populated | Recommended Memory Channels (UMC to Memory Channel Mapping) | | | | | | | | | | | | Nodes per Socket (NPS) supported[2] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8 | Memory Channel | A | C | B | E | | | G | I | H | K | | |
| | UMC instance | 3 | 0 | 4 | 1 | | | 9 | 6 | 10 | 7 | | NPS4, NPS2, NPS1 |
| 6 | Memory Channel | A | C | B | | | | G | I | H | | | |
| | UMC instance | 3 | 0 | 4 | | | | 9 | 6 | 10 | | | NPS2, NPS1 |
| 4 | Memory Channel | A | C | | | | | G | I | | | | |
| | UMC instance | 3 | 0 | | | | | 9 | 6 | | | | NPS4, NPS2, NPS1 |
| 2 | Memory Channel | A | | | | | | G | | | | | |
| | UMC instance | 3 | | | | | | 9 | | | | | NPS2, NPS1 |
| 1 | Memory Channel | A | | | | | | | | | | | |
| | UMC instance | 3 | | | | | | | | | | | NPS1 |

| | DIMM Population/Channel | | DDR5 Frequency MT/s |
|---|---|---|---|
| DIMM Type | DIMM 0 | DIMM 1 | Genoa platforms |
| | | | 14L 74mil low-DK PCB stackup |
| RDIMM | - | 1R | 4800 |
| | 1R | 1R | 4000 |
| | - | 2R | 4800 |
| | 1R | 2R | 3600 |
| | 2R | 2R | 3600 |
| 3DS RDIMM* | - | 2SxR | 4800 |
| | 2SxR | 2SxR | 3600 |
| | | | |
| *For 3DS RDIMM | When x = 2 | DIMM Ranks = 4 | |
| | When x = 4 | DIMM Ranks = 8 | |
| | When x = 8 | DIMM Ranks = 16 | |

| DIMM SLOT | Silk screen | DIMM SLOT | Silk screen |
|---|---|---|---|
| P0_UMC3_CH_A0 | P0_CHA_DIM0 | P0_UMC9_CH_G0 | P0_CHG_DIM0 |
| P0_UMC4_CH_B0 | P0_CHB_DIM0 | P0_UMC10_CH_H0 | P0_CHH_DIM0 |
| P0_UMC0_CH_C0 | P0_CHC_DIM0 | P0_UMC6_CH_I0 | P0_CHI_DIM0 |
| P0_UMC1_CH_E0 | P0_CHE_DIM0 | P0_UMC7_CH_K0 | P0_CHK_DIM0 |

## Recommended Memory Population Table

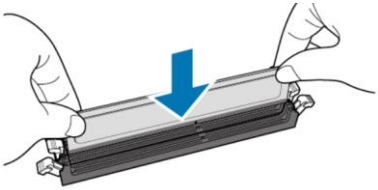
| CPU Installed | Quantity of memory installed | | | | |
|---|---|---|---|---|---|
| | 1 | 2 | 4 | 6 | 8 |
| P0_CHA_DIM0 | √ | √ | √ | √ | √ |
| P0_CHB_DIM0 | | | | √ | √ |
| P0_CHC_DIM0 | | | √ | √ | √ |
| P0_CHE_DIM0 | | | | | √ |
| P0_CHG_DIM0 | | √ | √ | √ | √ |
| P0_CHH_DIM0 | | | | √ | √ |
| P0_CHI_DIM0 | | | √ | √ | √ |
| P0_CHK_DIM0 | | | | | √ |

## Memory Installation Procedure

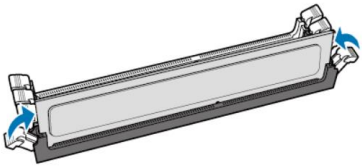
Follow these instructions to install memory modules into the S8050.

1. Unlock a DIMM socket by Press the retaining clip outwardly in the following illustration.

2. Align the memory module with the socket，such that the DIMM NOTCH match the KEY SLOT on the socket.

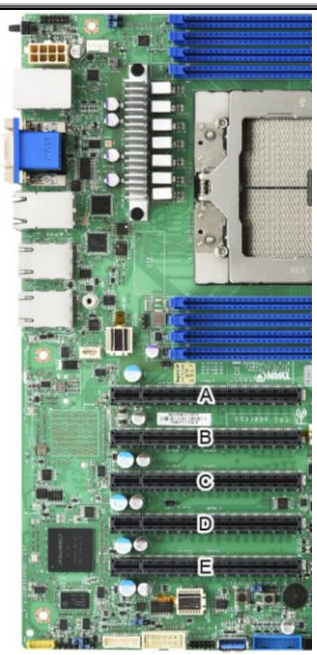


3. Seat the module firmly into the socket by gently pressing down until it sits flush with the socket. The locking levers pop up into place.



## 5.10 Installing Add-In Cards

Before installing add-in cards, it's helpful to know if they are fully compatible with your motherboard. For this reason, we've provided the diagrams below, showing the slots that may appear on your motherboard.




| |
|---|
| A: PCIE#1 PCI-E Gen.5 x16 slots |
| B: PCIE#2 PCI-E Gen.5 x16 slots |
| C: PCIE#4 PCI-E Gen.5 x16 slots |
| D: PCIE#5 PCI-E Gen.5 x16 slots |
| E: PCIE#3 PCI-E Gen.5 x16 slots |

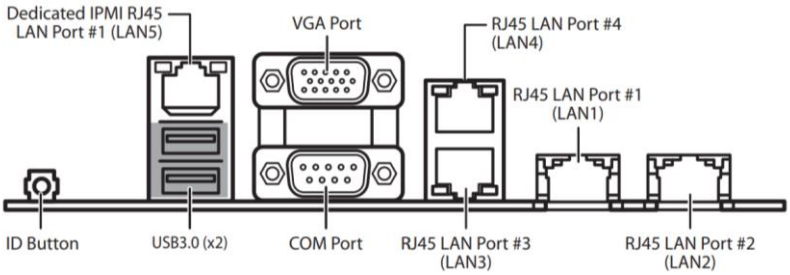
Simply find the appropriate slot for your add-in card and insert the card firmly. Do not force any add-in cards into any slots if they do not seat in place. It is better to try another slot or return the faulty card rather than damaging both the motherboard and the add-in card.

**TIP:** It's a good practice to install add-in cards in a staggered manner rather than making them directly adjacent to each other. Doing so allows air to circulate within the chassis more easily, thus improving cooling for all installed devices.

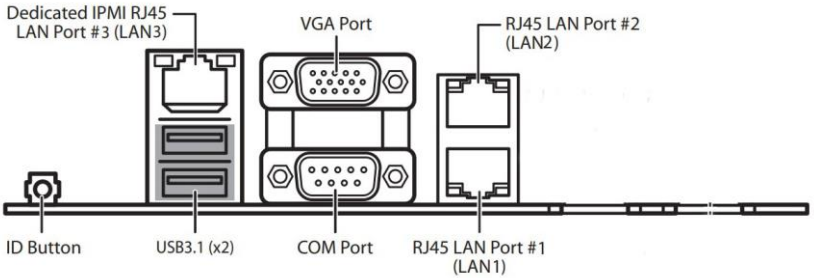
**NOTE:** You must always unplug the power connector from the motherboard before performing system hardware changes to avoid damaging the board or expansion device.

## 5.11 Connecting External Devices

Connecting external devices to the motherboard is an easy task. The motherboard supports a number of different interfaces through connecting peripherals. See the following diagrams for the details.




**B8050F65TV8E2H-N**



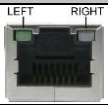

**S8050GM2NE**

**NOTE:** 1. For **S8050GM4NE-2T** Sku:
RJ45 (10GbE) LAN1/LAN2 is from Intel X710-AT2.
RJ45 (1GbE) LAN3/LAN4 are from Intel I210-AT chipset.
LAN5 is from RTL8211F

2. For **S8050GM2NE** Sku:
RJ45 (1GbE) LAN1/ LAN2/ is from Intel I210-AT chipset.
LAN3 is from RTL8211F

**Onboard LAN LED Color Definition**

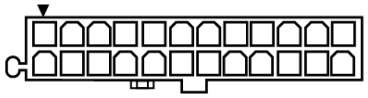
The **Five (5)** onboard Ethernet ports have green and Amber LEDs to indicate LAN status. The chart below illustrates the different LED states.

| 10Mbps/100Mbps/1Gbps/10Gbps LAN Link/Activity LED Scheme | | | |
|---|---|---|---|
|  | | **Left LED** | **Right LED** |
| **No Link** | | Off | Off |
| **10Mbps** | **Link** | Green | Off |
| | **Active** | Blinking Green | Off |
| **100Mbps** | **Link** | Green | Solid Green |
| | **Active** | Blinking Green | Solid Green |
| **1Gbps** | **Link** | Green | Solid Yellow |
| | **Active** | Blinking Green | Solid Yellow |
| **10Gbps** | **Link** | Yellow | Solid Yellow |
| | **Active** | Blinking Yellow | Solid Yellow |

## 5.12 Installing the Power Supply

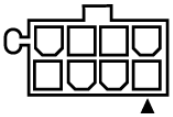
There are **Three (3)** power connectors on your S8050 motherboard. The S8050 supports EPS 12V power supply.

**PWR1: ATX 24-pin Main Power Connector**



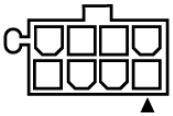
| Signal | Pin | Pin | Signal |
|---|---|---|---|
| +3.3V_1 | **1** | **13** | +3.3V_4 |
| +3.3V_2 | **2** | **14** | -12V |
| COM_1 | **3** | **15** | COM_4 |
| +5V_1 | **4** | **16** | PS-ON# |
| COM_2 | **5** | **17** | COM_5 |
| +5V_2 | **6** | **18** | COM_6 |
| COM_3 | **7** | **19** | COM_7 |
| PWR_OK | **8** | **20** | RES |
| 5VSB | **9** | **21** | +5V_3 |
| +12V_1 | **10** | **22** | +5V_4 |
| +12V_2 | **11** | **23** | +5V_5 |
| +3.3V_3 | **12** | **24** | COM_8 |

**PWR2: 8-PIN Power Connector**



| Signal | Pin | Pin | Signal |
|---|---|---|---|
| COM_1 | 1 | 5 | +12VDIG_1 |
| COM_2 | 2 | 6 | +12VDIG_ 2 |
| COM_3 | 3 | 7 | +12VDIG_3 |
| COM_4 | 4 | 8 | +12VDIG_4 |

**PWR3: 8-PIN Power Connector**



| Signal | Pin | Pin | Signal |
|---|---|---|---|
| COM_1 | 1 | 5 | +12VDIG_1 |
| COM_2 | 2 | 6 | +12VDIG_ 2 |
| COM_3 | 3 | 7 | +12VDIG_3 |
| COM_4 | 4 | 8 | +12VDIG_4 |

**NOTE:**
You must unplug the power supply before plugging the power cables to motherboard connectors.

## 5.13 Finishing Up

Congratulations on making it this far! You have finished setting up the hardware aspect of your computer. Before closing up your chassis, make sure that all cables and wires are connected properly, especially SATA cables and most importantly, jumpers. You may have difficulty powering on your system if the motherboard jumpers are not set correctly.

In the rare circumstance that you have experienced difficulty, you can find help by asking your vendor for assistance. If they are not available for assistance, please find setup information and documentation online at our website or by calling your vendor's support line.

# Chapter 6: BIOS Setup

## 6.1 About the BIOS

The BIOS is the basic input/output system, the firmware on the motherboard that enables your hardware to interface with your software. The BIOS determines what a computer can do without accessing programs from a disk. The BIOS contains all the code required to control the keyboard, display screen, disk drives, serial communications, and a number of miscellaneous functions. This chapter describes the various BIOS settings that can be used to configure your system.

The BIOS section of this manual is subject to change without notice and is provided for reference purposes only. The settings and configurations of the BIOS are current at the time of print and are subject to change, and therefore may not match exactly what is displayed on screen.

This section describes the BIOS setup program. The setup program lets you modify basic configuration settings. The settings are then stored in a dedicated, battery-backed memory (called NVRAM) that retains the information even when the power is turned off.

**To start the BIOS setup utility:**

1. Turn on or reboot your system.
2. Press <**F2**> or <**Del>** during POST (<**Tab**> on remote console) to start the BIOS setup utility.

### 6.1.1 Setup Basics

The table below shows how to navigate in the setup program using the keyboard.

| Key | Function |
|---|---|
| ↑ ↓ →← | Move cursor |
| <Enter> | Execute command or select submenu |
| <->/<+> | Select the previous or next value/setting of the field |
| <ESC> | Exit current menu |
| <F1> | General help |
| <F2> | Previous values |
| <F3> | Load the Optimal default configuration values of the menu |
| <F4> | Save and exit |
| <K> | Scroll help area upwards |
| <M> | Scroll help area downwards |
| <PgUp> / <PgDn> | Move cursor to next/previous page |

### 6.1.2 Getting Help

Pressing [**F1**] will display 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.

### 6.1.3 In Case of Problems

If you have trouble booting your computer after making and saving the changes with the BIOS setup program, you can restart the computer by holding the power button down until the computer shuts off (usually within 4 seconds); resetting by pressing CTRL-ALT-DEL; or clearing the CMOS.
The best advice is to only alter settings that you thoroughly understand. In particular, do not change settings in the Chipset section unless you are absolutely sure of what you are doing. The Chipset defaults have been carefully chosen either by MiTAC or your system manufacturer for best performance and reliability. Even a seemingly small change to the Chipset setup options may cause the system to become unstable or unusable.

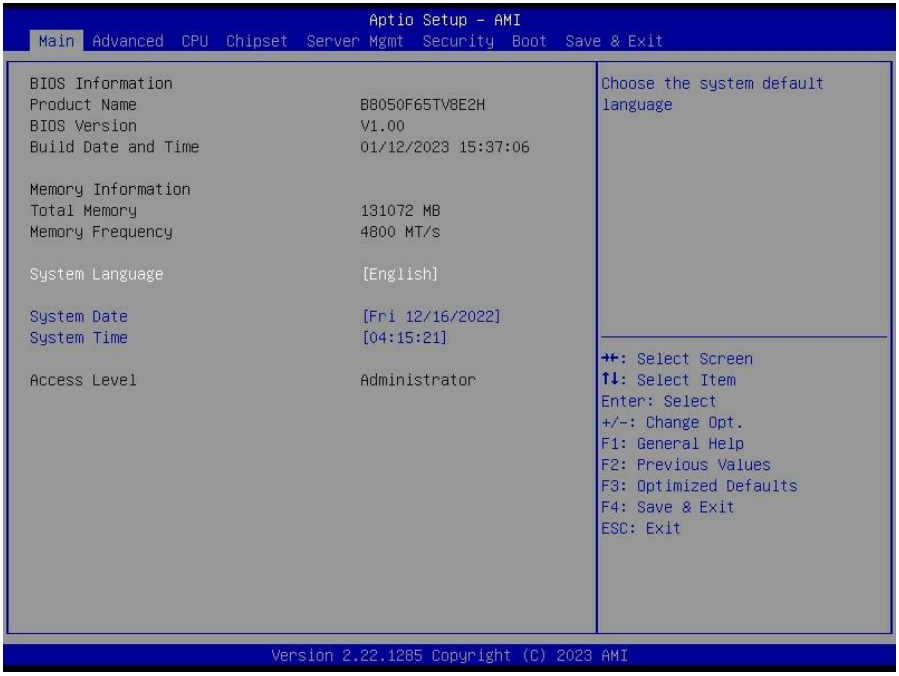
### 6.1.4 Setup Variations

Not all systems have the same BIOS setup layout or options. While the basic look and function of the BIOS setup remains more or less the same for most systems, the appearance of your Setup screen may differ from the charts shown in this section. Each system design and chipset combination requires a custom configuration. In addition, the final appearance of the Setup program depends on the system designer. Your system designer may decide that certain items should not be available for user configuration, and remove them from the BIOS setup program.

**NOTE**: The following pages provide the details of BIOS menu. Please be aware that the BIOS menus are continually changing due to continual BIOS updates over the product lifespan of the motherboard. The BIOS menus provided are current as of the date when this manual was written. Please visit TYAN's website at http://www.tyan.com for information on BIOS updates available for this specific motherboard.

## 6.2 Main Menu

In this section, you can alter general features such as the date and time.
Note that the options listed below are for options that can directly be changed within the Main Setup screen.




**BIOS Information**
It displays BIOS related information.

**Product Name**
It displays Product information.

**BIOS Version**
It displays BIOS version information

**Build Date and Time**
It displays the time when built

**Memory Information**
It displays the total memory size.

**Memory Frequency**
It displays Memory frequency

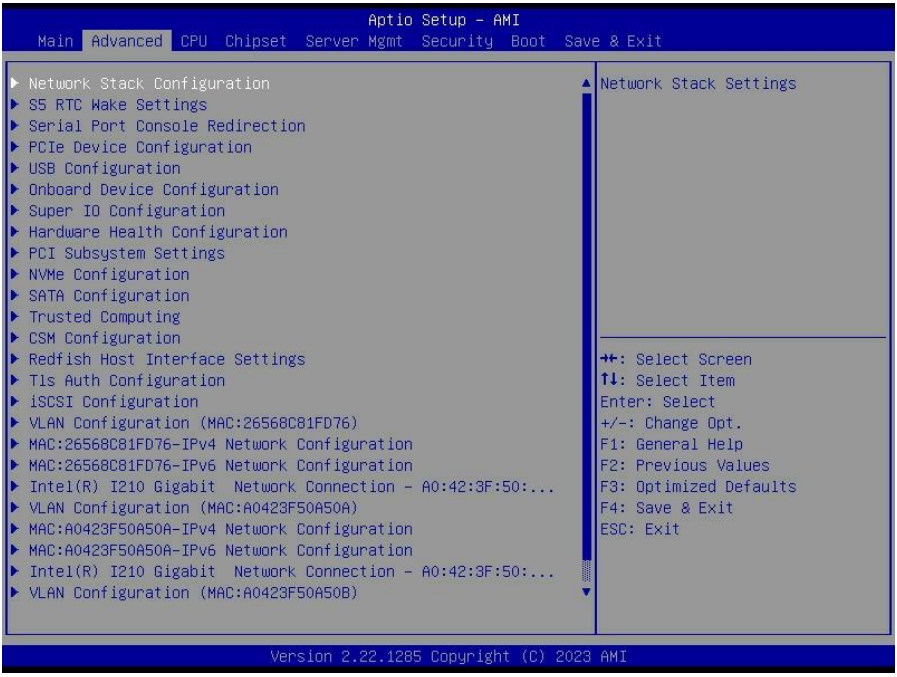
**System Date**
Set the Date. Use Tab to switch between Date elements. Default Ranges:
Year: 2005-2099
Months: 1-12
Days: dependent on month

**System Time**
Adjust the system clock.
HH (24 hours format): MM (Minutes): SS (Seconds)

**Access Level**
Administrator

## 6.3 Advanced Menu

This section facilitates configuring advanced BIOS options for your system.




**NOTE:** This is a sample screenshot of the Advanced Menu. The HII network drivers displayed here depend on the card(s) you installed and the functions you enabled.

**Network Stack Configuration**
Network Stack Settings

**S5 RTC Wake Settings**
Enable system to wake from S5 using RTC alarm

**Serial Port Console Redirection**
Serial Port Console Redirection

**PCIe Device Configuration**
Onboard PCIE Slot Configuration

**USB Configuration**
USB Configuration Parameters

**Onboard Device Configuration**
Onboard Device and Function Configuration.

**Super IO Configuration**
System Super IO Chip Parameters.

**Hardware Health Configuration**
Hardware Health Configuration

**PCI Subsystem Settings**
PCI, PCI-X and PCI Express Settings

**NVMe Configuration**
NVMe Device Information

**SATA Configuration**
SATA Devices Information

**Trusted Computing**
Trusted Computing settings.

**CSM Configuration**
CSM Configuration, Enable/Disable Option ROM execution setting, etc

**Redfish Host Interface Settings**
Redfish Host Interface Parameters

**Tls Auth Configuration**
Press<Enter> to select Tls Auth configuration.

**iSCSI Configuration**
Configure the iSCSI parameters

**VLAN Configuration(MAC:8ACE8EEDBEF9)**
VLAN Configuration(MAC: 8ACE8EEDBEF9)

**MAC: 26568C81FD76-IPv4 Network Configuration**
Configure IPv4 network parameters.(MAC: 26568C81FD76)

**MAC: 26568C81FD76-IPv6 Network Configuration**
Configure IPv6 network parameters.(MAC: 26568C81FD76)

**Intel(R) I210 Gigabit Network Connection**
Configure Gigabit Ethernet device parameters.

**VLAN Configuration (MAC : A0423F50A50A)**
VLAN Configuration (MAC : A0423F50A50A)

**MAC:A0423F50A50A-IPv4 Network Configuration**
Configure network parameters(MAC: A0423F50A50A)

**MAC: A0423F50A50A-IPv6 Network Configuration**
Configure network parameters(MAC: A0423F50A50A)

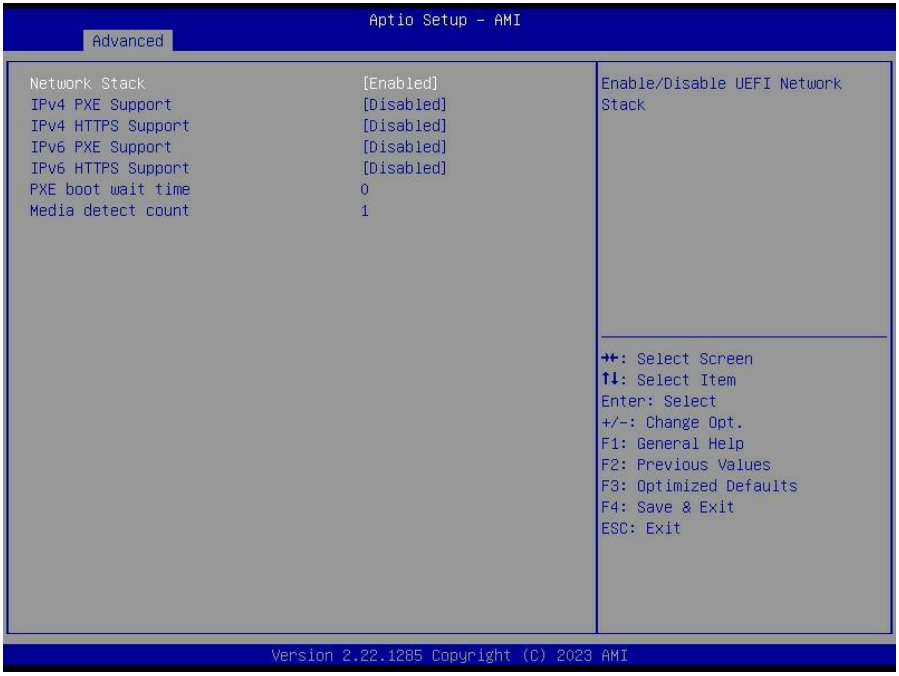
**Intel® I210 Gigabit Network Connection**
Configure Gigabit Ethernet device parameters.

**VLAN Configuration** (MAC: **A0423F50A50B**)
VLAN Configuration (MAC: **A0423F50A50B**)

**MAC: A0423F50A50B -IPv4 Network Configuration**
Configure network parameters(MAC: A0423F50A50B)

**MAC: A0423F50A50B -IPv6 Network Configuration**
Configure network parameters(MAC: A0423F50A50B)

### 6.3.1 Network Stack Configuration




**Network Stack**
Enable/Disable UEFI Network Stack
**Disabled / Enabled**

**NOTE: When Network Stack was set to Enabled, the following item will appear.**

**IPv4 PXE Support**
Enable/Disable IPv4 PXE boot support. If disabled, IPv4 PXE boot support will not be available.

**Disabled /** Enabled

**IPv4 HTTPs Support**
Enable/Disable IPv4 HTTPs boot support. If disabled, IPv4 HTTPS boot support will not be available.

**Disabled /** Enabled

**IPv6 PXE Support**
Enable/Disable IPv6 HTTPs boot support. If disabled, IPv6 HTTPS boot support will not be available.

**Disabled /** Enabled

**IPv6 HTTPs Support**
Enable/Disable IPv6 HTTPs boot support. If disabled, IPv6 HTTPS boot support will not be available.

**Disabled /** Enabled

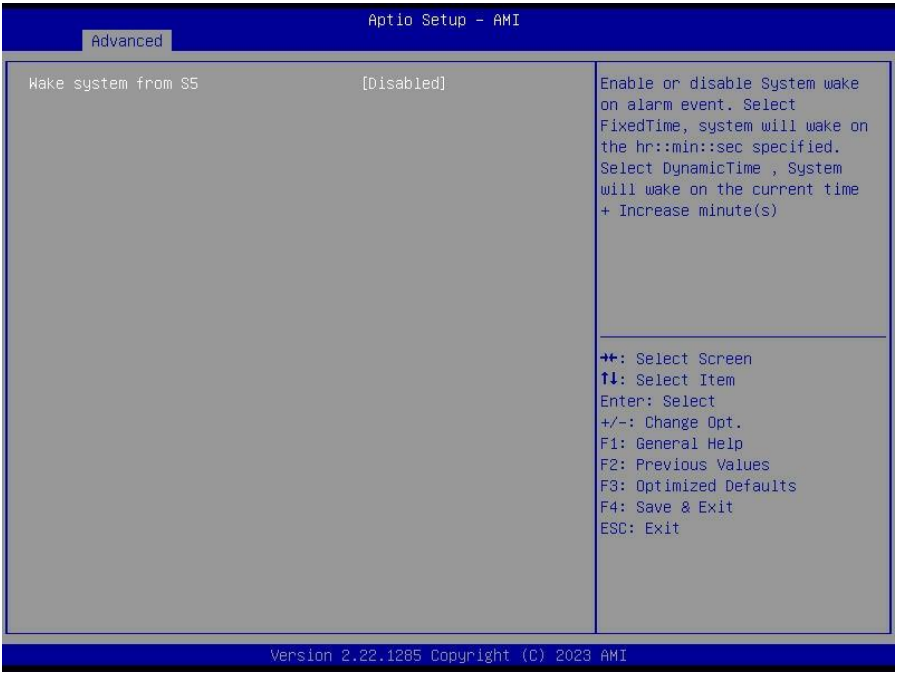
**PXE boot wait time**
Wait time in seconds to press ESC key to abort the PXE boot. Use either +/- or numeric keys to set the value.

0

**Media detect count**
Number of times the presence of media will be checked. Use either +/- or numeric keys to set the value.

1

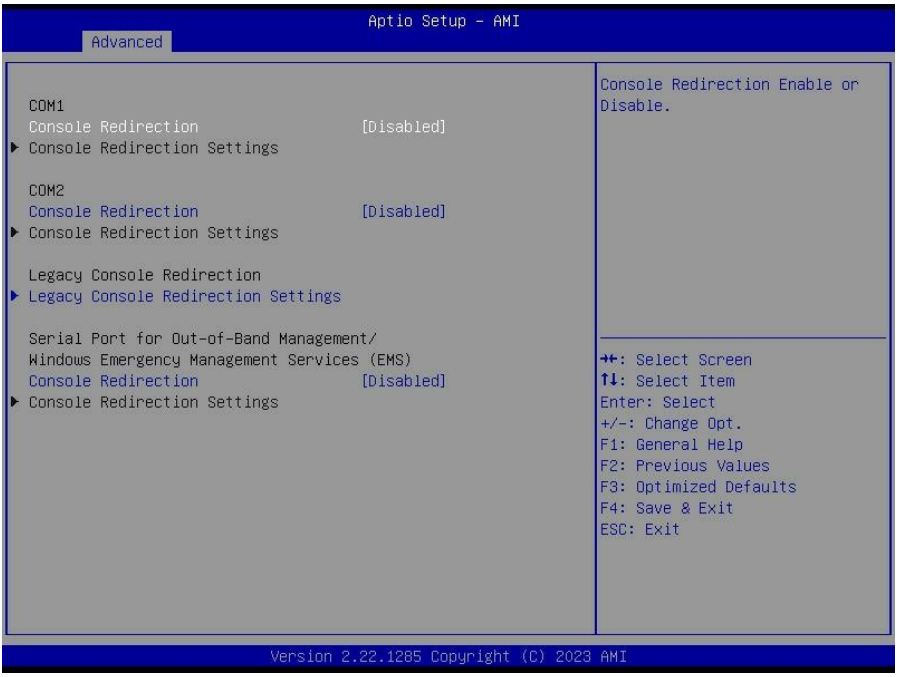
### 6.3.2 S5 RTC Wake Settings




**Wake system from S5**
Enable or disable system wake on alarm event. Select Fixed time, system will wake on the hr::min::sec specified. Select dynamic time, system will wake on the current time+ increase minute(s)

**Disabled** / Fixed Time / Dynamic Time

### 6.3.3 Serial Port Console Redirection




**COM1**
**Console Redirection**
Console redirection enable or disable.
**Disabled /** Enabled

**COM2**
**Console Redirection**
Console redirection enable or disable.
**Disabled /** Enabled

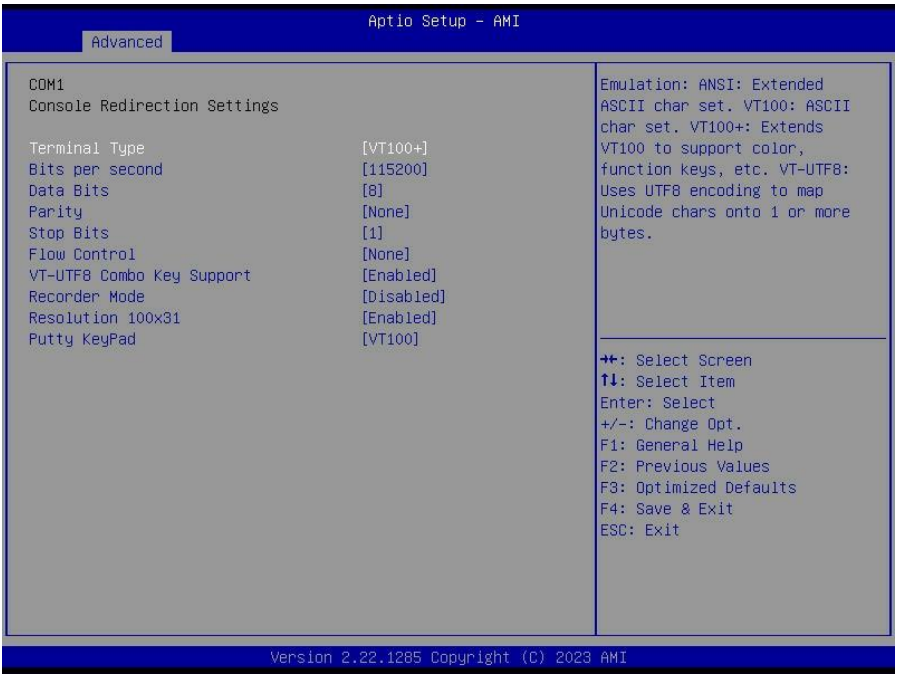
**Legacy Console Redirection**
Legacy Console Redirection Settings

**Serial Port for Out-Of-Band Management/Windows Emergency Services (EMS)**
**Console Redirection**
Console redirection enable or disable.
**Disabled /** Enabled

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

**NOTE: Console Redirection Settings** menu only appear when **Console Redirection** was set to **[Enabled].**

### 6.3.3.1 COM1 Console Redirection Settings




**Terminal Type**
Emulation: ANSI: Extended ASCII char set.
VT100: ASCII char set.
VT100+: Extends VT100 to support color function keys, etc.
VT-UTF8: Uses UTF8 encoding to map Unicode chars onto 1 or more bytes.
VT-UTF8 **/** VT100 / **VT100+** / ANSI

**Bits per Second**
Select serial port transmission speed. The speed must be matched on the other side. Long or noisy lines may require lower speeds.
9600 / 19200 / 38400 / 57600 **/ 115200**

**Data Bits**
**8 /** 7

**Parity**
A parity bit can be sent with the data bits to detect some transmission errors. Even: parity bit is 0 if the num of 1's in the data bits is even. Odd: parity bit is 0 if the num of 1's in the data bits is odd. Mark: parity bit is always 1. Space: parity bit is always 0. Mark and Space parity do not allow for error detection.

**None /** Even / Odd / Mark / Space

**Stop Bits**
Stop bits indicate the end of a serial data packet. (A start bit indicates the beginning). The standard setting is 1 stop bit. Communication with slow devices may require more than 1 stop bit.

**1 /** 2

**Flow Control**
Flow Control can prevent data loss from buffer overflow. When sending data, if the receiving buffers are full, a 'stop' signal can be sent to stop the data flow. Once the buffers are empty, a 'start' signal can be sent to re-start the flow. Hardware flow control uses two wires to send start/stop signals.

**None /** Hardware RTS/CTS

**VT-UTF8 Combo Key Support**
Enable VT-UTF8 Combination Key Support for ANSI/VT100 terminals.

**Enabled /** Disabled

**Recorder Mode**
With this mode enabled only text will be sent. This is to capture Terminal data.

**Disabled /** Enabled

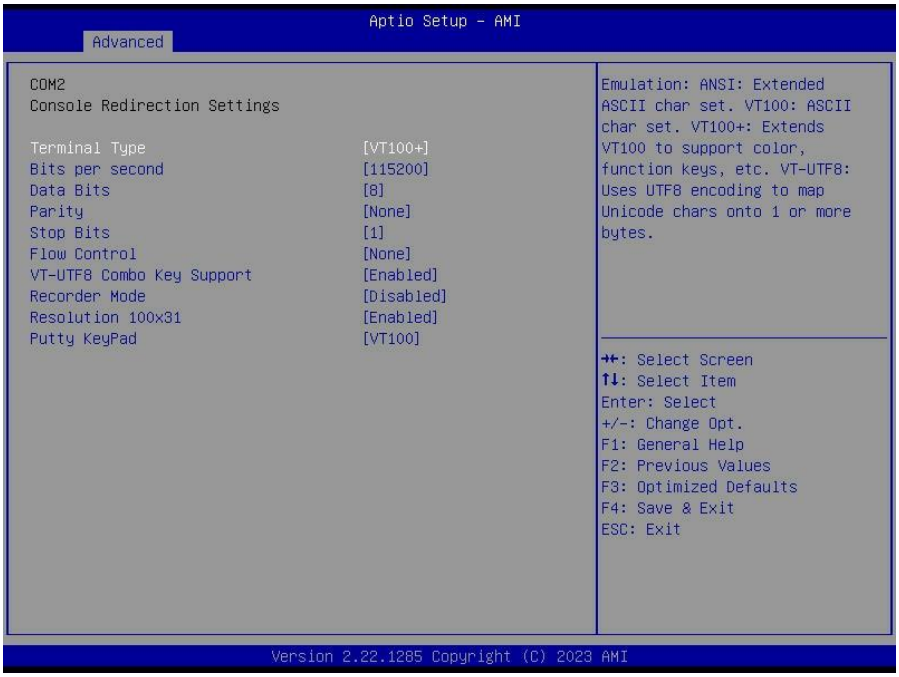
**Resolution 100x31**
Enable or disable extended terminal resolution.

Disabled **/ Enabled**

**Putty KeyPad**
Select FunctionKey and KeyPad on Putty.

**VT100** / LINUX / XTERMR6 / SCO / ESCN / VT400

### 6.3.3.2 COM2 Console Redirection Settings




**Terminal Type**
Emulation: ANSI: Extended ASCII char set.
VT100: ASCII char set.
VT100+: Extends VT100 to support color function keys, etc.
VT-UTF8: Uses UTF8 encoding to map Unicode chars onto 1 or more bytes.
VT100 / **VT100+** / VT-UTF8 **/** ANSI

**Bits per Second**
Select serial port transmission speed. The speed must be matched on the other side. Long or noisy lines may require lower speeds.
9600 / 19200 / 38400 / 57600 / **115200**

**Data Bits**
**8 /** 7

**Parity**
A parity bit can be sent with the data bits to detect some transmission errors. Even: parity bit is 0 if the num of 1's in the data bits is even. Odd: parity bit is 0 if the num of 1's in the data bits is odd. Mark: parity bit is always 1. Space: parity bit is always 0. Mark and Space parity do not allow for error detection.
**None /** Even / Odd / Mark / Space

**Stop Bits**
Stop bits indicate the end of a serial data packet. (A start bit indicates the beginning). The standard setting is 1 stop bit. Communication with slow devices may require more than 1 stop bit.

**1 /** 2

**Flow Control**
Flow Control can prevent data loss from buffer overflow. When sending data, if the receiving buffers are full, a 'stop' signal can be sent to stop the data flow. Once the buffers are empty, a 'start' signal can be sent to re-start the flow. Hardware flow control uses two wires to send start/stop signals.

**None /** Hardware RTS/CTS

**VT-UTF8 Combo Key Support**
Enable VT-UTF8 Combination Key Support for ANSI/VT100 terminals.

**Enabled /** Disabled

**Recorder Mode**
With this mode enabled only text will be sent. This is to capture Terminal data.

**Disabled /** Enabled

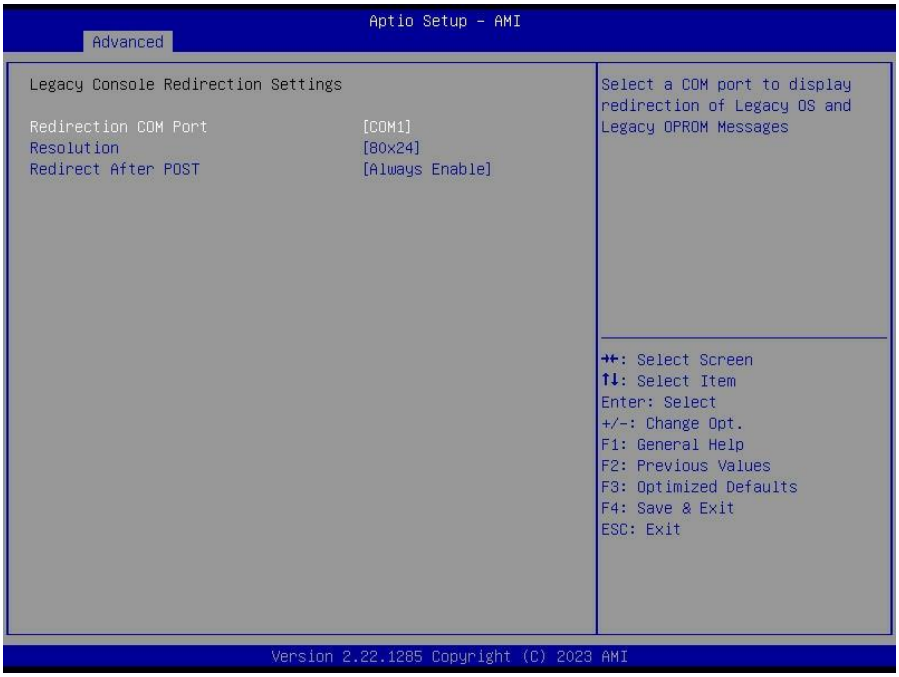
**Resolution 100x31**
Enable or disable extended terminal resolution.

Disabled **/ Enabled**

**Putty KeyPad**
Select FunctionKey and KeyPad on Putty.

**VT100** / LINUX / XTERMR6 / SCO / ESCN / VT400

### 6.3.3.3 Legacy Console Redirection Settings




**Redirection COM Port**
Select a COM port to display redirection of Legacy OS and Legacy OPROM Messages

**COM1 /** COM2

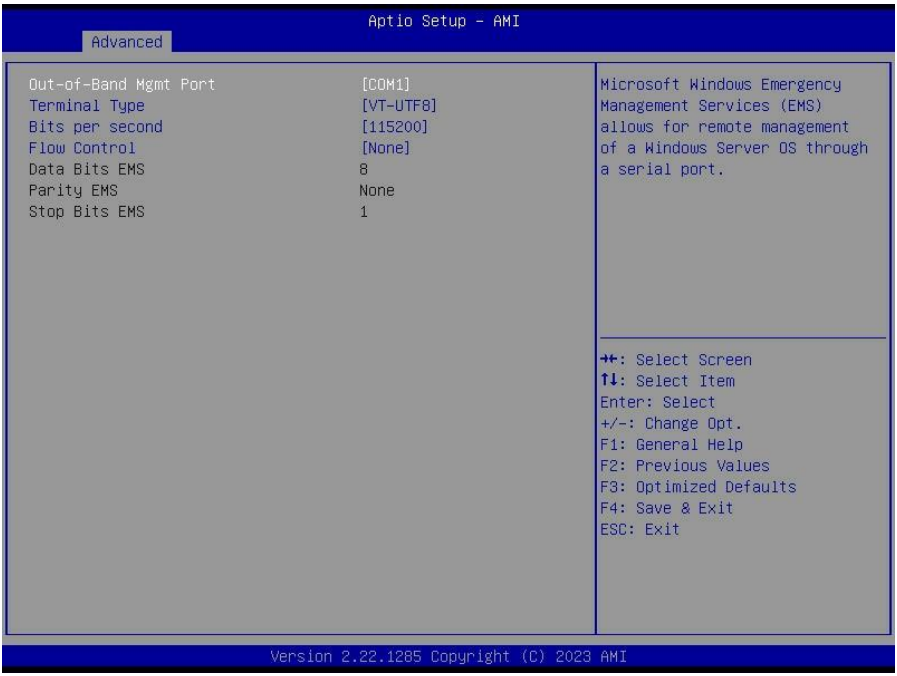
**Resolution**
On Legacy OS, the Number of Rows and Columns supported redirection

**80x24 / 80x25**

**Redirect After POST**
when Bootloader is selected, then Legacy Console Redirection is disabled before booting to legacy OS, when Always Enable is selected, then Legacy Console Redirection is enabled for Legacy OS. Default setting for this option is set to Always Enable.

**Always Enable /** BootLoader

### 6.3.3.4 Serial Port for Out-Of-Band Management/Windows Emergency Services (EMS) Console Redirection Settings




**Out-of Band Mgmt Port**
Microsoft Windows Emergency Management Services (EMS) allows for remote management of a Windows Server OS through a serial port.

**COM1** / COM2

**Terminal Type**
VT-UTF8 is the preferred terminal type for out-of-band management. The next best choice is VT100+ and then VT100. See above, in Console Redirection Settings page, for more Help with Terminal Type/Emulation.

**VT-UTF8 /** VT100 / VT100+ / ANSI

**Bits per Second**
Select serial port transmission speed. The speed must be matched on the other side. Long or noisy lines may require lower speeds.

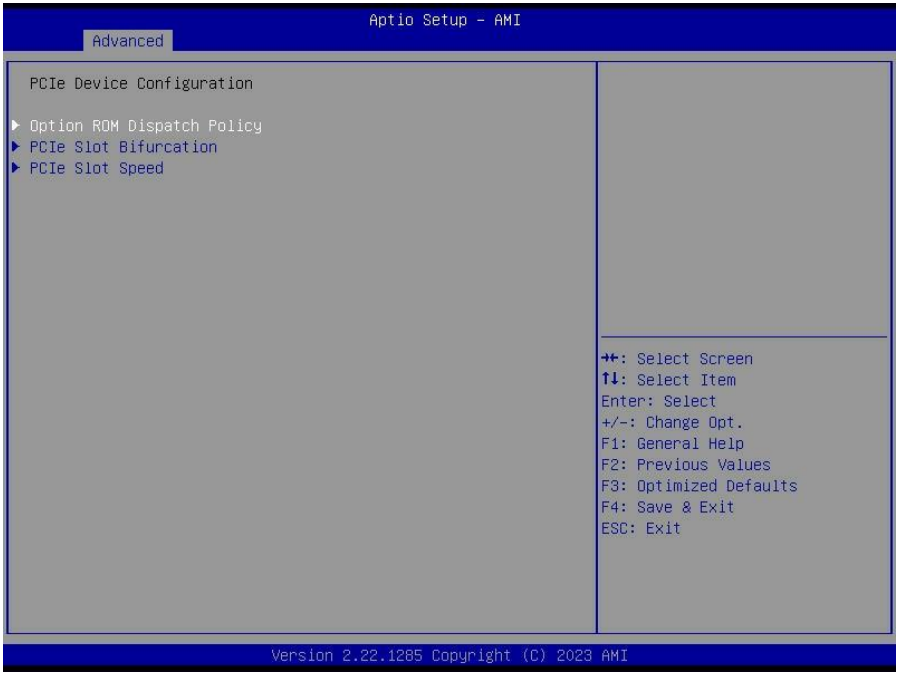
9600 / 19200 / 57600 / **115200**

**Flow Control**
Flow Control can prevent data loss from buffer overflow. When sending data, if the receiving buffers are full, a 'stop' signal can be sent to stop the data flow. Once the buffers are empty, a 'start' signal can be sent to restart the flow. Hardware flow control uses two wires to send start/stop signal.

**None /** Hardware RTS/CTS / Software Xon/Xoff

**Data Bits EMS / Parity EMS / Stop Bits EMS**
Read only.

### 6.3.4 PCIe Device Configuration

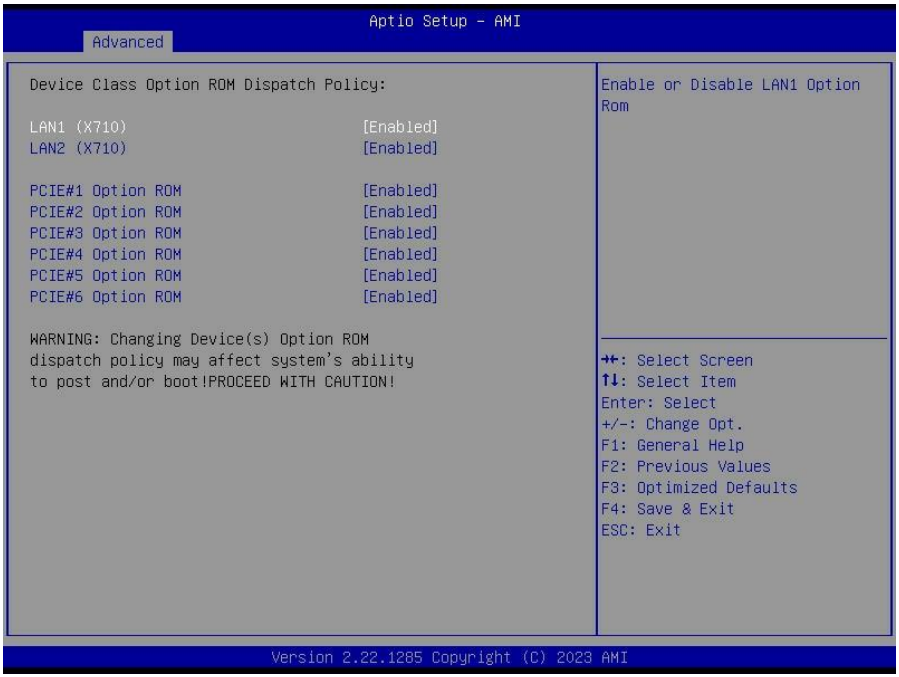



**Option ROM Dispatch Policy**
Option ROM Dispatch Policy settings.

**PCIe Slot Bifurcation**
PCIe Slot Bifurcation settings.

**PCIe Slot Speed**
PCIe Slot Speed settings.

#### 6.3.4.1 Device Class Option ROM Dispatch Policy:




**LAN1 (X710)**
Enable or Disable LAN1 Option Rom
**Enabled /** Disabled

**LAN2 (X710)**
Enable or Disable LAN2 Option Rom
**Enabled /** Disabled

**PCIE#1 Option ROM**
Enable or Disable Option ROM execution for selected Slot.
**Enabled /** Disabled

**PCIE#2 Option ROM**
Enable or Disable Option ROM execution for selected Slot.
**Enabled /** Disabled

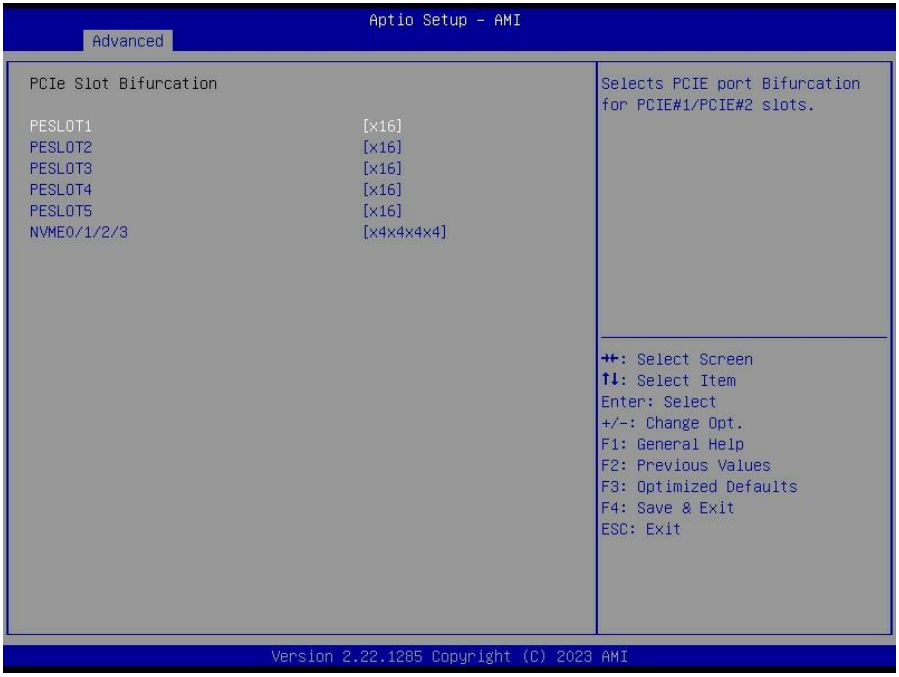
**PCIE#3 Option ROM**
Enable or Disable Option ROM execution for selected Slot.
**Enabled /** Disabled

**PCIE#4 Option ROM**
Enable or Disable Option ROM execution for selected Slot.
**Enabled /** Disabled

**PCIE#5 Option ROM**
Enable or Disable Option ROM execution for selected Slot.
**Enabled /** Disabled

**PCIE#6 Option ROM**
Enable or Disable Option ROM execution for selected Slot.
**Enabled /** Disabled

### 6.3.4.2 PCIe Slot Bifurcation




**PESLOT1**
Selects PCIE port Bifurcation for PCIE#1/PCIE#2 slots.
**X16** / x8x8 / x4x4x4x4

**PESLOT2**
Selects PCIE port Bifurcation for PCIE#3/PCIE#4 slots.
**X16** / x8x8 / x4x4x4x4

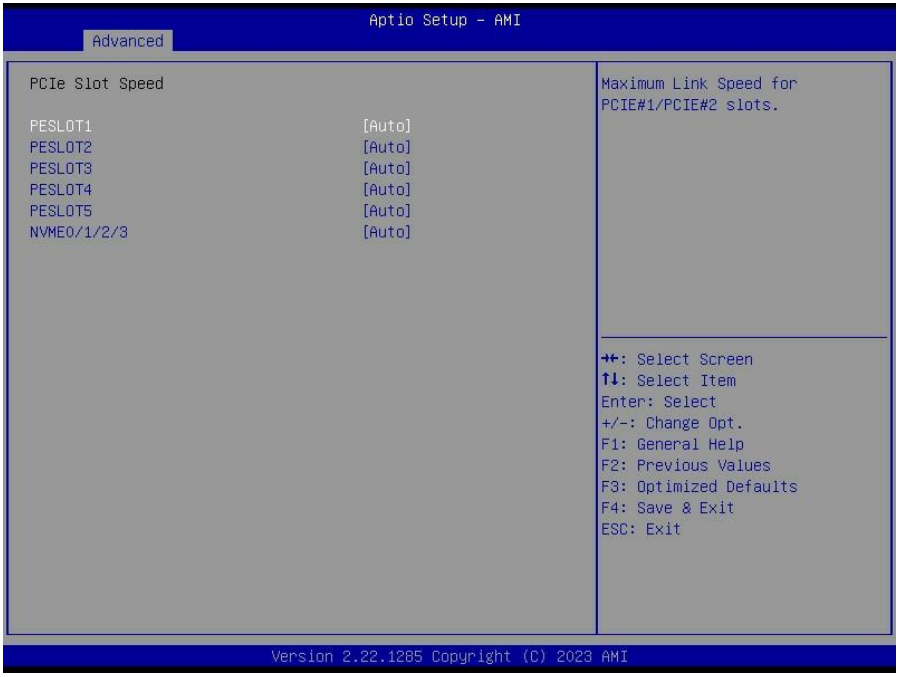
**PESLOT3**
Selects PCIE port Bifurcation for PCIE#5 slot.
**X16** / x8x8 / x4x4x4x4

**PESLOT4**
Selects PCIE port Bifurcation for PCIE#6 slot
**X16** / x8x8 / x4x4x4x4

**PESLOT5**
Selects PCIE port Bifurcation for PCIE#7/PCIE#8 slots
**X16** / x8x8 / x4x4x4x4

**NVME0/1/2/3**
Selects PCIE port Bifurcation for PCIE#9/PCIE#10
X16 / x8x8 / **x4x4x4x4**

### 6.3.4.3 PCIe Slot Speed




**PESLOT1**
Maximum Link Speed for PCIE#1/PCIE#2 slots.
**Auto** / GEN1(2.5 GT/s) / GEN2(5 GT/s) / GEN3(8 GT/s) / GEN4(16 GT/s) / GEN5 (32GT/s)

**PESLOT2**
Maximum Link Speed for PCIE#3/PCIE#4 slots
**Auto** / GEN1(2.5 GT/s) / GEN2(5 GT/s) / GEN3(8 GT/s) / GEN4(16 GT/s) / GEN5 (32GT/s)

**PESLOT3**
Maximum Link Speed for PCIE#5 slot.
**Auto** / GEN1(2.5 GT/s) / GEN2(5 GT/s) / GEN3(8 GT/s) / GEN4(16 GT/s) / GEN5 (32GT/s)

**PESLOT4**
Maximum Link Speed for PCIE#6 slot.
**Auto** / GEN1(2.5 GT/s) / GEN2(5 GT/s) / GEN3(8 GT/s) / GEN4(16 GT/s) / GEN5 (32GT/s)

**PESLOT5**
Maximum Link Speed for PCIE#7/ PCIE#8 slots.
**Auto** / GEN1(2.5 GT/s) / GEN2(5 GT/s) / GEN3(8 GT/s) / GEN4(16 GT/s) / GEN5 (32GT/s)

**NVME0/1/2/3**
Maximum Link Speed for PCIE#7/PCIE#8 slots.
**Auto** / GEN1(2.5 GT/s) / GEN2(5 GT/s) / GEN3(8 GT/s) / GEN4(16 GT/s) / GEN5 (32GT/s)

### 6.3.5 USB Configuration


**Legacy USB Support**
Enables USB legacy support. AUTO option disables legacy support if no USB devices are connected. DISABLE option will keep USB devices available only for EFI applications.

**Enabled /** Disabled / Auto

**XHCI Hand-off**
This is a workaround for OSes without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver.

**Enabled /** Disabled

**USB Mass Storage Driver Support**
Enable/Disable USB Mass Storage Driver Support.

Disabled **/ Enabled**

**Port 60/64 Emulation**
Enable I/O port 60h/64h emulation support. This should be enabled for the complete USB keyboard legacy support for non-USB aware OSes.

Disabled **/ Enabled**

**USB transfer time-out**
The time-out value for Control, Bulk and Interrupt transfers.
1 sec / 5 sec **/** 10 sec / **20 sec**

**Device reset time-out**
USB mass storage device Start Unit command time-out.
10 sec / **20 sec** / 30 sec / 40 sec

**Device power-up delay**
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.
**Auto** / Manual

### 6.3.6 Onboard Device Configuration


**Onboard VGA**
Enable/Disable ASPEED VGA
Disabled / **Enabled**

**LAN (X710)**
LAN Enable/Disable control function.
Disabled / **Enabled**

**LAN (I210-1)**
LAN Enable/Disable control function.
Disabled / **Enabled**

**LAN (I210-2)**
LAN Enable/Disable control function.
Disabled / **Enabled**

**Primary Display**
Select active Video type.
**Onboard /** External

**NMI Button**
Enable or disable NMI button.
**Disabled** / Enabled

**Chassis Intrusion Detention**
Enabled: When a chassis open event is detected, the BIOS will display the event.
**Disabled** / Enabled

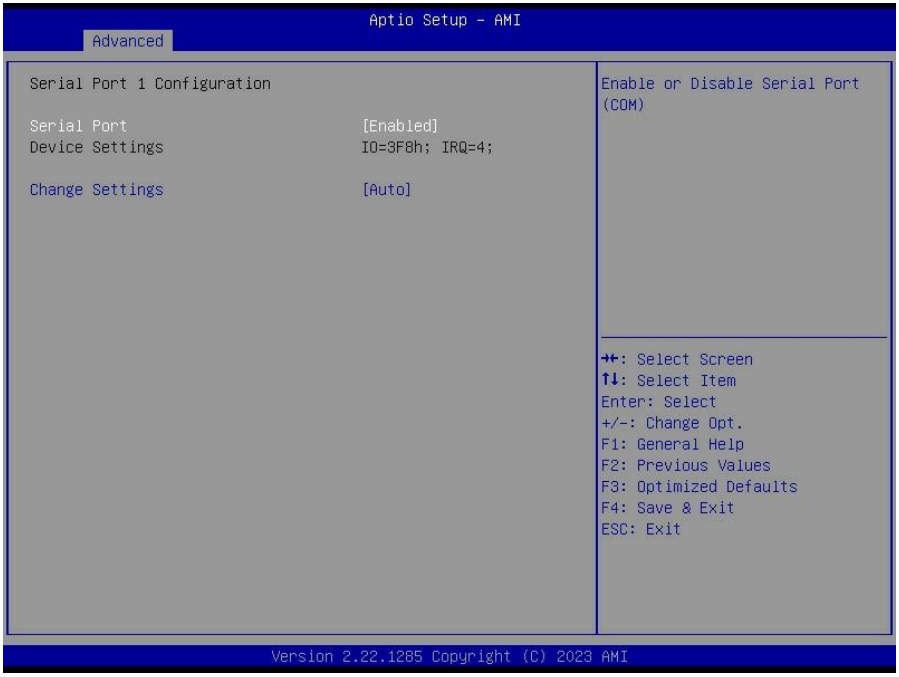
**Clock Spread Spectrum**
Enable/Disable Clock Spread Spectrum
**Disabled** / Enabled

### 6.3.7 Super IO Configuration


**Serial Port 1 Configuration**
Set Parameters of serial Port 1 (COMA)

**Serial Port 2 Configuration**
Set Parameters of serial Port 2 (COMB)

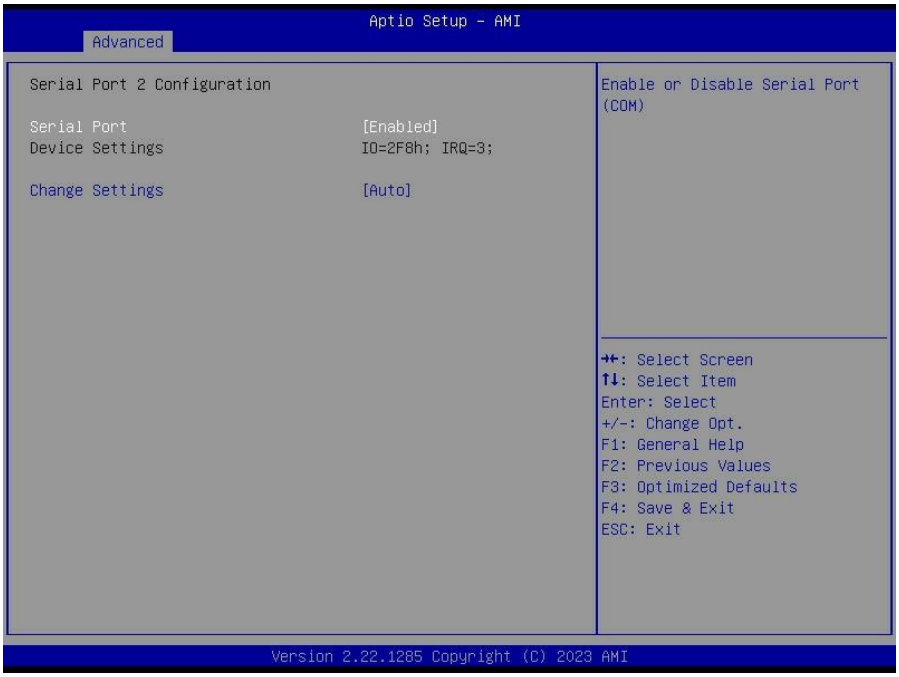
### 6.3.7.1 Serial Port 1 Configuration




**Serial Port**
Enable or Disable Serial Port (COM).
Disabled **/ Enabled**
**NOTE:** Serial Port has set to **Enabled**, the following items will be appear.

**Change Settings**
Allows the user to change the device resource settings. New settings will be reflected on this setup page after system restarts.
**Auto** / IO=3F8h; IRQ=4; / IO=2F8h, IRQ=4, / IO=3F8h; IRQ=4,
/ IO=2E8h, IRQ=4,

### 6.3.7.2 Serial Port 2 Configuration




**Serial Port**
Enable or Disable Serial Port (COM).
Disabled **/ Enabled**
**NOTE:** Serial Port has set to **Enabled**, the following items will be appear.

**Change Settings**
Allows the user to change the device resource settings. New settings will be reflected on this setup page after system restarts.
**Auto** / IO=3F8h; IRQ=3; / IO=2F8h, IRQ=3, / IO=3E8h; IRQ=3, / IO=2E8h, IRQ=3,

### 6.3.8 Hardware Health Configuration


**Fan Speed Control**
Fan Speed Control help.
**Automatic /** Manual **/** Full Speed

**NOTE:** When **Auto Fan Control was set to [Manual] PWM Minimal Duty Cycle Item will appear.**

**PWM Minimal Duty Cycle**
PWM Minimal Duty Cycle
**30**

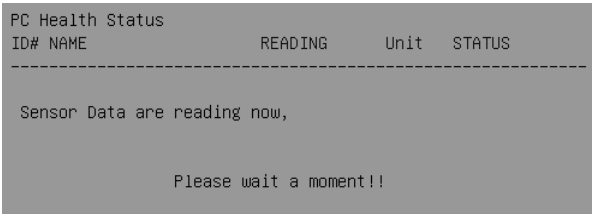
**BMC Alert Beep**
Enable/Disable BMC Alert Beep
**On /** Off

**PMBus support**
PMBus Support
**Disabled /** Enabled
**NOTE:** When **PMBus support was set to [Enabled] Number of PSU** Item will appear.

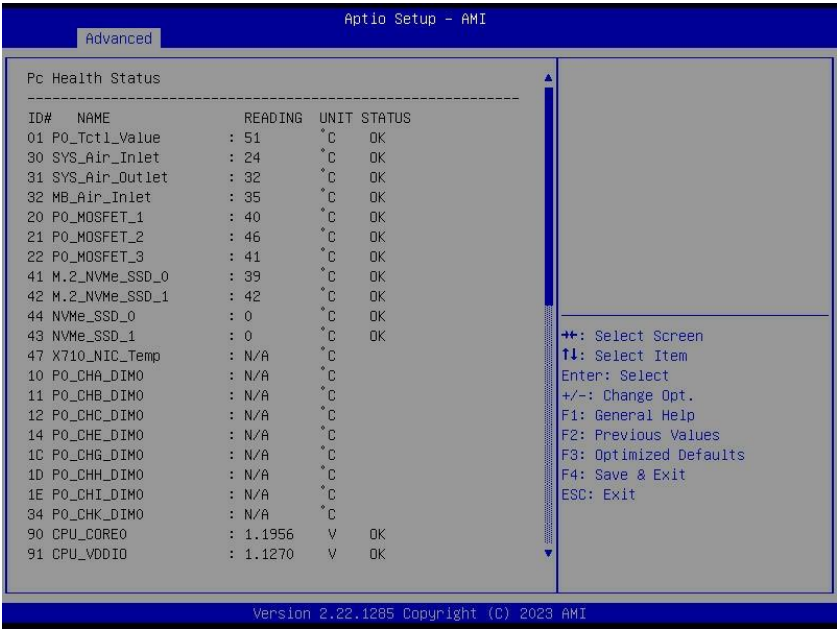
**Number of PSU**
User can select PSU number for needed
1 **/ 2**

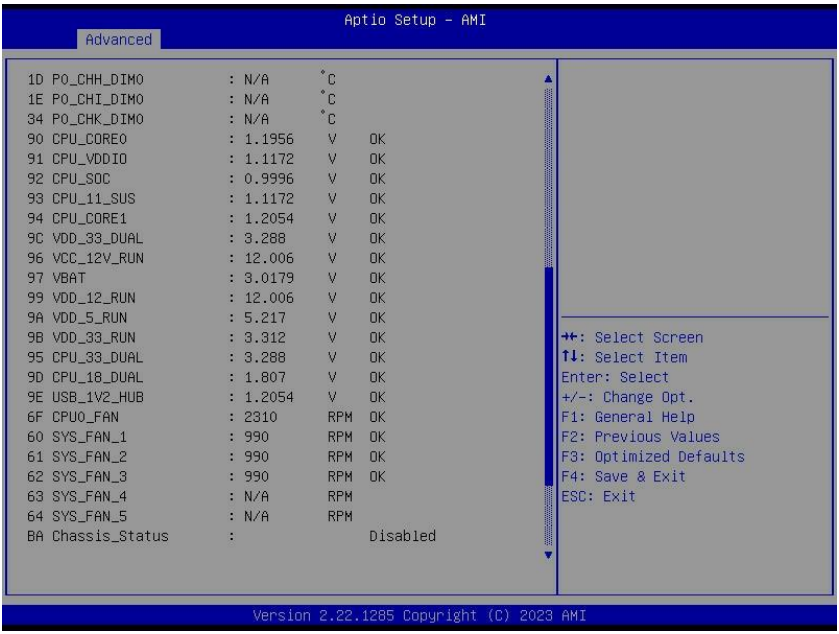
### 6.3.8.1 Sensor Data Register Monitoring

When you enter the **Sensor Data Register Monitoring** submenu, you will see the following dialog window pop out. Please wait 8~10 seconds.

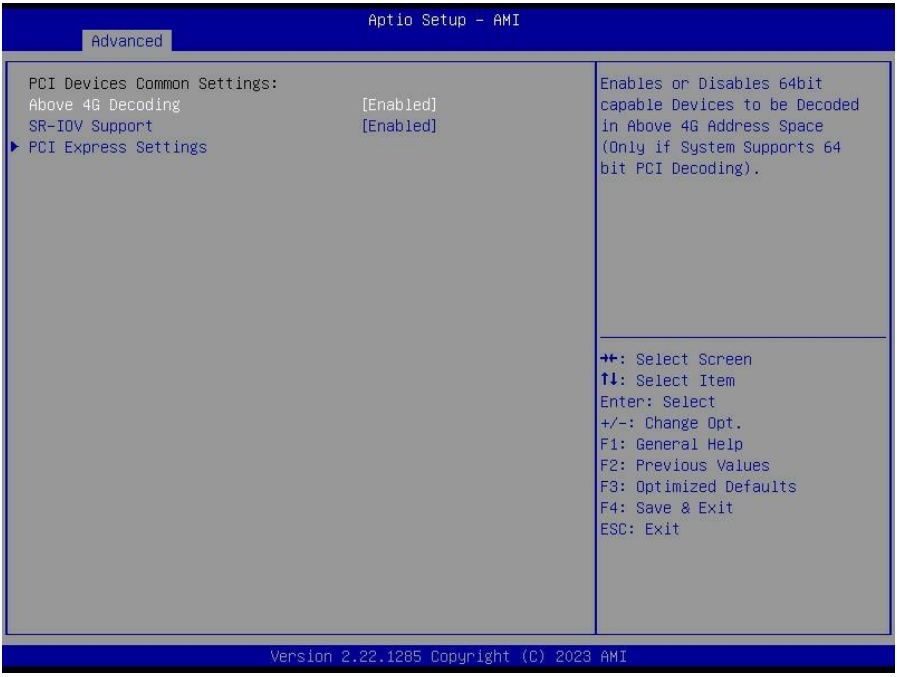



**NOTE 1:** SDR can not be modified. Read only.


Aptio Setup - AMI
Advanced
Pc Health Status
ID# NAME READING UNIT STATUS
01 P0_Tctl_Value : 51 °C OK
30 SYS_Air_Inlet : 24 °C OK
31 SYS_Air_Outlet : 32 °C OK
32 MB_Air_Inlet : 35 °C OK
20 P0_MOSFET_1 : 40 °C OK
21 P0_MOSFET_2 : 46 °C OK
22 P0_MOSFET_3 : 41 °C OK
41 M.2_NVMe_SSD_0 : 39 °C OK
42 M.2_NVMe_SSD_1 : 42 °C OK
44 NVMe_SSD_0 : 0 °C OK
43 NVMe_SSD_1 : 0 °C OK
47 X710_NIC_Temp : N/A °C
10 P0_CHA_DIMM : N/A °C
11 P0_CHB_DIMM : N/A °C
12 P0_CHC_DIMM : N/A °C
14 P0_CHE_DIMM : N/A °C
1C P0_CHG_DIMM : N/A °C
1D P0_CHH_DIMM : N/A °C
1E P0_CHI_DIMM : N/A °C
34 P0_CHK_DIMM : N/A °C
90 CPU_CORE0 : 1.1956 V OK
91 CPU_VDDIO : 1.1270 V OK
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.22.1285 Copyright (C) 2023 AMI


Aptio Setup - AMI
Advanced
1D P0_CHH_DIMM : N/A °C
1E P0_CHI_DIMM : N/A °C
34 P0_CHK_DIMM : N/A °C
90 CPU_CORE0 : 1.1956 V OK
91 CPU_VDDIO : 1.1172 V OK
92 CPU_SOC : 0.9996 V OK
93 CPU_11_SUS : 1.1172 V OK
94 CPU_CORE1 : 1.2054 V OK
9C VDD_33_DUAL : 3.288 V OK
96 VCC_12V_RUN : 12.006 V OK
97 VBAT : 3.0179 V OK
99 VDD_12_RUN : 12.006 V OK
9A VDD_5_RUN : 5.217 V OK
9B VDD_33_RUN : 3.312 V OK
95 CPU_33_DUAL : 3.288 V OK
9D CPU_18_DUAL : 1.807 V OK
9E USB_1V2_HUB : 1.2054 V OK
6F CPU0_FAN : 2310 RPM OK
60 SYS_FAN_1 : 990 RPM OK
61 SYS_FAN_2 : 990 RPM OK
62 SYS_FAN_3 : 990 RPM OK
63 SYS_FAN_4 : N/A RPM
64 SYS_FAN_5 : N/A RPM
BA Chassis_Status : Disabled
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.22.1285 Copyright (C) 2023 AMI

### 6.3.9 PCI Subsystem Settings




**Above 4G Decoding**
Enables or Disables 64bit capable Devices to be decoded in Above 4G Address Space(Only if System supports 64 bit PCI Decoding).

**Enabled /** Disabled

**SR-IOV Support**
If system has SR-IOV capable PCIe devices, this option Enables or Disables Single Root IO virtualization Support

**Enabled /** Disabled

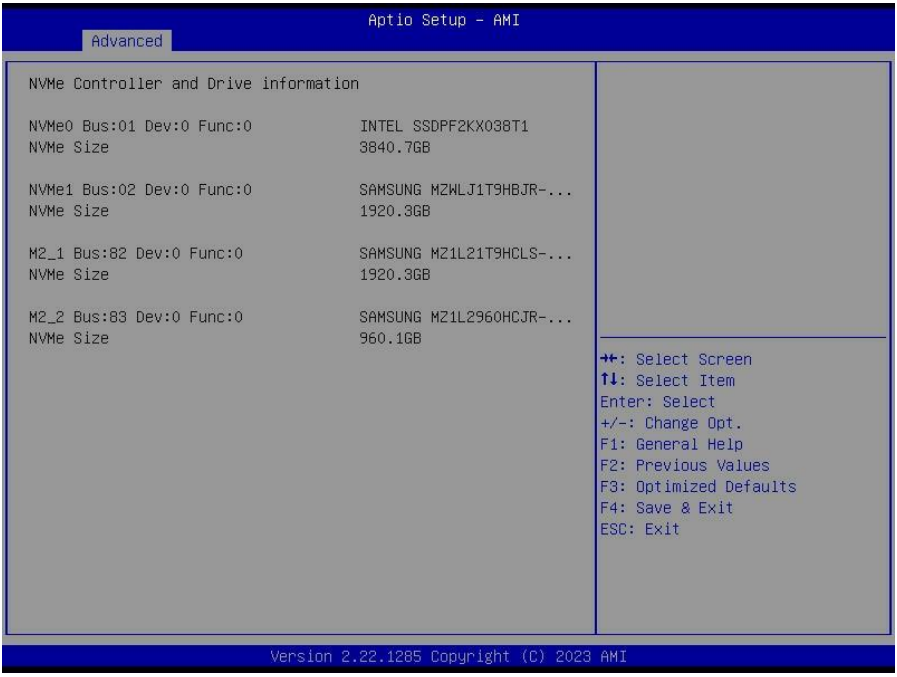
**PCI Express Settings**
Change PCI Express Devices Settings

### 6.3.9.1 PCI Express Subsystem

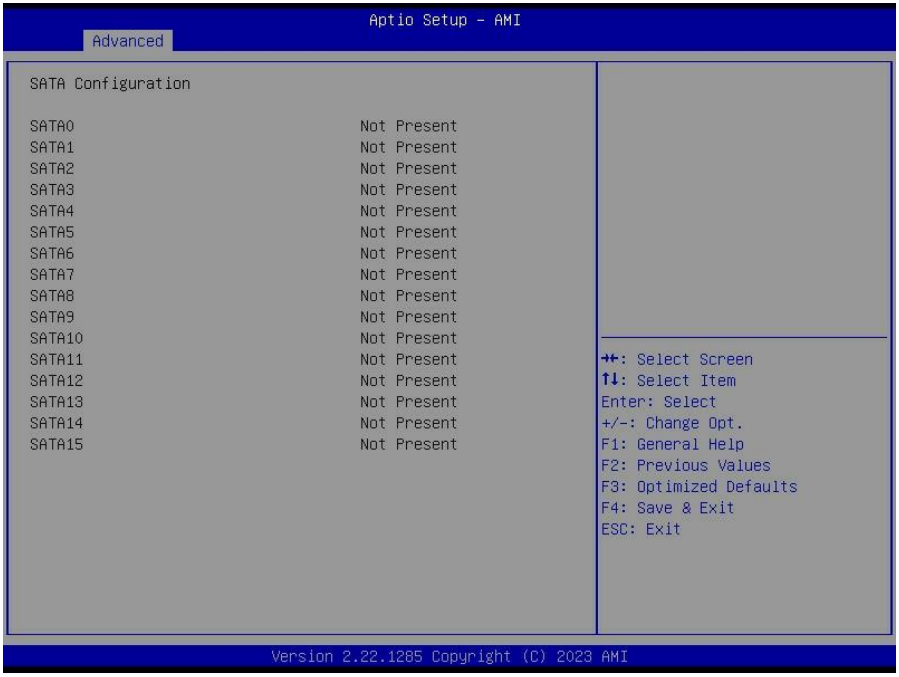

**Maximum Payload**
Set Maximum Payload of PCI Express Device or allow System BIOS to select the value.

**Auto** / 128 Bytes / 256 Bytes / 512 Bytes / 1024 Bytes / 2048 Bytes / 4096 Bytes

### 6.3.10 NVMe Configuration



### 6.3.11 SATA Configuration



### 6.3.12 Trusted Computing

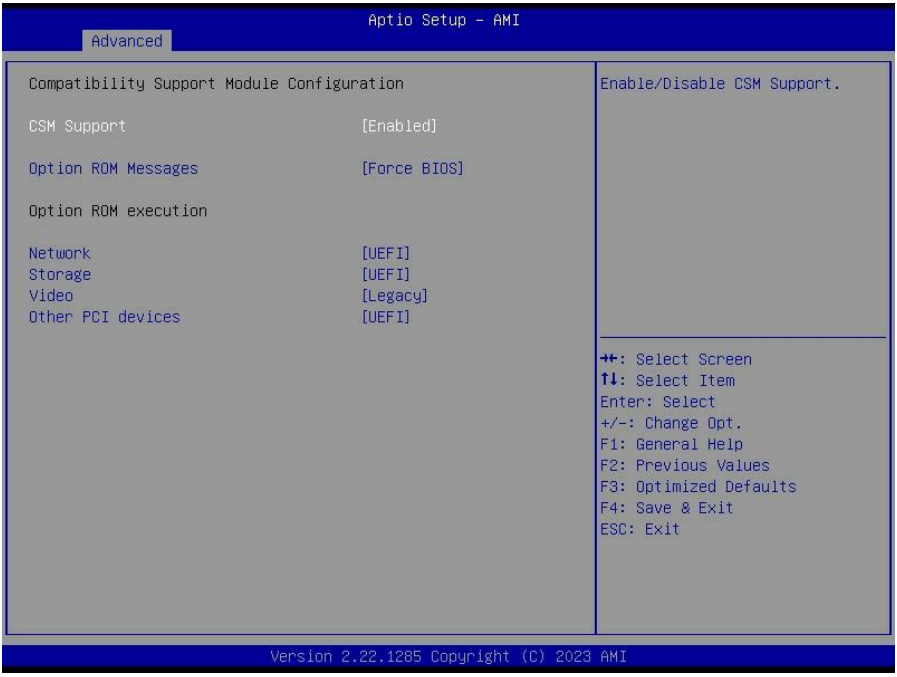

**Security Device Support**
Enables or disables BIOS support for security device. O.S. will not show Security device. O.S. will not show Security Device. TCG EFI protocol and INT1A interface will not be available.

Enabled **/ Disabled**

**Disable Block sid**
Override to allow SID authentication in TCG Storage device.

Enabled **/ Disabled**

### 6.3.13 CSM Configuration




**CSM support**
Enable/Disable CSM Support
**Enabled /** Disabled

**Option ROM Messages**
Set display mode for Option ROM
**Force BIOS** / Keep Current

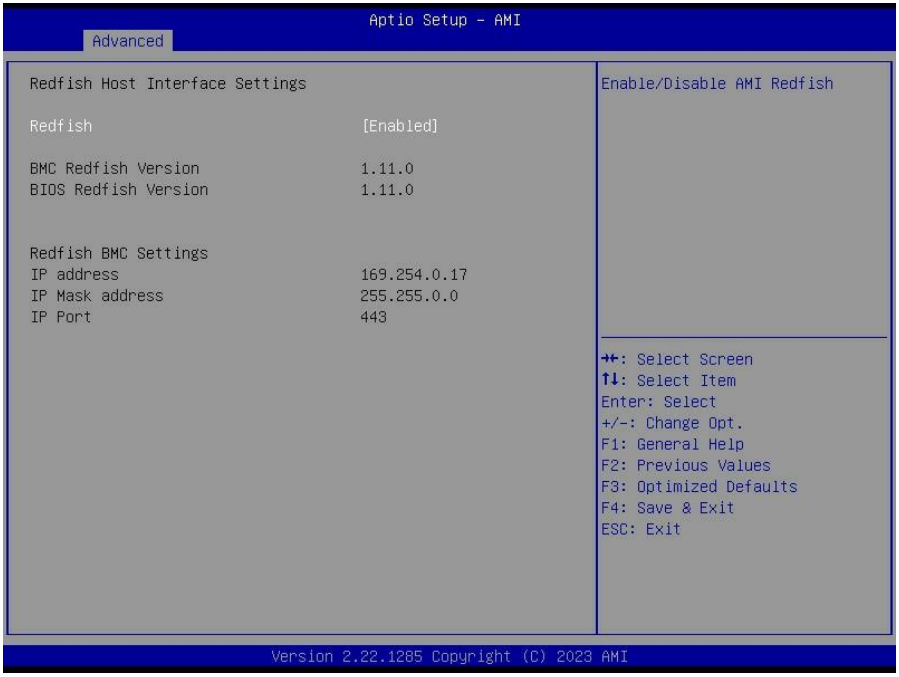
**Network**
Controls the execution of UEFI and legacy PXE OpROM
**UEFI** / legacy

**Storage**
Controls the execution of UEFI and legacy PXE OpROM
**UEFI** / legacy

**Video**
Controls the execution of UEFI and legacy Video OpROM
UEFI / **legacy**

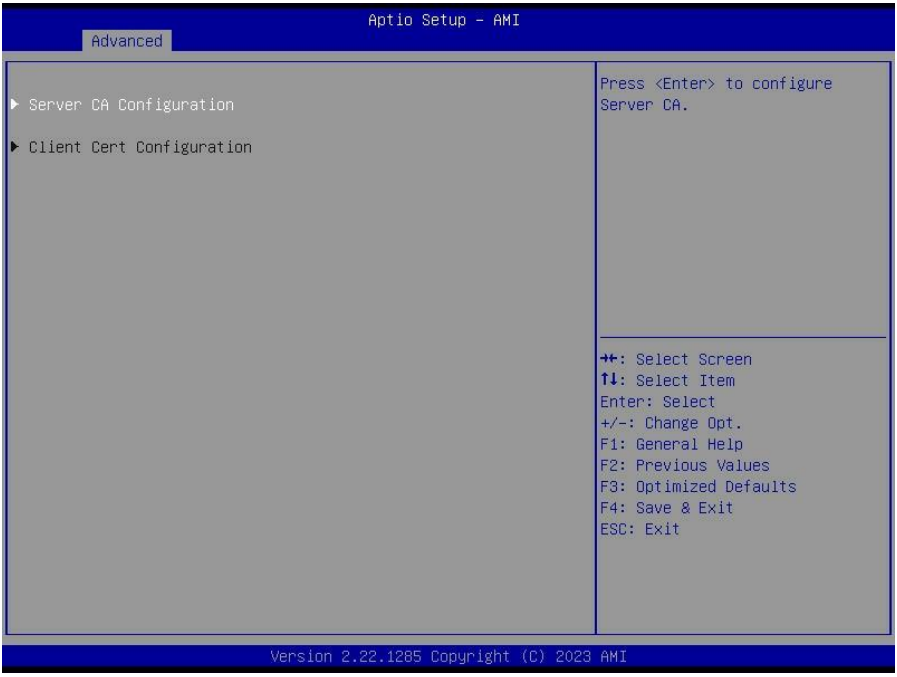
**Other PCI devices**
Determines OpRom execution policy for devices other than network, storage, or video
**UEFI** / legacy

### 6.3.14 Redfish Host Interface Settings




**Redfish**
Enable/Disable AMI Redfish.
Disabled / **Enabled**

### 6.3.15 Tls Auth Configuration




**Server CA Configuration**
Press <Enter> to configure Server CA.

### 6.3.15.1 Tls Auth Configuration


**Enroll Cert**
Press <Enter> to enroll cert.

**Delete Cert**
Press <Enter> to delete cert.

#### 6.3.15.1.1 Enroll Cert Configuration

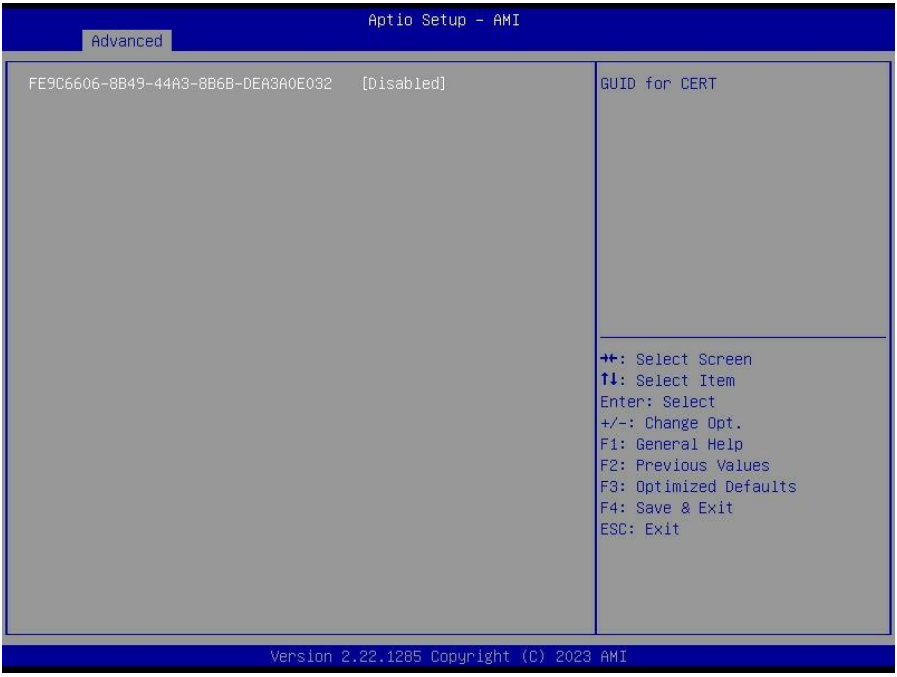

**Enroll Cert Using File**
Enroll Cert Using File

**Cert GUID**
Input digit character in 11111111-2222-3333-4444-1234567890ab format.

**Commit Changes and Exit**
Commit Changes and Exit

**Discard Changes and Exit**
Discard Changes and Exit

### 6.3.15.1.2 Delete Cert Configuration

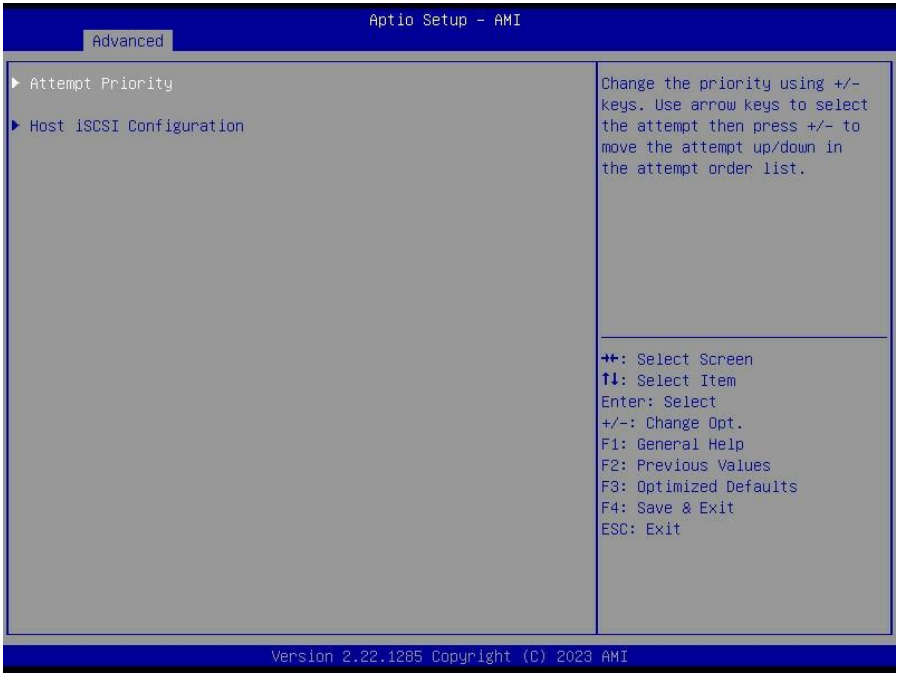



**FEXXXXXX-XXXX-XXXX-XXXX-XXXXXXXXXX**

GUID for CERT

**Disabled /** Enabled

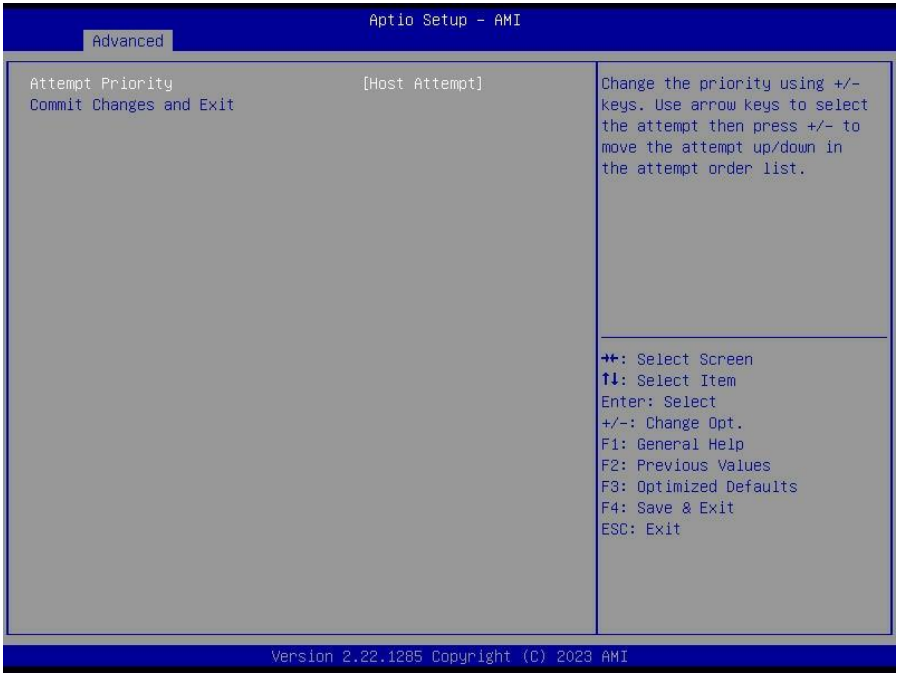
### 6.3.16 ISCSI Initiator Configuration




**Attempt Priority**
Change the priority using +/- keys. Use arrow keys to select the attempt then press +/- to move the attempt up/down in the attempt order list.

**Host iSCSI Configuration**
Host iSCSI Configuration settings

### 6.3.16.1 Attempt Priority

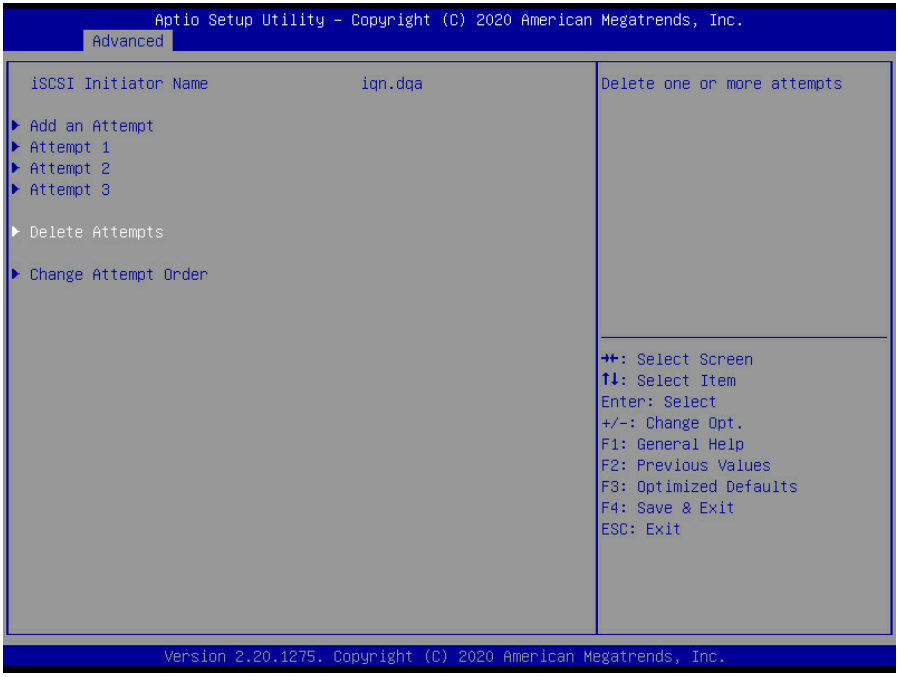



**Attempt Priority**
Change the priority using +/- keys. Use arrow keys to select the attempt then press +/- to move the attempt up/down in the attempt order list.

**Host Attempt** / Redfish Attempt

**Commit Changes and Exit**
Commit Changes and Exit

### 6.3.16.2 Host iSCSI Configuration




Please follow the instructions to initiate the iSCSI function.
Step 1.
Select **Advanced → CSM Configuration → Network →** [UEFI].
Step 2.
Select **Advanced → Network Stack Configuration → Network Stack →** [Enabled]
Step 3.
Save changes and reboot.

**iSCSI Initiator Name**

The worldwide unique name of iSCSI Initiator. Only IQN format is accepted. Range is from 4 to 223.

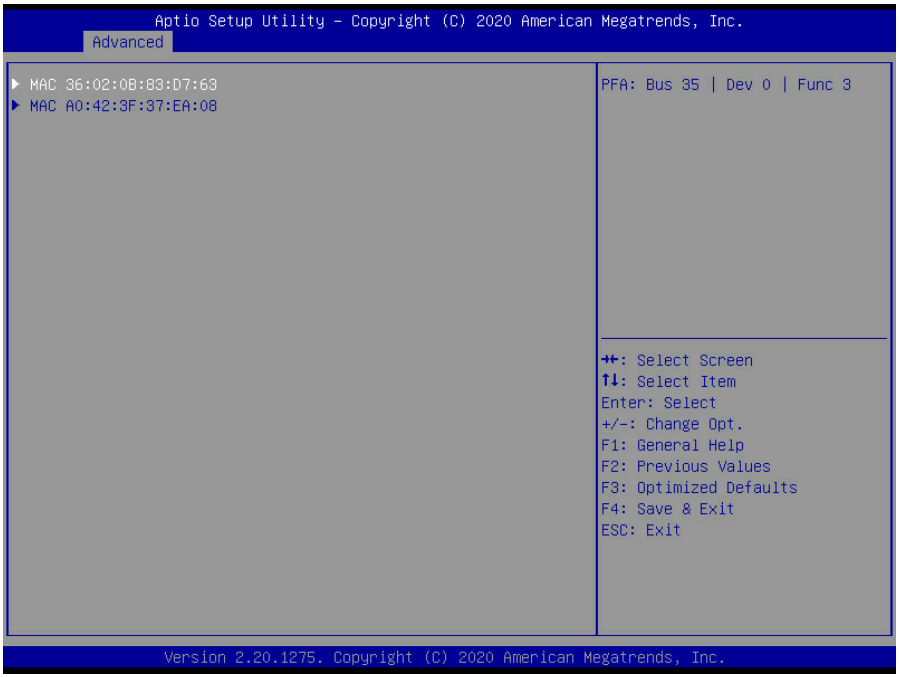
**Add an Attempt**
Add one or more attempts

**Attempt 1**
**Attempt 2**
**Attempt 3**

**Delete Attempts**
Delete one or more attempts

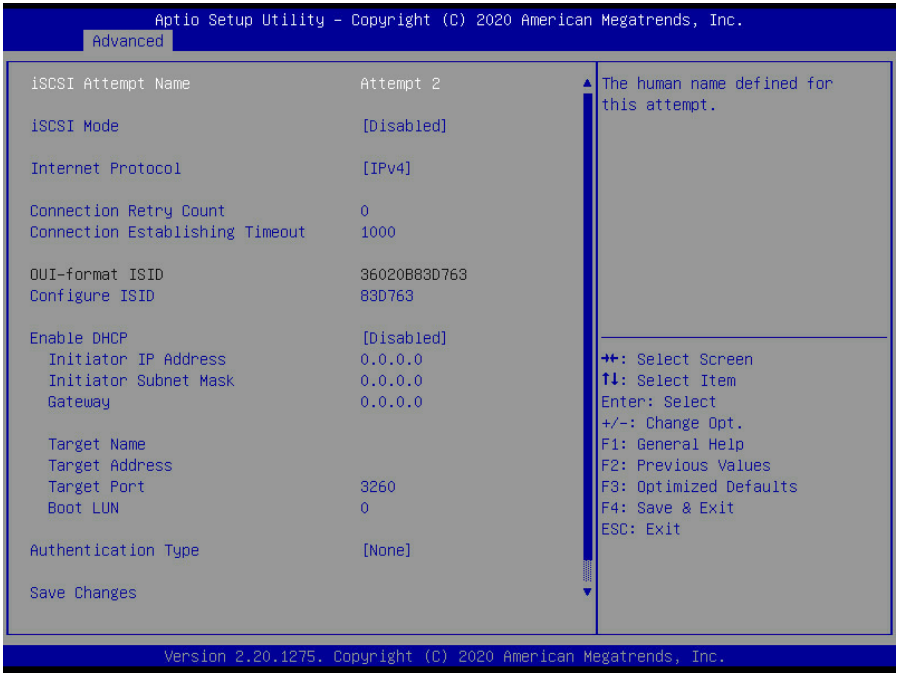
**Change Attempt Order**
Change attempt sequence

### 6.3.16.3 Add an Attempt




Read only.

#### 6.3.16.3.1 MAC 36:02:0B:83:D7:63




**iSCSI Mode**
Disabled, Enabled, Enabled for MPIO.
**Disabled** / Enabled / Enabled for MPIO

**Internet Protocol**
Initiator IP address is system assigned in IP6 mode. In Autoconfigure mode, iSCSI driver will attempt to connect iSCSI target via IPv4 stack, if failed then attempt IPv6 stack.
**IPv4** / IPv6 / Autoconfigure

**Connection Retry Count**
The minimum value is 0 and the maximum is 16. 0 means no retry.

**Connection Establishing Timeout**
The timeout value in milliseconds. The minimum value is 100 milliseconds and the maximum is 20 seconds.

**Configure ISID**
OUI-format ISID in 6 bytes, default value is derived from MAC address. Only last 3 bytes are configurable. Example: update 0ABBCCDDEEFF to OABBCCF07901 by input F07901.

**Enable DHCP**
Enable DHCP.
**Disabled** / Enabled

**Initiator IP Address**
Enter IP address in dotted-decimal notation.

**Initiator Subnet Mask**
Enter IP address in dotted-decimal notation.

**Gateway**
Enter IP address in dotted-decimal notation.

**Target Name**
The worldwide unique name of the target. Only iqn. format is accepted. Range is from 4 to 223
**iqu. xxx**

**Target Address**
Enter Target address in IPv4, IPv6 or URL format. You need to configure DNS server address in advance if input a URL string.

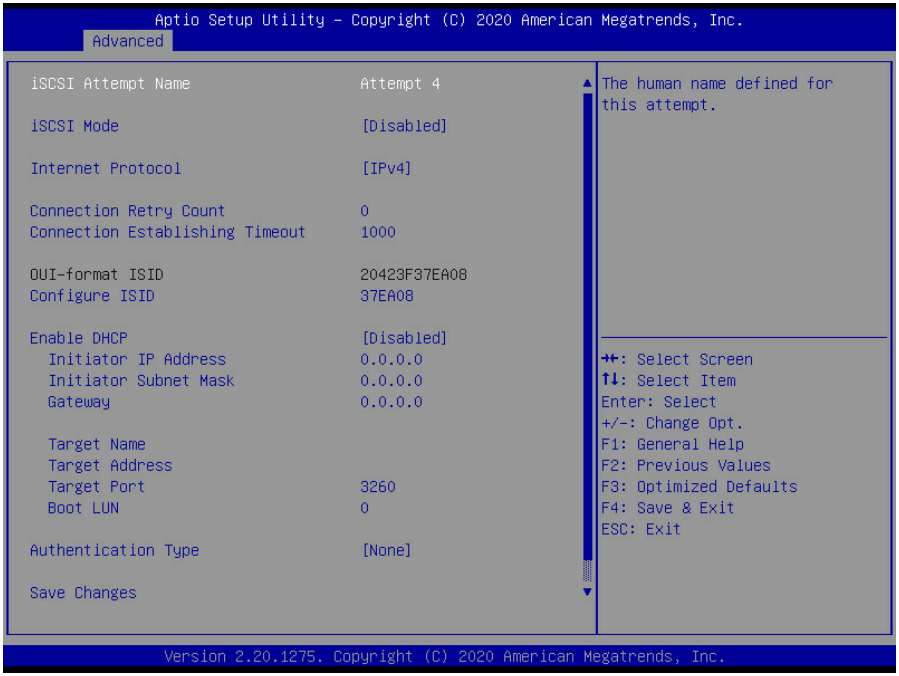
**Target Port**
Target Port.

**Boot LUN**
Hexadecimal representation of the LU number. Examples are:
4752-3A4F-6b7e-3F99, 6734-9-156f-127, 4186-9.

**Authentication Type**
Authentication method: CHAP, Kerberos, or None.
CHAP / **None**

**Save Changes**
Must reboot system manually for changes to take place.

### 6.3.16.3.2 MAC A0:42:3F:37:EA:08




**iSCSI Mode**
Disabled, Enabled, Enabled for MPIO.
**Disabled** / Enabled / Enabled for MPIO

**Internet Protocol**
Initiator IP address is system assigned in IP6 mode. In Autoconfigure mode, iSCSI driver will attempt to connect iSCSI target via IPv4 stack, if failed then attempt IPv6 stack.
**IPv4** / IPv6 / Autoconfigure

**Connection Retry Count**
The minimum value is 0 and the maximum is 16. 0 means no retry.

**Connection Establishing Timeout**
The timeout value in milliseconds. The minimum value is 100 milliseconds and the maximum is 20 seconds.

**Configure ISID**
OUI-format ISID in 6 bytes, default value is derived from MAC address. Only last 3 bytes are configurable. Example: update 0ABBCCDDEEFF to OABBCCF07901 by input F07901.

**Enable DHCP**
Enable DHCP.
**Disabled** / Enabled

**Initiator IP Address**
Enter IP address in dotted-decimal notation.

**Initiator Subnet Mask**
Enter IP address in dotted-decimal notation.

**Gateway**
Enter IP address in dotted-decimal notation.

**Target Name**
The worldwide unique name of the target. Only iqn. format is accepted. Range is from 4 to 223
**iqu. xxx**

**Target Address**
Enter Target address in IPv4, IPv6 or URL format. You need to configure DNS server address in advance if input a URL string.

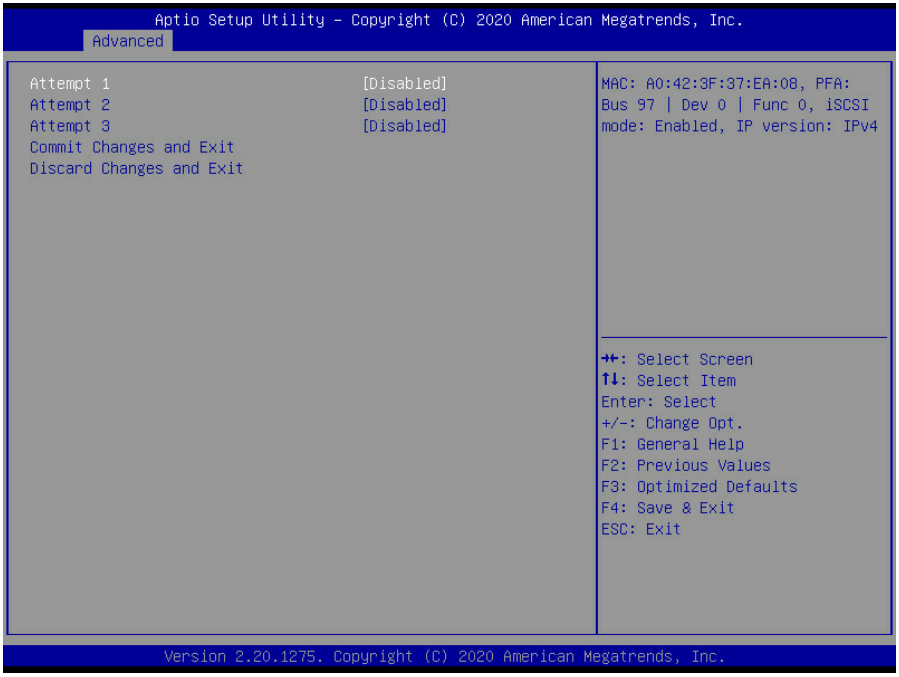
**Target Port**
Target Port.

**Boot LUN**
Hexadecimal representation of the LU number. Examples are:
4752-3A4F-6b7e-3F99, 6734-9-156f-127, 4186-9.

**Authentication Type**
Authentication method: CHAP, Kerberos, or None.
CHAP / **None**

**Save Changes**
Must reboot system manually for changes to take place.

### 6.3.16.4 Delete Attempts




**Attempt 1**
MAC: A0:42:3F:37:EA:08, PFA: Bus 97/ Dev 0 / Func 0, iSCSI mode: Enabled, IP version: IPv4.

**Disabled** / Enabled

**Attempt 2**
MAC: 36:02:0B:83:D7:63, PFA: Bus 35 / Dev 0 / Func 3, iSCSI mode: Disabled, IP version: IPv4.

**Disabled** / Enabled

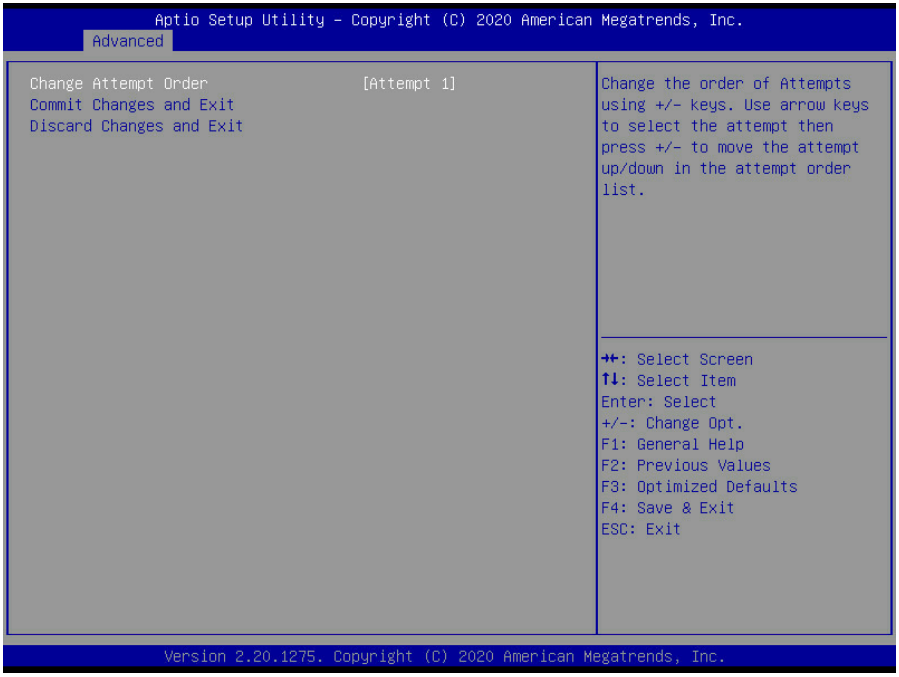
**Attempt 3**
MAC: 36:02:0B:83:D7:63, PFA: Bus 35 / Dev 0 / Func 3, iSCSI mode: Disabled, IP version: IPv4.

**Disabled** / Enabled

**Commit Changes and Exit**
Commit Changes and Exit.

**Discard Changes and Exit**
Discard Changes and Exit.

### 6.3.16.5 Change Attempt Order



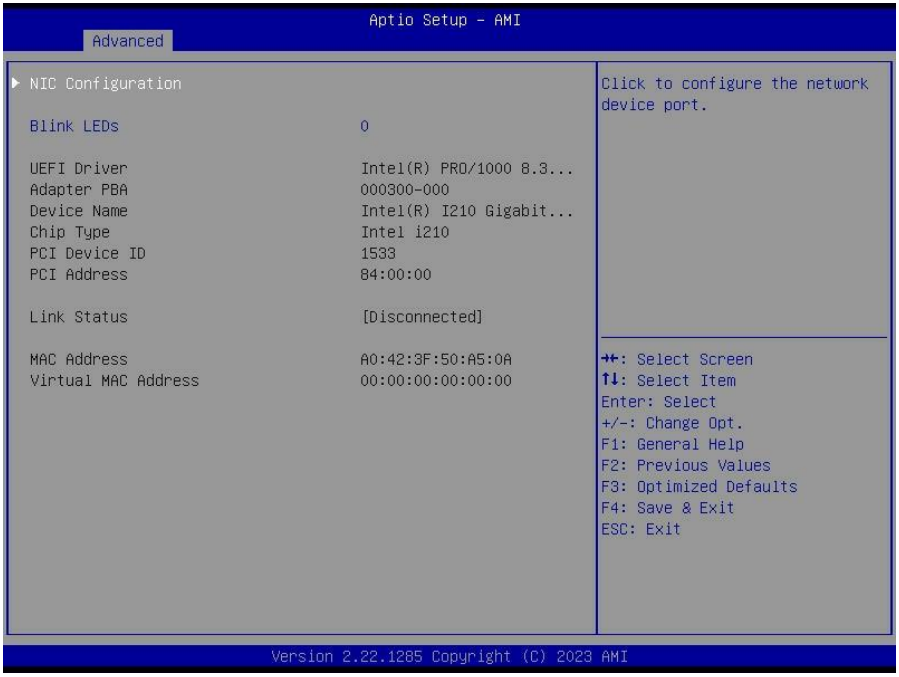

**Change Attempt Order**
Change the order of Attempts using +/- keys. Use arrow keys to select the attempt then press +/- to move the attempt up/down in the attempt order list.

**Attempt 1** / Attempt 2 / Attempt 3

**Commit Changes and Exit**
Commit Changes and Exit.

**Discard Changes and Exit**
Discard Changes and Exit.

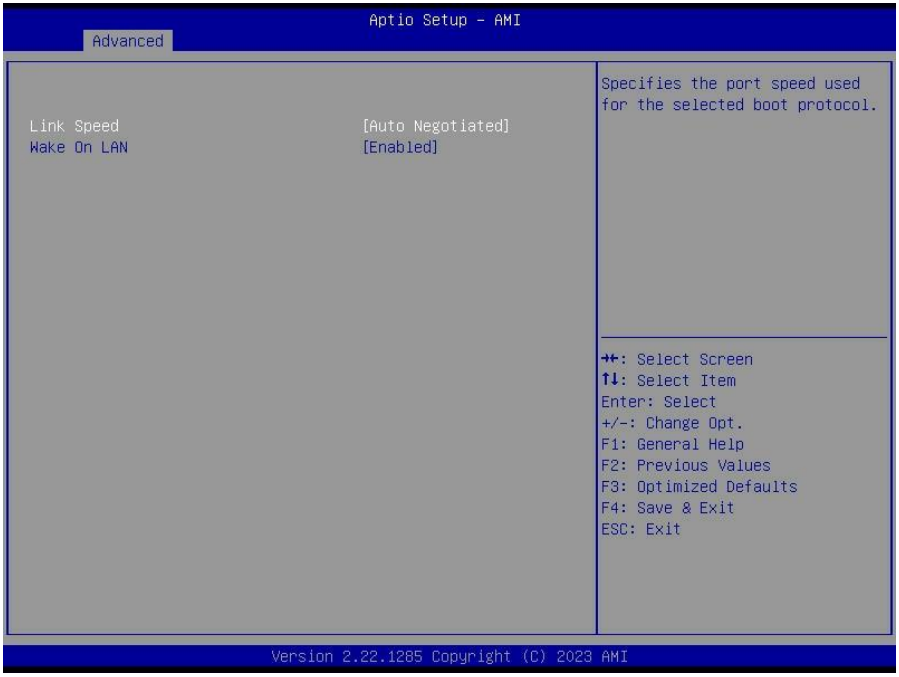
### 6.3.17 Intel® I210 Gigabit Network Connection Configuration




**NIC Configuration**
Click to configure the network device port.

**Blink LEDs**
Blink LEDs for a duration up to 15 seconds

### 6.3.17.1 NIC Configuration



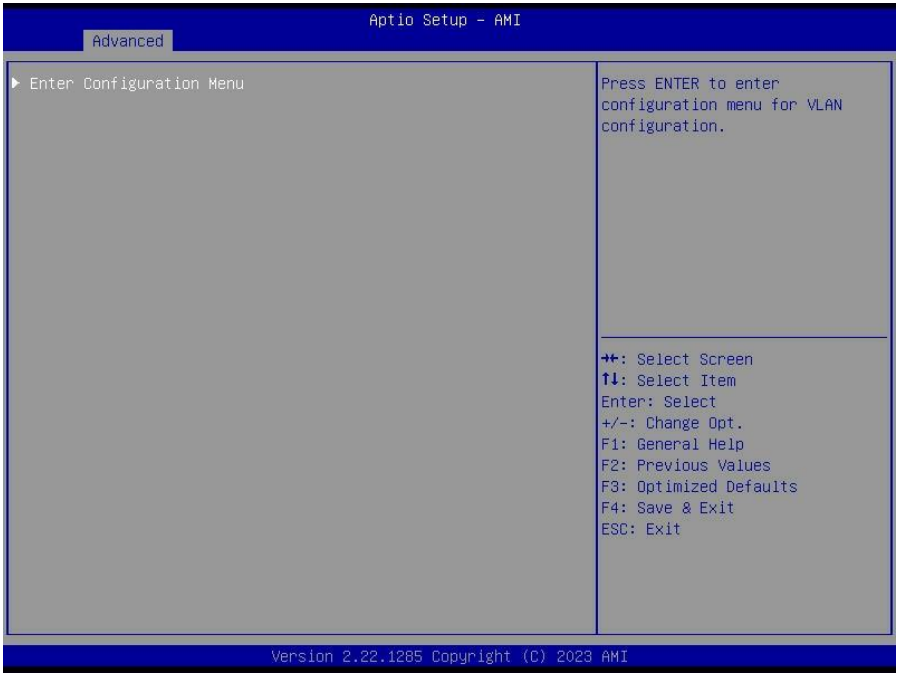

**Link Speed**
Specifies the port speed used for the selected boot protocol.

**Auto Negotiated** / 10Mbps Half / 10Mbps Full / 100Mbps Half / 100Mbps Full

**Wake On LAN**
Enables power on of the system via LAN. Note that configuring Wake on LAN in the operating system does not change the value of this setting, but does override the behavior of Wake on LAN in OS controlled power states.

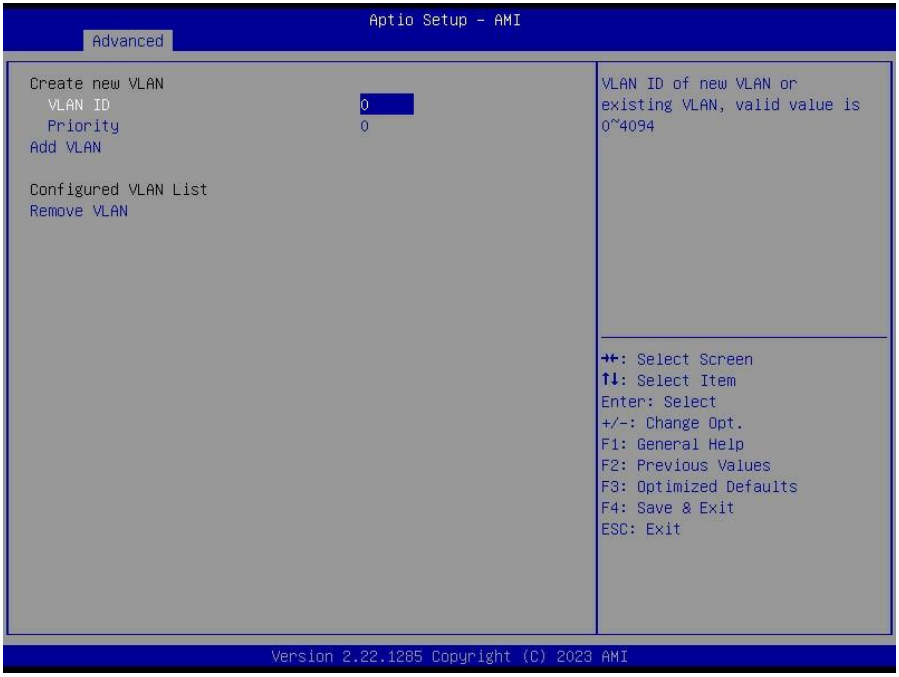
Disabled / **Enabled**

### 6.3.18 VLAN Configuration




**Enter Configuration Menu**
Press ENTER to enter configuration menu for VLAN configuration.

### 6.3.18.1 Enter Configuration




**VLAN ID**
VLAN ID of new VLAN or existing VLAN, valid value is 0~4094

**Priority**
802.1Q Priority, valid value is 0~7

**Add VLAN**
Create a new VLAN or update existing VLAN

**Remove VLAN**
Remove selected VLANs

### 6.3.19 MAC: A0423F50A50A-IPv4 Network Menu


**Configured**
Indicate whether network address configured successfully or not.
**Disabled** / Enabled
**NOTE:** When Configured was set to **Enabled,** the following items will be available to set up.

**Enable DHCP**
Indicate whether network address configured successfully or not.
**Disabled** / Enabled

**Local IP Address**
Enter IP address in dotted-decimal notation. Example: 162.168.10.12

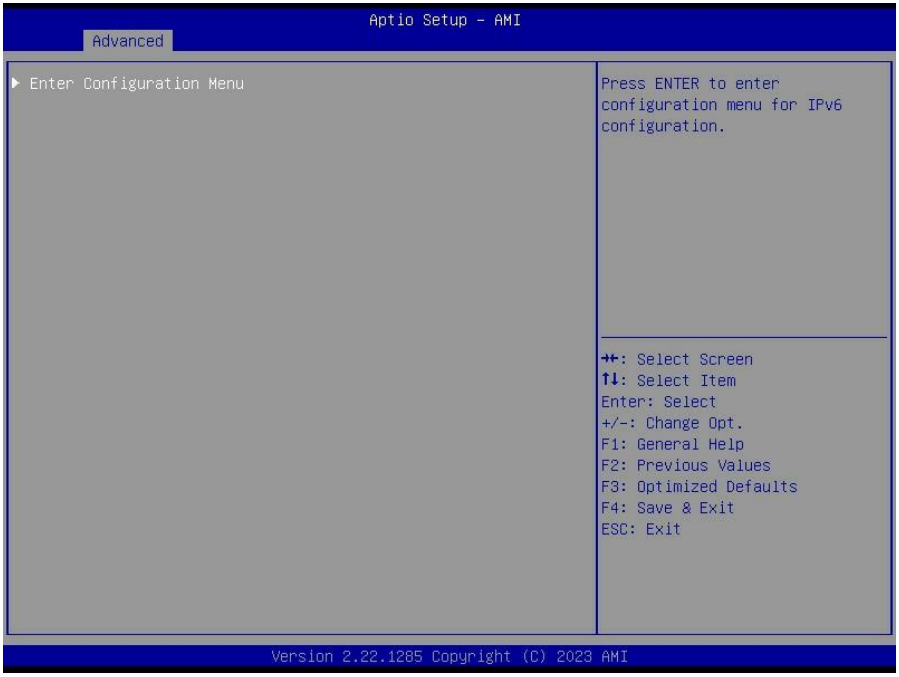
**Local NetMask**
Enter Netmask in dotted-decimal notation. Example:255.255.255.0

**Local Gateway**
Enter Gateway in dotted-decimal notation. Example:192.168.10.1

**Local DNS Servers**
Enter DNS Servers in dotted-decimal notation. Example:192.168.10.8
192.168.10.9

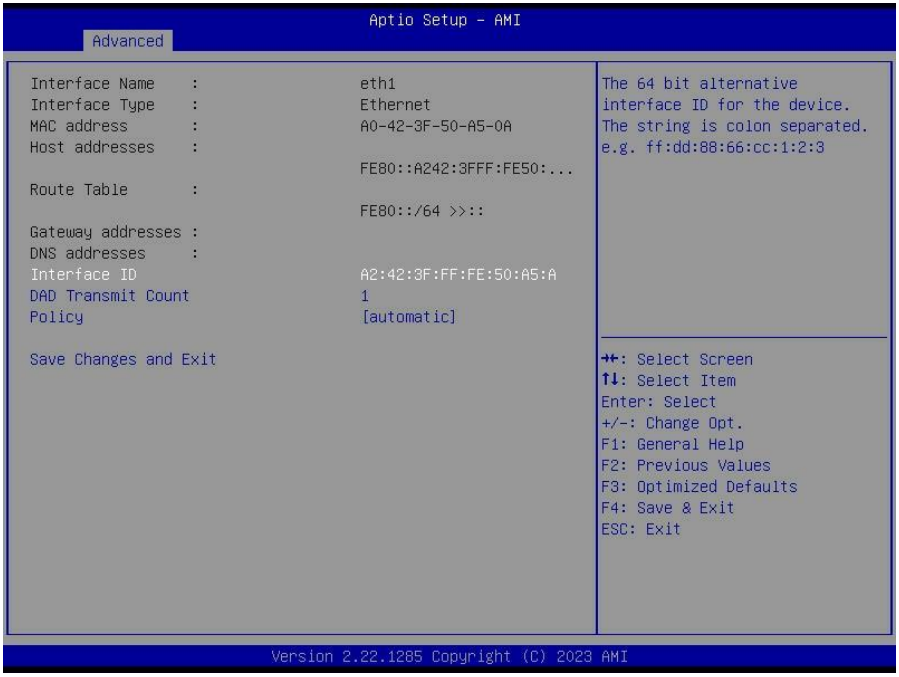
**Save Changes and Exit**
Save Changes and Exit

### 6.3.20 MAC: A0423F50A50A-IPv6 Network Menu




**Enter Configuration Menu**
Press ENTER to enter configuration menu for VLAN configuration.

### 6.3.20.1 Enter Configuration Menu




**Interface ID**
The 64 bit alternative interface ID for the device. The string is colon separated. e.g. ff:dd:88:66:cc:1:2:3

**DAD Transmit Count**
The number of consecutive Neighhor Solicatation message sent while performing Duplicate Address Detection on a tentative address. A value of zero indicates that duplicate address detection is not performed.

**1**

**Policy**
Automatic or manual

**automatic** / manual

**Save Changes and Exit**
Save changes for interface ID, DAD transmit count, policy, and data in advanced configuration.

## 6.4 CPU Configuration


**CPU Configuration**
CPU Configuration Parameters

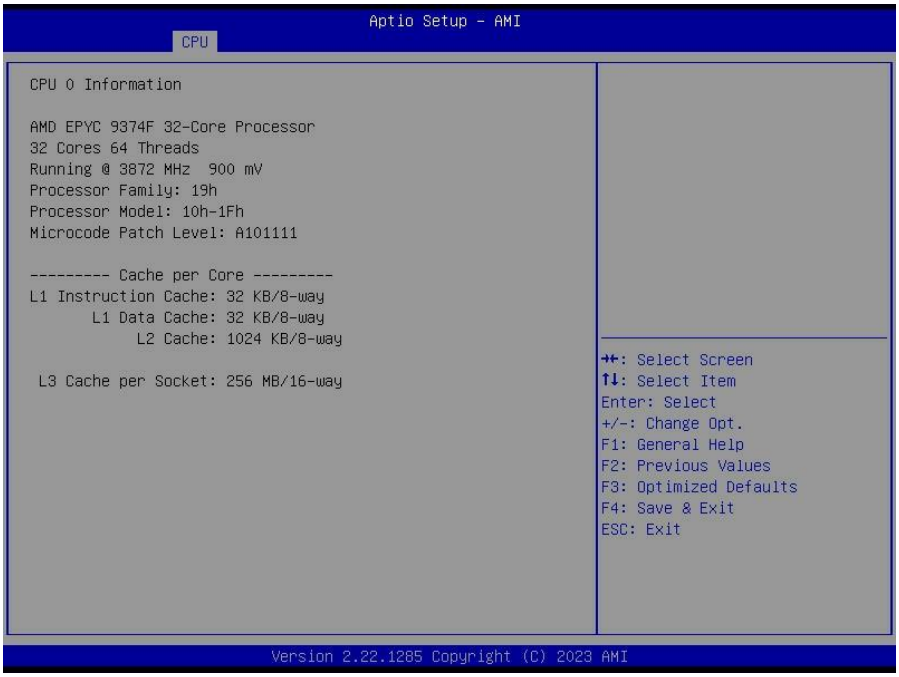
### 6.4.1 CPU Configuration Submenu


**SVM Mode**
Enable/disable CPU Virtualization
**Enabled /** Disabled

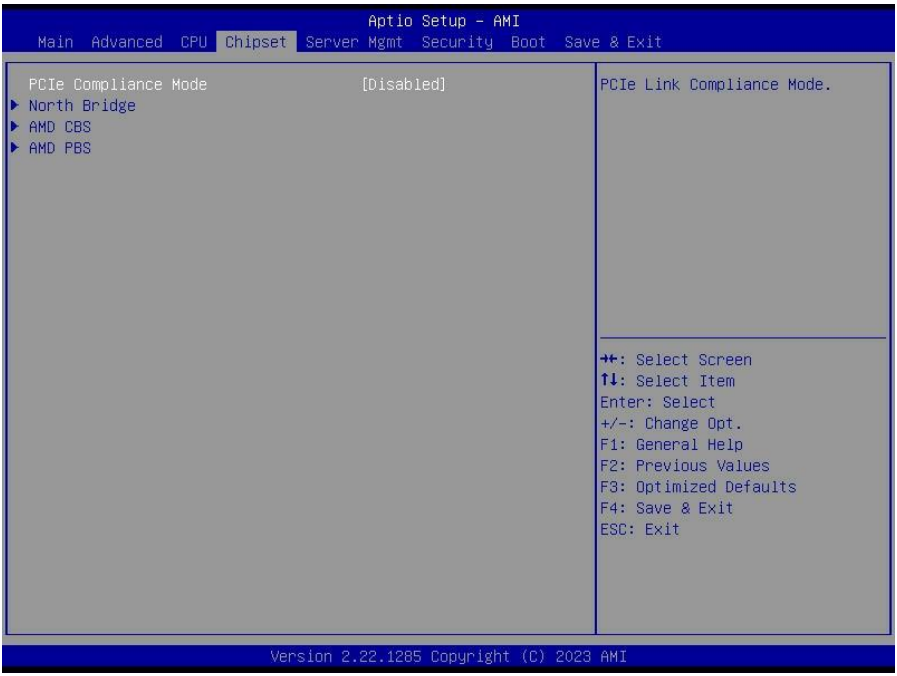
**SMEE**
Control secure memory encryption enable
Enabling both SMEE and SME-Mk is not supported. Results in #GP
**Enabled /** Disabled

**CPU0 Information**
View Information related to CPU 0

#### 6.4.1.1 CPU0 Information



## 6.5 Chipset Menu



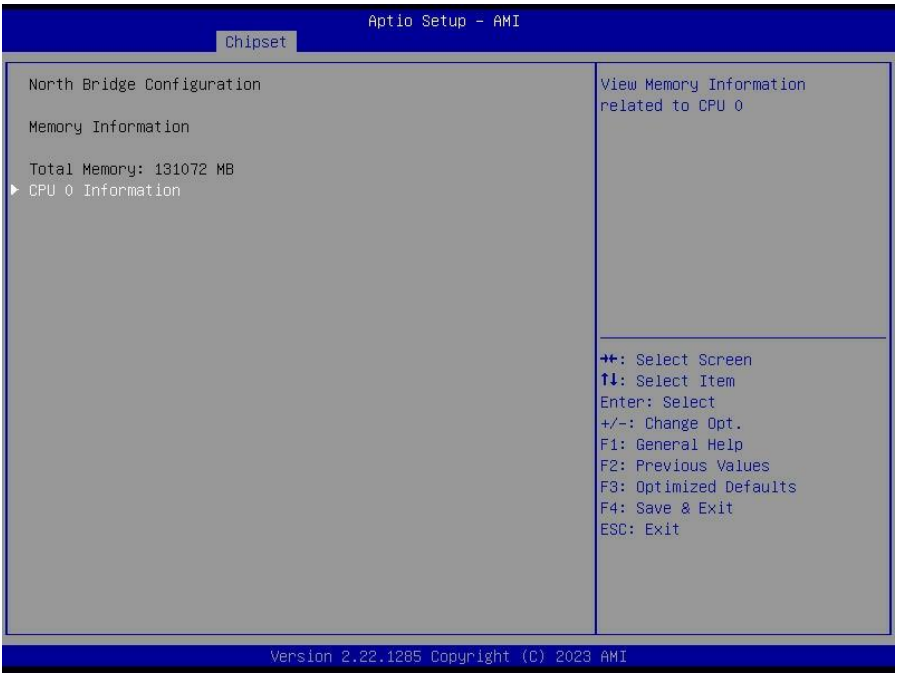

**PCIe Compliance Mode**
PCIe Link Compliance Mode Settings
Enabled / **Disabled**

**North Bridge**
North Bridge Parameters

**AMD CBS**
AMD CBS Setup Page

**AMD PBS**
AMD PBS Setup Page

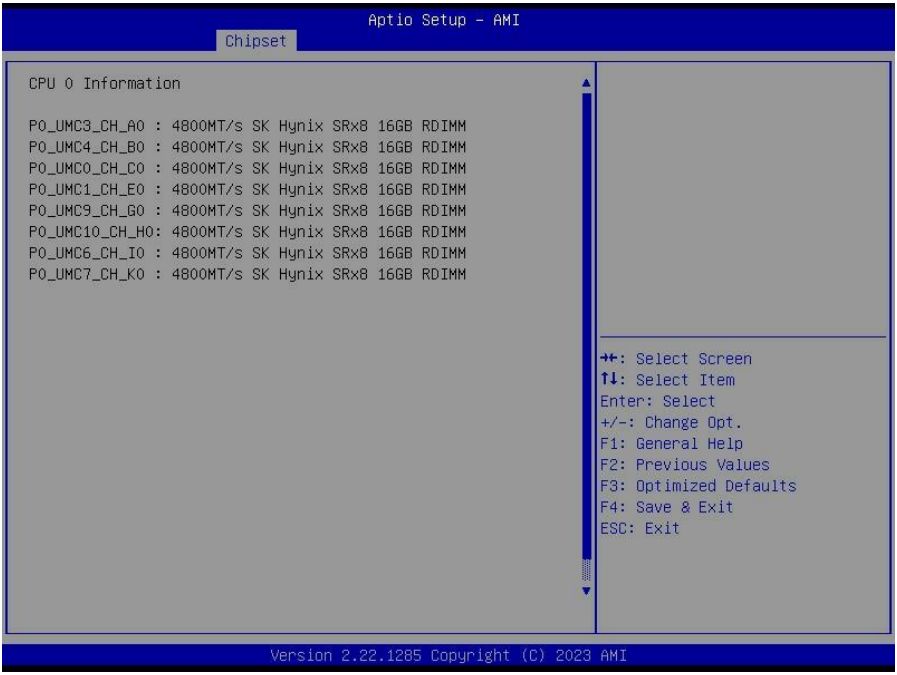
### 6.5.1 North Bridge Configuration



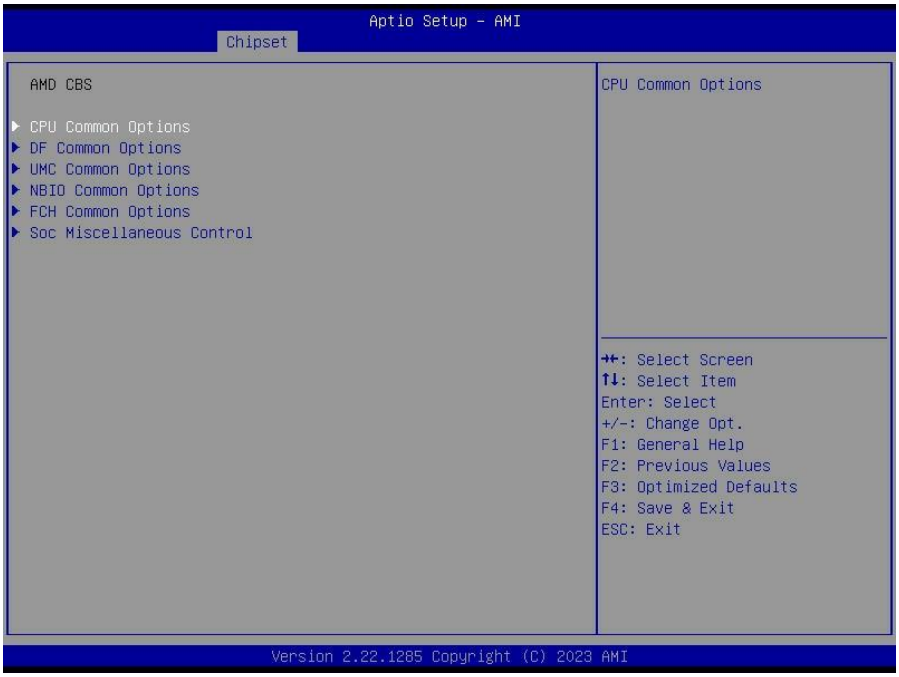

**North Bridge Configuration**
**Memory Information**
**Total Memory： xxxxx MB**

**CPU 0 Information**
View Memory Information related to CPU 0

#### 6.5.1.1 CPU 0 Information



### 6.5.2 AMD CBS Menu




**CPU Common Options**
CPU Common Parameters

**DF Common Options**
DF Common Parameters

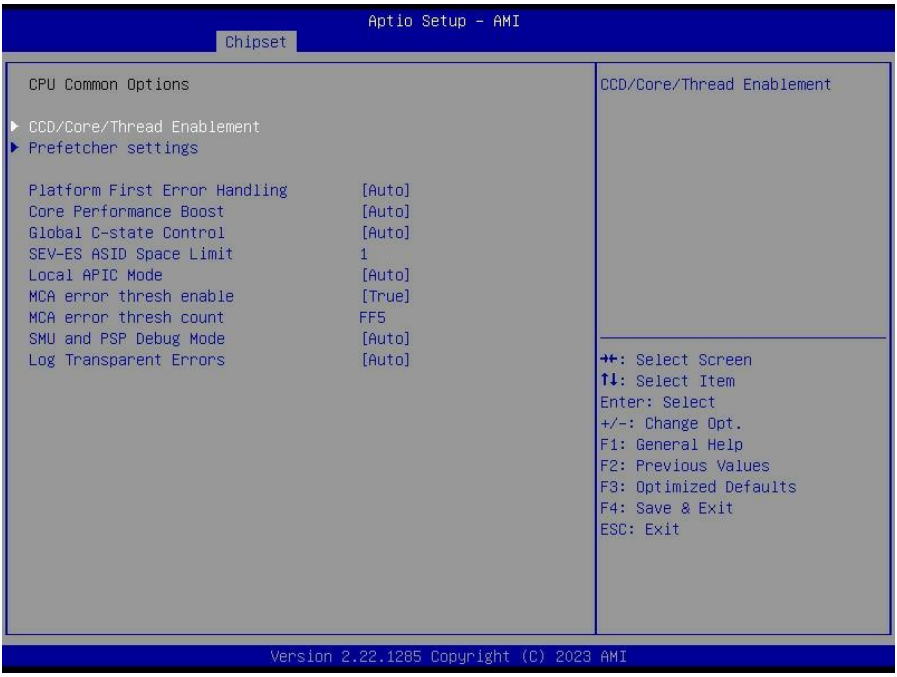
**UMC Common Options**
UMC Common Parameters

**NBIO Common Options**
NBIO Common Parameters

**FCH Common Options**
FCH Common Parameters

**Soc Miscellaneous Control**
Soc Miscellaneous Control parameters

### 6.5.2.1 CPU Common Options Submenu




**CCD/Core/Thread Enablement**
CCD/Core/Thread Enablement settings

**Prefetcher settings**
Prefetcher parameters

**Platform First Error Handling**
Enable/disable PFEH, cloak individual banks, and mask deferred error interrupts from each bank.

Enabled / Disabled / **Auto**

**Core Performance Boost**
Disable CPB

Disabled / **Auto**

**Global C-state Control**
Controls IO based C-state generation and DF C-states.

Disabled **/** Enabled **/ Auto**

**SEV-ES ASID Space Limit**
SEV VMs using ASIDs below the SEV-ES ASID Space Limit must enable the SEV-ES feature. ASIDs from SEV-ES ASID Space Limit to (SEV ASID Count +1) can only be used with SEV VMs. If this field is set to (SEV ASID Count +1)， all ASIDs are forced to be SEV-ES ASIDs. Hence, the valid values for this field is 1 – (SEV ASID Count +1)

**Local APIC Mode**
Local APIC Mode
Compatibility / xAPIC **/** x2APIC **/ Auto**

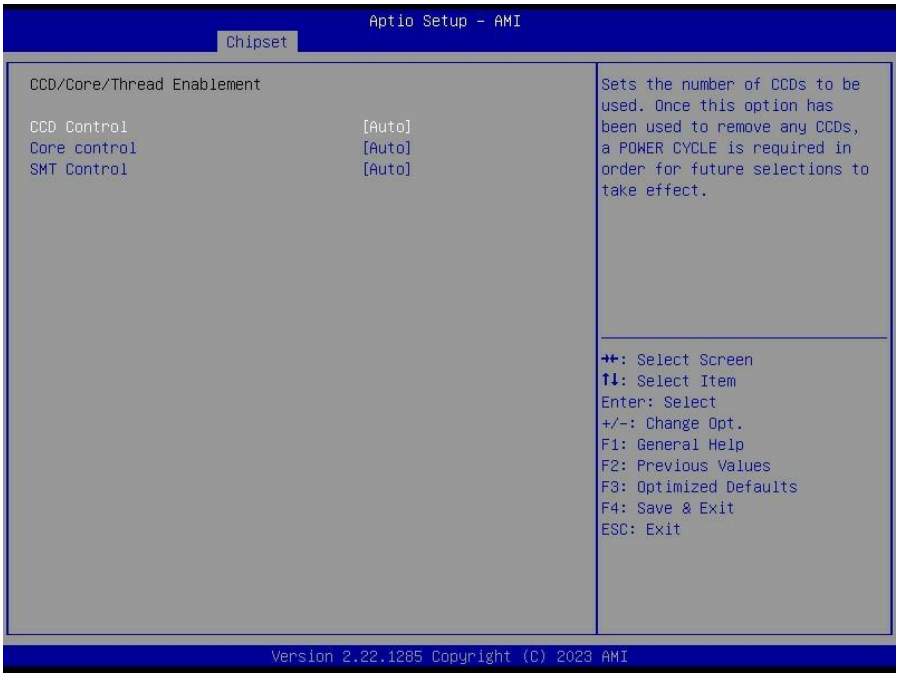
**MCA error thresh enable**
Enable MCA error thresholding
False / True / **Auto**

**MCA error thresh count**
Effective error threshold count=0xFFF (4095) - <this value> (e.g. the default value of 0xFF5 (4085) results in a threshold of 0xA(10)).
**FF5**

**SMU and PSP Debug Mode**
When this option is enabled, uncorrected errors detected by the PSP FW or SMU FW that should cause a cold reset, will hang and not reset the system.
Disabled / Enabled / **Auto**

**Log Transparent Errors**
Log transparent errors in MCA in addition to debug registers.
**Auto** / Disabled / Enabled

#### 6.5.2.1.1 CCD/Core/ Thread Enablement Submenu

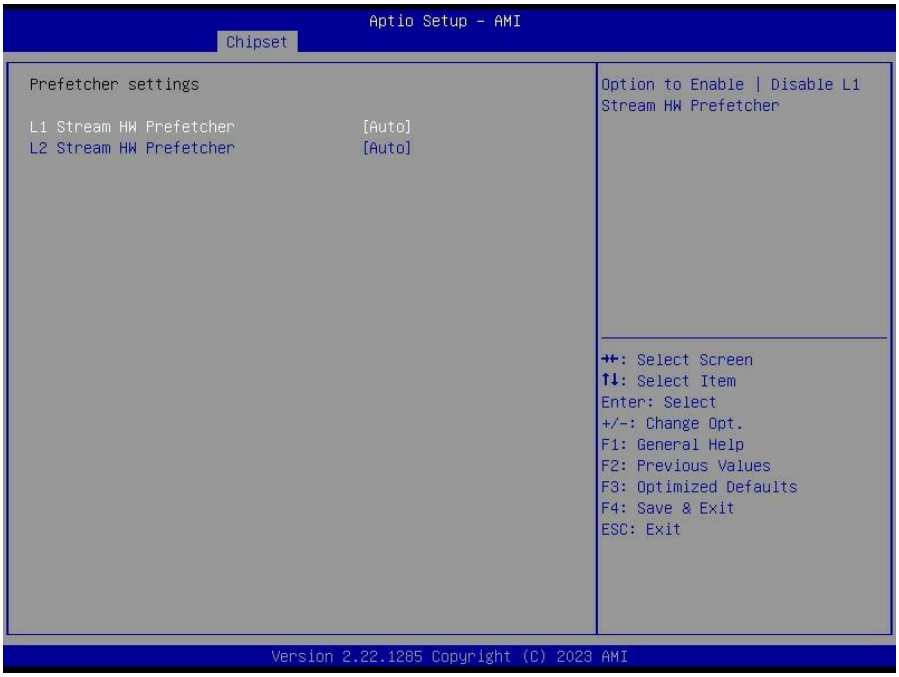



**CCD Control**
Sets the number of CCDs to be used. Once this option has been used to remove any CCDs, a POWER CYCLE is required in order for future selections to take effect.
**Auto** / 2 CCDs / 4 CCDs / 6 CCDs / 8 CCDs / 10 CCDs

**Core control**
Sets the number of Cores to be used. Once this option has been used to remove any Cores, a POWER CYCLE is required in order for future selections to take effect.
**Auto** / ONE (1 + 0) / TWO (2 + 0) / THREE (3 + 0) / FOUR (4 + 0) / FIVE (5 + 0) / SIX (6 + 0) / SEVEN (7 + 0)

**SMT Control**
Can be used to disable symmetric multithreading. To re-enable SMT, a POWER CYCLE is needed after selecting the 'Auto' option.
Disabled **/** Enabled **/ Auto**

#### 6.5.2.1.2 Prefetcher Submenu




**L1 Stream HW Prefetcher**
Option to Enable | Disable L1 Stream HW Prefetcher
Disabled / Enabled / **Auto**

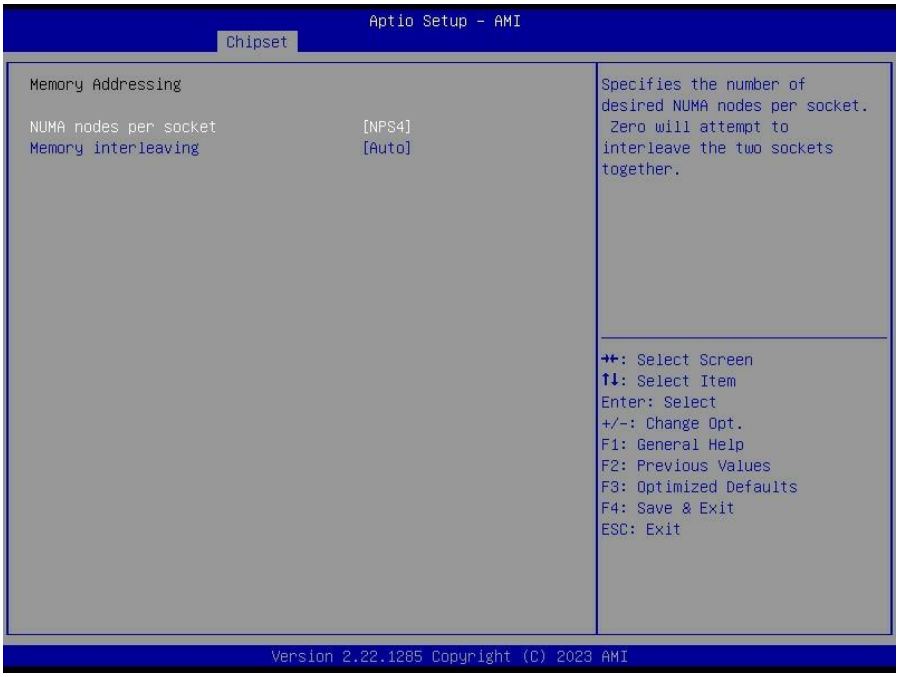
**L2 Stream HW Prefetcher**
Option to Enable | Disable L2 Stream HW Prefetcher
Disabled / Enabled / **Auto**

### 6.5.2.2 DF Common Options Submenu


**PSP error injection support**
Enable EINJ support

**False** / True

#### 6.5.2.2.1 Memory Addressing Submenu



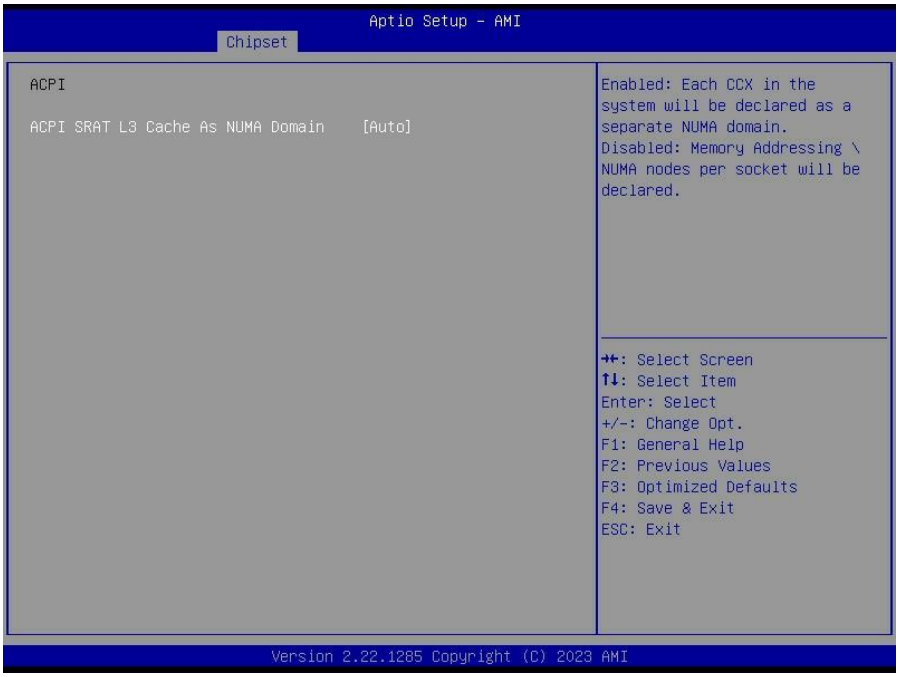

**NUMA nodes per socket**
Specifies the number of desired NUMA nodes per socket. Zero will attempt to interleave the two sockets together.

NPS0 / NPS1 / NPS2 / **NPS4**

**Memory interleaving**
Allows for disabling memory interleaving. Note that NUMA nodes per socket will be honored regardless of this setting.

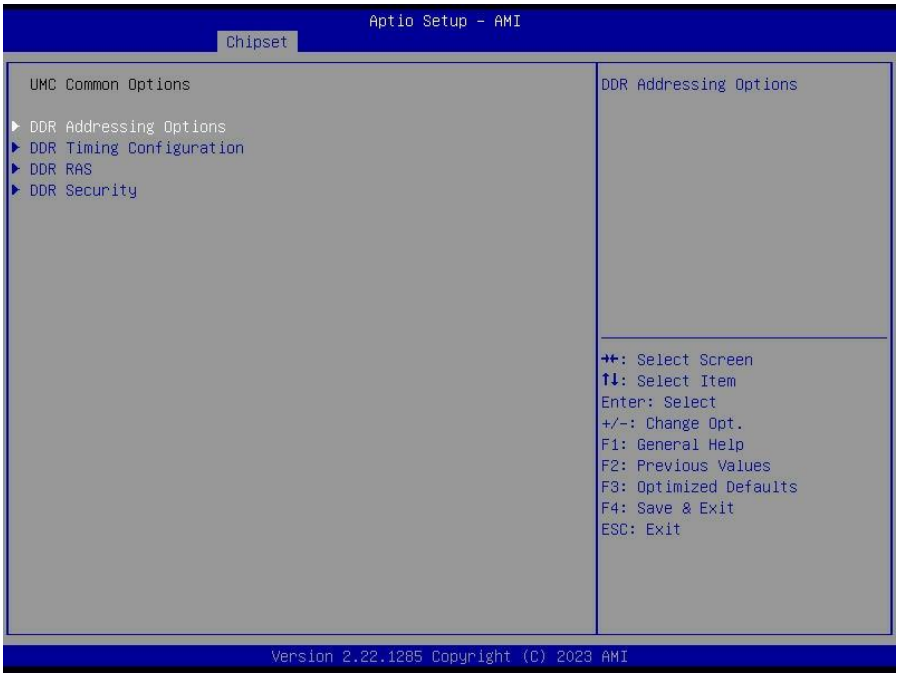
Disabled / **Auto**

#### 6.5.2.2.2 ACPI Submenu




**ACPI SRAT L3 Cache As NUMA Domain**
Enabled: Each CCX in the system will be declared as a separate NUMA domain.
Disabled: Memory Addressing \ NUMA nodes per socket will be declared.
Disabled / Enabled / **Auto**

### 6.5.3 UMC Common Options Submenu



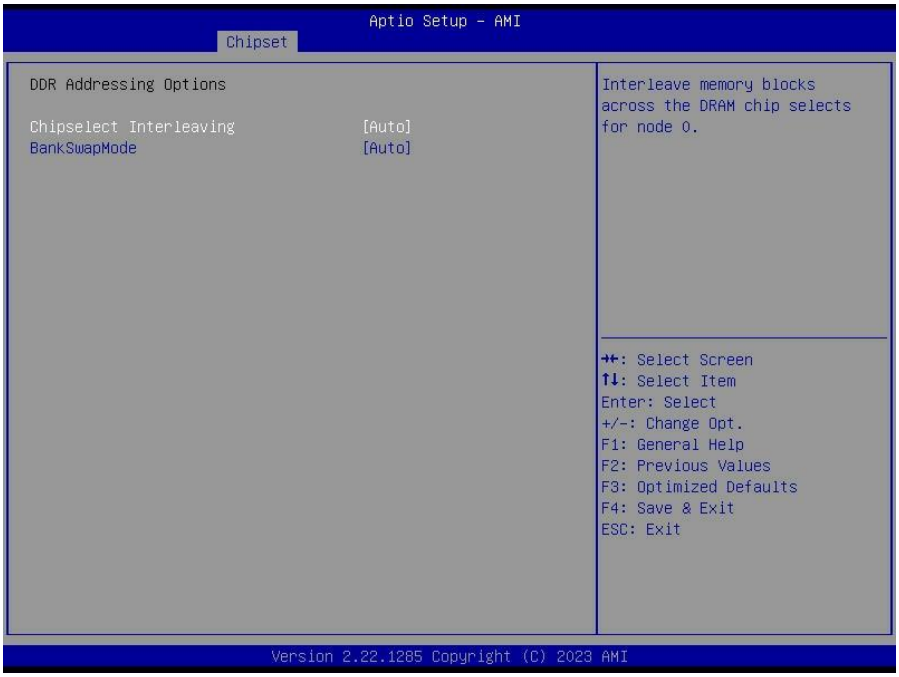

**DDR Addressing Options**
DDR addressing parameters

**DDR Timing Configuration**
DDT Timing parameters

**DDR RAS**
DDR RAS parameters

**DDR Security**
DDR Security parameters

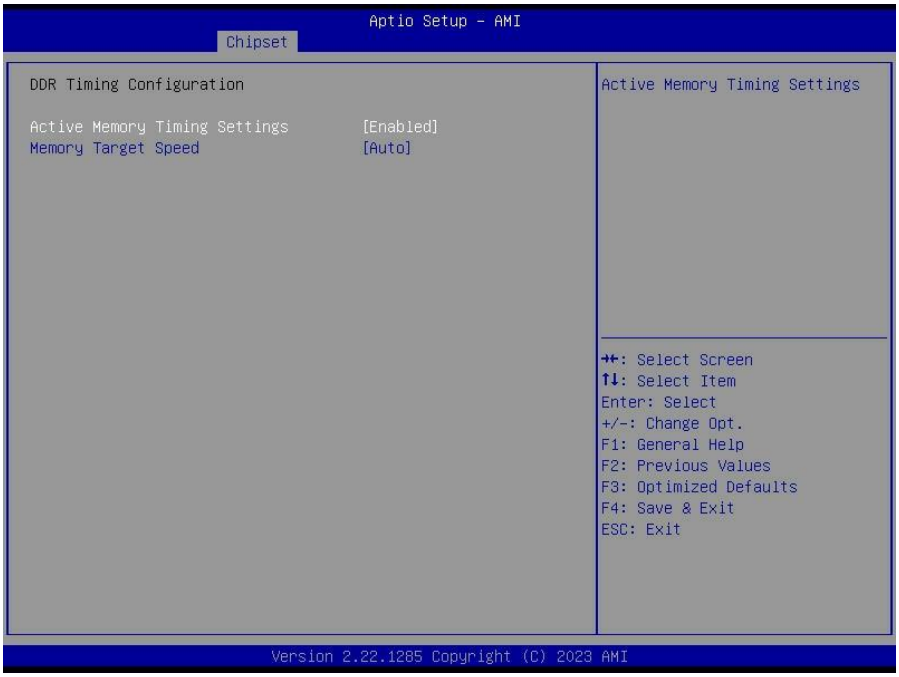
### 6.5.3.1 DDR Addressing Options Submenu




**Chipselect Interleaving**
Interleave memory blocks across the DRAM chip selects for node 0.
Disabled / **Auto**

**BankSwapMode**
BankSwapMode value: 0=Disabled, 1= SwapCPU
Disabled / **Auto**

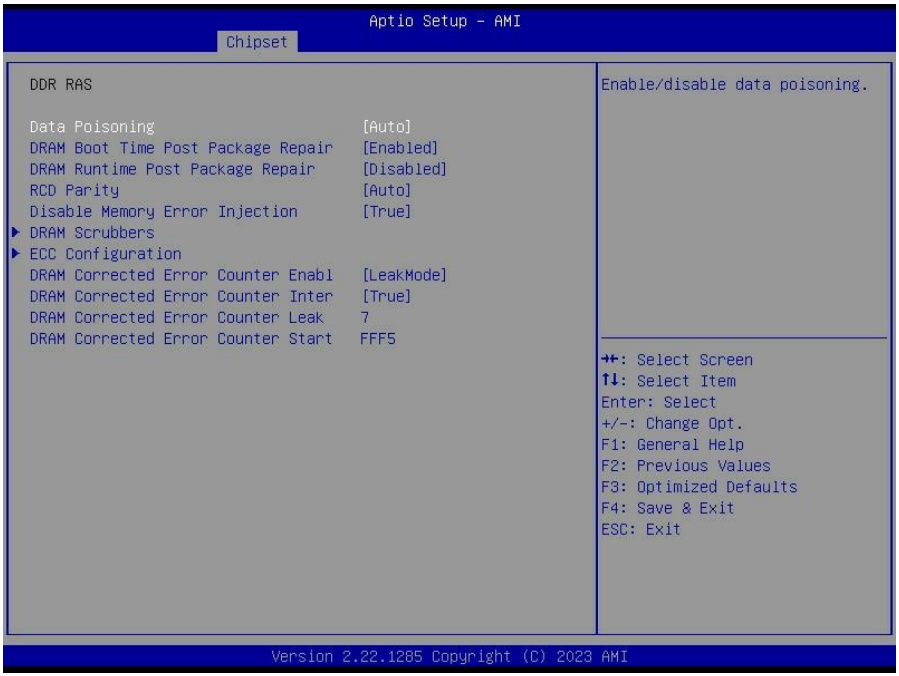
### 6.5.3.2 DRAM Time Configuration Submenu




**Active Memory Timing Settings**
Active Memory Timing Settings
Auto / **Enabled**

**Memory Target Speed**
Specifies the memory target speed in MT/s. The valid input is 3200, 3600, 4000,4400,4800,5200, 5600. Value in decimal.
**Auto** / DDR3200 / DDR3600 / DDR4000 / DDR4400 / DDR4800 / DDR5200 / DDR5600

### 6.5.3.3 DDR RAS Submenu




**Data Poisoning**
Enable/disable data poisoning
Disabled / Enabled / **Auto**

**DRAM Boot Time Post Package Repair**
Enable or Disable DRAM Boot Time Post Package Repair.
Disabled / **Enabled**

**DRAM Runtime Post Package Repair**
Enable or Disable DRAM Run Time Post Package Repair.
**Disabled** / Enabled

**RCD Parity**
Enable RCD command and address parity.
**Auto** / Disabled / Enabled

**Disable Memory Error Injection**
0=Enable. 1=Disable. Specifies UMC error injection configuration writes are disabled.
True:: CH:: MiscCfg[DisErrInj]=1
False / **True** / Auto

**DRAM Corrected Error Counter Enable**
Configure DRAM Corrected Error Counter function. Only meaningful when PcdAmdCcxCfgPFEHEnable is TRUE.

Disabled **/** NoLeakMode / **LeakMode**

**DRAM Corrected Error Counter Interleaving**
Enable SMI when DRAM Corrected Error Counter count exceeds the threshold value.

False **/ True**

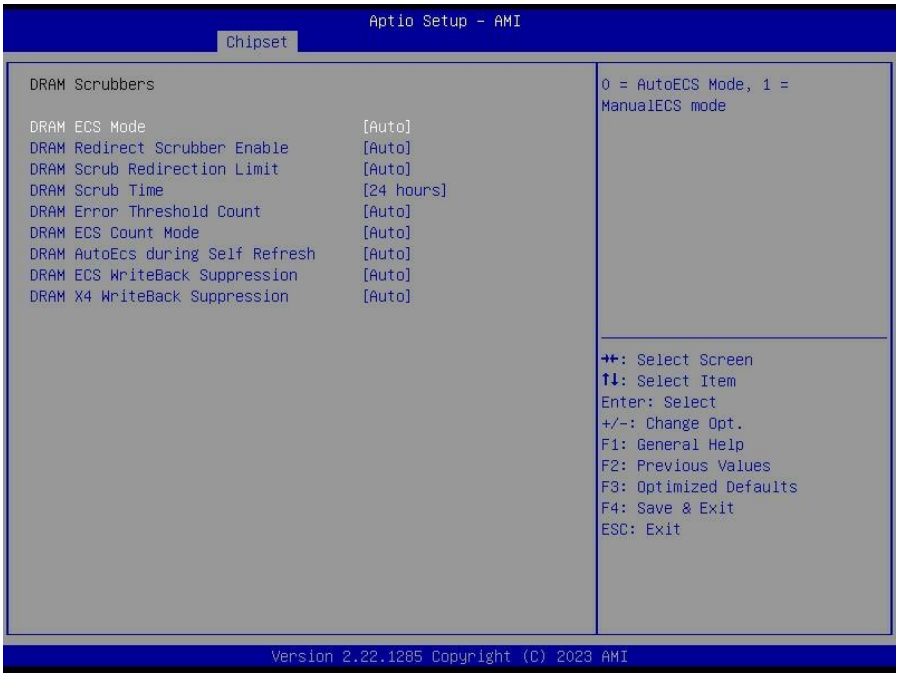
**DRAM Corrected Error Counter Leak**
Program Rate value for DRAM Corrected Error Counter function. Only meaningful when PcdAmdDdrEccErrorCounterEnable is set to LeakMode(Value:0x00-0x1F).

**7**

**DRAM Corrected Error Counter Start**
Program starting count value for DRAM Corrected Error Counter function. Only meaningful when PcdAmdDdrEccErrorCounterEnable is not Disable(0x00 – 0xFFFF).

**FFFF5**

#### 6.5.3.3.1 DRAM Scrubbers Submenu




**DRAM ECS Mode**

0 = AutoECS Mode, 1=ManualECS mode

AutoECS / Manual ECS / **Auto** / DisableECS

**DRAM Redirect Scrubber Enable**

Enable/Disable Dram Redirect Scrubber

Disabled / Enabled / **Auto**

**DRAM Scrub Redirection Limit**

Dram ECC Scrub Redirection Limit: 0=8 scrubs, 1=4 scrubs, 2=2 scrubs, 3=1 scrub

8 Scrubs / 4 Scrubs / 2 Scrubs / 1 Scrubs / **Auto**

**DRAM Scrub Time**

Provide a value that is the number of hours to scrub memory.

Disabled / 1 hour / 4 hours / 6 hours / 8 hours / 12 hours / 16 hours / **24 hours** / 48 hours

**DRAM Error Threshold Count**

List of Values: 0=ETC_4, 1=ETC_16, 2=ETC_64, 3=ETC_256(default – Auto), 4 = ETC_1024, 5 = ETC_4096,

ETC_4 / ETC_16 / ETC_64 / ETC_256 / ETC_1024 / ETC_4096 / **Auto**

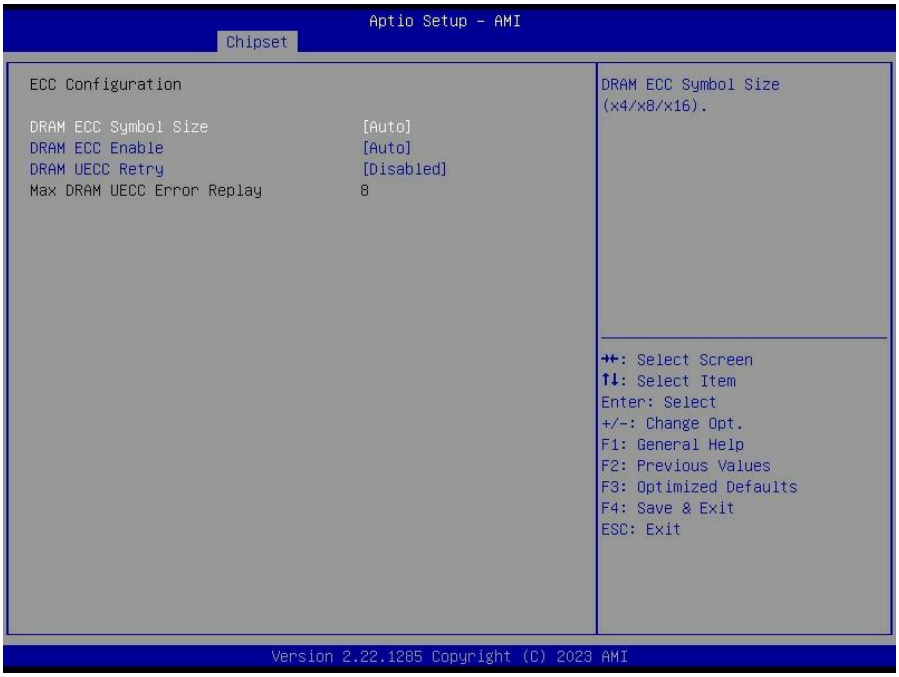
**DRAM ECS Count Mode**
0: RowCount Mode 1: CodeWord Mode 0xFF: Auto – ABL decides default as CodeWord Mode
Row Count Mode / Code Word Count Mode / **Auto**

**DRAM AutoEcs during Self Refresh**
0: AutoEcs Disabled 1: AutoEcs Enabled 0xFF: Auto – ABL choose AutoEcs Disabled
AutoEcs Disabled / AutoEcs Enabled / **Auto**

**DRAM ECS WriteBack Suppression**
To enable/Disable ECS Error Correction Writeback suppression
0: ECS Writeback Suppression Disabled
1: ECS Writeback Suppression Enabled
0xFF: Auto – ABL chooses Writeback Suppression to be Enabled by default
Disabled / Enabled / **Auto**

**DRAM x4 WriteBack Suppression**
To enable/Disable X4 device Error Correction Writeback suppression
0: ECS Writeback Suppression Disabled
1: ECS Writeback Suppression Enabled
0xFF: Auto – ABL chooses Writeback Suppression to be Enabled by default
Disabled / Enabled / **Auto**

#### 6.5.3.3.2 ECC Configuration Submenu

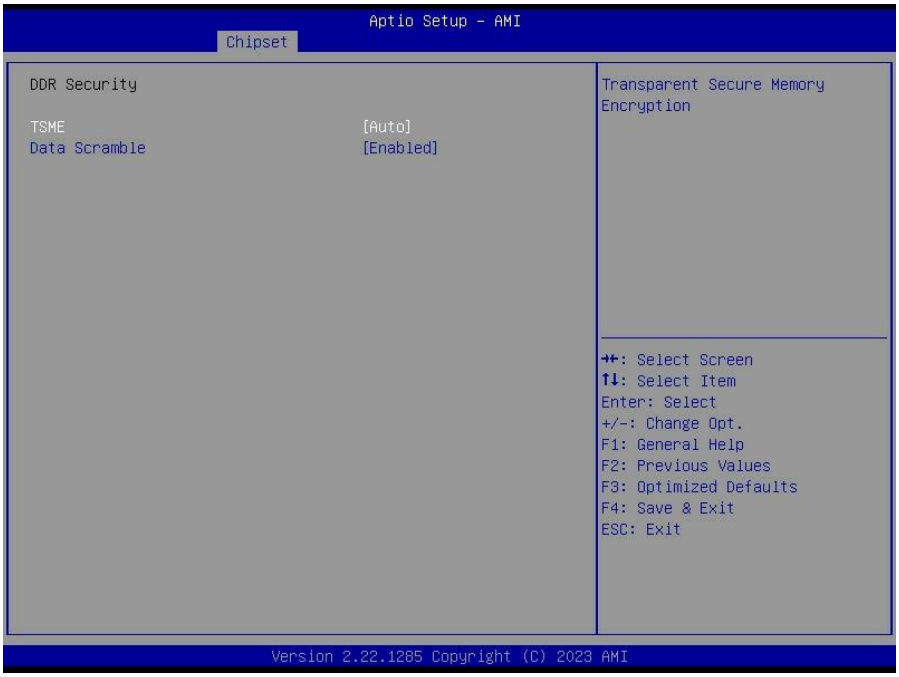



**DRAM ECC Symbols Size**
DRAM ECC Symbol Size (x4/x8/x16)
x4 / x16 / **Auto**

**DRAM ECC Enable**
Use this option to enable / disable DRAM ECC. Auto will set ECC to enable.
Disabled / Enabled / **Auto**

**DRAM UECC Retry**
DRAM UECC Retry. Program to UMC:: RecCtrl.RecEn [2]
Auto / **Disabled** / Enabled

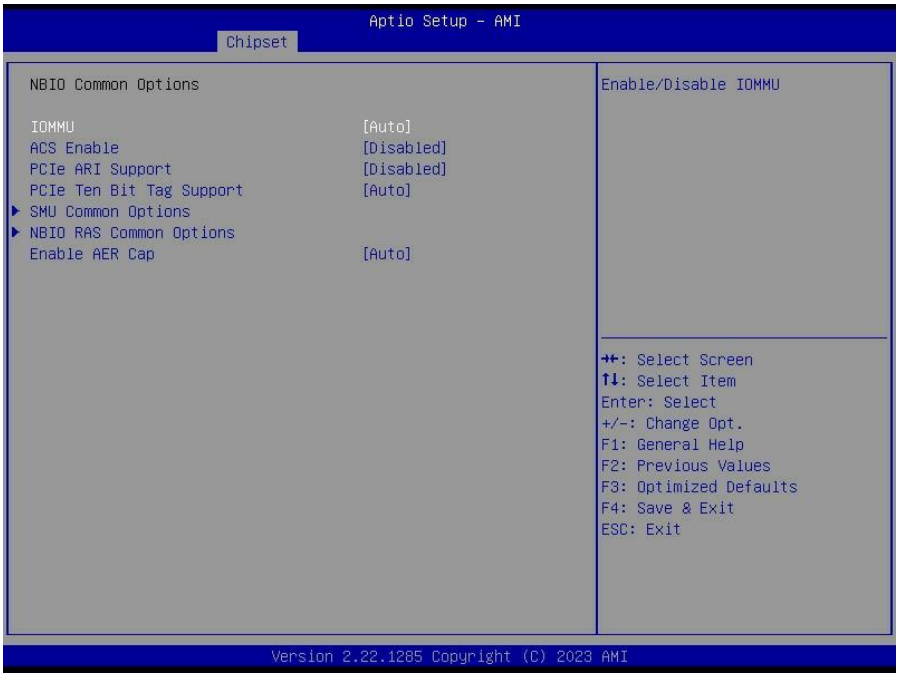
### 6.5.3.4 DDR Security Submenu




**TSME**
Transparent Secure Memory Encryption
**Auto** / Disabled / Enabled

**Data Scramble**
Data Scrambling
**Enabled** / Disabled

### 6.5.4 NBIO Common Options Submenu




**IOMMU**
Enable/Disable IOMMU
Disabled / Enabled / **Auto**

**ACS Enable**
AER must be enabled for ACS enable to work
Enabled / Disabled / **Auto**

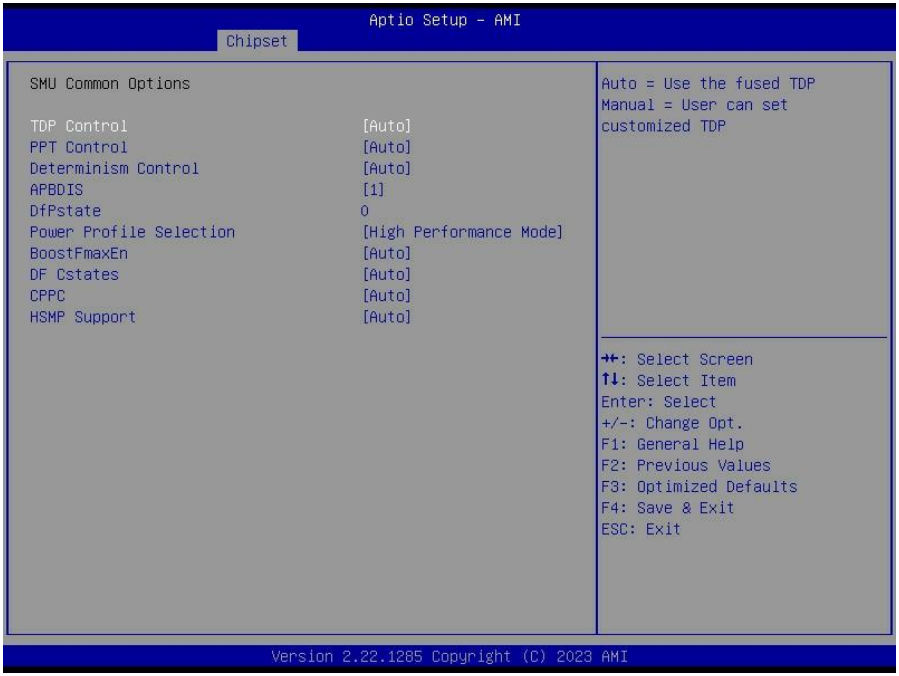
**PCIe ARI Support**
Enables Alternative Routing-ID Interpretation
Disabled / Enabled / **Auto**

**PCIe Ten Bit Tag Support**
Enables PCIe ten bit tags for supported devices. Auto = Disable
Disabled / Enabled / **Auto**

**SMU Common Options**
**NBIO RAS Common Options**

**Enable AER Cap**
Enable Advanced Error Reporting Capability
Disabled / Enabled / **Auto**

### 6.5.4.1 SMU Common Options Submenu




**TDP Control**
Auto = Use the fused TDP
Manual = User can set customized TDP
Manual / **Auto**

**PPT Control**
Auto = Use the fused PPT
Manual = User can set customized PPT
Manual / **Auto**

**Determinism Control**
Auto = Use the fused Determinism
Manual = User can set customized Determinism
Manual / **Auto**

**APBDIS**
Algorithm Performance Boost Disable
0 / 1 / **Auto**

**DF Pstate**
DfPstate index to set when APBDIS=1 [0-4]
0

**Power Profile Selection**
[0= High Performance Mode (DEFAULT);
1= Efficiency Mode;
2= Maximum IO Performance]
**High Performance Mode** / Efficiency Mode / Maximum IO Performance

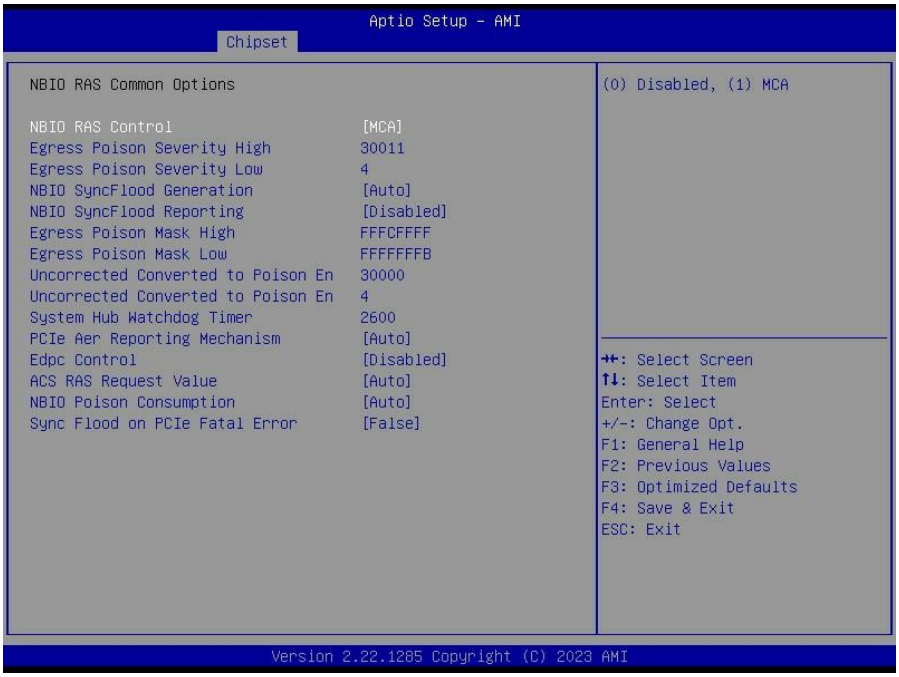
**BoostFmaxEn**
Auto = Use the default Fmax
Manual = User can set the boost Fmax
Manual / **Auto**

**DF Cstates**
Enable or Disable Data Fabric to go to a low-power state when the processor has entered Cx states
Disabled / Enabled / **Auto**

**CPPC**
Enable = Enable the feature :
Disable = Disable the feature
Disabled / Enabled / **Auto**

**HSMP Support**
Select HSMP support enable or disable
Disabled / Enabled / **Auto**

### 6.5.4.2 NBIO RAS Common Options Submenu




**NBIO RAS Control**
(0) Disabled, (1) MCA
Disabled / **MCA** / Auto

**Egress Poison Severity High**
Each bit set to 1 enables HIGH severity on the associated IOHC egress port. A bit of 0 indicates LOW severity.

**Egress Poison Severity Low**
Each bit set to 1 enables HIGH severity on the associated IOHC egress port. A bit of 0 indicates LOW severity.

**NBIO SyncFlood Generation**
This value may be used to mask SyncFlood caused by NBIO RAS options. When set to TRUE syncFlood from NBIO is masked. When set to FALSE NBIO is capable of generating SyncFlood.
Disabled / Enabled / **Auto**

**NBIO SyncFlood Reporting**
This value may be used to enable SyncFlood reporting to APML. When set to TRUE SyncFlood will be reported to APML. When set to FALSE that reporting well be disabled.

Enabled / **Disabled** / Auto

**Egress Poison Mask High**
These set the enable mask for masking of errors logged in EGRESS_ POISN_ STATUS. For each bit set to 1. Errors are masked. For each bit set to 0, errors trigger response actions.

**Egress Poison Mask Low**
These set the enable mask for masking of errors logged in EGRESS_ POISN_ STATUS. For each bit set to 1, Errors are masked. For each bit set to 0, errors trigger response actions.

**Uncorrected Converted to Poison Enable**
These set the enable mask for masking of uncorrectable parity errors on internal arrays. For each bit set to 1, a system fatal error event is triggered for UCP errors on arrays associated with that egress port. For each bit set to 0, errors are masked.

**Uncorrected Converted to Poison Enable**
These set the enable mask for masking of uncorrectable parity errors on internal arrays. For each bit set to 1, a system fatal error event is triggered for UCP errors on arrays associated with that egress port. For each bit set to 0, errors are masked.

**System Hub Watchdog Timer**
This value specifies the timer interval of the SYSHUB Watchdog timer in miliseconds

**PCIe Aer Reporting Mechanism**
This value selects the method of reporting AER errors from PCI Express. A value of 1 allows OS First handling of the errors through generation of a system control interrupt (SCI). A value of 2 provides for Firmware First handling of errors through generation of a system management interrupt (SMI).

Firmware First / Firmware First but allow OS First / OS First / **Auto**

**Edpc Control**
(0) Disabled; (1) Enabled; (3) Auto

Enabled / **Disabled** / Auto

**ACS RAS Request Value**
No help string

Direct Request Access Enabled / Request Blocking Enabled / Request Redirect Enabled / **Auto**

**NBIO Poison Consumption**

Enabled / Disabled / **Auto**

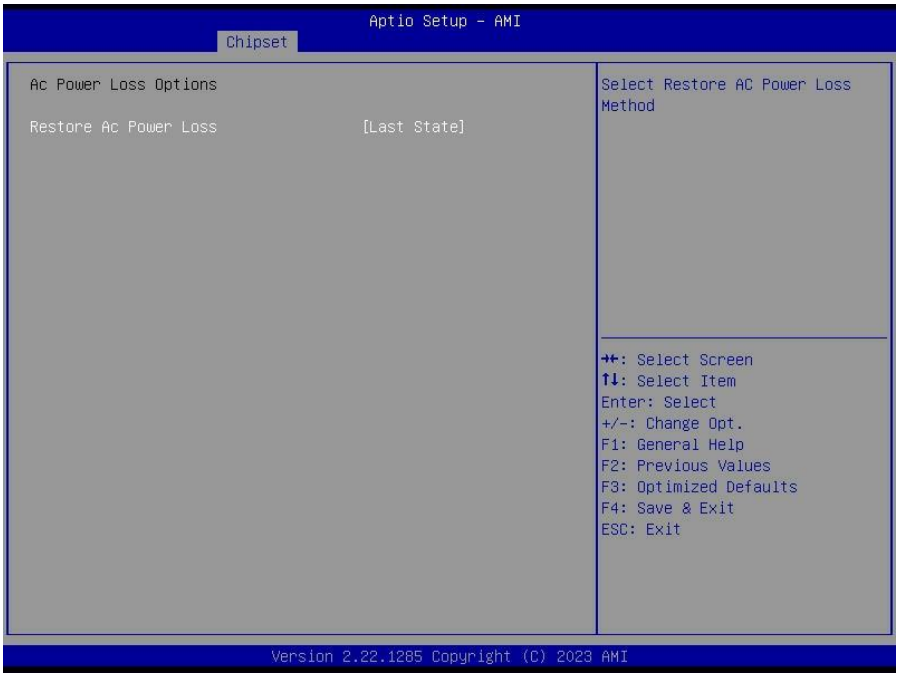
**Sync Flood on PCIe Fatal Error**
When ‘ Sync Flood on PCIe Fatal Error’ is True, PcdAmdPcieSyncFloodOnFatal should be set to True. When ‘Sync Flood on PCIe Fatal Error’ is False, PcdAmdPcieSyncFloodOnFatal should be set to False. When ‘Sync Flood on PCIe Fatal Error’ is Auto. PcdAmdPcieSyncFloodOnFatal

Auto / True / **False**

### 6.5.5 FCH Common Options Submenu

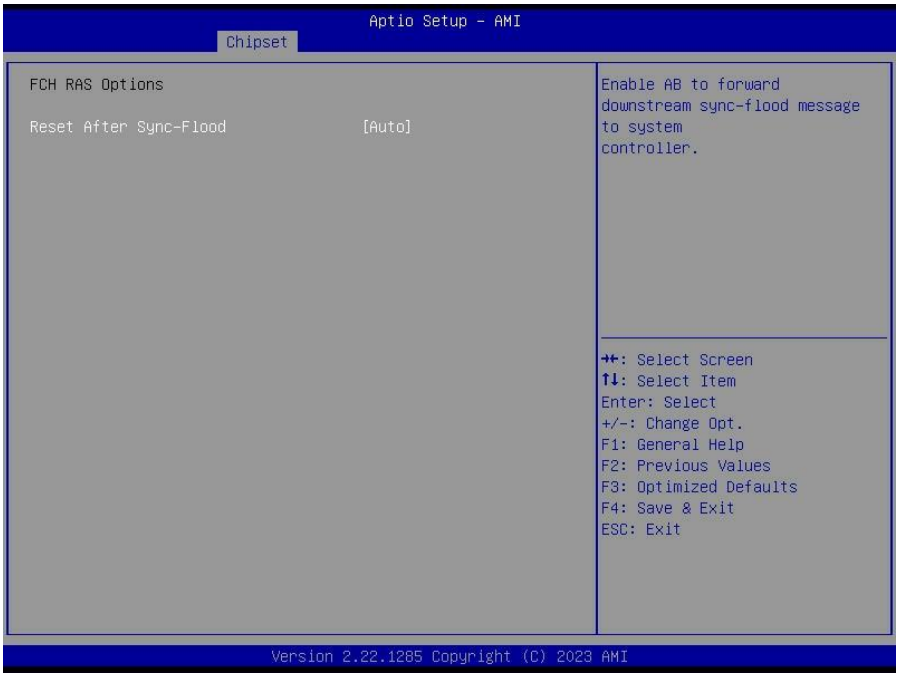

**Ac Power Loss Options**
**FCH RAS Options**

### 6.5.5.1 AC Power LOSS Options Submenu




**Restore Ac Power Loss**
Select Restore AC Power Loss Method
Power Off / Power On / **Last State**

### 6.5.5.2 FCH RAS Options Submenu




**Reset After Sync flood**
Enable AB to forward downstream sync-flood message to system controller.
Disabled / Enabled / **Auto**

### 6.5.6 Soc Miscellaneous Control Submenu

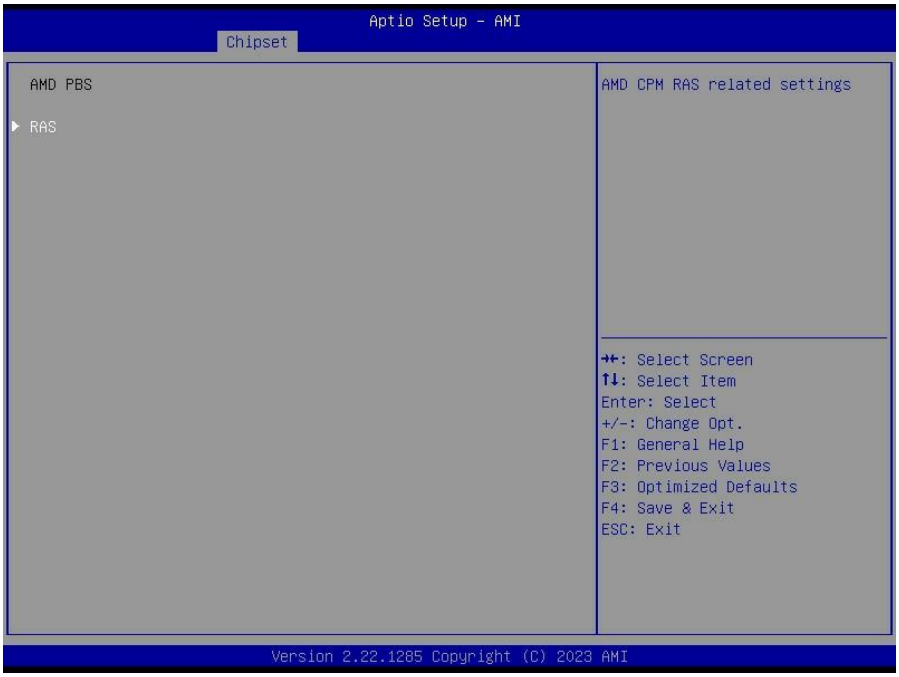

**ABL Console Out Control**
Enable: Enable ConsoleOut Function for ABL
Disable: Disable ConsoleOut Function for ABL
Auto: Keep default behavior

**Disabled** / Enabled / Auto

**PSP error injection support**
Enable EINJ support

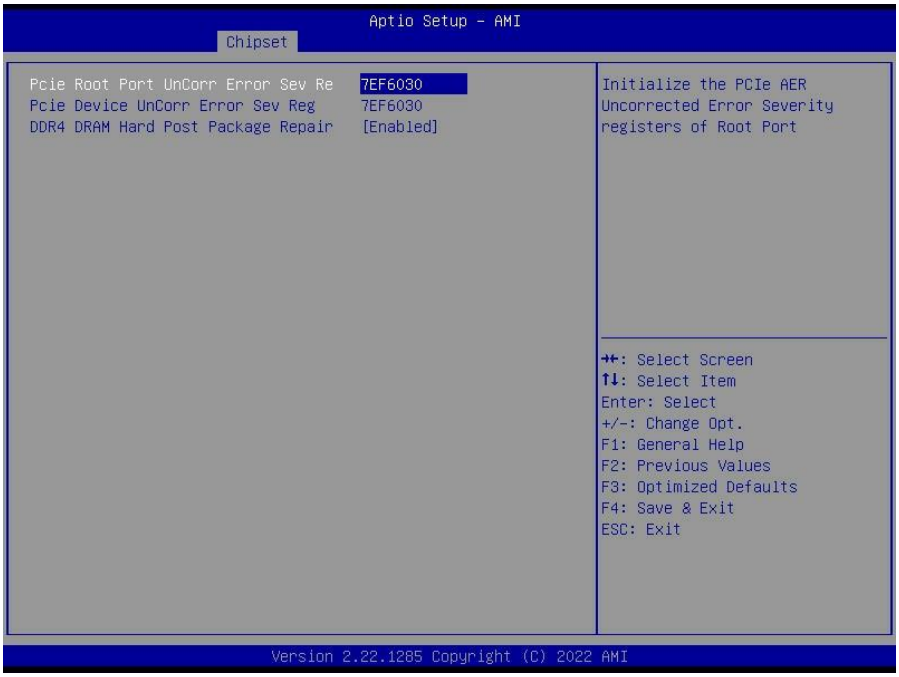
**False** / True

### 6.5.7 AMD PBS Submenu




**RAS**
AMD CPM RAS related settings

#### 6.5.7.1 RAS Submenu



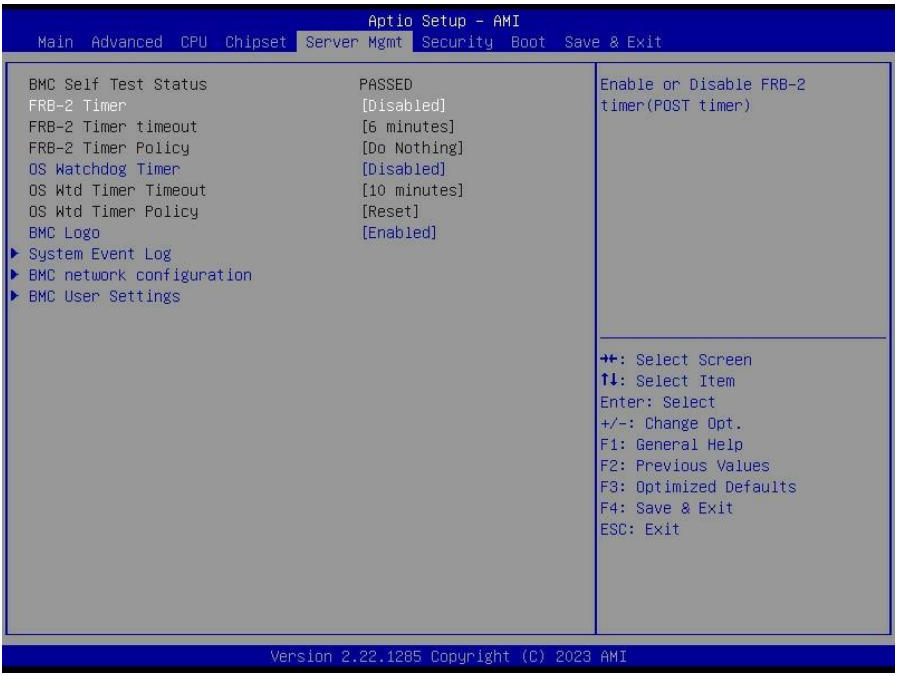

**PCie Root Port UnCorrected Error Sev Re**
Initialize the PCIe AER Uncorrected Error Severity registers of Root Port

**Pcie Device Uncorrected Error Sev Reg**
Initialize the PCIe AER Uncorrected Error Severity registers of PCIe Device

**DDR4 DRAM Hard Post Package Repair**
This feature allows spare DRAM rows to replace malfunctioning rows via an in-field repair mechanism.

Disabled / **Enabled**

## 6.6 Server Management




**FRB-2 Timer**
Enable or Disable FRB-2 timer (POST timer)
**Disabled** / Enabled
**NOTE:** When [FRB-2 Timer] is set to **[Enabled],** the following items will be available.

**FRB-2 Timer timeout**
Enter value Between 3 to 6 min for FRB-2 Timer Expiration value
3 minutes **/** 4 minutes **/** 5 minutes **/ 6 minutes** / 12 minutes

**FBR-2 Timer Policy**
Configure how the system should respond if the FRB-2 Timer expires. Not available if FRB-2 Timer is disabled.
**Do Nothing / Reset / Power Down / Power Cycle**

**OS Watchdog Timer**
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.
**Disabled** / Enabled

**NOTE:** When [OS Watchdog Timer] is set to **[Enabled],** the following items will be available.

**OS Wtd Timer Timeout**
Configure the length of the OS Boot Watchdog Timer. Not available if OS Boot Watchdog Timer is disabled.
5 minutes **/ 10 minutes / 1**5 minutes **/** 20 minutes

**OS Wtd Timer Policy**
Configure how the system should respond if the OS Boot Watchdog Timer expires. Not available if OS Boot Watchdog Timer is disabled.
Do Nothing **/ Reset /** Power Down **/** Power Cycle

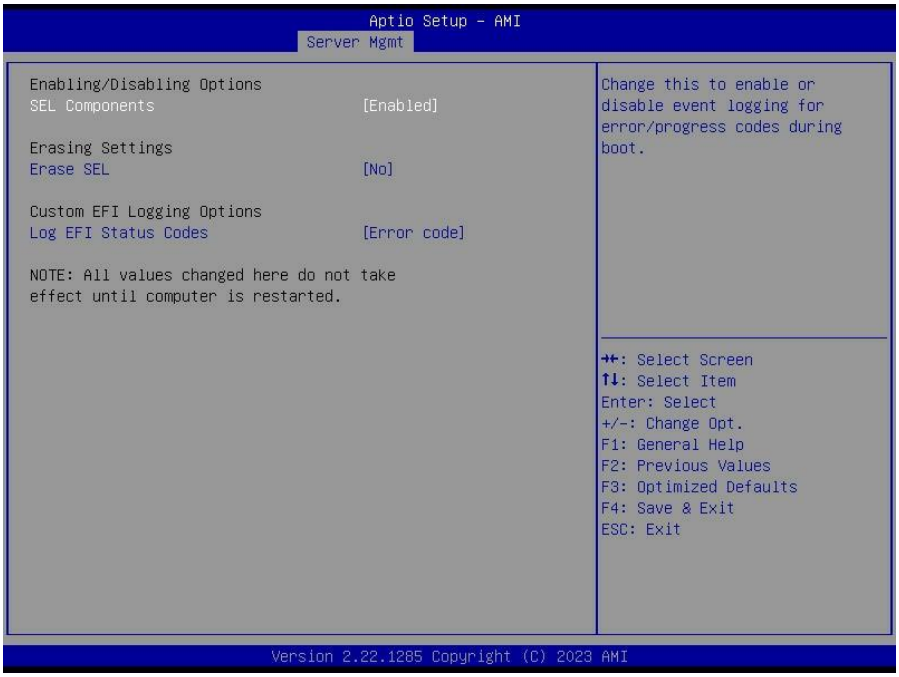
**BMC Logo**
Enable or Disable BMC logo
Disabled / **Enabled**

**System Event Log**
Press<Enter> to change the SEL event log configuration.

**BMC network configuration**
Configure BMC network parameters

**BMC User Settings**
Press<Enter> to Add. Delete and Set Privilege level for users.

### 6.6.1 System Event Log Submenu

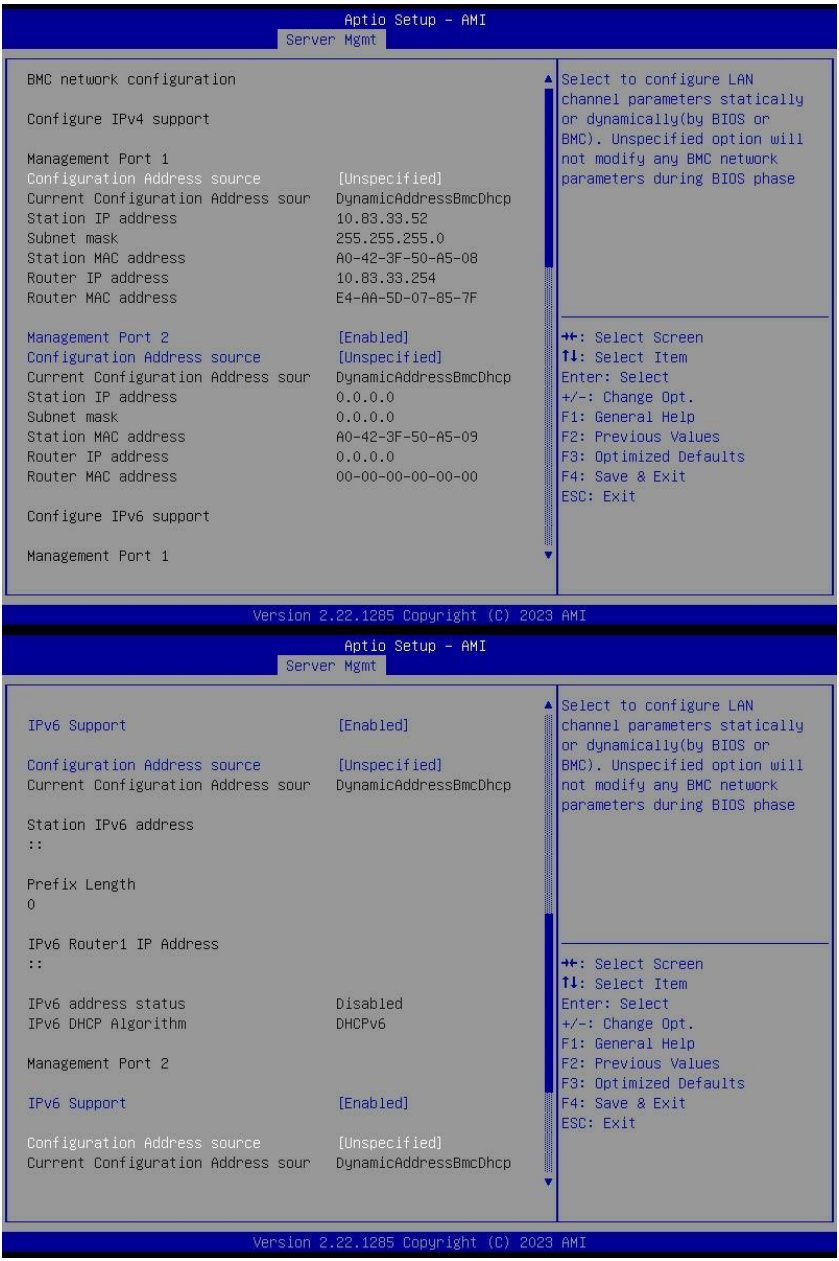



**SEL Components**
Change this to enable or disable event logging for error/progress codes during boot.
**Enabled /** Disabled

**Erase SEL**
Choose options for erasing SEL.
**No /** Yes, on next reset / Yes, on every reset

**Log EFI Status Codes**
Disable the logging of EFI Status Codes or log only error code or only progress code or both.
Both **/** Disabled / **Error Code** / Progress Code

### 6.6.2 BMC Network Configuration Submenu



**Configure IPV4 support**
**Management Port 1**
**Configuration Address Source**
Select the configure LAN channel parameters statically or dynamically (by BIOS or BMC). Unspecified option will not modify any BMC network parameters during BIOS phase.

**Unspecified /** Static / DynamicBmcDhcp / DynamicBmcNonDhcp

**Management Port 2**
Enable/Disable BMC Share NIC

**Disabled** / Enabled

**NOTE: When Management Port 2** is set to **Enabled,** the following items will be available to set up.

**Configuration Address Source**
Select the configure LAN channel parameters statically or dynamically (by BIOS or BMC). Unspecified option will not modify any BMC network parameters during BIOS phase.

**Unspecified /** Static / DynamicBmcDhcp / DynamicBmcNonDhcp

**Configure IPV6 support**
**Management Port 1**
**IPV6 Support**
Enable or Disable LAN1 IPV6 Support

**Disabled** / Enabled

**Management Port 2**
**IPV6 Support**
Enable or Disable LAN2 IPV6 Support

**Disabled** / Enabled

**NOTE: When Management Port 2** is set to **Enabled,** the following items will be available to set up.

**Configuration Address Source**
Select the configure LAN channel parameters statically or dynamically (by BIOS or BMC). Unspecified option will not modify any BMC network parameters during BIOS phase.

**Unspecified /** Static / DynamicBmcDhcp / DynamicBmcNonDhcp

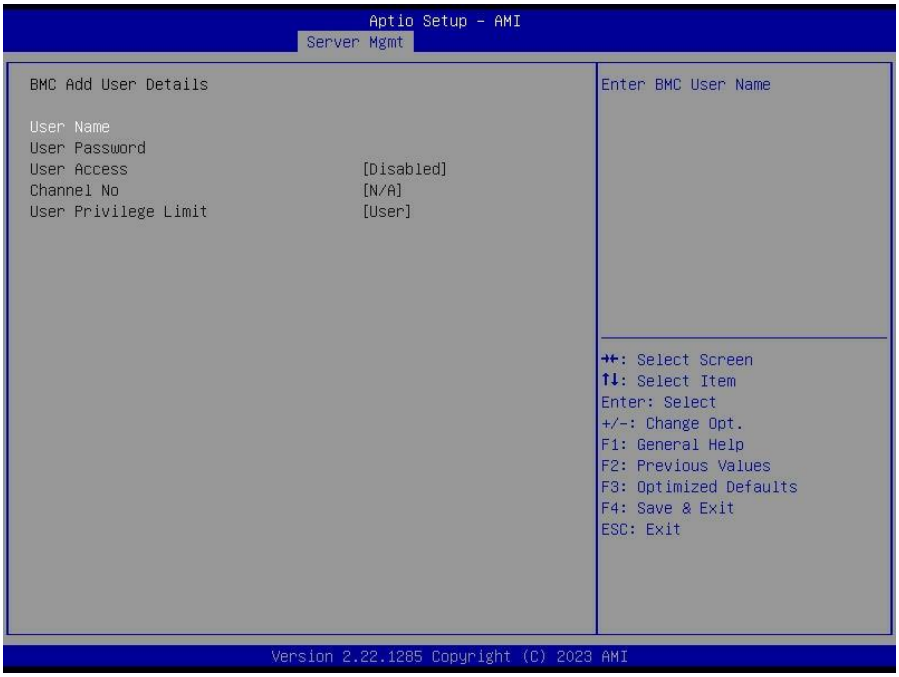
### 6.6.3 BMC User Configuration Submenu


**Add User**
Press <Enter> to Add a User.

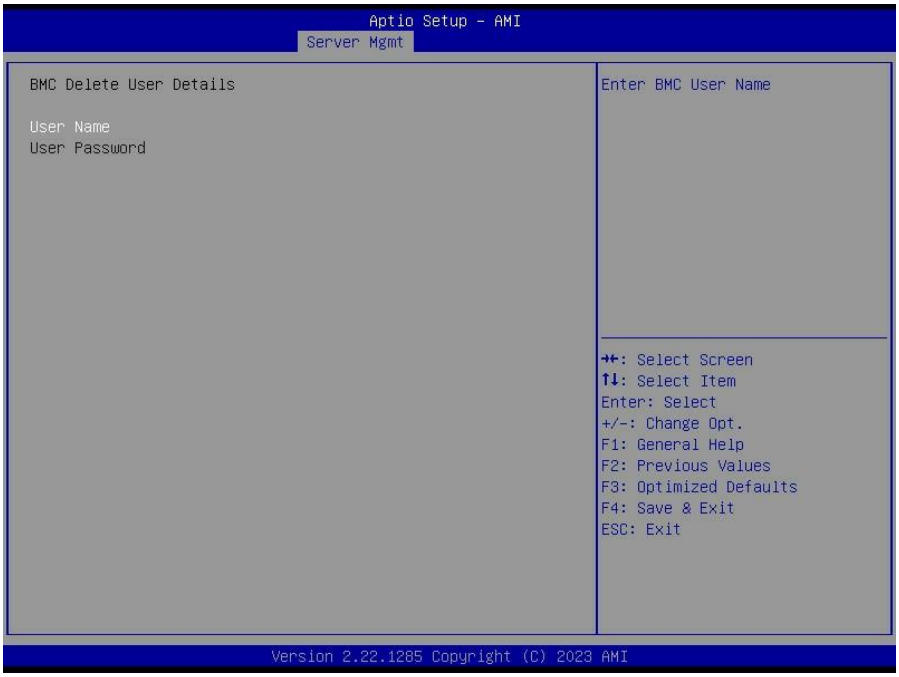
**Delete User**
Press<Enter> to Delete a User.

**Change User Settings**
Press<Enter> to Change User Settings.

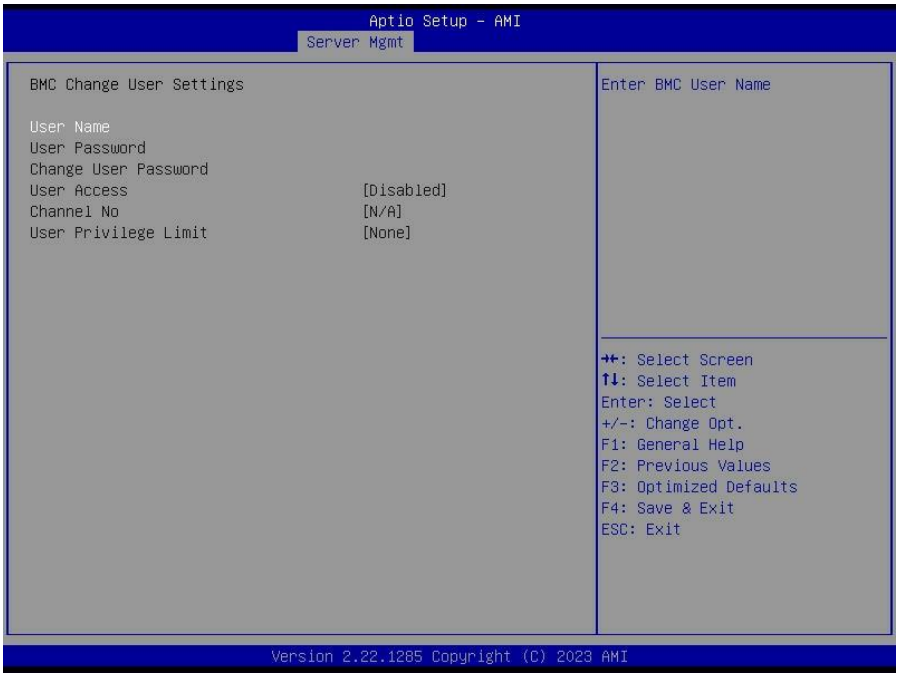
### 6.6.3.1 BMC User Configuration Submenu



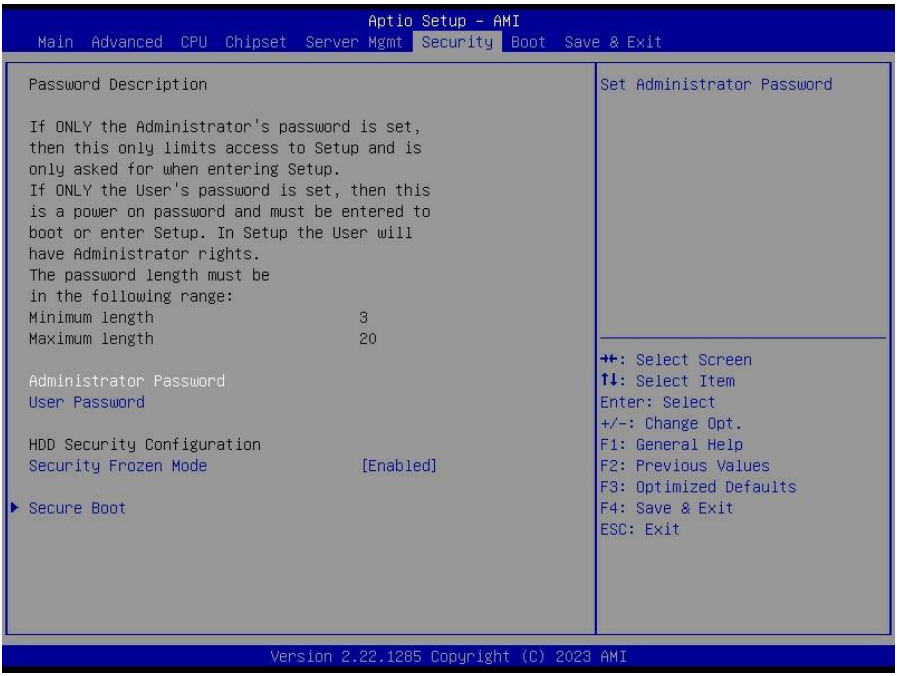
### 6.6.3.2 Delete User Configuration Submenu



### 6.6.3.3 Change User Configuration Submenu



## 6.7 Security



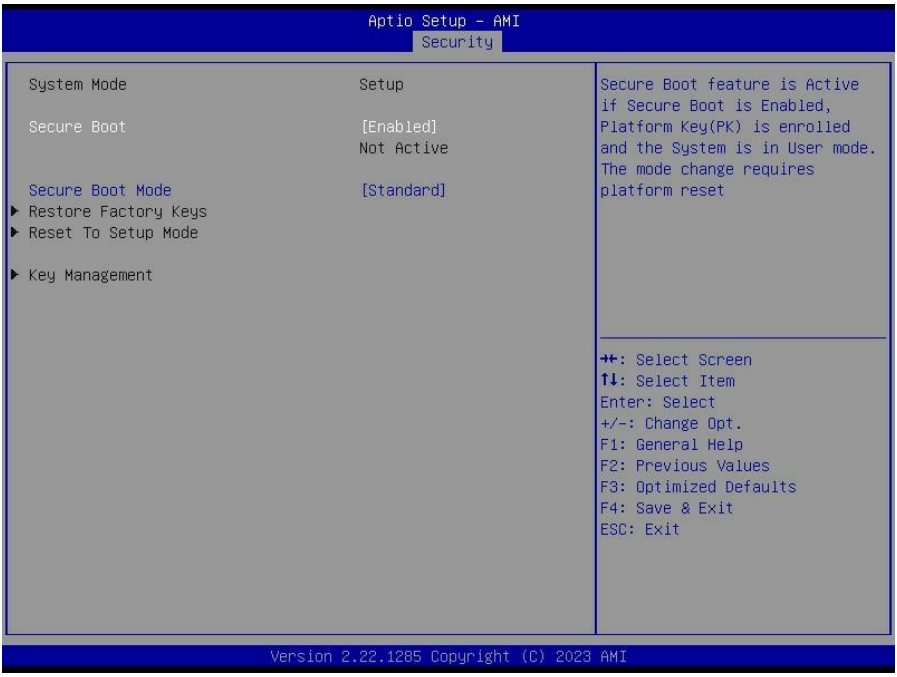

**Administrator Password**
Set Administrator Password.

**User Password**
Set User Password.

**Security Frozen Mode**
Enable or disable HDD security freeze lock.
Disable to support secure erase function.
Disabled / **Enabled**

**Secure Boot**
Customizable Secure Boot settings

### 6.7.1 Secure Boot Configuration Submenu




**Secure Boot**
Secure boot feature is Active if Secure Boot is Enabled, Platform Key(PK) is enrolled and the System is in User mode. The mode change requires platform reset
System mode is User/Deployed, and CSM function is disabled
**Enabled** / Disabled

**Secure Boot Mode**
Secure Boot mode selector. 'Custom' mode enables users to change Image execution policy and manage secure boot keys.
**Standard** / Custom

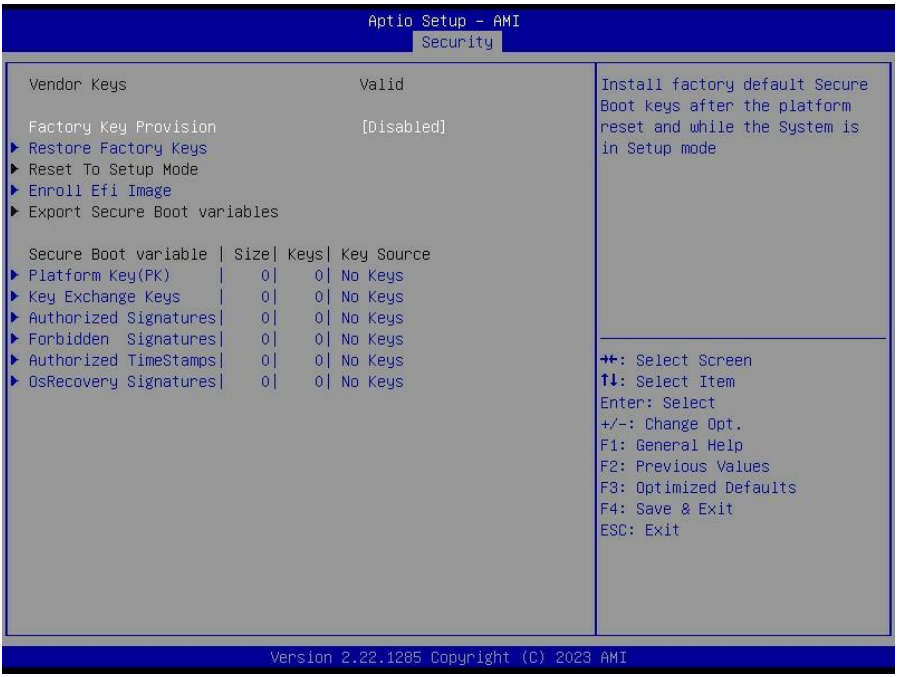
**NOTE:** When **Secure Boot Mode** was set to **[Custom],** the following items will be available to set up.

**Restore Factory Keys**
Force System to User Mode. Install factory default Secure Boot key databases

**Reset To Setup Mode**
Delete all Secure Boot Key databases from NVRAM

**Key Management**
Enables expert users to modify Secure Boot Policy variables without full authentication

### 6.7.2 Key Management




**Factory Keys Provision**
Install factory default Secure Boot Keys after the platform reset and while the System is in Setup Mode.
Enabled / **Disabled**

**Restore Factory Keys**
Force System to User Mode. Install Factory Default Secure Boot key databases.

**Reset To Setup Mode**
Delete all Secure Boot Key database from NVRAM

**Enroll Efi Image**
Allow the image to run in Secure Boot mode. Enroll SHA256 hash certificate of a PE image into Authorized Signature Database (db)

**Export Secure Boot variables**
Copy NVRAM content of Secure Boot variables to files in a root folder on a file system device

**Platform Key (PK)**
Enroll Factory Defaults or load certificates from a file:
1. Public Key Certificate in:
a) EFI_SIGNATURE_LIST
b) EFI_CERT_X509 (DER encoded)
c) EFI_CERT_RSA2048 (bin)
d) EFI_CERT_SHA256,384,512
2. Authenticated UEFI Variable
3. EFI PE/COFF Image(SHA256)
Key Source:
Default, External, Mixed, Test
Set New

**Key Exchange Keys**
Enroll Factory Defaults or load certificates from a file:
1. Public Key Certificate in:
a) EFI_SIGNATURE_LIST
b) EFI_CERT_X509 (DER encoded)
c) EFI_CERT_RSA2048 (bin)
d) EFI_CERT_SHA256,384,512
2. Authenticated UEFI Variable
3. EFI PE/COFF Image(SHA256)
Key Source:
Default, External, Mixed, Test

**Authorized Signatures**
Enroll Factory Defaults or load certificates from a file:
1. Public Key Certificate in:
a) EFI_SIGNATURE_LIST
b) EFI_CERT_X509 (DER encoded)
c) EFI_CERT_RSA2048 (bin)
d) EFI_CERT_SHAXXX
2. Authenticated UEFI Variable
3. EFI PE/COFF Image(SHA256)
Key Source:
Default, External, Mixed

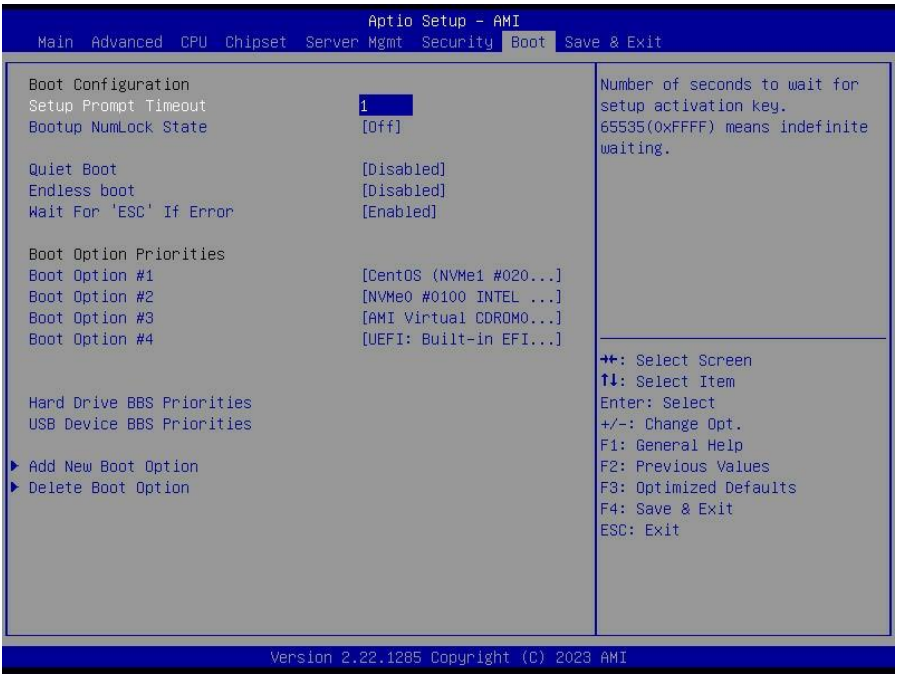
**Forbidden Signatures**
Enroll Factory Defaults or load certificates from a file:
1. Public Key Certificate in:
a) EFI_SIGNATURE_LIST
b) EFI_CERT_X509 (DER)
c) EFI_CERT_RSA2048 (bin)

d) EFI_CERT_SHAXXX
2. Authenticated UEFI Variable
3. EFI PE/COFF Image(SHA256)
Key Source:
Default, External, Mixed

**Authorized TimeStamps**
Enroll Factory Defaults or load certificates from a file:
1. Public Key Certificate in:
a) EFI_SIGNATURE_LIST
b) EFI_CERT_X509 (DER encoded)
c) EFI_CERT_RSA2048 (bin)
d) EFI_CERT_SHAXXX
2. Authenticated UEFI Variable
3. EFI PE/COFF Image(SHA256)
Key Source:
Default, External, Mixed

**OsRecovery Signatures**
Enroll Factory Defaults or load certificates from a file:
1. Public Key Certificate in:
a) EFI_SIGNATURE_LIST
b) EFI_CERT_X509 (DER encoded)
c) EFI_CERT_RSA2048 (bin)
d) EFI_CERT_SHAXXX
2. Authenticated UEFI Variable
3. EFI PE/COFF Image(SHA256)
Key Source:
Default, External, Mixed

## 6.8 Boot




**Setup Prompt Timeout**
Number of seconds to wait for setup activation key.
65535 (0xFFFF) means indefinite waiting.

**Bootup NumLock State**
Select the keyboard NumLock state.
**Off** / On

**Quiet Boot**
Enable or disable Quiet Boot option.
**Disabled /** Enabled

**Endless Boot**
Enabled or Disabled Endless boot
**Disabled /** Enabled

**Wait for "ESC" if Error**
Enabled or Disabled Wait ESC key Function. When chassis intrusion, CMOS Clear or BMC not Response.
Disabled **/ Enabled**

**Boot Option Priorities**
**Boot Option #1#2#3#4#5#6**
Sets the system boot order.
**Device Name /** Disabled

**Hard Drive BBS Priorities**
Set the order of the legacy devices in this group

**USB Device BBS Priorities**
Set the order of the legacy devices in this group

**Add New Boot Option**
Add a new EFI boot option to the boot order

**Delete Boot Option**
Remove an EFI boot option from the boot order

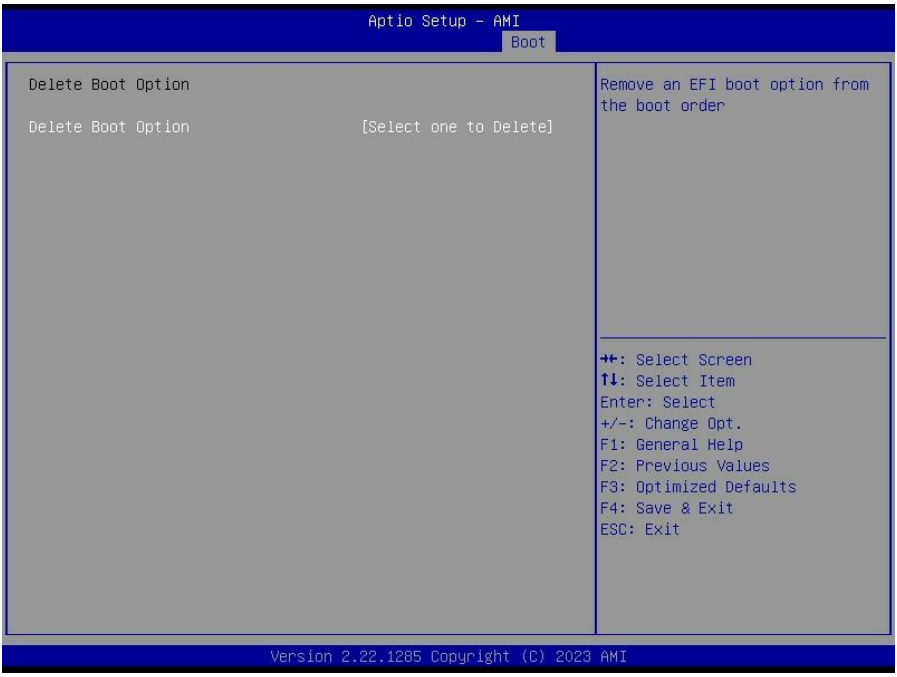
### 6.8.1 Add Boot Option Configuration


**Add boot option**
Create new boot option

**Path for boot option**
Enter the path to the boot option in the format
Fs0:\path\ filename.efi

**Create**
Creates the newly formed boot option

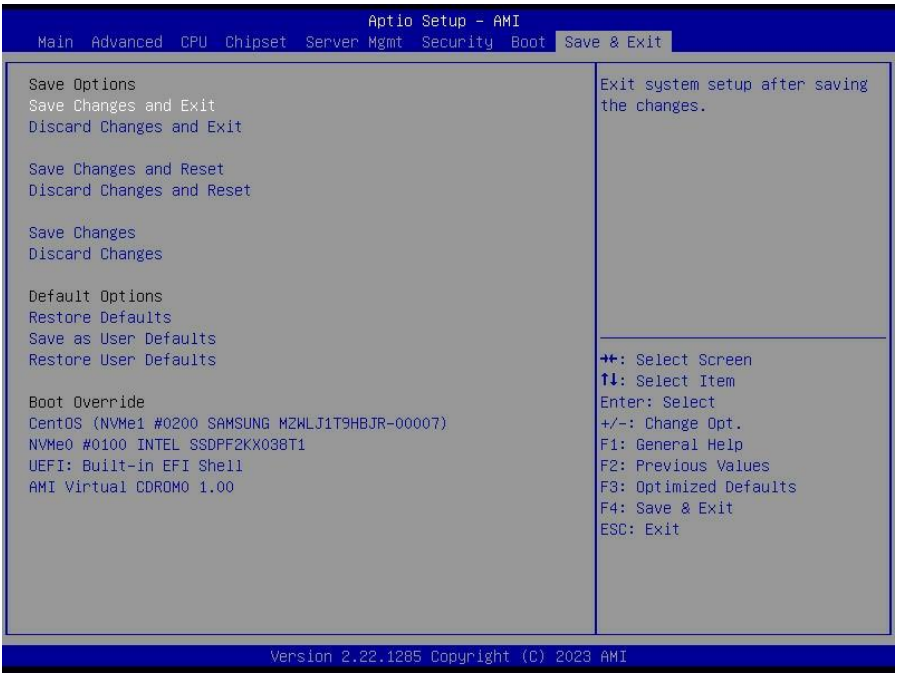
### 6.8.2 Delete Boot Option Configuration




**Delete Boot Option**
Remove an EFI boot option from the boot order.

**Device Name /** Select one to Delete

## 6.9 Save & Exit




**Save Changes and Exit**
Exit system setup after saving the changes.

**Discard Changes and Exit**
Exit system setup without saving any changes.

**Save Changes and Reset**
Reset the system after saving the changes.

**Discard Changes and Reset**
Reset system setup without saving any changes.

**Save Changes**
Save changes done so far to any of the setup options.

**Discard Changes**
Discard changes done so far to any of the setup options.

**Restore Defaults**
Restore/Load Default values for all the setup options.

**Save as User Defaults**
Save the changes done so far as User Defaults.

**Restore User Defaults**
Restore the User Defaults to all the setup options.

**Boot Override**
Device Name

# Chapter 7: Diagnostics

**NOTE**: if you experience problems with setting up your system, always check the following things in the following order:

**Memory, Video, CPU**

By checking these items, you will most likely find out what the problem might have been when setting up your system. For more information on troubleshooting, check the TYAN website at http://www.tyan.com.

## 7.1 Flash Utility

Every BIOS file is unique for the motherboard it was designed for. For Flash Utilities, BIOS downloads, and information on how to properly use the Flash Utility with your motherboard, please check the TYAN web site at http://www.tyan.com

**NOTE:** Please be aware that by flashing your BIOS, you agree that in the event of a BIOS flash failure, you must contact your dealer for a replacement BIOS. There are no exceptions. TYAN does not have a policy for replacing BIOS chips directly with end users. In no event will TYAN be held responsible for damages done by the end user.

## 7.2 AMIBIOS Post Code (Aptio)

The POST code checkpoints are the largest set of checkpoints during the BIOS pre-boot process. The following table describes the type of checkpoints that may occur during the POST portion of the BIOS:

**Checkpoint Ranges**

| Status Code Range | Description |
|---|---|
| 0x01 – 0x0B | SEC execution |
| 0x0C – 0x0F | Sec errors |
| 0x10 – 0x2F | PEI execution up to and including memory detection |
| 0x30 – 0x4F | PEI execution after memory detection |
| 0x50 – 0x5F | PEI errors |
| 0x60 – 0x8F | DXE execution up to BDS |
| 0x90 – 0xCF | BDS execution |
| 0xD0 – 0xDF | DXE errors |
| 0xE0 – 0xE8 | S3 Resume (PEI) |
| 0xE9 – 0xEF | S3 Resume errors (PEI) |
| 0xF0 – 0xF8 | Recovery (PEI) |
| 0xF9 – 0xFF | Recovery errors (PEI) |

**Standard Checkpoints**

SEC Phase

| Status Code | Description |
|---|---|
| 0x00 | Note used |
| **Progress Codes** | |
| 0x01 | Power on. Reset type detection (soft/hard). |
| 0x02 | AP initialization before microcode loading |
| 0x03 | North Bridge initialization before microcode loading |
| 0x04 | South Bridge initialization before microcode loading |
| 0x05 | OEM initialization before microcode loading |
| 0x06 | Microcode loading |
| 0x07 | AP initialization after microcode loading |
| 0x08 | North Bridge initialization after microcode loading |
| 0x09 | South Bridge initialization after microcode loading |
| 0x0A | OEM initialization after microcode loading |
| 0x0B | Cache initialization |

| SEC Error Codes | |
|---|---|
| 0x0C – 0x0D | Reserved for future AMI SEC error codes |
| 0x0E | Microcode not found |
| 0x0F | Microcode not found |

SEC Phase

None

PEI Phase

| Status Code | Description |
|---|---|
| **Progress Codes** | |
| 0x10 | PCI Core is started |
| 0x11 | Pre-memory CPU initialization is started |
| 0x12 | Pre-memory CPU initialization (CPU module specific) |
| 0x13 | Pre-memory CPU initialization (CPU module specific) |
| 0x14 | Pre-memory CPU initialization (CPU module specific) |
| 0x15 | Pre-memory North Bridge initialization is started |
| 0x16 | Pre-Memory North Bridge initialization (North Bridge module specific) |
| 0x17 | Pre-memory North Bridge initialization (North Bridge module specific) |
| 0x18 | Pre-Memory North Bridge initialization (North Bridge module specific) |
| 0x19 | Pre-memory South Bridge initialization is started |
| 0x1A | Pre-Memory South Bridge initialization (South Bridge module specific) |
| 0x1B | Pre-memory South Bridge initialization (South Bridge module specific) |
| 0x1C | Pre-Memory South Bridge initialization (South Bridge module specific) |
| 0x1D – 0x2A | OEM pre-memory initialization codes |
| 0x2B | Memory initialization. Serial Presence Detect (SPD) data reading |
| 0x2C | Memory initialization. Memory presence detection |
| 0x2D | Memory initialization. Programming memory timing information |
| 0x2E | Memory initialization. Configuring memory |
| 0x2F | Memory initialization (other) |
| 0x30 | Reserved for ASL (see ASL Status Codes section below) |
| 0x31 | Memory Installed |
| 0x32 | CPU post-memory initialization is started. |
| 0x33 | CPU post-memory initialization. Cache initialization |
| 0x34 | CPU post-memory initialization. Application Processor(s) (AP) initialization |

| Status Code | Description |
|---|---|
| 0x35 | CPU post-memory initialization. Boot Strap Processor (BSP) selection |
| 0x36 | CPU post-memory initialization. System Management Mode (SMM) initialization |
| 0x37 | Post-Memory North Bridge initialization is started. |
| 0x38 | Post-Memory North Bridge initialization (North Bridge module specific) |
| 0x39 | Post-Memory North Bridge initialization (North Bridge module specific) |
| 0x3A | Post-Memory North Bridge initialization (North Bridge module specific) |
| 0x3B | Post-Memory South Bridge initialization is started |
| 0x3C | Post-Memory South Bridge initialization (South Bridge module specific) |
| 0x3D | Post-Memory South Bridge initialization (South Bridge module specific) |
| 0x3E | Post-Memory South Bridge initialization (South Bridge module specific) |
| 0x3F – 0x4E | OEM post memory initialization codes |
| 0x4F | DXE PIL is started |
| **PCI Error Codes** | |
| 0x50 | Memory initialization error. Invalid memory type or incompatible memory speed |
| 0x51 | Memory initialization error. SPD reading has failed. |
| 0x52 | Memory initialization error. Invalid memory size or memory modules do not match. |
| 0x53 | Memory initialization error. No usable memory detected |
| 0x54 | Unspecified memory initialization error |
| 0x55 | Memory not installed |
| 0x56 | Invalid CPU type or speed |
| 0x57 | CPU mismatch |
| 0x58 | CPU self test failed or possible CPU cache error |
| 0x59 | CPU microcode is not found or microcode update is failed. |
| 0x5A | Internal CPU error |
| 0x5B | Reset PPI is not available. |
| 0x5C – 0x5F | Reserved for future AMI error codes |
| **S3 Resume Progress Codes** | |
| 0xE0 | S3 Resume is started (S3 Resume PPI is called by the DXE IPL). |
| 0xE1 | S3 Boot Script execution |
| 0xE2 | Video repost |
| 0xE3 | OS S3 wake vector call |
| 0xE4 – 0xE7 | Reserved for future AMI progress codes |

| Status Code | Description |
|---|---|
| **S3 Resume Error Codes** | |
| 0xE8 | S3 Resume failed |
| 0xE9 | S3 Resume PPI not found |
| 0xEA | S3 Resume Boot Script error |
| 0xEB | S3 OS wake error |
| 0xEC – 0xEF | Reserved for future AMI error codes |
| **Recovery Progress Codes** | |
| 0xF0 | Recovery condition triggered by firmware (Auto recovery) |
| 0xF1 | Recovery condition triggered by user (forced recovery) |
| 0xF2 | Recovery process started |
| 0xF3 | Recovery firmware image is found. |
| 0xF4 | Recovery firmware image is loaded. |
| 0xF5 – 0xF7 | Reserved for future AMI progress codes |
| Recovery Error Codes | |
| 0xF8 | Recovery PPI is not available. |
| 0xF9 | Recovery capsule is not found. |
| 0xFA | Invalid recovery capsule |
| 0xFB – 0xFF | Reserved for future AMI error codes |

PEI Beep Codes

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

DXE Phase

| Status Code | Description |
|---|---|
| 0x60 | DXE Core is started. |
| 0x61 | NVRAM initialization |
| 0x62 | Installation of the South Bridge Runtime Services |

| Status Code | Description |
|---|---|
| 0x63 | CPU DXE initialization is started. |
| 0x64 | CPU DXE initialization (CPU module specific) |
| 0x65 | CPU DXE initialization (CPU module specific) |
| 0x66 | CPU DXE initialization (CPU module specific) |
| 0x67 | CPU DXE initialization (CPU module specific) |
| 0x68 | PCI host bridge initialization |
| 0x69 | North Bridge DXE initialization is started. |
| 0x6A | North Bridge DXE SMM initialization is started. |
| 0x6B | North Bridge DXE initialization (North Bridge module specific) |
| 0x6C | North Bridge DXE initialization (North Bridge module specific) |
| 0x6D | North Bridge DXE initialization (North Bridge module specific) |
| 0x6E | North Bridge DXE initialization (North Bridge module specific) |
| 0x6F | North Bridge DXE initialization (North Bridge module specific) |
| 0x70 | South Bridge DXE initialization is started. |
| 0x71 | South Bridge DXE SMM initialization is started. |
| 0x72 | South Bridge devices initialization |
| 0x73 | South Bridge DXE initialization (South Bridge module specific) |
| 0x74 | South Bridge DXE initialization (South Bridge module specific) |
| 0x75 | South Bridge DXE initialization (South Bridge module specific) |
| 0x76 | South Bridge DXE initialization (South Bridge module specific) |
| 0x77 | South Bridge DXE initialization (South Bridge module specific) |
| 0x78 | ACPI module initialization |
| 0x79 | CSM initialization |
| 0x7A – 0x7F | Reserved for future AMI DXE codes |
| 0x80 – 0x8F | OEM DXE initialization codes |
| 0x90 | Boot Device Selection (BDS) phase is started |
| 0x91 | Driver connecting is started |
| 0x92 | PCI Bus initialization is started |
| 0x93 | PCI Bus Hot Plug Controller initialization |
| 0x94 | PCI Bus Enumeration |
| 0x95 | PCI BUS Request Resources |
| 0x96 | PCI Bus Assign Resources |
| 0x97 | Console output devices connect |
| 0x98 | Console Input devices connect |
| 0x99 | Super IO initialization |
| 0x9A | USB initialization is started. |

| Status Code | Description |
|---|---|
| 0x9B | USB Reset |
| 0x9C | USB Detect |
| 0x9D | USB Enable |
| 0x9E -0x9F | Reserved for future AMI codes |
| 0xA0 | IDE initialization is started |
| 0xA1 | IDE Reset |
| 0xA2 | IDE Detect |
| 0xA3 | IDE Enable |
| 0xA4 | SCSI initialization is started. |
| 0xA5 | SCSI Reset |
| 0xA6 | SCSI Detect |
| 0xA7 | SCSI Enable |
| 0xA8 | Setup Verifying Password |
| 0xA9 | Start of Setup |
| 0xAA | Reserved for ASL (see ASL Status Codes section below) |
| 0xAB | Setup Input Wait |
| 0xAC | Reserved for ASL (see ASL Status Codes section below) |
| 0xAD | Ready To Boot event |
| 0xAE | Legacy Boot event |
| 0xAF | Exit Boot Services event |
| 0xB0 | Runtime Set Virtual Address MAP Begin |
| 0xB1 | Runtime Set Virtual Address MAP End |
| 0xB2 | Legacy Option ROM initialization |
| 0xB3 | System Reset |
| 0xB4 | USB hot plug |
| 0xB5 | PCI bus hot plug |
| 0xB6 | Clean-up of NVRAM |
| 0xB7 | Configuration Reset (reset of NVRAM settings) |
| 0xB8 – 0xBF | Reserved for future AMI codes |
| 0xC0 – 0xCF | OEM BDS initialization codes |
| **DXE Error Codes** | |
| 0xD0 | CPU initialization error |
| 0xD1 | North Bridge initialization error |
| 0xD2 | South Bridge initialization error |
| 0xD3 | Some of the Architectural Protocols are not available |
| 0xD4 | PCI resource allocation error. Out of Resources |

| Status Code | Description |
|---|---|
| 0xD5 | No Space for Legacy Option ROM |
| 0xD6 | No Console Output Devices are found. |
| 0xD7 | No Console Input Devices are found. |
| 0xD8 | Invalid password |
| 0xD9 | Error loading Boot Option (LoadImage returned error) |
| 0xDA | Boot Option is failed (StartImage returned error). |
| 0xDB | Flash update is failed. |
| 0xDC | Reset protocol is not available. |

DXE Beep Codes

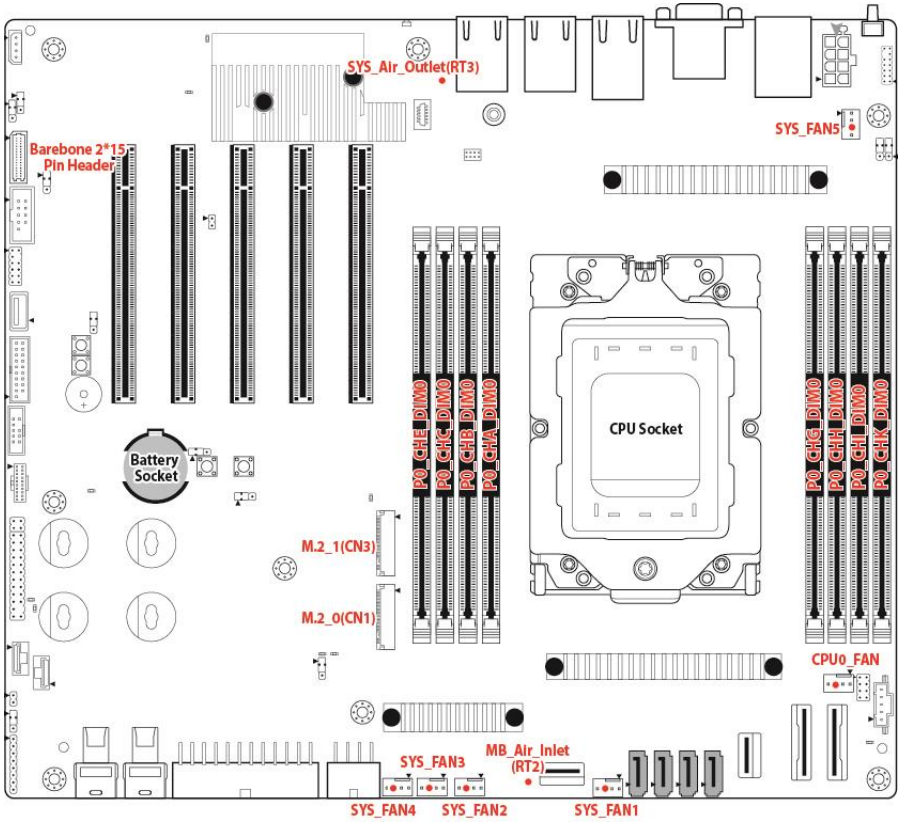
| # of Beeps | Description |
|---|---|
| 1 | Invalid password |
| 4 | Some of the Architectural Protocols are not available. |
| 5 | No Console Output Devices are found. |
| 5 | No Console Input Devices are found. |
| 6 | Flash update is failed. |
| 7 | Reset protocol is not available. |
| 8 | Platform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

ACPI/ASL Checkpoints

| Status Code | Description |
|---|---|
| 0x01 | System is entering S1 sleep state. |
| 0x02 | System is entering S2 sleep state. |
| 0x03 | System is entering S3 sleep state. |
| 0x04 | System is entering S4 sleep state. |
| 0x05 | System is entering S5 sleep state. |
| 0x10 | System is waking up from the S1 sleep state. |
| 0x20 | System is waking up from the S2 sleep state. |
| 0x30 | System is waking up from the S3 sleep state. |
| 0x40 | System is waking up from the S4 sleep state. |
| 0xAC | System has transitioned into ACPI mode. Interrupt controller is in APIC mode. |
| 0xAA | System has transitioned into ACPI mode. Interrupt controller is in APIC mode. |

# Appendix I: Fan and Temp Sensors

This section aims to help readers identify the locations of some specific FAN and Temp Sensors on the motherboard. A table of BIOS Temp sensor name explanation is also included for readers' reference.

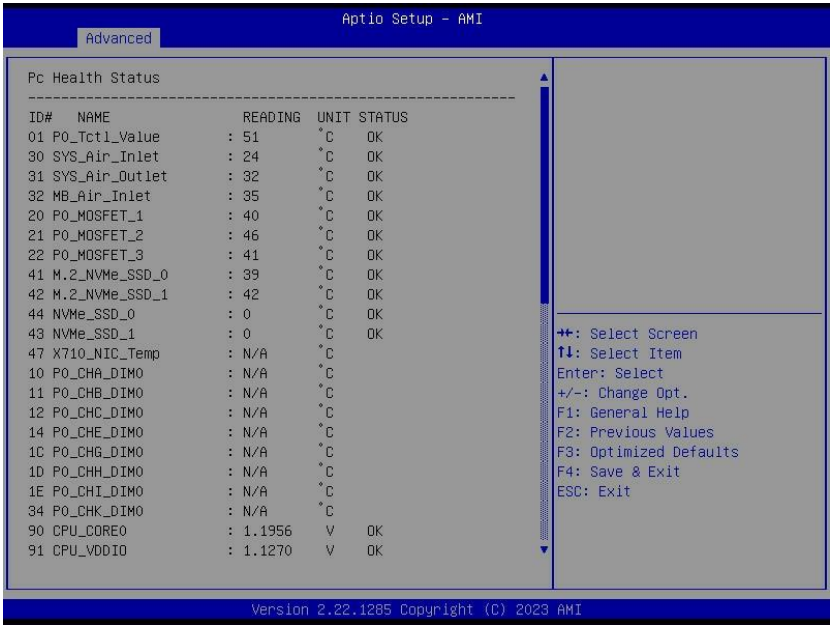


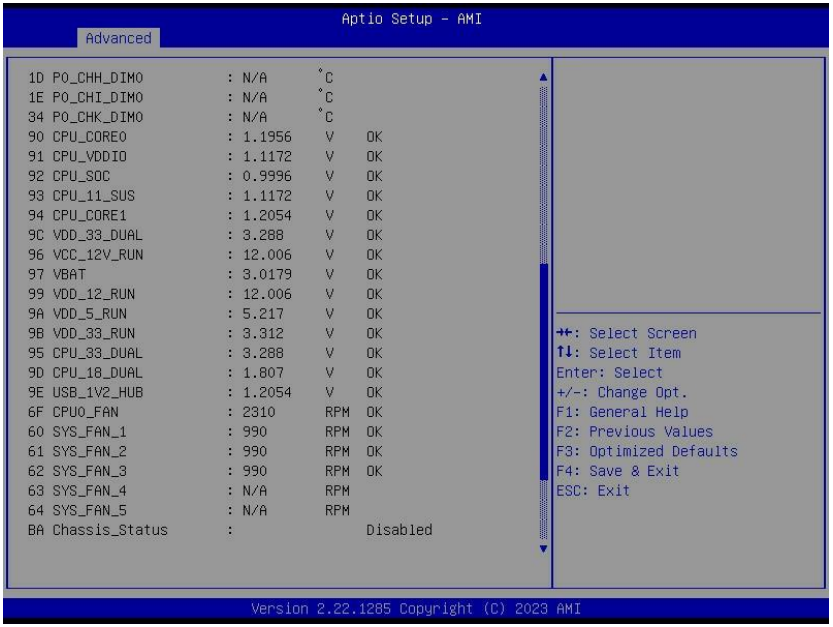

**NOTE:** The red dot indicates the sensor.

**Fan and Temp Sensor Location:**

1. Fan Sensor: It is located in the third pin of the fan connector, which detects the fan speed (rpm)
2. Temp Sensor: SYS_Air_Outlet(RT3) ,and MB_Air_Inlet(RT2) etc. They detect the system temperature around.
   **NOTE:** The system temperature is measured in a scale defined by **AMD**, not in Fahrenheit or Celsius.

## BIOS Temp Sensor Name Explanation:



| BIOS Temp Sensor | Name Explanation |
|---|---|
| SYS_Air_Inlet | Temperature of the System Air Inlet Area |
| SYS_Air_Outlet | Temperature of the System Air Outlet Area |
| MB_Air_Inet | Temperature of the M/B Air Inlet Area |
| P0_MOSFET_1 | Temperature of the P0_MOSFET_1Area |
| P0_MOSFET_2 | Temperature of the P0_MOSFET_2Area |
| P0_MOSFET_3 | Temperature of the P0_MOSFET_3Area |
| M.2_NVMe_SSD_0 | Max Temperature of M.2 NVMe_SSD_0 |
| M.2_NVMe_SSD_1 | Max Temperature of M.2 NVMe_SSD_1 |
| NVMe_SSD_0 | Max Temperature of NVMe_SSD_0 |
| NVMe_SSD_1 | Max Temperature of NVMe_SSD_1 |
| X710_NIC_Temp | Temperature of the X710_LAN |
| GPU1_Temp | Temperature of GPU1 |
| GPU2_Temp | Temperature of GPU2 |
| GPU3_Temp | Temperature of GPU3 |
| P0_DIM_A0 | Temperature of CPU0 DIMM Channel A0 |
| P0_DIM_B0 | Temperature of CPU0 DIMM Channel B0 |
| P0_DIM_C0 | Temperature of CPU0 DIMM Channel C0 |
| P0_DIM_E0 | Temperature of CPU0 DIMM Channel E0 |
| P0_DIM_G0 | Temperature of CPU0 DIMM Channel F0 |
| P0_DIM_H0 | Temperature of CPU0 DIMM Channel H0 |
| P0_DIM_I0 | Temperature of CPU0 DIMM Channel I0 |
| SYS_FAN_1 | Fan Speed of SYS_FAN_1 |
| SYS_FAN_2 | Fan Speed of SYS_FAN_2 |
| SYS_FAN_3 | Fan Speed of SYS_FAN_3 |
| SYS_FAN_4 | Fan Speed of SYS_FAN_4 |
| SYS_FAN_5 | Fan Speed of SYS_FAN_5 |

# Appendix II: How to recover UEFI BIOS

**Important Notes:**

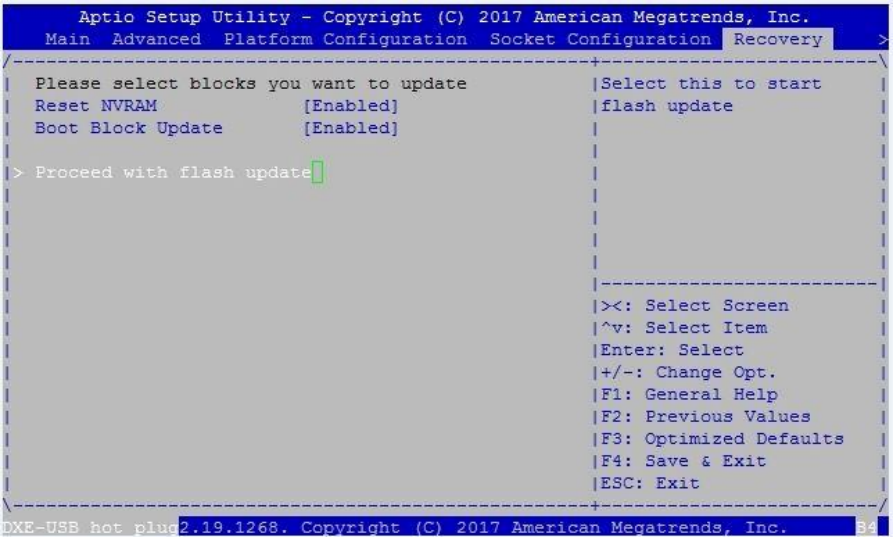
The emergency UEFI BIOS Recovery process is only used to rescue a system with a failed or corrupted BIOS image that fails to boot to an OS. It is not intended to be used as a general purpose BIOS flashing procedure and should not be used as such. Please do not shutdown or reset the system while the BIOS recovery process is underway or there is risk of damage to the UEFI recovery bootloader that would prevent the recovery process itself from working. In no event shall Tyan be liable for direct, indirect, incidental, special or consequential damages arising from the BIOS update or recovery.

The BIOS Recovery file is named xxxx.cap, where the 'xxxx' portion is the motherboard model number. Examples: 5630.cap, 7106.cap, 7109.cap, etc. Please make sure that you are using the correct BIOS Recovery file from Tyan's web site.

**BIOS Recovery Process**

1. Place the recovery BIOS file (xxxx.cap) in the root directory of a USB disk.
2. Ensure that the system is powered off.
3. Insert the USB disk to any USB port on the motherboard or chassis.
4. Power the system on while pressing “Ctrl” and “Home” simultaneously on the keyboard. Continue to hold these keys down until the following Tyan screen is displayed on the monitor:

5. The system will boot to BIOS setup. A new menu item will appear at the far right of the screen. Scroll to the 'Recovery' tab, move the curser to “Proceed with flash update” and press the "Enter" key on the keyboard to start the BIOS recovery process.




6. IMPORTANT: Do not power off or reboot the server during the BIOS recovery process. This can damage the BIOS recovery bootloader and prevent it from loading a subsequent time.
7. Wait for the BIOS recovery procedure to complete. Completion is signified with the message “Flash update completed. Press any key to reset the system” displayed on screen.
8. Remove the USB disk and reboot.

If your system does not have video output or the POST code halts at “FF” on the right-lower portion of the screen, please contact Tyan representatives for RMA service.

# Appendix III: Cable Connection Tables

## 1. FP Ctrl & USB Cable

| M1713F65T-FPB to S8050 MB | | |
|---|---|---|
| **M1713F65T-FPB** | **Connect to** | **S8050 M/B** |
| FP ctrl cable J3 | → | FPIO_2<br>P/N: 422B01400003 |
| USB cable J34 | → | USB3_FPIO1<br>P/N: 422T56500001 |

## 2. Mini-SAS HD & Fan ctrl Cable

| M1309F65T to S8050 MB | | |
|---|---|---|
| **M1309F65T** | **Connect to** | **S8050 M/B** |
| Mini-SAS HD Cable-1<br>CN10 | → | J25<br>P/N: 422T63200009 |
| Mini-SAS HD Cable-2<br>CN11 | → | J26<br>P/N: 422T53400017 |
| Fan Ctrl Cable<br>J4 | → | FAN_HD1<br>P/N: 422T53400003 |

## 3. MCIO & SATA Cable

| M1318T65-BP12E-2 to S8050 MB | | |
|---|---|---|
| **M1318T65-BP12E-2** | **Connect to** | **S8050 M/B** |
| MCIO Cable J1 | → | MCIO<br>P/N: 422B00300010 |
| Signal Cable 7P | → | HDR_3<br>P/N: 422T60900011 |
| SATA Cable-1 SATA0 | → | J15<br>P/N: 422784300008 |
| SATA Cable-2 SATA1 | → | J16<br>P/N: 422784300008 |

## 4. Intrusion Cable

| Chassis to S8050 MB | | |
|---|---|---|
| **Chassis** | **Connect to** | **S8050 M/B** |
| Intrusion cable | → | J66 |

## 5. 2x12P & 2x4P MB PWR Cable

| PSU to S8050 MB | | |
|---|---|---|
| **PSU** | **Connect to** | **S8050 M/B** |
| 2x12P PWR Cable MB | → | PW1 |
| 2x4P to 2x2P PWR Cable P2 CPU CPU | → | PWR3 |
| 2x4P PWR Cable P3 CPU CPU | → | PWR2 |
| 2x4P to 2x2P PWR Cable | → | PWR4<br>P/N: 422B00700002 |

## 6. 2x4P 3.5” HDD BP PWR Cable

| PSU to M1309F65T-BP12-8 | | |
|---|---|---|
| **PSU** | **Connect to** | **M1309F65T-BP12-8** |
| 2x4P PWR Cable P19 VGA PCI-E | → | J6 |
| 2x4P PWR Cable P20 VGA PCI-E | → | J7 |

## 7. 4P 2.5” HDD BP PWR Cable

| PSU to M1318T65-BP12E-2 | | |
|---|---|---|
| **PSU** | **Connect to** | **M1318T65-BP12E-2** |
| 4P PWR Cable P21 | → | PW1 |

## 8. System & Rear FAN extend Cable

| System & Rear FAN to M1309F65T-BP12-8 | | |
|---|---|---|
| **FAN** | **Connect to** | **M1309F65T-BP12-8** |
| System FAN1 | → | J8 |
| System FAN2 | → | J9 |
| System FAN3 | → | J10 |
| Real FAN4 (Need to FAN extend cable) | → | J11<br>P/N: 422T63200006 |
| Real FAN5 (Need to FAN extend cable) | → | J12<br>P/N: 422T63200006 |

# Appendix IV: FRU Parts Table

| FT65T-B8050 FRU Parts | | | | |
|---|---|---|---|---|
| **Item** | **Model Number** | **Part Number** | **Picture** | **Description** |
| Power Supply | FRU-PS-0440 | 471100000527 |  | 2000 W,FSP,FSP2000-52AGPBI |
| CPU Heatsink | FRU-TH-0540 | 343B01400003 |  | HEATSINK; Active, AMD 4th EPYC |
| FAN module | FRU-TS-9290 | 5412T6320007 |  | FRU-TF-FANMODULE;SBU,FT65T-B8030,<br>FRU-TS-9290,SYSTEM FAN |
| Rear FAN module | FRU-TS-9300 | 5412T6320008 |  | Rear FAN FRU for FT65T-B8030; (2)80*80*38mm (13,800 rpm) FANs assembled w/ FAN bracket; RoHS |
| rack mount FRU kit | FRU-AS-9230 | 5412T6320006 |  | FT65T-B8030 SLIDE RAIL KIT+HANDLE R+HANDLE L |
| Cables | FRU-CS-1800 | 422T63200009 |  | 350 mm,MINI-SAS HD CABLE, SHORT MINI-SAS HD 36P/SHORT MINI-SAS HD 36P |
| | FRU-CS-1670 | 422T53400017 |  | 500 mm,MINI-SAS HD CABLE, SHORT MINI-SAS HD 36P/SHORT MINI-SAS HD 36P |
| | FRU-CS-1070 | 422784300008 |  | SATA CABLE(SAS WIRE),7P 180°/7P 180°,L=500MM,GT57-B7016 |
| | FRU-CS-2040 | 422B00300010 |  | 500 mm,MCIO 8i TO MCIO 8i CABLE, MCIO 8i 74P/MCIO 8i 74P,85ohm,PCIE Gen5,TS70-B8056 |
| | FRU-CS-2050 | 332810000568 |  | North America,125 V,14AWG, Black, WS-001+WS-002F |
| | FRU-CS-1830 | 332810000348 |  | EU,250V,EL202+711,3PIN.1.5MM2,16A，PWR CORD |

# Appendix V: Technical Support

If a problem arises with your system, you should first turn to your dealer for direct support. Your system has most likely been configured or designed by them and they should have the best idea of what hardware and software your system contains. Hence, they should be of the most assistance for you. Furthermore, if you purchased your system from a dealer near you, take the system to them directly to have it serviced instead of attempting to do so yourself (which can have expensive consequence).

If these options are not available for you then MITAC COMPUTING TECHNOLOGY CORPORATION can help. Besides designing innovative and quality products for over a decade, MITAC has continuously offered customers service beyond their expectations. TYAN's website (http://www.tyan.com) provides easy-to-access resources such as in-depth Linux Online Support sections with downloadable Linux drivers and comprehensive compatibility reports for chassis, memory and much more. With all these convenient resources just a few keystrokes away, users can easily find their latest software and operating system components to keep their systems running as powerful and productive as possible. MITAC also ranks high for its commitment to fast and friendly customer support through email. By offering plenty of options for users, MITAC serves multiple market segments with the industry's most competitive services to support them.

Please feel free to contact us directly for this service at tech-support@tyan.com

**Help Resources:**

1. See the beep codes section of this manual.
2. See the TYAN's website for FAQ's, bulletins, driver updates, and other information: http://www.tyan.com
3. Contact your dealer for help before calling TYAN.

**Returning Merchandise for Service**

During the warranty period, contact your distributor or system vendor FIRST for any product problems. This warranty only covers normal customer use and does not cover damages incurred during shipping or failure due to the alteration, misuse, abuse, or improper maintenance of products.

**NOTE:**

A receipt or copy of your invoice marked with the date of purchase is required before any warranty service can be rendered. You may obtain service by calling the manufacturer for a Return Merchandise Authorization (RMA) number. The RMA number should be prominently displayed on the outside of the shipping carton and the package should be mailed prepaid.
TYAN will pay to have the board shipped back to you.

TYAN® FT65T-B8050 Service Engineer's Manual V1.0f

Document No.: D2579 - 100