FT65T-B5642

Tower Server Engineer's Manual

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Version 1.0

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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) and UK (UKCA Mark)**

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

MiTAC Benelux N.V.
Z5 Mollem 318-1730 Asse (Mollem), Belgium

For UK use only:
This product is in conformity with the Electromagnetic Compatibility Regulations 2016 and Electrical Equipment (Safety) Regulations 2016.

MiTAC Europe Ltd.
The Pinnacle 3rd floor, Station Way, Crawley RH10 1JH, U.K.

Warning

This equipment is compliant with Class B of CISPR 32. In a residential environment this equipment may cause radio interference.

CAUTION

Lithium battery included with this board. Do not puncture, mutilate, or dispose of battery in fire. There will be danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by manufacturer. Dispose of used battery according to manufacturer instructions and in accordance with your local regulations.

クラスＢ機器

この装置は、クラスＡ情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

VCCI-B

- **Safety: IEC/EN BSEN 62368-1**

This equipment is compliant with CB/LVD of Safety: IEC/EN 62368-1:2014.

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-B5642.

How this guide is organized

This guide contains the following parts:

Chapter 1: Overview
This chapter provides an introduction to the TYAN FT65T-B5642 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: Replacing the Pre-installed Components
This chapter covers the removal and replacement procedures for pre-installed components.

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

Before installing and using TYAN FT65T-B5642, take note of the following precautions:

- Read all instructions carefully.
- Do not place the unit on an unstable surface, cart, or stand.
- Do not block the slots and opening on the unit, which are provided for ventilation.
- Only use the power source indicated on the marking label. If you are not sure, contact the power company.
- The unit uses a three-wire ground cable, which is equipped with a third pin to ground the unit and prevent electric shock. Do not defeat the purpose of this pin. If your outlet does not support this kind of plug, contact your electrician to replace your obsolete outlet.
- Do not place anything on the power cord. Place the power cord where it will not be in the way of foot traffic.
- Follow all warnings and cautions in this manual and on the unit case.
- Do not push objects in the ventilation slots as they may touch high voltage components and result in shock and damage to the components.
- When replacing parts, ensure that you use parts specified by the manufacturer.
- When service or repairs have been done, perform routine safety checks to verify that the system is operating correctly.
- Avoid using the system near water, in direct sunlight, or near a heating device.
- Cover the unit when not in use.

Safety Information

Retain and follow all product 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**. This symbol indicates a potential hazard. The potential for injury exists if cautions are not observed. Consult equipment documentation for specific details.
	**Caution.** Slide-mounted equipment is not to be used as a shelf or a work space.
	**Warning.** This symbol indicates the presence of hazardous energy circuits or electric shock hazards. Refer all servicing to qualified personnel.
	**Warning**. This symbol indicates the presence of a hot surface or hot component. If this surface is contacted, the potential for injury exists. To reduce risk of injury from a hot component, allow the surface to cool before touching.
	**CAUTION:** Risk of Explosion if Battery is replaced by an Incorrect Type. Dispose of Used Batteries According to the Instructions. **ATTENTION:** Risque d'explosion si la batterie est remplacée par un type incorrect. Mettre au rebus les batteries usagées selon les instructions.
	**Multiple power connections.** Prior to servicing, disconnect all power cords. **Raccordements de puissance multiples.** Avant l'entretien, vous devez débranchez tous les cordons d'alimentation.

General Precautions

- Follow all caution and warning instructions marked on the equipment and explained in the accompanying equipment documentation.

Machine Room Environment

- Make sure that the area in which you install the system 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 system in or near a plenum, air duct, radiator, or heat register.
- Never use the product in a wet location.

Equipment Chassis

- Do not block or cover the openings to the system.
- 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; a minimum of two people are needed to move a rack.
- Do not attempt to move a fully loaded rack. Remove equipment from the rack before moving it.
- 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 appliance 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.
- If you install the Model in a rack, do not place equipment on top of the unit. It will cause restricted airflow and might cause damage to the equipment.
- Make sure the product is properly matted with the rails. Products that are improperly matted with the rails might be unstable.
- Verify that the AC power supply branch circuit that provides power to the rack is not overloaded. This will reduce 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.

Equipment Power Cords

- Use only the power cords and power supply units provided with your system. The system might have one or more power cords.
- Plug the power cord into a grounded (earthed) electrical outlet that is easily accessible at all times.
- 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 appliance.

Equipment Batteries

- The system 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).
- The system battery is not replaceable. If the battery is replaced by an incorrect type, there is danger of explosion. Replace the battery only with a spare designated for your product.
- 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 household waste. To forward them to recycling or proper disposal, use the public collection system or return them to TYAN, your authorized TYAN partner, or their agents.

Equipment Modifications

- Do not make mechanical modifications to the system. TYAN is not responsible for the regulatory compliance of TYAN equipment that has been modified.

Equipment Repairs and Servicing

• The installation of internal options and routine maintenance and service of this product should be performed by individuals who are knowledgeable about the procedures, precautions, and hazards associated with equipment containing hazardous energy levels.

• Retain all screws or other fasteners when removing access cover(s). Upon completion of accessing inside the product, refasten access cover with original screws or fasteners.

• Do not exceed the level of repair specified in the procedures in the product documentation. Improper repairs can create a safety hazard.

• Allow the product to cool before removing covers and touching internal components.

• 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 system components; they can become hot to the touch.

• If the product sustains damage requiring service, disconnect the product 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 product or an object has fallen into the product.

– The product has been exposed to rain or water.

– The product has been dropped or damaged.

– The product does not operate normally when you follow the operating instructions.

• Retain all screws or other fasteners when removing access cover(s). Upon completion of accessing inside the product, refasten access cover with original screws or fasteners.

Table of Contents

Chapter 1: Overview

1.1 About the TYAN FT65T-B5642

Congratulations on your purchase of the TYAN® FT65T-B5642, a highly optimized Tower Server barebone system. The FT65T-B5642 is designed to support single 3rd Gen Intel® Xeon® Scalable Series Processor and up to 512GB RDIMM/1,024GB LRDIMM/ 2,048GB RDIMM 3DS 3200 DDR4 memory, providing a rich feature set and incredible performance. Leveraging advanced technology from Intel®, the FT65T-B5642 Tower Server system is capable of offering scalable 64-bit computing, high bandwidth memory design, and lightning-fast PCI-E bus implementation. The FT65T-B5642 not only empowers your company in nowadays IT demand but also offers a smooth path for future application usage.

TYAN® also offers the FT65T-B5642 in a version that can support up to eight 3.5”/2.5” hot-swap SSD/HDD and two 2.5” hot-swap NVMe SSD/HDD. The FT65T-B5642 uses TYAN’s latest chassis featuring a robust structure and a solid mechanical enclosure. All of this provides FT65T-B5642 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:

- **B5642F65TV8E2H-G**: Intel-based platform
- **B5642F65TV8E2H-2T-N:** Intel-based platform

SKU Differences

Model Name	FT65T-B5642	
SKU Name	**B5642F65TV8E2H-G**	**B5642F65TV8E2H-2T-N**
MB	S5642AGMNRE	S5642AGM3NRE-2T
Fans	no System Rear FAN Module	with System Rear FAN Module

1.3 Features

B5642F65TV8E2H-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	S5642AGMNRE
	Board Dimension	CEB, 12"x10.5" (305x267mm)
Front Panel	**Buttons**	(1) UID / (1) PWR w/ LED / (1) RST
	LEDs	(1) HDD / (1) ID / (2) LAN / (1) BMC event
	I/O Ports	(2) USB 3.2 Gen1 ports
External Drive Bay	**Q'ty / Type**	(2) 2.5" Hot-Swap NVMe HDD/SSDs / (8) 3.5/2.5" Hot-swap HDD/SSDs
	HDD Backplane Support	SAS 12Gb/s /SATA 6Gb/s /NVMe
	Supported HDD Interface	(2) SATA 6Gb/s / NVMe / (8) SATA 6Gb/s / SAS 12Gb/s
	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/12~15A
	Frequency	50-60 Hz
	Output Watts	2,000 Watts
	Efficiency	80 plus Platinum
	Redundancy	N/A
Processor	**Q'ty / Socket Type**	(1) LGA4189
	Supported CPU Series	3rd Gen Intel Xeon Scalable Processor
	Configurable Thermal Design Power (cTDP) Wattage	Max up to 270W

Chipset	**PCH**	Intel C621A
Memory	**Supported DIMM Qty**	(8) DIMM slots
	DIMM Type / Speed	DDR4 RDIMM/LRDIMM 3200
	Capacity	512GB RDIMM/ 1,024GB LRDIMM/ 2,048GB RDIMM 3DS *Follow latest Intel DDR4 Memory POR
	Memory channel	8 Channels per CPU
	Memory voltage	1.2V
Expansion Slots	**PCIe**	(1) PCIe Gen.4 x8 slot (#4 w/x4 link) / (1) PCIe Gen.4 x8 slot (#2 via MUX) / (1) PCIe Gen.4 x16 slot (#3 w/x8 link) / (2) PCIe Gen.4 x16 slots (#5,#6)
LAN	**Q'ty / Port**	(1) GbE port + (1) GbE dedicated for IPMI
	Controller	Intel I210
	PHY	Realtek RTL8211E
Storage SATA	**Connector**	(2) 7-pin SATA 6G ports / (1) Mini-SAS HD (4 ports)
	Controller	Intel C621A
	Speed	6Gb/s
	RAID	RAID 0/1/10/5 (Intel RSTe)
Stotage sSATA	**Connector**	(2) Mini-SAS HD (8-ports)
	Controller	Intel C621A
	Speed	6Gb/s
	RAID	RAID 0/1/10/5 (Intel RSTe)
Storage NVMe	**Connector (M.2)**	(2) 22110/2280 (by PCIe Gen.3 interface)
	Connector (U.2)	(1) SFF-8654 for (2) NVMe ports
Storage (Optional)	**VROC Support**	Yes
Graphic	**Connector type**	D-Sub 15-pin
	Resolution	Up to 1920x1200
	Chipset	Aspeed AST2500
I/O Ports	**USB**	(2) USB2.0 ports (@ rear) / (2) USB3.2 Gen1 ports (@ rear) / (2) USB3.2 Gen1 ports (via cable)

	COM	(1) DB-9 COM port
	VGA	(1) D-Sub 15-pin port
	Audio	(1) 2x5-pin header / (1) 3 holes Audio Jack connector
	RJ-45	(1) GbE ports + (1) GbE dedicated for IPMI
	Button	ID Button
	SATA	(14) SATA-III ports from AHCI
TPM (Optional)	**TPM Support**	Please refer to our TPM supported list.
System Monitoring	**Chipset**	Aspeed AST2500
	Temperature	Monitors temperature for CPU & memory & system environment
	Voltage	Monitors voltage for CPU, memory, chipset & power supply
	LED	Over temperature warning indicator / Fan & PSU fail LED indicator
	Others	Watchdog timer support
Server Management	**Onboard Chipset**	Onboard Aspeed AST2500
	AST2500 iKVM Feature	24-bit high quality video compression / Supports storage over IP and remote platform-flash / USB 2.0 virtual hub
	AST2500 IPMI Feature	IPMI 2.0 compliant baseboard management controller (BMC) / 10/100/1000 Mb/s MAC interface
BIOS	**Brand / ROM size**	AMI / 32MB
	Feature	Hardware Monitor / Boot from USB device/PXE via LAN/Storage / Console Redirection / User Configurable FAN PWM Duty Cycle / SMBIOS 3.3/PnP/Wake on LAN / ACPI 6.2 / ACPI sleeping states S5
Operating System	**OS supported list**	Please refer to our AVL support lists.
Regulation	**FCC (SDoC)**	Class B
	CE (DoC)	Class B

	RCM	Class B
	VCCI	Class B
Operating Environment	**Operating Temp.**	0° C ~ 40° C (32° F~ 104° 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-B5642 Barebone
	Manual	(1) Quick Installation Guide
RoHS	**RoHS 6/6 Compliant**	Yes

B5642F65TV8E2H-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	S5642AGM3NRE-2T
	Board Dimension	CEB, 12"x10.5" (305x267mm)
Front Panel	**Buttons**	(1) UID / (1) PWR w/ LED / (1) RST
	LEDs	(1) HDD / (1) ID / (2) LAN / (1) BMC event
	I/O Ports	(2) USB 3.2 Gen1 ports
External Drive Bay	**Q'ty / Type**	(2) 2.5" Hot-Swap NVMe HDD/SSDs / (8) 3.5/2.5" Hot-swap HDD/SSDs
	HDD Backplane Support	SAS 12Gb/s /SATA 6Gb/s /NVMe
	Supported HDD Interface	(2) SATA 6Gb/s / NVMe / (8) SATA 6Gb/s / SAS 12Gb/s
	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 hot-swap FAN module at rear / (3) easy-swap 12038 fans
Power Supply	**Type**	ATX
	Input Range	AC 100~240V/12~15A
	Frequency	50-60 Hz
	Output Watts	2,000 Watts
	Efficiency	80 plus Platinum
	Redundancy	N/A
Processor	**Q'ty / Socket Type**	(1) LGA4189
	Supported CPU	3rd Gen Intel Xeon Scalable

	Series	Processor
	Configurable Thermal Design Power (cTDP) Wattage	Max up to 270W
Chipset	**PCH**	Intel C621A
Memory	**Supported DIMM Qty**	(8) DIMM slots
	DIMM Type / Speed	DDR4 RDIMM/LRDIMM 3200
	Capacity	512GB RDIMM/ 1,024GB LRDIMM/ 2,048GB RDIMM 3DS *Follow latest Intel DDR4 Memory POR
	Memory channel	8 Channels per CPU
	Memory voltage	1.2V
Expansion Slots	**PCIe**	(1) PCIe Gen.4 x8 slot (#4 w/x4 link)/ (1) PCIe Gen.4 x8 slot (#2 via MUX)/ (1) PCIe Gen.4 x16 slot (#3 w/x8 link)/ (2) PCIe Gen.4 x16 slots (#5,#6)
LAN	**Q'ty / Port**	(2) 10GbE ports + (1) GbE ports + (1) GbE dedicated for IPMI
	Controller	Intel I210 / Intel X550-AT2
	PHY	Realtek RTL8211E
Storage SATA	**Connector**	(2) 7-pin SATA 6G ports/ (1) Mini-SAS HD (4 ports)
	Controller	Intel C621A
	Speed	6Gb/s
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	Button	ID Button
	SATA	(14) SATA-III ports from AHCI
TPM (Optional)	**TPM Support**	Please refer to our TPM supported list.
System Monitoring	**Chipset**	Aspeed AST2500
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	AST2500 iKVM Feature	24-bit high quality video compression / Supports storage over IP and remote platform-flash / USB 2.0 virtual hub
	AST2500 IPMI	IPMI 2.0 compliant baseboard

	Feature	management controller (BMC)/ 10/100/1000 Mb/s MAC interface
BIOS	**Brand / ROM size**	AMI / 32MB
	Feature	Hardware Monitor / Boot from USB device/PXE via LAN/Storage/ Console Redirection / User Configurable FAN PWM Duty Cycle / SMBIOS 3.3/PnP/Wake on LAN / ACPI 6.2/ ACPI sleeping states S5
Operating System	**OS supported list**	Please refer to our AVL support lists.
Regulation	**FCC (SDoC)**	Class B
	CE (DoC)	Class B
	RCM	Class B
	VCCI	Class B
Operating Environment	**Operating Temp.**	0° C ~ 40° C (32° F~ 104° 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-B5642 Barebone
	Manual	(1) Quick Installation Guide
RoHS	**RoHS 6/6 Compliant**	Yes

1.4 Standard Parts List

This section describes FT65T-B5642 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-B5642 Box Content

- 4U Chassis
- (1) 2000W PSU 80+gold
- (1) M1309F65T-BP12-8 HDD Backplane
- (1) M1298T65-BP12E-2 HDD Backplane
- (1) M1713G24-FPB Front Panel Board
- (3) System Fan + (2) Rear Fan for –N SKU
- (3) System Fan for –G SKU
- (1) S5642 MB

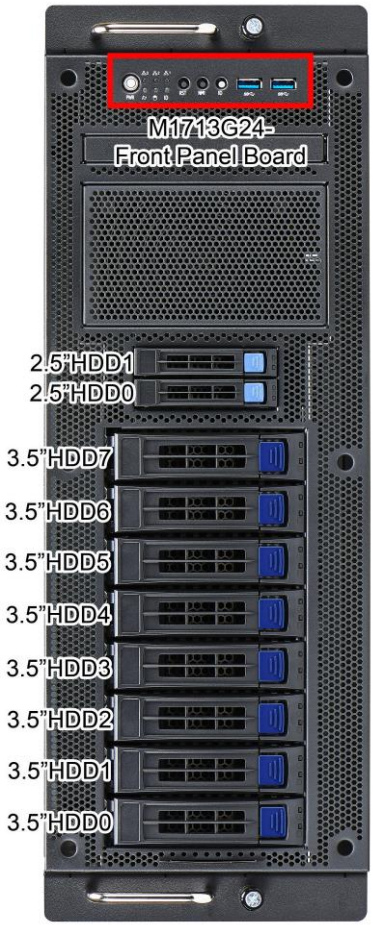
FT65T-B5642 Accessories

- (1) CPU Heatsink
- (1) US power cord
- (1) EU power cord
- (2) M.2 Latch
- (1) Quick Installation Guide
- (1) Whitley CPU Clip

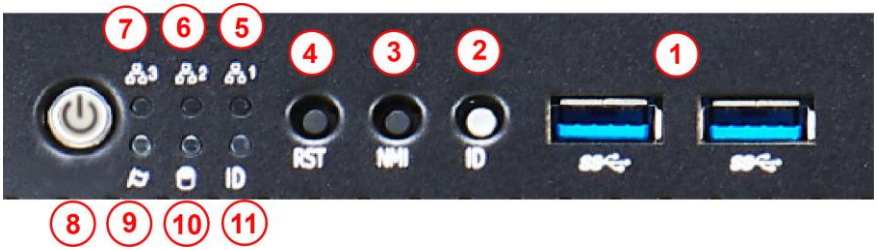
1.5 About the Product

The following views show you the product.

1.5.1 System Front View



Front Control Panel (M1713G24-FPB pre-installed)



1	USB 3.2 Gen1 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	ID LED
10	HDD LED
11	IPMI LED/Fault LED

M1713G24-FPB Front Panel Board

Switch and LED Indication

M1713G24-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

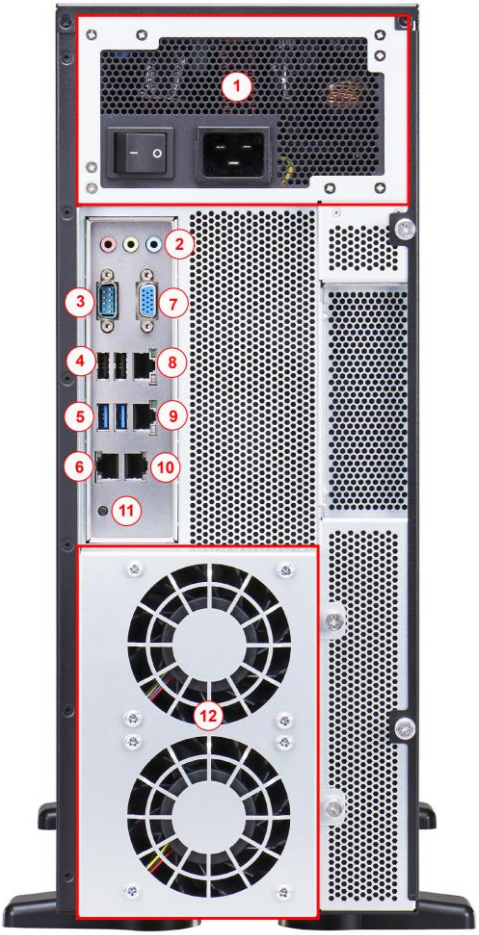
	OFF	OFF	LAN not linked
NIC3 (NO function, Reserved for OEM customer)	Blinking	GREEN	LAN active
	ON	GREEN	LAN linked
	OFF	OFF	LAN not linked
HDD LED	ON	GREEN	HDD accessed
	OFF	OFF	NO HDD access
ID LED	ON	BLUE	system identified
	OFF	OFF	system no identified
BMC LED	ON	AMBER	Fan fail/Over temperature/Over 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 AST2500 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	Don't care	Red Solid On
Drive dentify	Don't care	Red Blinking @1 Hz
Drive Rebuild	Don't care	Red Blinking @4 Hz

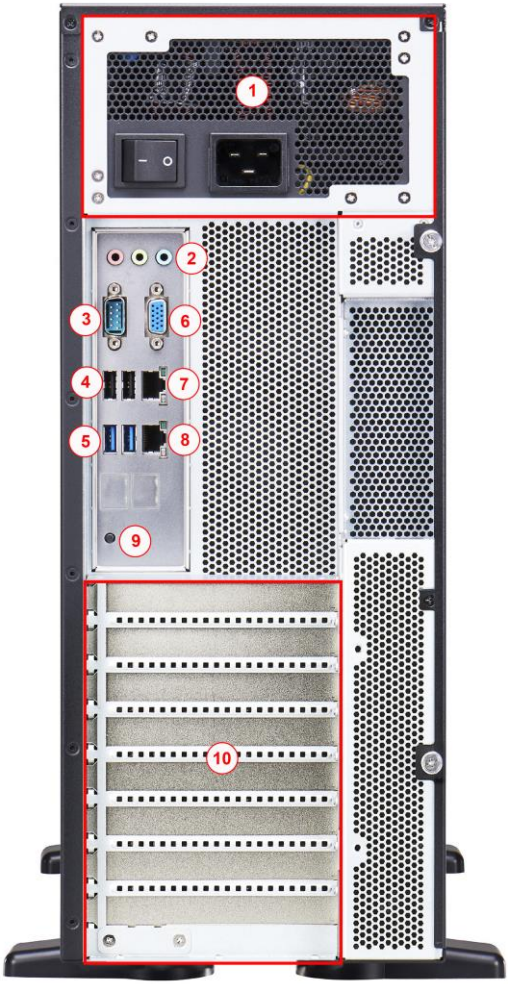
1.5.2 System Rear View

B5642F65TV8E2H-2T-N



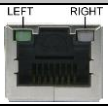
1	PSU	7	VGA Port
2	Audio Jack	8	RJ45 LAN Port#4(LAN4)
3	COM Port	9	Dedicated IPMI RJ45 LAN Port#3(LAN3)
4	USB 2.0 Ports x2	10	RJ45 LAN Port#2(LAN2)
5	USB 3.2 Gen1 Ports x2	11	ID Button
6	RJ45 LAN Port#1(LAN1)	12	Rear Fans

B5642F65TV8E2H-G



1	PSU	6	VGA Port
2	Audio Jack	7	RJ45 LAN Port#2(LAN2)
3	COM Port	8	Dedicated IPMI RJ45 LAN Port#1(LAN1)
4	USB 2.0 Ports x2	9	ID Button
5	USB 3.2 Gen1 Ports x2	10	Expansion Slots

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 AST2500 user guide.

Power Supply

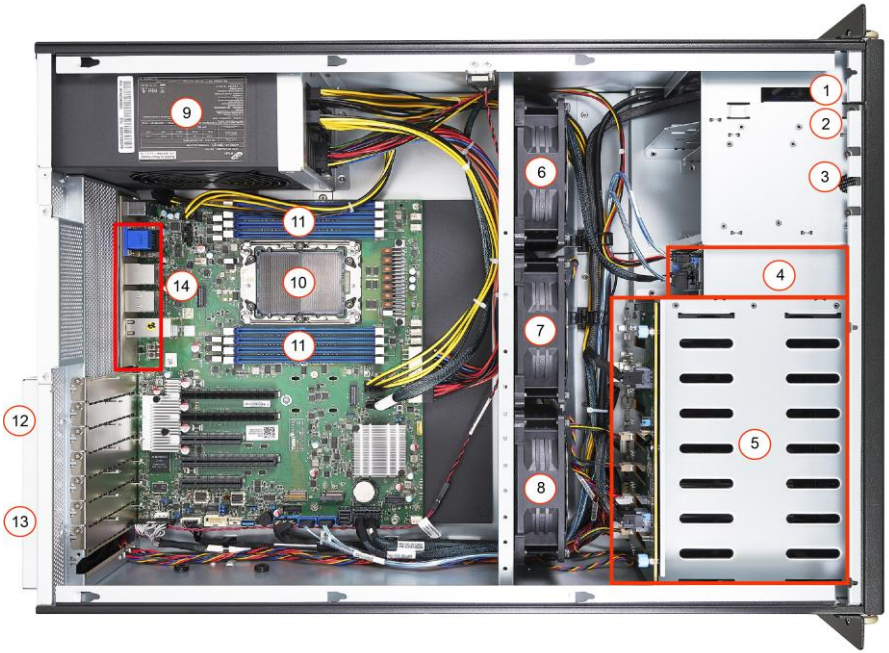
System PSU Output Power Limit

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 1500@115-200Vac 1200@100-115Vac				

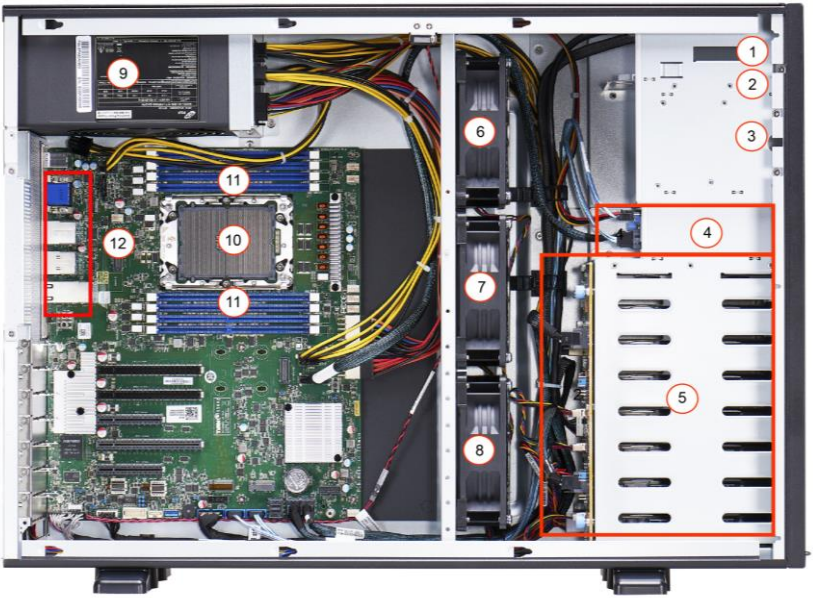
1.5.3 System Top View

B5642F65TV8E2H-2T-N



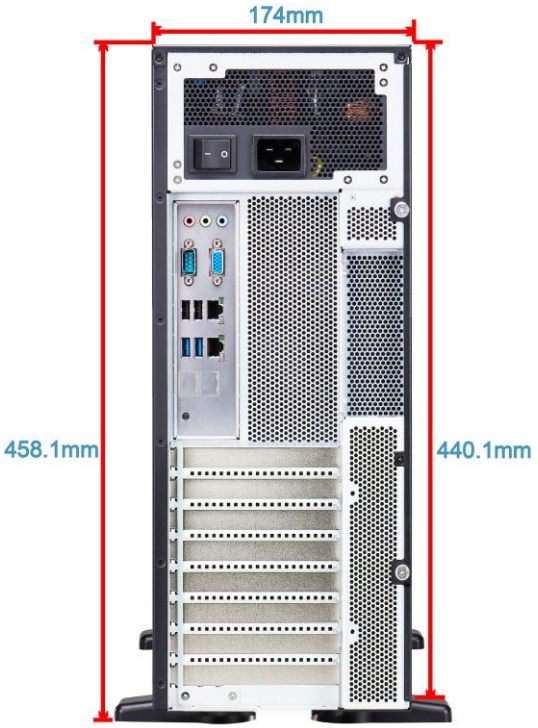
1	M1713G24-FPB Front Panel Board pre-installed	8	FAN3
2	Reserved space for slim CD dummy	9	Power supply
3	Reserved space for 2.5” HDD trays	10	CPU Socket
4	(2) 2.5”HDD/SSD trays (M1298T65-BP12E-2 HDD Backplane pre-installed)	11	Memory Slots
5	(8) 2.5”/3.5”HDD/SSD trays (M1309F65T-BP12-8 HDD Backplane pre-installed)	12	FAN4
6	FAN1	13	FAN5
7	FAN2	14	IO Ports(with 4 LAN)

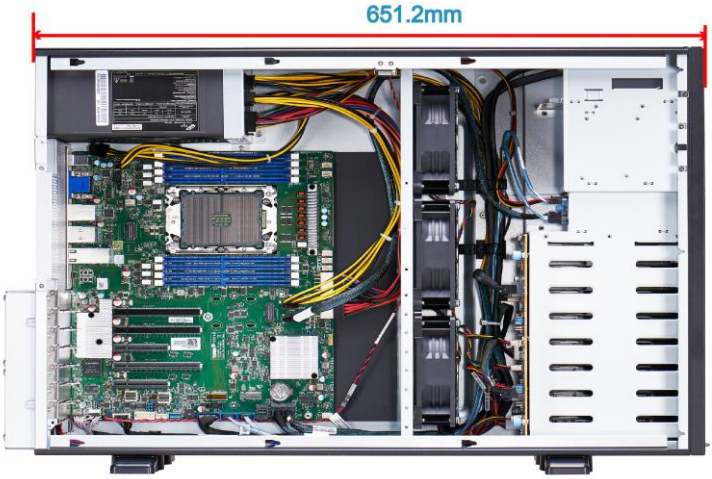
B5642F65TV8E2H-G



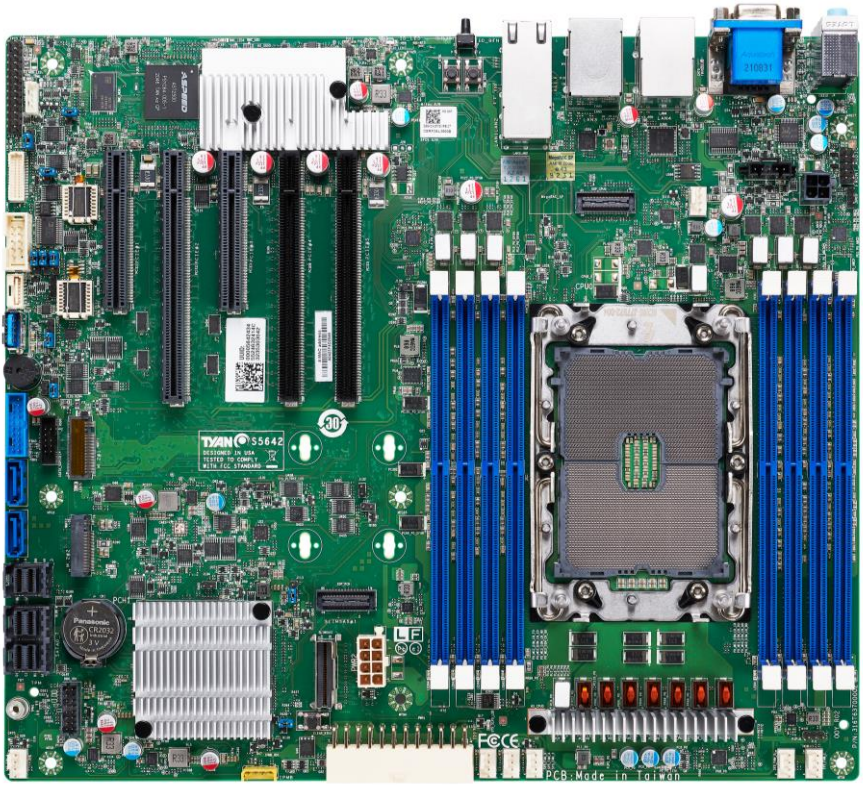
1	M1713G24-FPB Front Panel Board pre-installed	7	FAN2
2	Reserved space for slim CD dummy	8	FAN3
3	Reserved space for 2.5” HDD trays	9	Power supply
4	(2) 2.5”HDD trays (M1298T65-BP12E-2 HDD Backplane pre-installed)	10	CPU Socket
5	(8) 3.5”HDD trays (M1309F65T-BP12-8 HDD Backplane pre-installed)	11	Memory Slots
6	FAN1	12	IO Ports(with 2 LAN)

1.5.4 Chassis Dimensions





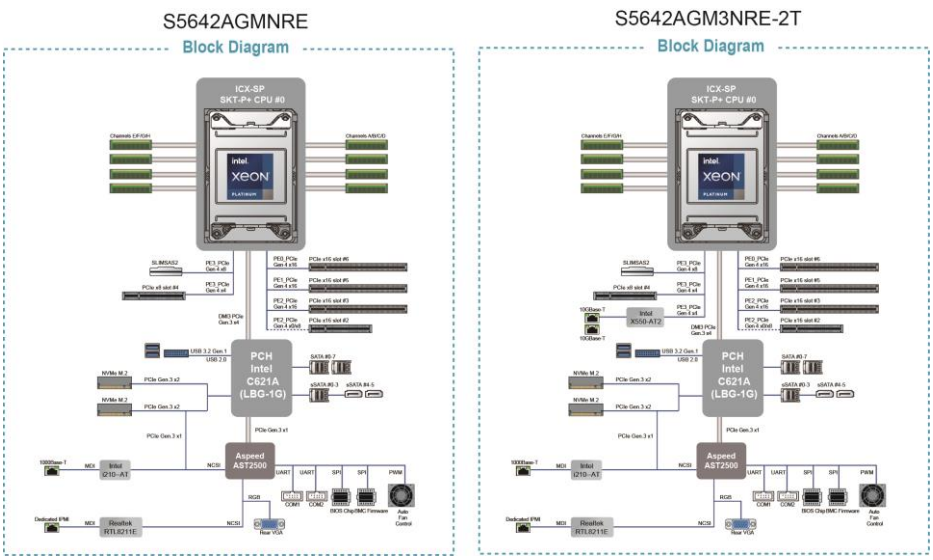
1.5.5 Board Image



S5642AGM3NRE-2T

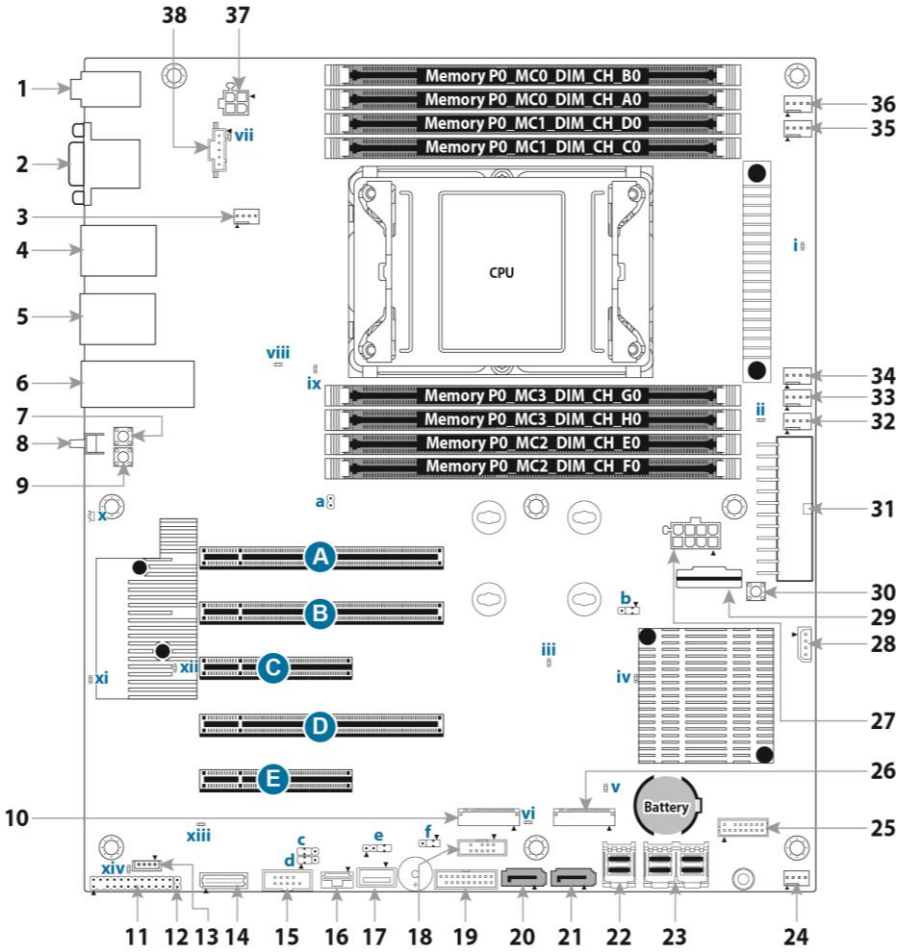
This picture is representative of the latest board revision available at the time of publishing. The board you receive may not look exactly like the above picture.

1.5.6 Block Diagram



S5642 Block Diagram

1.5.7 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.**

Motherboard Components

Connectors	
1.Audio Jack(J4)	20. SATA Connector for SSATA (SSATA5)
2. VGA+ COM PORT (VGA_COM1)	21. SATA Connector for SSATA (SSATA4)
3. 4-Pin Fan Connector(CPU0_FAN)	22. Mini-SAS HD 4i connector for 4ports SSATA (SSATA0_3)
4. RJ45 LAN Port(LAN4)&USB2.0x2	23. Mini-SAS HD 8i connector for 8ports SATA (SATA0_7)
5. RJ45 LAN Port(LAN3) Dedicated IPMI &USB3.2 Gen1 x2	24. 4-pin FAN Connector (SYS_FAN_6)
6. RJ45 LAN Ports (LAN1&LAN2)	25. TYAN Module Header (DBG_HD1)
7. Power Button(Power_BTN1)	26. M.2 Connector (NGFF2)
8. ID LED Button (IDLED_BTN1)	27. 8-Pin Power Connector (PWR2)
9. Reset Button (RST_BTN1)	28. IPMB Connector (IPMB_HD1)
10. M.2 Connector (NGFF1)	29.Vertical SLIMSAS connector (SLIMSAS1)
11. Front Panel Header (FPIO1)	30. RTC Reset Button for Clear CMOS (CLEAR_BTN1)
12. Intruder Header (J121)	31. 24-Pin Power Connector (PWR1)
13. Intel VROC RAID Key (J51)	32. 4-pin FAN Connector (SYS_FAN_5)
14. Fan Connector for BB (FAN_HD1)	33. 4-pin FAN Connector (SYS_FAN_4)
15. COM Port Header(HD_COM2)	34. 4-pin FAN Connector (SYS_FAN_3)
16.SMBus Header(HDR_3)	35. 4-pin FAN Connector (SYS_FAN_2)
17.Vertical Type A USB3.2 Gen1 Connector (TYPEA_USB3)	36. 4-pin FAN Connector (SYS_FAN_1)
18. SATA SGPIO Header for SSATA Port0~5 (SGPIO1)	37. 4-Pin Power Connector (PWR3)
19. Front USB3.2 Gen1 Header (USB3_ FPIO1)	38. PSMI Connector (PSMI_HD1)
Jumpers/ Headers	
a. PECI Jumper (J133_12)	d. COM Port Jumper (J118_23)
b. ME Recovery Jumper (J113_12)	e. System Buzzer Jumper (J120_34)
c. COM Port Jumper (J119_23)	f. PSU Throttling Function Jumper (J125_12)
PCIE Slots	
A. Standard PCIE 16X slot, support PCIE GEN4 16 lanes (PCIE5)	D. Standard PCIE 16X slot, support PCIE GEN4 16 or 8 lanes (switch by PCIE1) (PCIE2)
B. Standard PCIE 16X slot, support PCIE GEN4 16 lanes (PCIE4)	E. Standard PCIE 8X slot, support PCIE GEN4 8 lanes(switch by PCIE2) (PCIE1)
C. Standard PCIE 8X slot, support PCIE GEN4 4 lanes (PCIE3)	
LEDs	
i CPU Power Good LED (P0_PG_LED1)	viii CPU CAT ERROR LED (CAT_LED1)
ii PCH SLP_S5 LED (SYS_SLP5_LED)	ix CPU ERROR LED (ERR_LED2)

iii CPU ERROR LED(ERR_LED0)	x ID LED (ID_LED1)
iv CPU ERROR LED(ERR_LED1)	xi BMC Heart Beat LED (BMC_LED4)
v NGFF2 LED(D9)	xii System Reset LED (SYS_RST_LED1)
vi NGFF1 LED(LED75)	xiii BMC DEBUG LED (BMC_LED1)
vii Onboard PSMI ALERT LED (PSMI_LED1)	xiv On board HDD active LED(HDD_LED1)

Chapter 2: Setting Up

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 T30 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-B5642 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-B5642 chassis cover.

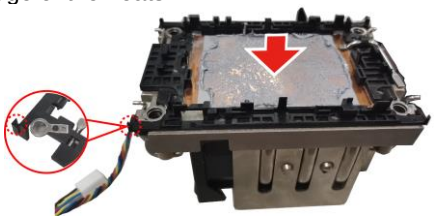
1. Loosen one screw and two thumb screws to slide the top cover off.

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

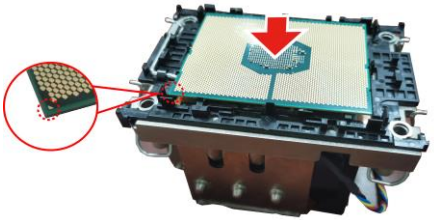
2.1.2 Installing the CPU and Heatsink

Follow the steps below to install the processors and heat sinks.
NOTE: Please save and replace the CPU protection cap when returning for service.

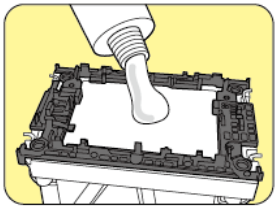
1. Align the triangle edge of the carrier with the notch on the edge of the heatsink. Then install the carrier on the bottom of the heatsink and make sure the latches are snapped under the edge of the heatsink.



2. Align and install the processor on the carrier. Make sure the gold arrow is located in the correct direction.

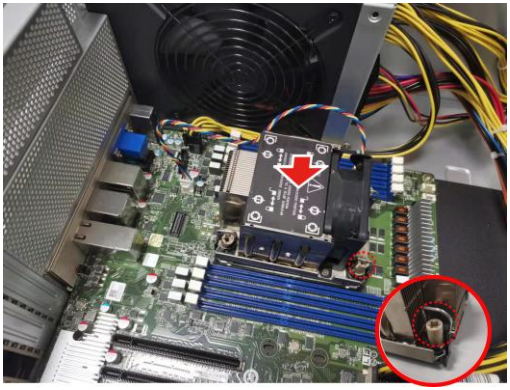


NOTE: A new heatsink comes with pre-applied thermal grease. Once the heatsink has been removed from the processor, you need to clean the processor and heatsink using an alcohol solvent. Then apply new thermal grease before reinstalling the heatsink.



3. Remove the CPU cover.

4. Carefully flip the heatsink assembly. Align the heatsink with the CPU socket by the guide pins. Make also sure that the triangle edge of the carrier is aligned correctly with the triangle mark on the CPU socket. Then place the heatsink assembly onto the top of the CPU socket.

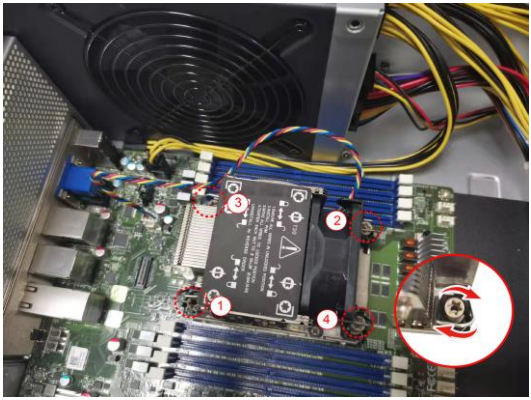


5. Press down on the retention clips to fix the heatsink assembly to the CPU socket.

6. To secure the heatsink assembly, use a T30 Torque Driver to tighten the screws in a sequential order (1→2→3→4).

NOTE: When disassembling the heatsink, loosen the screws in reverse order (4→3→2→1).

NOTE: Use a T-30 Torque Driver. 8in-lbs is recommended, but torques in the 6-12 in-lbf range are supported, with a durability at 12 in-lbf of 20 cycles.



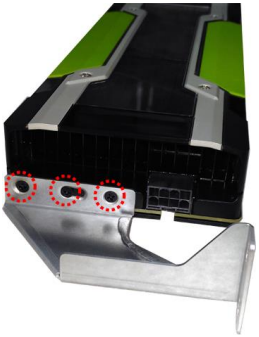
NOTE: Always check with the manufacturer of the heat sink & processor to ensure that the thermal interface material is compatible with the processor and meets the manufacturer's warranty requirements.

2.1.3 Installing the Expansion Cards

Follow the instructions to install the expansion cards.

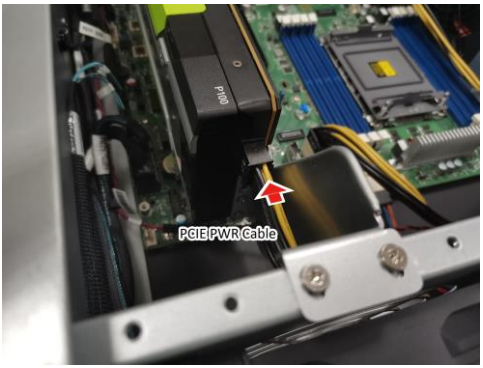
1. Locate the PCI-E Gen.4 slots on the motherboard. Unscrew to take out the dummy brackets.

2. Screw the GPU bracket to the GPU card.



3. Insert the GPU card into the PCIE Gen. 4 slot and screw the GPU card to the chassis.

4. Connect the GPU Power cable.

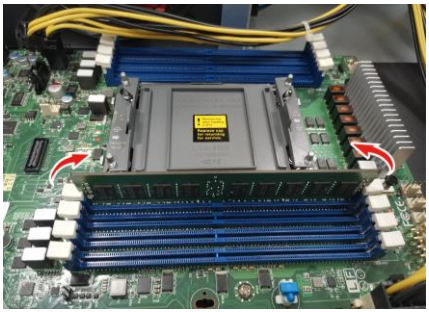


2.1.4 Installing the Memory

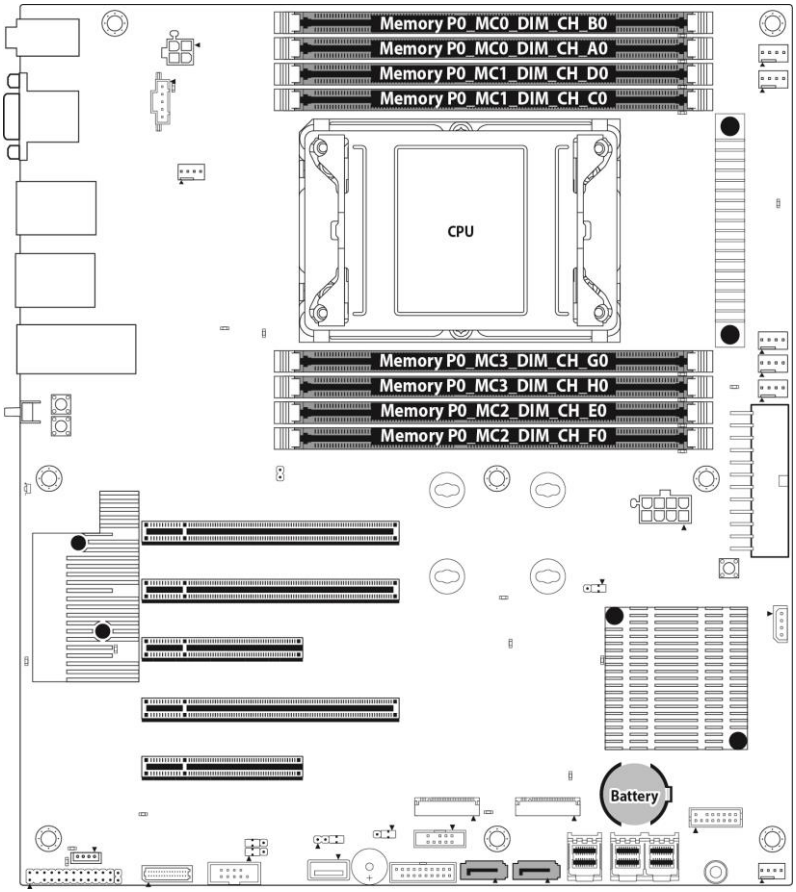
Follow these instructions to install the memory modules onto the motherboard.

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.



DIMM Location



NOTE:

1. √ indicates a populated DIMM slot.
2. Use paired memory installation for max performance.
3. Populate the same DIMM type in each channel, specifically
   - Use the same DIMM size
   - Use the same # of ranks per DIMM
4. Always install with CPU0 Socket first.

Memory Population Table

Single CPU Installed	Quantity of memory installed				
	1	2	4	6	8
P0_MC0_DIM_CH_A0		√	√	√	√
P0_MC0_DIM_CH_B0				√	√
P0_MC1_DIM_CH_C0	√		√	√	√
P0_MC1_DIM_CH_D0		√	√		√
P0_MC2_DIM_CH_E0				√	√
P0_MC2_DIM_CH_F0				√	√
P0_MC3_DIM_CH_G0			√	√	√
P0_MC3_DIM_CH_H0					√

NOTE:

1.√ indicates a populated DIMM slot.

2. Use paired memory installation for max performance.

3. Populate the same DIMM type in each channel, specifically

- Use the same DIMM size
- Use the same # of ranks per DIMM

4. Dual-rank DIMMs are recommended over single-rank DIMMs.

5. Always install with CPU0 Socket and DIMM_0 Slot first, following the alphabetical order.

2.1.5 Installing Hard Drives

The FT65T-B5642 can support up to eight (8) 3.5”/2.5” SSD/HDD，two (2) 2.5” NVMe SSD/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.

3.5” HDD

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

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

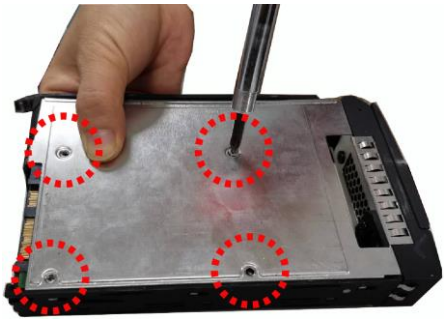
2. Slide the HDD tray out.

3. Place a 3.5"/2.5” SSD/HDD into the HDD tray.

3.5” HDD

2.5” SSD/HDD

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



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

2.5” NVMe HDD

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

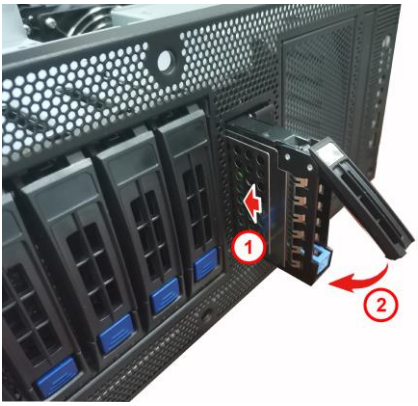
1. Press the locking lever latch and pull the locking lever open.

2. Slide the NVMe HDD tray out.

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

4. Lock the tray lever to secure HDD.

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



NOTE: When installing a 2.5” 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.

2.3 Rack Mounting

After installing the necessary components, the TYAN FT65T-B5642 can be mounted in a rack using the supplied rack mounting kit

2.3.1 Installing the FT65T-B5642 in a Rack

Follow these instructions to mount the TYAN FT65T-B5642 into an industry standard 19" rack.

NOTE: Before mounting the TYAN FT65T-B5642 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-B5642 as shown using six M4-L5 screws (black).

Left

Right

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

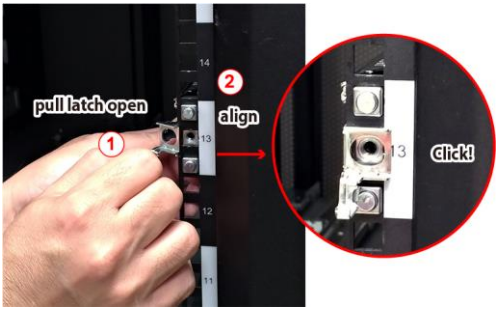
5. Install the inner sliding rail to each side of the server using four M4-L5 screws.

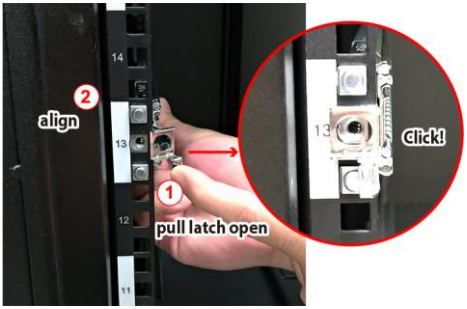
Installing the Outer Rails to the Rack

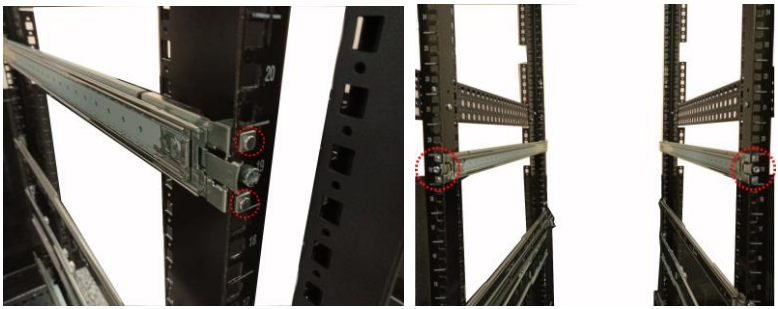
1. Attach the outer rail to the rack. Pull the latch open and align the square stud with the square hole on the rack rail. Please note that the square stud must be fully attached inside the square hole and then close the latch to lock.

Rear

Front







2.2.2 Rack Mounting the Server

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

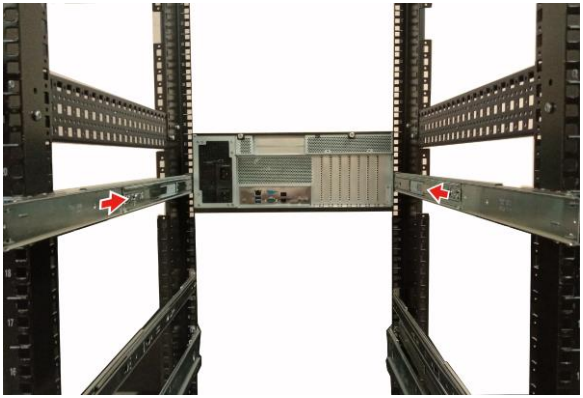
2. Push the whole system in.

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.

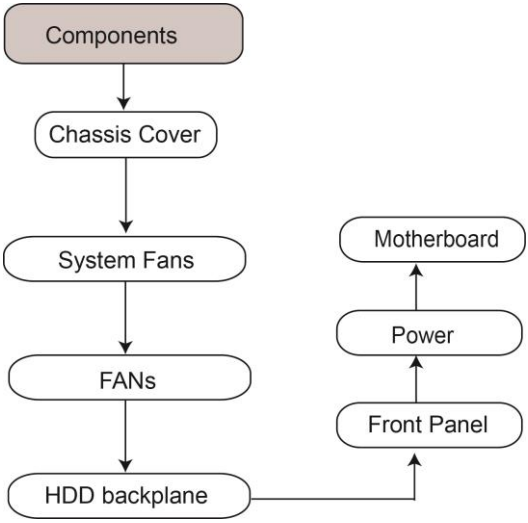
Chapter 3: Replacing Pre-Installed Components

3.0.1 Introduction

This chapter explains how to replace the pre-installed components, including the S5642 Motherboard, M1713G24-FPB Front Panel Board, M1309F65T-BP12-8/ M1298T65-BP12E-2 HDD Backplane, System Fan and Power Supply Unit etc.

3.0.2 Disassembly Flowchart

The following flowchart outlines the disassembly procedures.



3.1 Removing the Cover

Before replacing any parts you must remove the chassis cover. Follow Section ***2.1.1 Removing the Chassis Cover*** (page ***42***) to remove the cover of the FT65T-B5642.

3.2 Replacing Motherboard Components

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

3.2.1 Replacing the System Fan

Follow these instructions to replace the system fan.

1. Take out the failed fans.

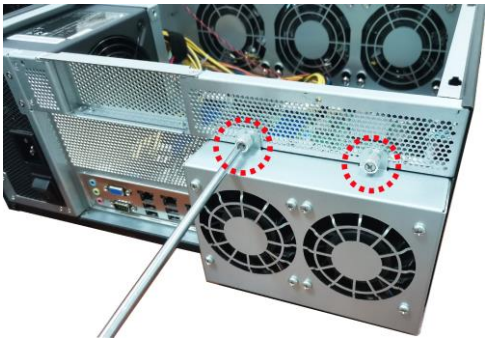
2. Unscrew to replace a new fan.

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

Replacing Rear Fans

Follow these instructions to replace the system fan.

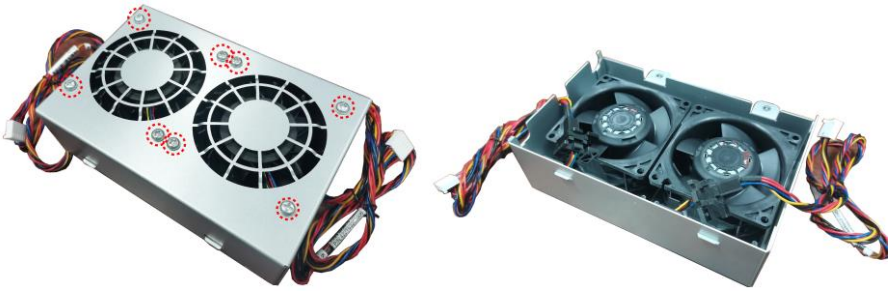
1. Release two thumb screws with the screwdriver.



2. Turn over the rear fan module.

3. Disconnect the fans cables.

4. Release the eight screws of the fans module.



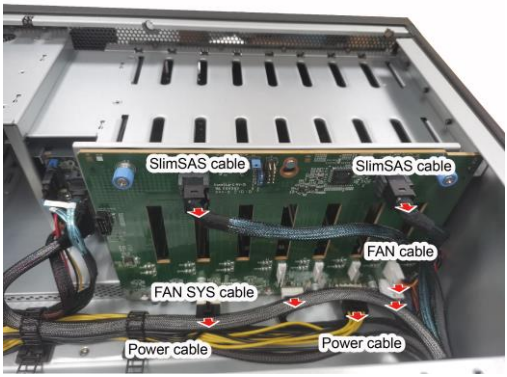
5. Take out the fans.

6. 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.
7. Install a small piece of iron to block the loophole of the fan cable.

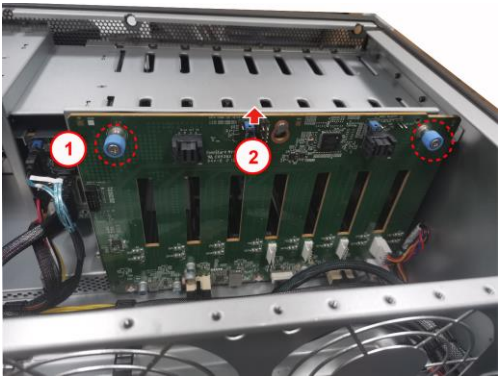
3.4 Replacing the HDD Backplane Board

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

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



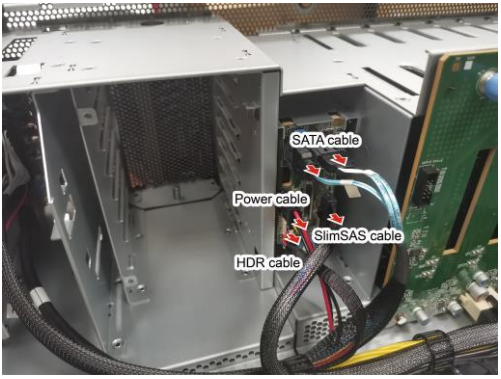
2. Unscrew to take it out.



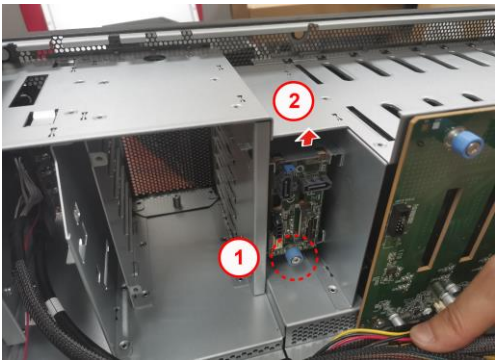
3. Prepare a new HDD BP Board and reinstall it into the chassis following the steps in reverse.

Follow these instructions to replace the M1298T65-BP12E-2 HDD Backplane Board.

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



2. Unscrew to take it out.

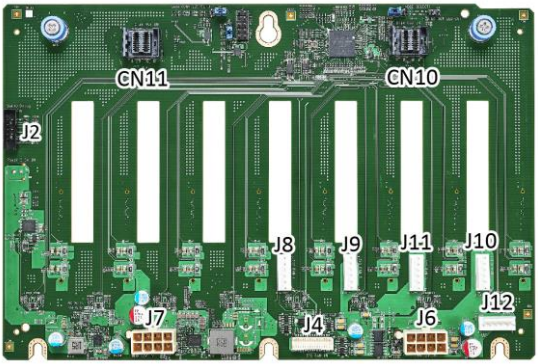


3. Prepare a new HDD BP Board and reinstall it into the chassis following the steps in reverse.

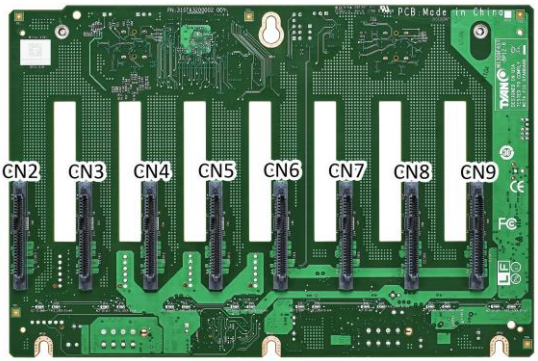
3.4.1 HDD BP Board Features

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) (1) FAN System Connector (J4) (8) SATA HDD Connector (CN2/CN3/CN4/CN5/CN6/CN7/CN8/CN9) (5) FAN Connectors (J8/J9/J10/J11/J12) (2) Power Connector (J6/J7) (1) SGPIO Debug Connector (J2)

3.4.2 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) **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.

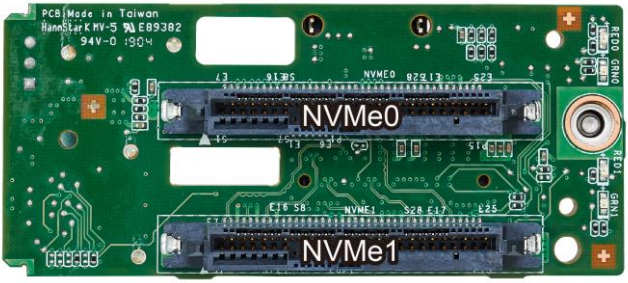
DEFAULT	PIN
HDD_BP_ACT_LED_OUT	1
GND	2

M1298T65-BP12E-2

Here shows the M1298T65-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	Slimsas Connector (J1) SATA + NVMe Connector(NVME0) SATA + NVMe Connector(NVME1) SATA Connector(SATA0) SATA Connector(SATA1) 4P Power CON (PW1) Header for PCA9544 SMBUS address Select (3PHD-1)

3.5 Replacing the Front Panel Board

Follow these instructions to replace the M1713G24-FPB Front Panel Control Board.

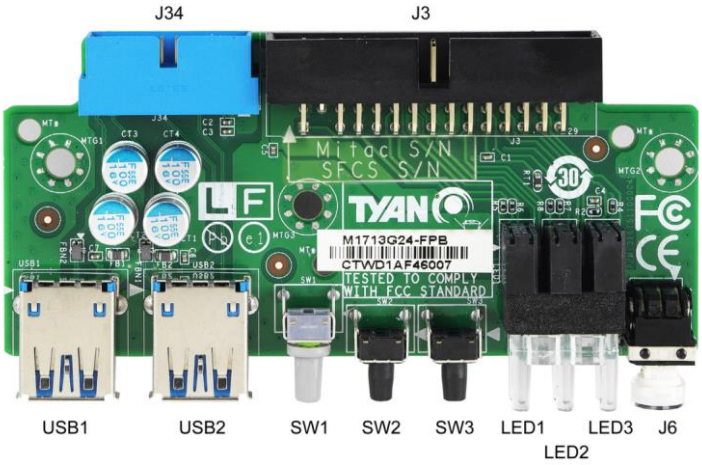
1. Unscrew the front panel unit.

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.

3.5.1 Front Panel Board Features



Integrated I/O	● 10*2 USB3.2 Gen1 Header connect to MB ● 15*2 Header connect to MB ● (2) USB3.2 Gen1 connector
LEDs	● 1 GREEN/BLUE LED for LAN1 and ID ● 1 GREEN/GREEN LED for LAN2 and HDD ● 1 GREEN/AMBER LED for LAN3 and BMC ● 1 power LED
Board size	● 97*45.2MM

3.5.2 Pin Definition

J34: USB3.2 Gen1 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

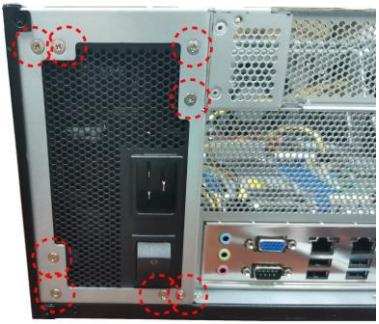
Definition	Pin	Pin	Definition
PW_LED+	1	2	VCC
key	3	4	ID_LED+
PW_LED-	5	6	ID_LED-
HDD_LED+	7	8	SYS_FAULT1-
HDD_LED-	9	10	SYS_FAULT2-
PWR_SW-	11	12	LAN1_LED+
GND	13	14	LAN1_LED-
RESET-	15	16	ICH_SMBDAT
GND	17	18	ICH_SMBCLK
ID_SW-	19	20	INTRU#
TEMP_SENSOR	21	22	LAN2_LED+
NMI_SW	23	24	LAN2_LED-
NC	25	26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

3.6 Replacing the Power Supply

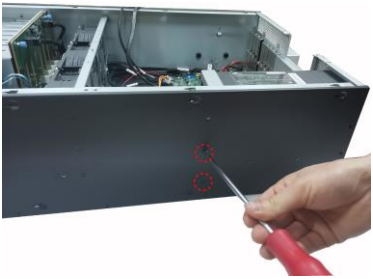
The system has one pre-installed Power Supply Units. Please unplug the power cord before you follow these instructions to replace the power supply units.

1. Disconnect the power supply cable.

2. Unscrew to release the power supply unit.



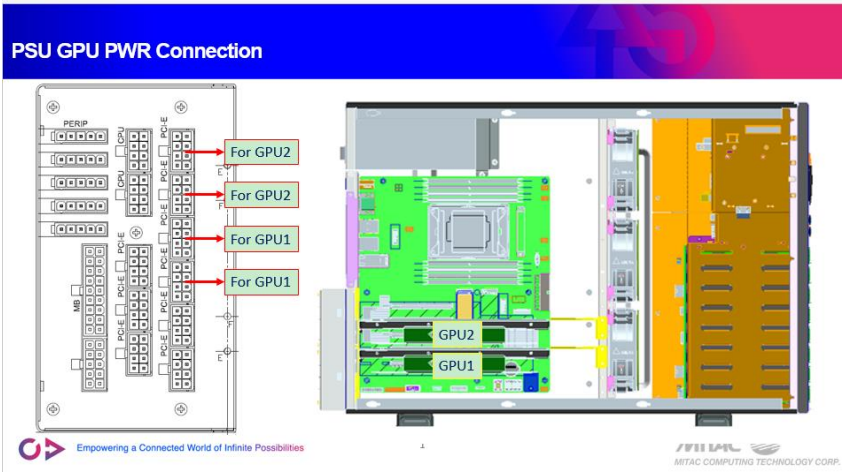
3. Unscrew to release the power supply unit.

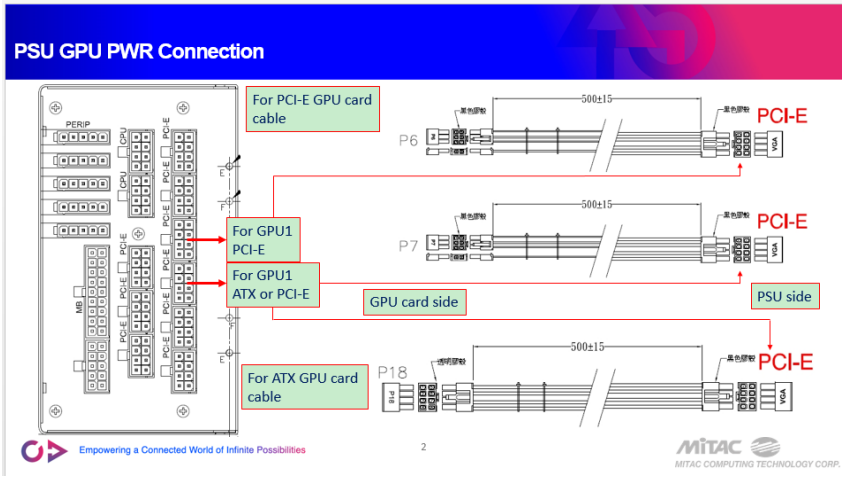


4. Take out the power supply unit.

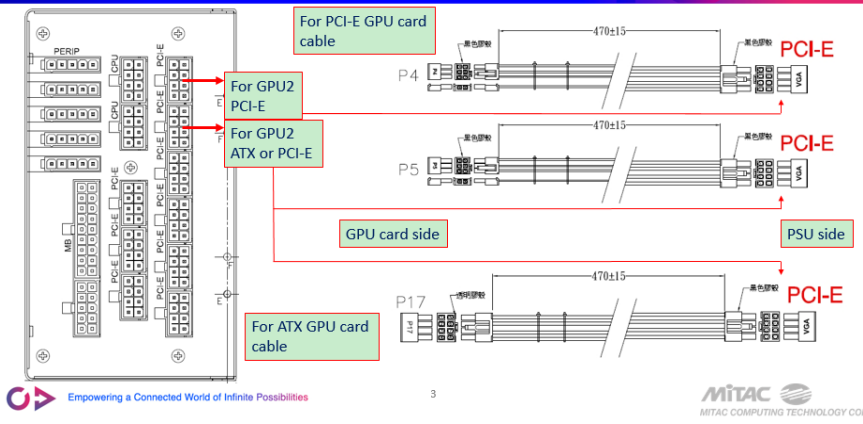
5. To replace a new power supply. And follow the procedures in reverse order to install a new power supply.

Power supply Unit GPU PWR Connection





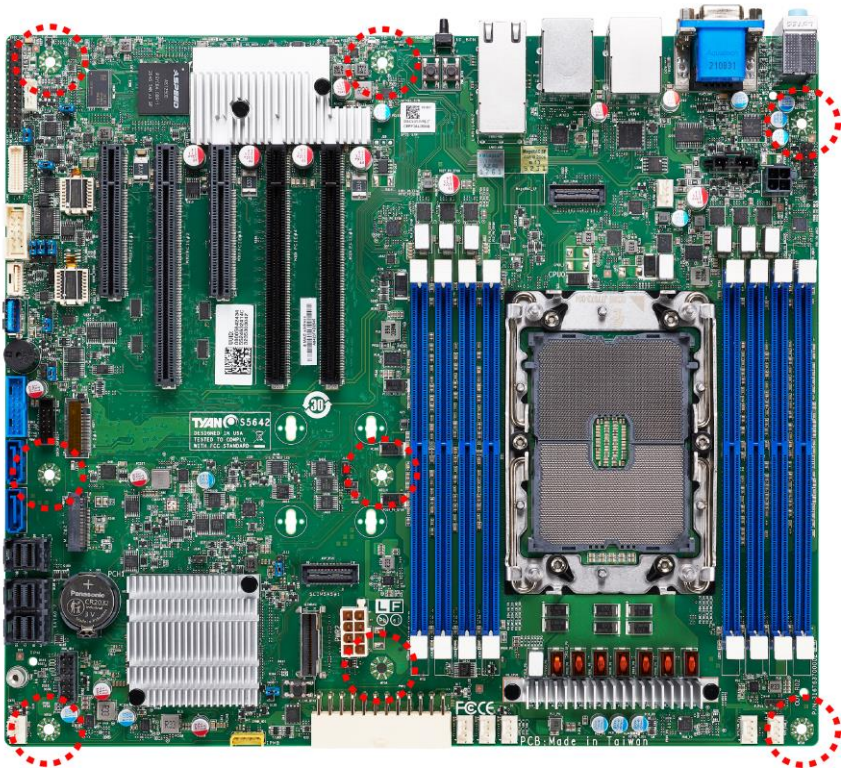
PSU GPU PWR Connection



3.7 Removing the Motherboard

Follow these instructions to replace the S5642 Motherboard.

1. Refer to the sections described earlier to remove all cables and components on the motherboard.
2. Unscrew the motherboard.



3. Carefully lift the motherboard from the chassis.
4. Prepare a new motherboard and follow the steps described earlier in reverse order to reinstall the motherboard into the chassis.

NOTE

Chapter 4: BIOS Setup

4.1 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.

4.1.1 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

4.1.2 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.

4.1.3 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.

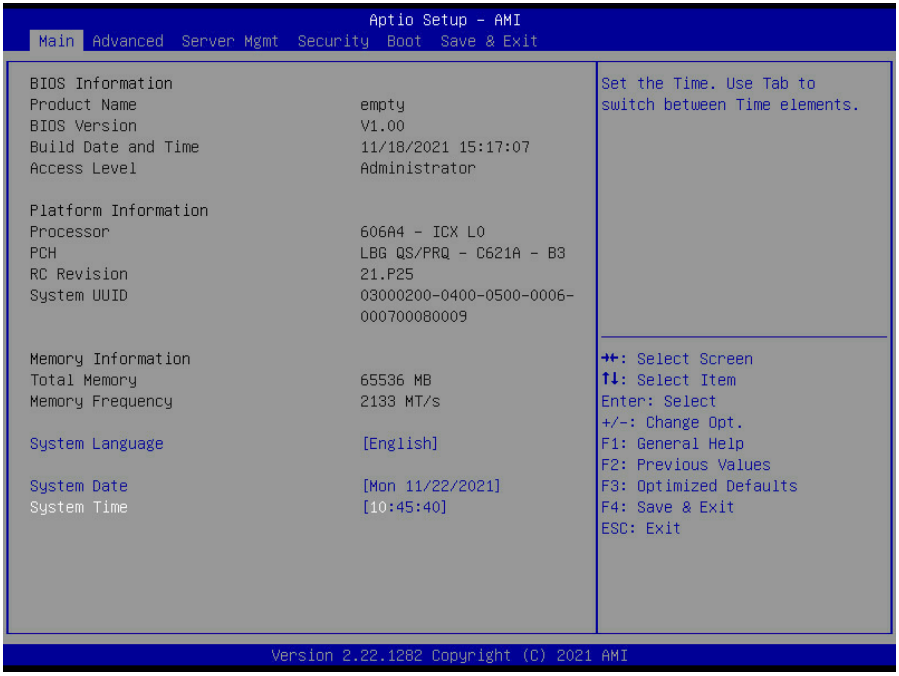
4.1.4 Setup Variations

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.

4.2 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

Access Level
Administrator

Platform Information
It displays the processor and PCH information

Memory Information
Total Memory
It displays the total memory size.

Memory Frequency
It displays Memory frequency

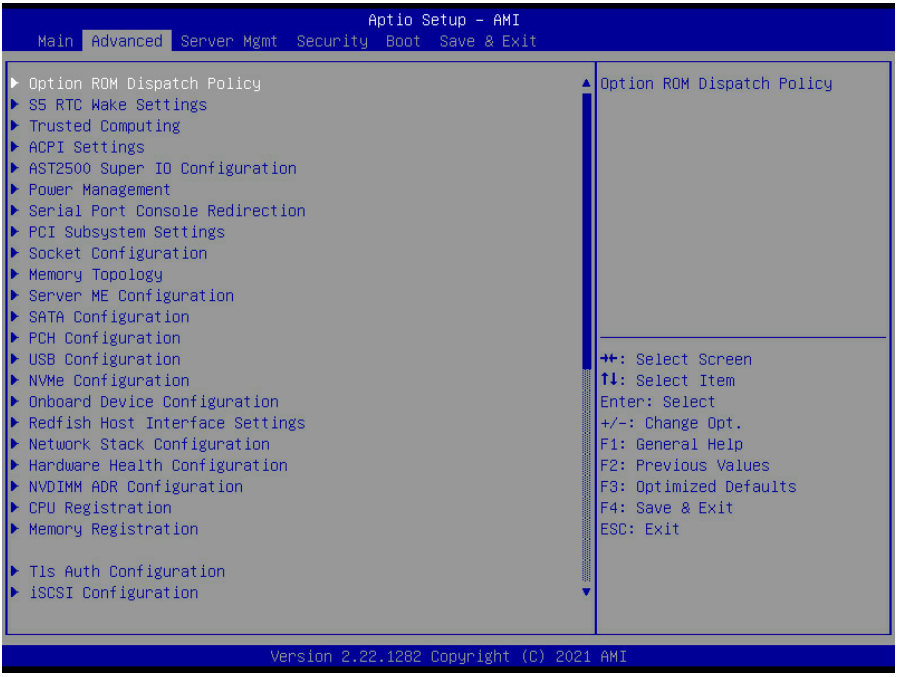
System Language
Choose the system default language

System Date
Set the Date. Use Tab to switch between Date elements. Default Ranges:
Year: 1998-9999
Months: 1-12
Days: dependent on month
Range of Years may vary

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

3.3 Advanced Menu

This section facilitates configuring advanced BIOS options for your system.



Option ROM Dispatch Policy
Option ROM Dispatch Policy

S5 RTC Wake Settings
S5 RTC Wake Settings

Trusted Computing
Trusted Computing settings.

ACPI Settings
System ACPI Parameters

AST2500 Super IO Configuration
System Super IO Chip Parameters

Power Management
Power Management

Serial Port Console Redirection
Serial Port Console Redirection

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

Socket Configuration
Socket Configuration

Memory Topology
Memory Topology

Server ME Configuration
Configure Server ME Technology Parameters

SATA Configuration
SATA devices and settings

PCH Configuration
PCH Configuraion

USB Configuration
USB Configuration Parameters.

NVMe Configuraion
NVMe Device Options Settings

Onboard Device Configuration
Onboard Device and Function Configuration.

Redfish Host Interface Settings
Redfish Host Interface Parameters

Network Stack Configuration
Network Stack Settings

Hardware Health Configuration
Hardware Health Configuration

NVDIMM ADR Configuration
NVDIMM ADR Configuration

CPU Registration
This item support INTEL CPU, sign the CPU will record current CPU. Once BIOS checked different with registered CPU, show WARNING message on POST screen.

Memory Registration
Sign the Memory will record current Memory. Once BIOS checked different with registered Memory, show WARNING message on POST screen.

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

iSCSI Configuration
Configure the iSCSI parameters

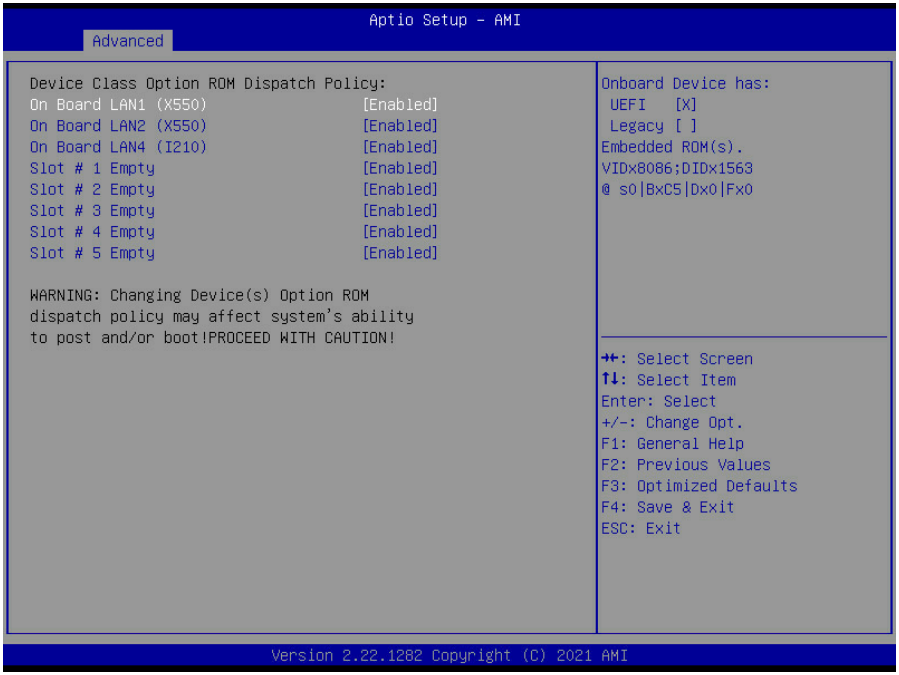
VLAN Configuration (MAC: XXXXXXXXXXXX)
VLAN Configuration (MAC: XXXXXXXXXXXX)

MAC: XXXXXXXXXXXX --- IPV4 Network Configuration
Configure network parameters. (MAC: XXXXXXXXXXXX)

MAC: XXXXXXXXXXXX --- IPV6 Network Configuration
Configure IPV6 network parameters. (MAC: XXXXXXXXXXXX)

Driver Health
Provides Health Status for the Drivers/Controllers.

3.3.1 Option ROM Dispatch Policy Configuration



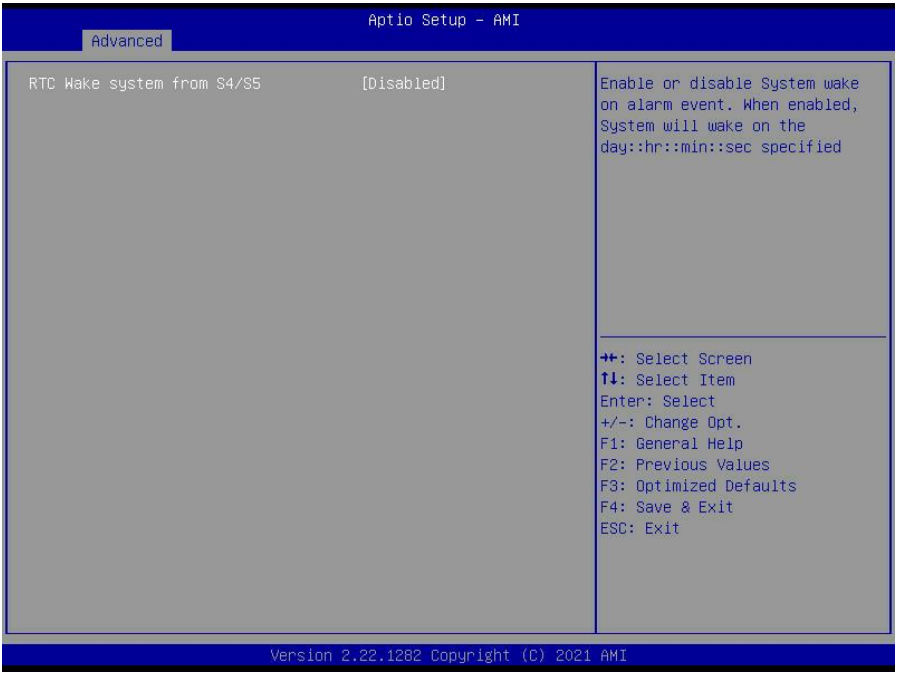
On Board LAN1 (X550)
Onboard Device has:
UEFI [X]
Legacy [ ]
Embedded ROM(s).
VIDx8086; DID x1563
@ s0|BxC5|Dx0|Fx0
Disabled / **Enabled**

On Board LAN2 (X550)
Onboard Device has:
UEFI [X]
Legacy [ ]
Embedded ROM(s).
VIDx8086; DID x1563
@ s0|BxC5|Dx0|Fx1
Disabled / **Enabled**

On Board LAN4 (I210)
Onboard Device has:
UEFI [X]
Legacy [ ]
Embedded ROM(s).
VIDx8086; DID x1533
@ s0|Bx2|Dx0|Fx0
Disabled / **Enabled**

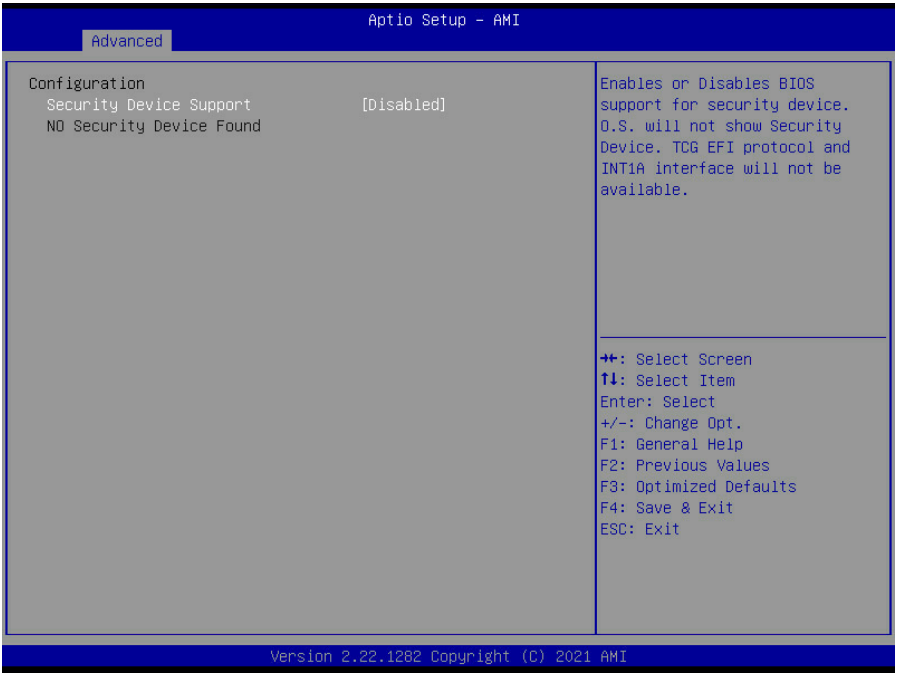
Slot # 1/2/3/4/5 Empty
Enable or Disable Option ROM execution for selected Slot.
Disabled **/ Enabled**

3.3.2 S5 RTC Wake Settings



RTC Wake system from S4/S5
Enable or disable System wake on alarm event. When enabled, system will wake on the hr::min::sec specified.
Disabled / Fixed time / Dynamic time

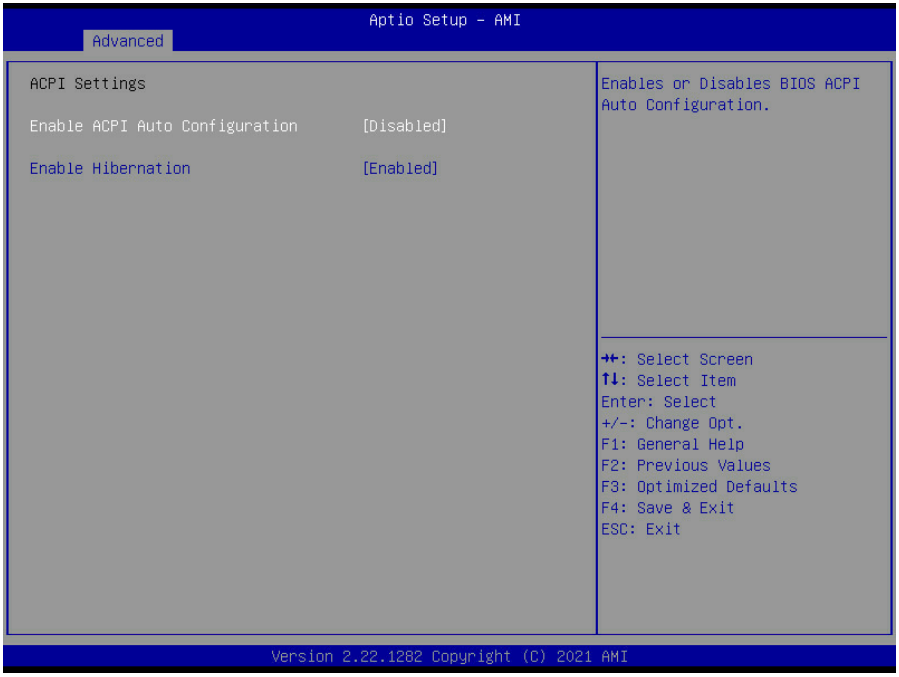
3.3.3 Trusted Computing



Security Device Support
Enable or Disable 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**

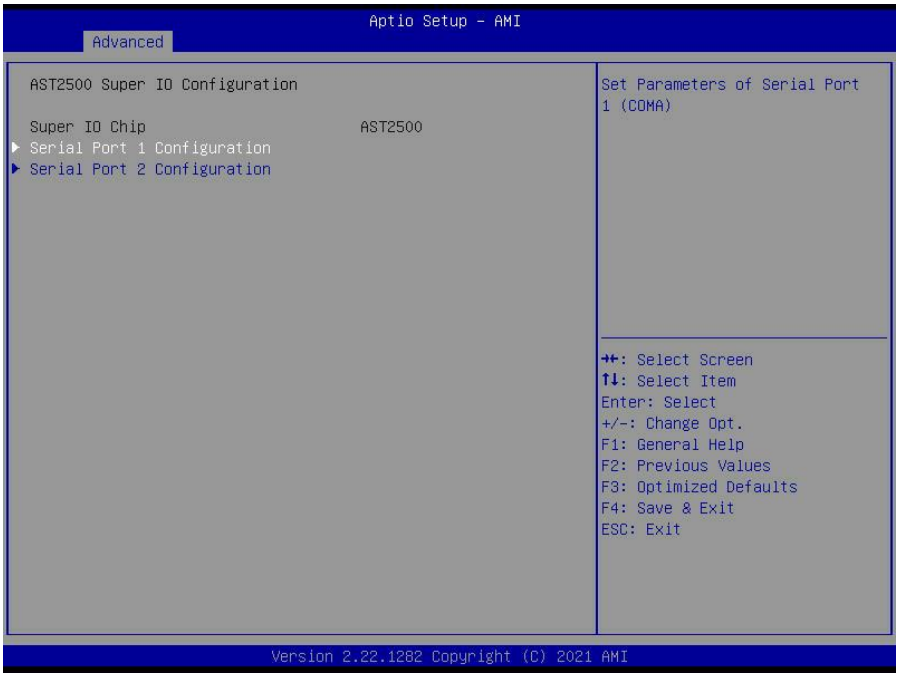
3.3.4 ACPI Configuration



Enable ACPI Auto Configuration
Enables or Disables BIOS ACPI Auto Configuration
Disabled / Enabled

Enable Hibernation
Enables or Disables System ability to Hibernate (OS/S4 Sleep state). This option may not be effective with some operating systems.
Disabled **/ Enabled**

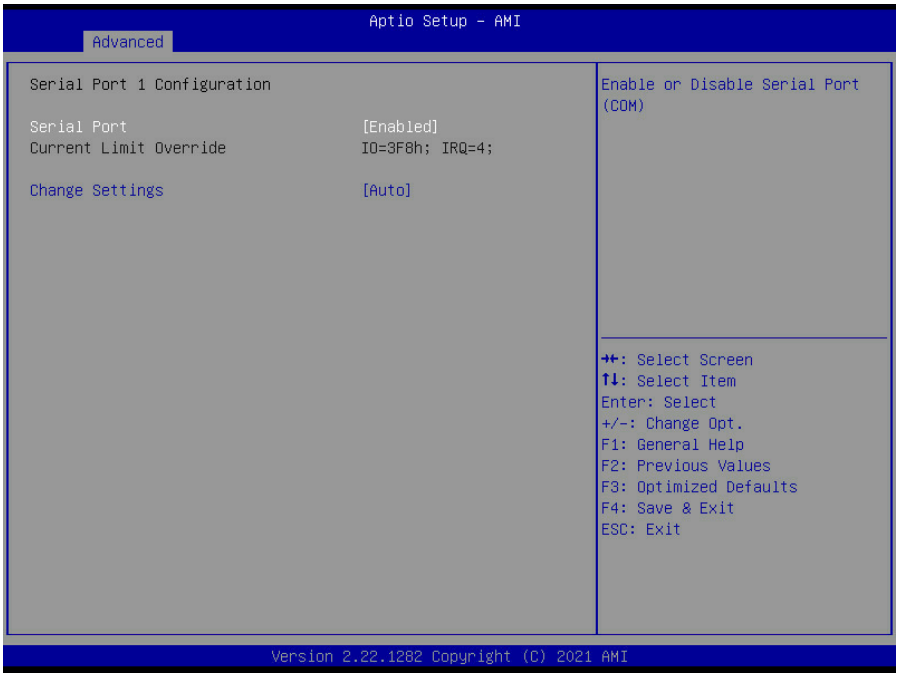
3.3.5 AST2500 Super IO Configuration



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

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

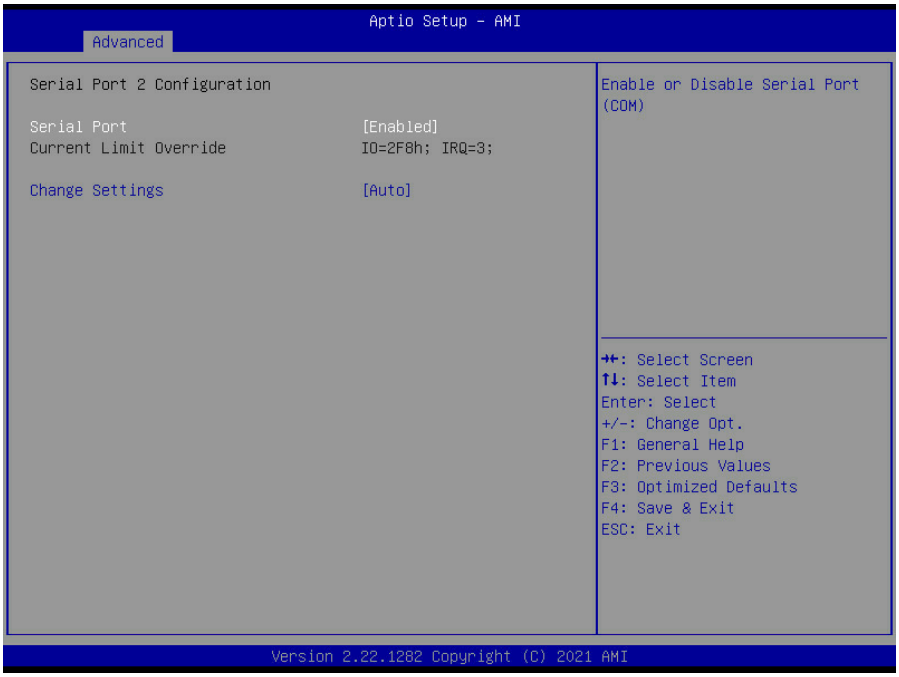
3.3.5.1 Serial Port 1 Configuration



Serial Port
Enable or disable Serial Port (COM).
Enabled / Disabled
NOTE: The following items will appear when Serial Port set to [Enabled]

Change Settings
Select an optimal setting for Super IO Device.
Auto / IO=3F8h; IRQ=4;
/ IO=3F8h, IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12;
/ IO=2F8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12;
/ IO=3E8h, IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12;
/ IO=2E8h, IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12;

3.3.5.2 Serial Port 2 Configuration



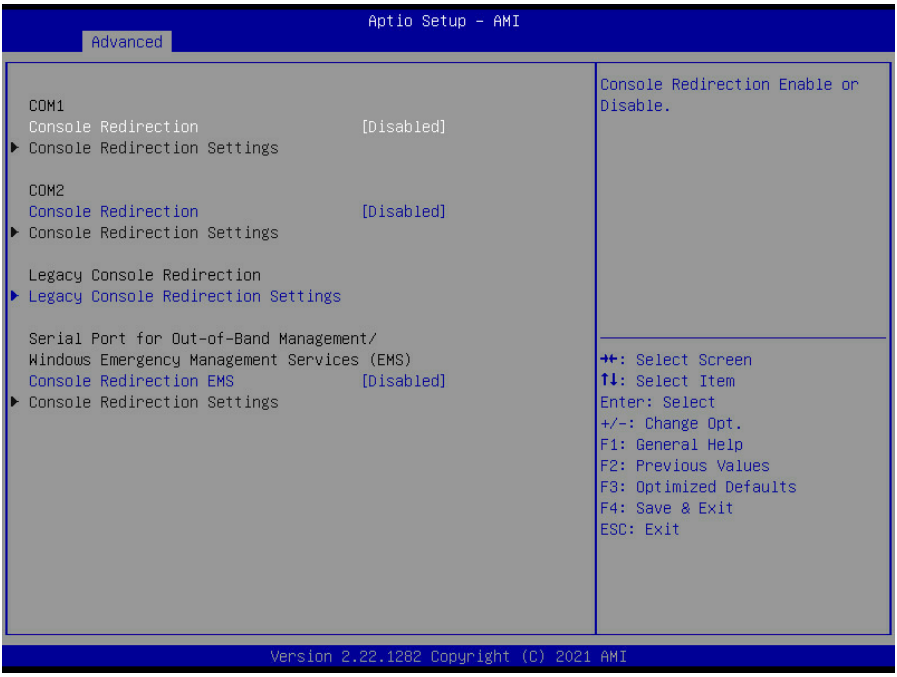
Serial Port
Enable or disable Serial Port (COM).
Enabled / Disabled

Change Settings
Select an optimal setting for Super IO Device.
Auto / IO=2F8h; IRQ=3;
/ IO=3F8h, IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12;
/ IO=2F8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12;
/ IO=3E8h, IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12;
/ IO=2E8h, IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12;

3.3.6 Power Management Configuration

CPU Power and Performance Policy
CPU Power and Performance Policy
Performance / Balanced Power / Power

3.3.7 Serial Port Console Redirection



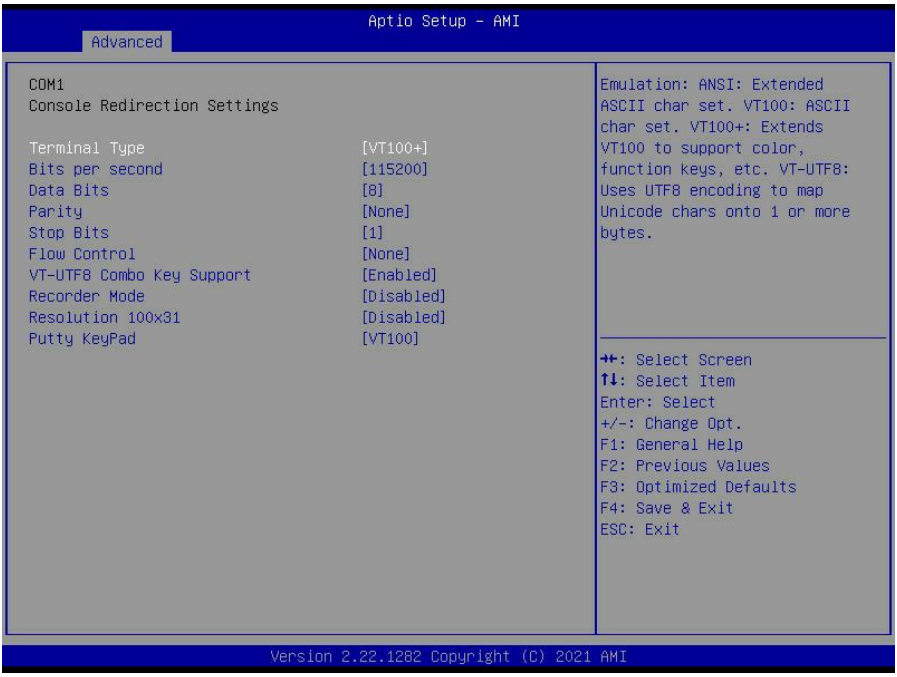
COM1/COM2
Console Redirection
Console redirection Enable or Disable.
Disabled / Enabled

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 available when **Console Redirection** was set to **[Enabled].**

3.3.7.1 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.
38400 **/** 9600 / 19200 / **115200** / 57600

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 signal.

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

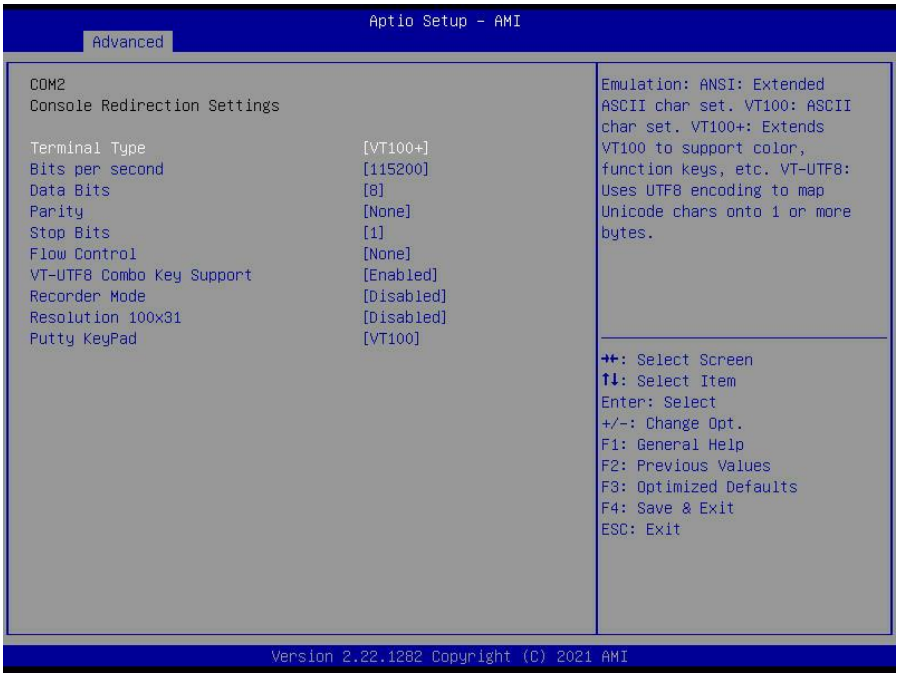
Resolution 100x31
Enable or disable extended terminal resolution.

Disabled / Enabled

Putty KeyPad
Select FunctionKey and KeyPad on Putty.

VT100 / LINUX / XTERMR6 / SCO / ESCN / VT400

3.3.7.2 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.
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.
38400 **/** 9600 / 19200 / **115200** / 57600

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 signal.

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

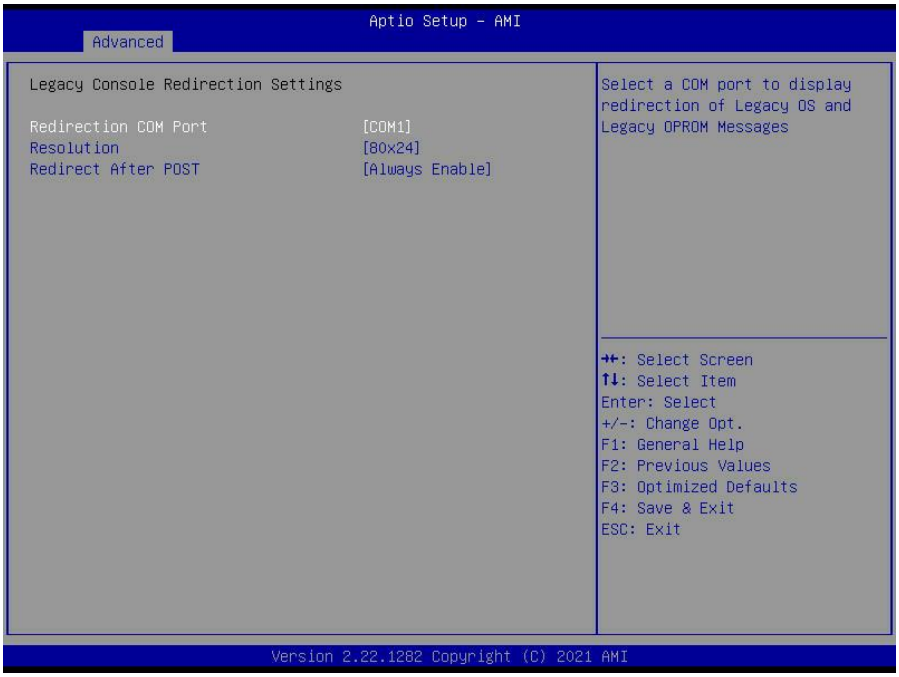
Resolution 100x31
Enable or disable extended terminal resolution.

Disabled / Enabled

Putty KeyPad
Select FunctionKey and KeyPad on Putty.

VT100 / LINUX / XTERMR6 / SCO / ESCN / VT400

3.3.7.3 Legacy Console Redirection Settings



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

COM1 / COM2

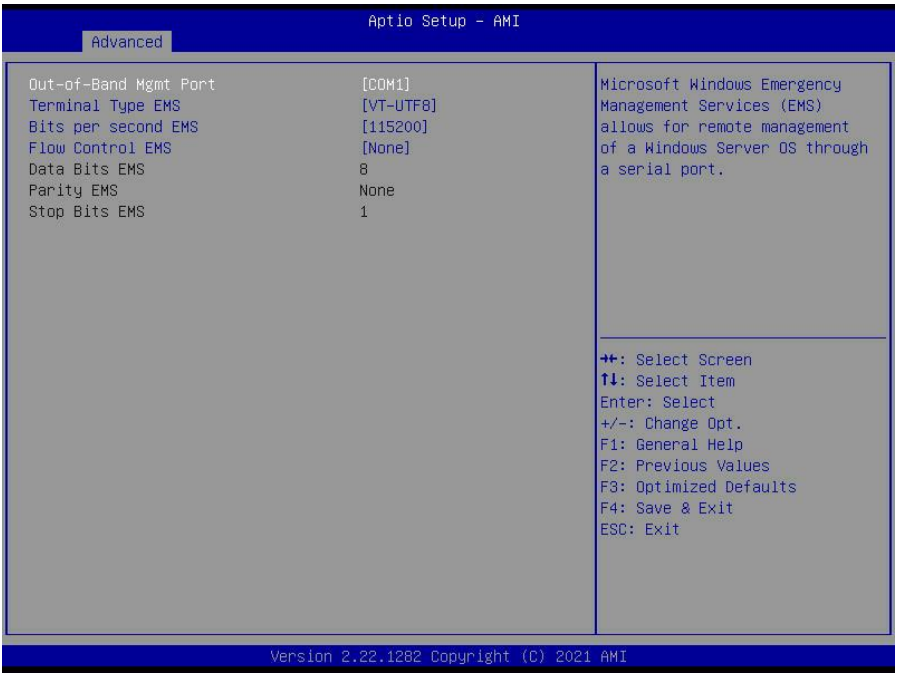
Resolution
On Legacy OS, the Number of Rows and Columns supported redirection

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

3.3.7.4 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 EMS
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 EMS
Select serial port transmission speed. The speed must be matched on the other side. Long or noisy lines may require lower speeds.

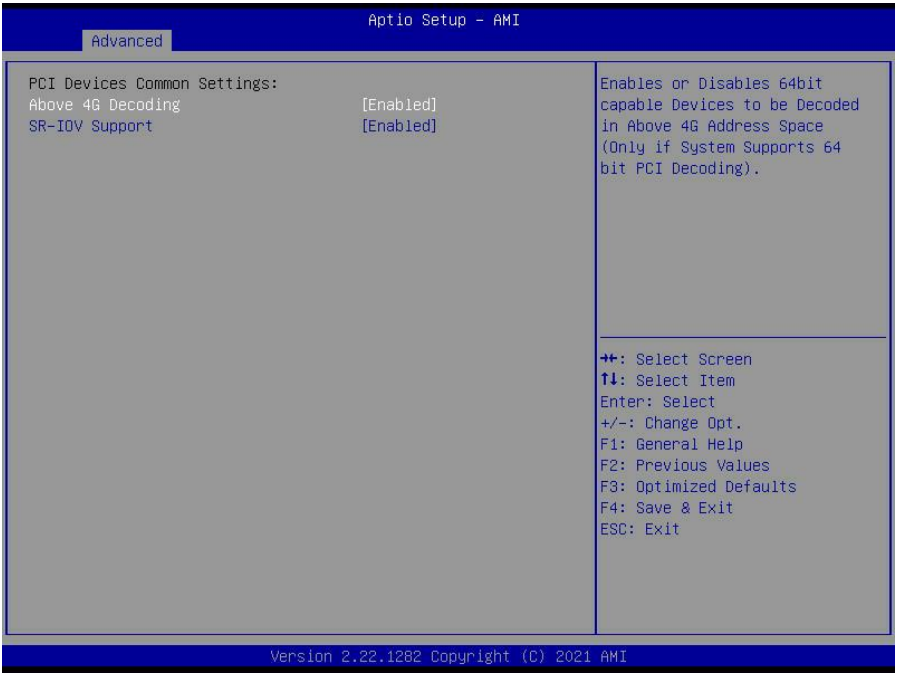
115200 / 9600 / 19200 / 38400 / 57600

Flow Control EMS
Flow Control can prevent data loss from buffer overflow. When sending data, if the receiving buffers are full, a ‘stop’ signal can be sent to stop the data flow. Once the buffers are empty, a ‘start’ signal can be sent to 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.

3.3.8 PCI Subsystem



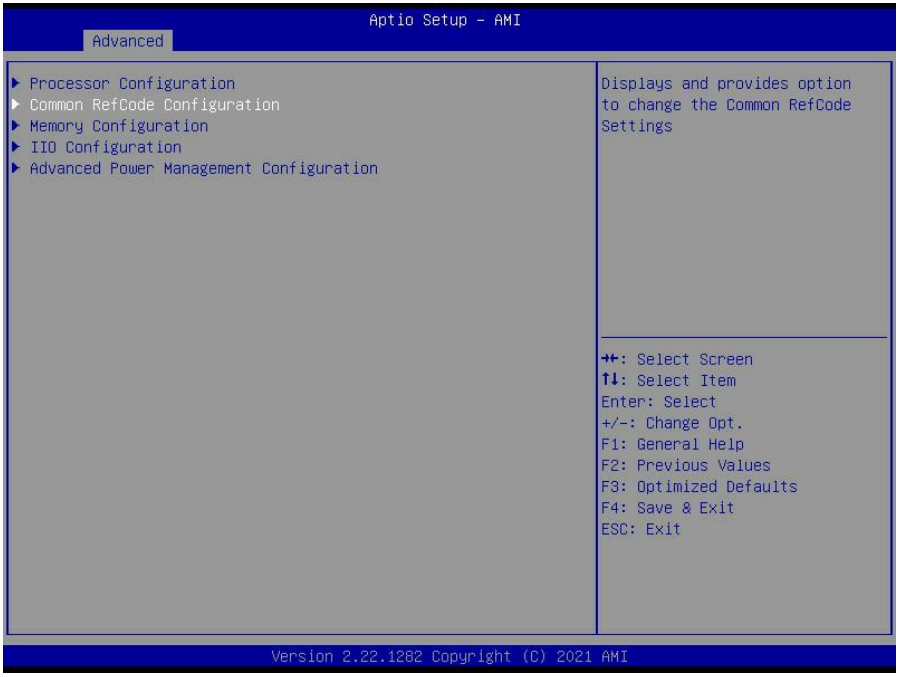
Above 4G Decoding
Enables or Disables 64bit capable Devices to be decoded in Above 4G Address Space(Only if System supports 64 bit PCI Decoding).

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

3.3.9 Socket Configuration Subsystem



Processor Configuration
Displays and provides option to change the Processor Settings.

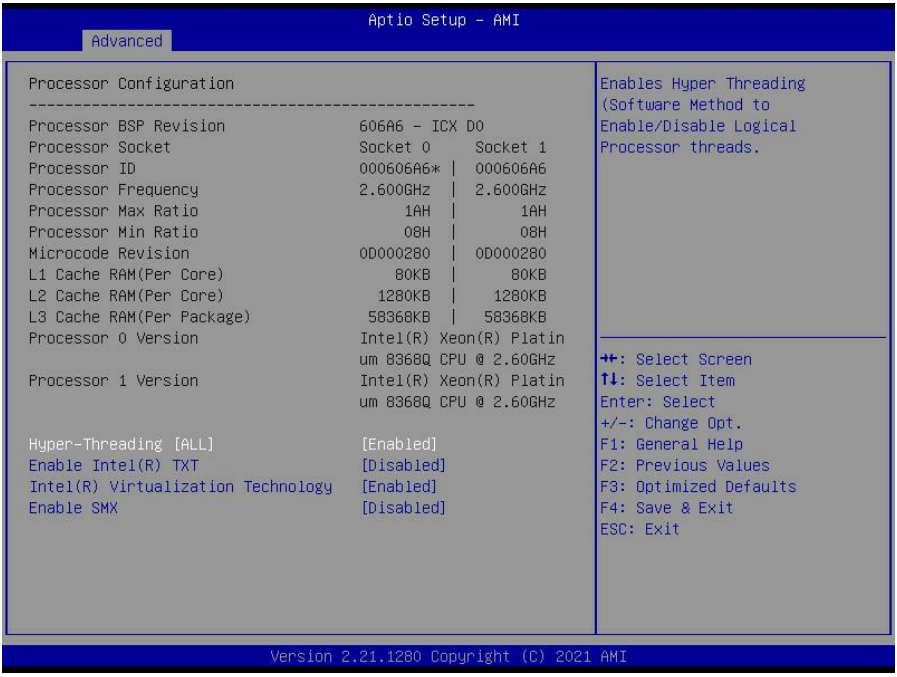
Common RefCode Configuration
Displays and provides option to change the Common RefCode Settings.

Memory Configuration
Displays and provides option to change the Memory Settings.

IIO Configuration
Displays and provides option to change the IIO Settings.

Advanced Power Management Configuration
Displays and provides option to change the Power Management Settings.

3.3.9.1 Processor Configuration



Hyper-Threading [All]
Enables Hyper Threading (Software Method to Enable/Disabled Logical Processor threads).

Disabled / **Enabled**

Enable Intel® TXT
Enable Intel® TXT.

Disabled / Enabled

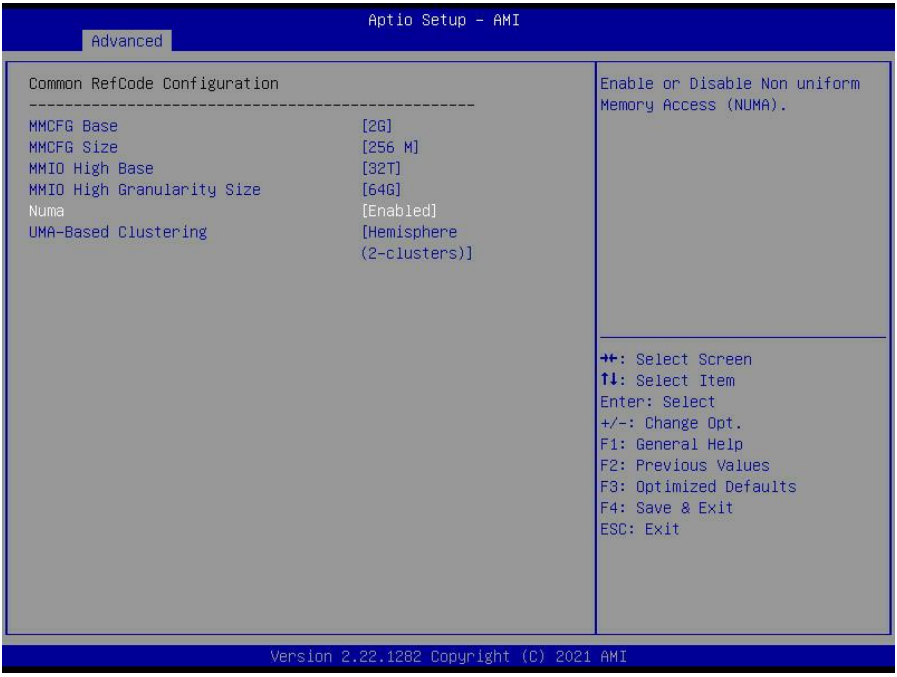
Intel® Virtualization Technology
Intel® Virtualization Technology allows a platform to run multiple operating systems and applications in independent partitions. Note: A change to this option requires the system to be powered off and then back on before the setting takes effect.

Disabled / **Enabled**

Enable SMX
Enables Safer Mode Extensions.

Disabled / Enabled

3.3.9.2 Common RefCode Configuration



MMCFG Base
Select MMCFG Base
1G / 1.5G / 1.75G / **2G** / 2.25G / 3G / Auto

MMCFG Size
Select MMCFG Size
64M / 128M / **256M** / 512M / 1G / 2G / Auto

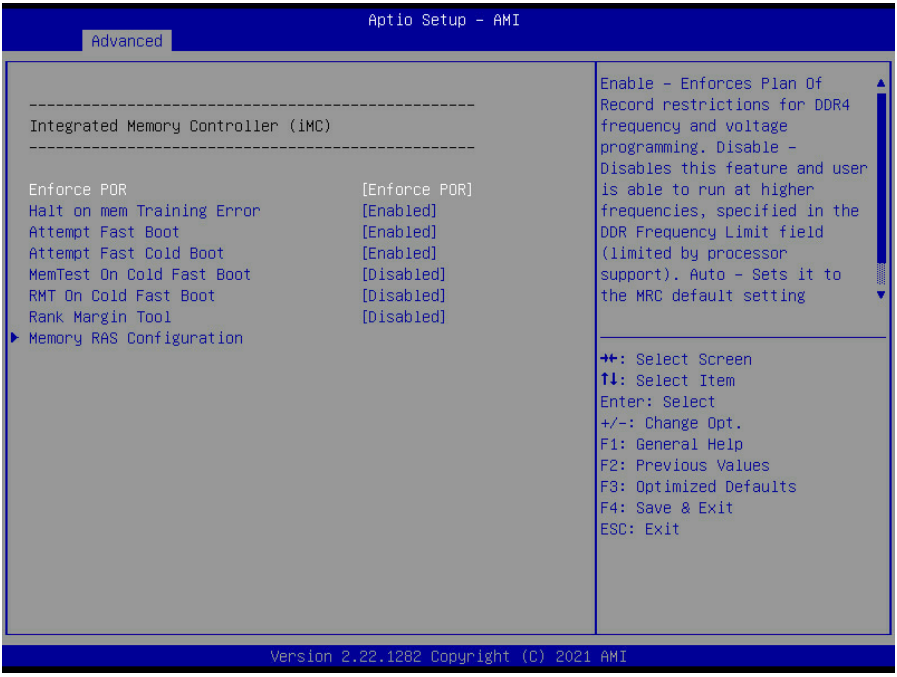
MMIO High Base
Select MMIO High Base.
56T / 40T / **32T** / 24T / 16T / 4T / 3T / 2T / 1T

MMIO High Granularity Size
Selects the allocation size used to assign mmioh resources. Total mmioh space can be up to 32xgranularity.
Per stack mmioh resource assignments are multiples of the granularity where 1 unit per stack is the default allocation.
1G / 4G / 16G / **64G** / 256G / 1024G

Numa
Enable or Disable Non uniform Memory Access (NUMA).
Disabled / **Enabled**

UMA-Based Clustering
UMA Based Clustering options include Disable (ALL2ALL), Hemisphere (2 cluster, not supported on ICX).These option are only valid when SNC is disabled. If SNC is enabled, UMA-Based Clustering is automatically disabled by BIOS.
Disable (All2All) / **Hemisphere (2-clusters)**

3.3.9.3 Memory Configuration



Enforce POR
Enable --- Enforces Plan Of Record restrictions for DDR4 frequency and voltage programming. Disable --- disables this feature and user is able to run at higher frequencies, specified in the DDR Frequency Limit field (limited by processor support). Auto --- Sets it to the MRC default setting; current default is Enable.
Enforce POR / Disabled

Halt on mem Training Error
Halt on mem Training Error Disable/Enable
Disabled **/ Enabled**

Attempt Fast Boot
Enable – Portions of memory reference code will be skipped when possible to increase boot speed on warm boots.
Disable – Disables this feature.
Auto– sets it to the MRC default setting; current default is Disable.
Disabled **/ Enabled**

Attempt Fast Cold Boot
Enable – Portions of memory reference code will be skipped when possible to increase boot speed on warm boots.
Disable – Disables this feature.
Auto– sets it to the MRC default setting; current default is Disable.
Disabled **/ Enabled**

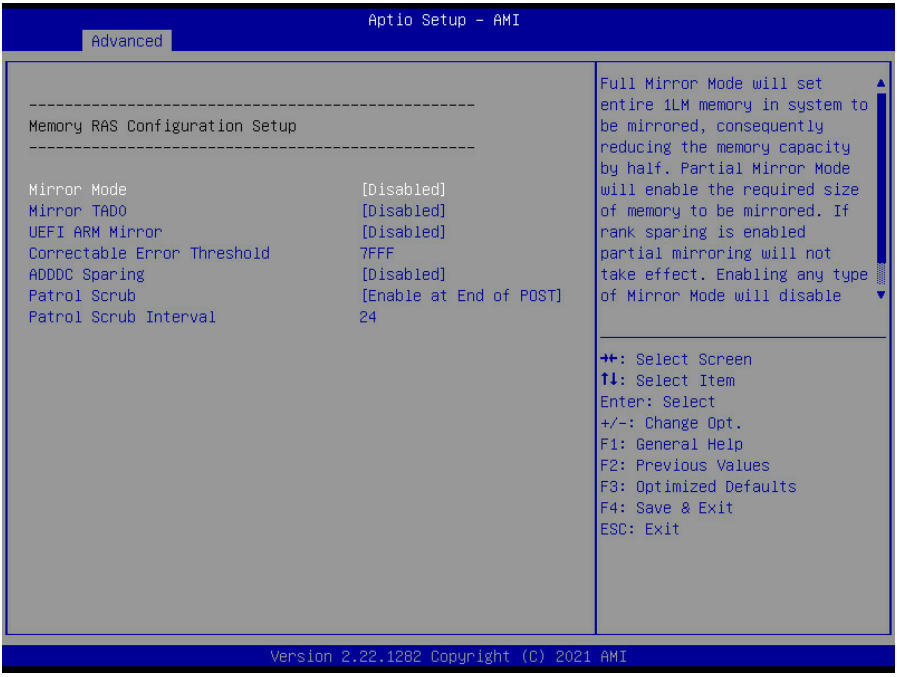
MemTest On Cold Fast Boot
Enable – Enables memory test during cold fast boot.
Disable – Disables this feature.
AUTO – Sets it to the MRC default setting; current default is Disable.
Disabled / Enabled

RMT On Cold Fast Boot
Enable – Enables Rank Margin Tool on Cold Fast Boot.
Disable – Disables this feature.
Auto – Sets it to the MRC default setting; Should be disabled in production release.
Disabled / Enabled

Rank Margin Tool
Enable – Enables the legacy rank margin tool to run after DDR4 memory training.
Disable– Disables this feature. Current default is Enable. Should be disabled in production releases.
Disabled / Enabled

Memory RAS Configuration
Displays and provides option to change the Memory RAS Settings

3.3.9.3.1 Memory RAS Configuration



Mirror Mode
Full Mirror Mode will set entire 1LM memory in system to be mirrored, consequently reducing the memory capacity by half. Partial Mirror Mode will enable the required size of memory to be mirrored. If rank sparing is enabled partial mirroring will not take effect. Enabling any type of Mirror Mode will disable XPT Prefetch.

Disabled / Full Mirror Mode / Partial Mirror Mode

Mirror TAD0
Enable Mirror on entire memory for TAD0.

Enabled / **Disabled**

UEFI ARM Mirror
Imitate behavior of UEFI based Address Range Mirror with Setup option

Enabled / **Disabled**

Correctable Error Threshold
Correctable Error Threshold (0x01 – 0x7fff) used for sparing, tagging, and leaky bucket.

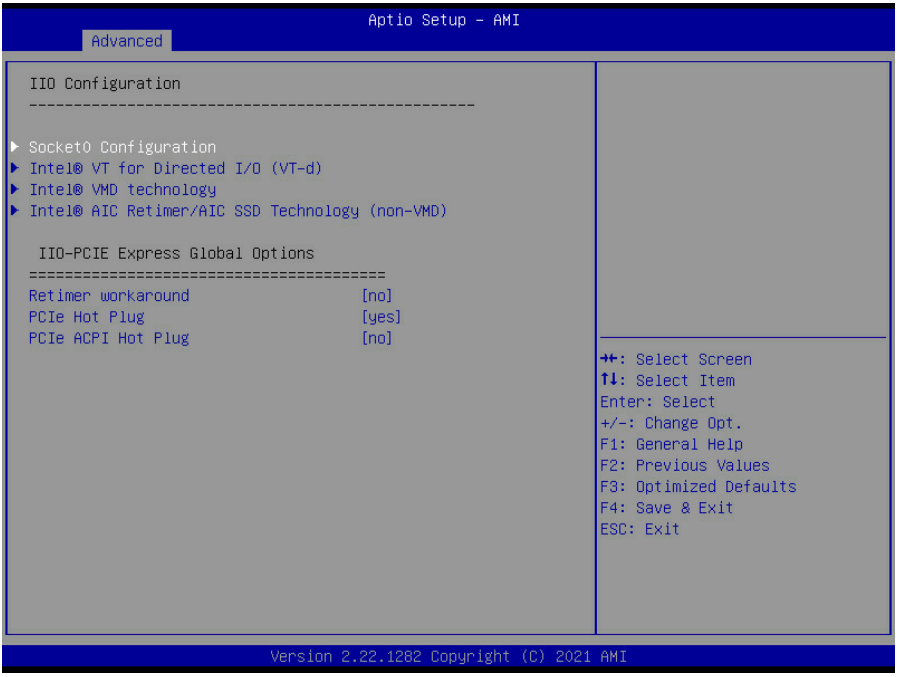
7FFF

ADDDC Sparing
Enable/Disable ADDDC Sparing
Enabled / **Disabled**

Patrol Scrub
Enable/Disable Patrol Scrub.
Disabled / Enabled / **Enable at End of POST**

Patrol Scrub Interval
Selects the number of hours (1-24) required to complete full scrub. A value of zero means auto!
24

3.3.9.4 IIO Configuration



Socket0 Configuration
Press <Enter> to bring up the Socket0 Configuration

Intel® VT for Directed I/O (VT-d)
Press <Enter> to bring up the Intel® VT for Directed I/O (VT-d) Configuration menu.

Intel® VMD Technology
Press <Enter> to bring up the Intel® VMD for Volume Management Device Configuration menu.

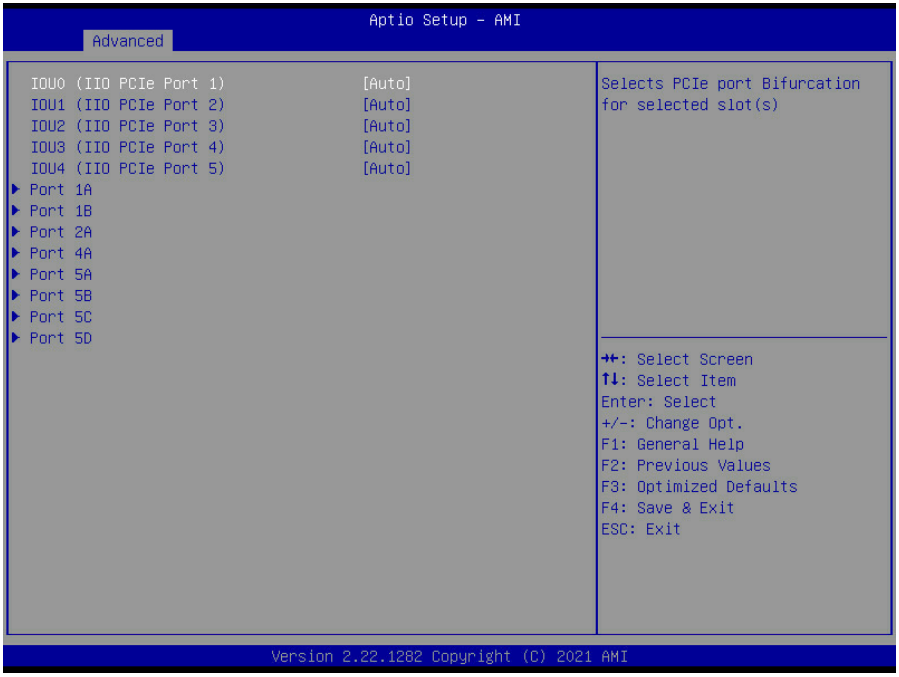
Intel@ AIC Retimer/AIC SSD Technology (non-VMD)
Press<Enter> to bring up the Intel@ AIC Retimer/AIC SSD Configuration menu.

Retimer workaround
Enable or disable the retime workaround
no / yes

PCIe Hot Plug
Enable/Disable PCIe Hot Plug globally.
no / **yes**

PCIe ACPI Hot Plug
Enable/Disable PCIe ACPI Hot Plug globally, or allow per-port control. When Disabled, MSI is generated on HP event. When enabled, _HPGPE message is generated.
no / yes / Per individual port

3.3.9.4.1 Socket0 Configuration



IOU0 (IIO PCIe Port 1)
Selects PCIe port Bifurcation for selected slot(s).
Auto / x4x4x4x4 / x4x4x8 / x8x4x4 / x8x8 / x16

IOU1 (IIO PCIe Port 2)
Selects PCIe port Bifurcation for selected slot(s).
Auto / x4x4x4x4 / x4x4x8 / x8x4x4 / x8x8 / x16

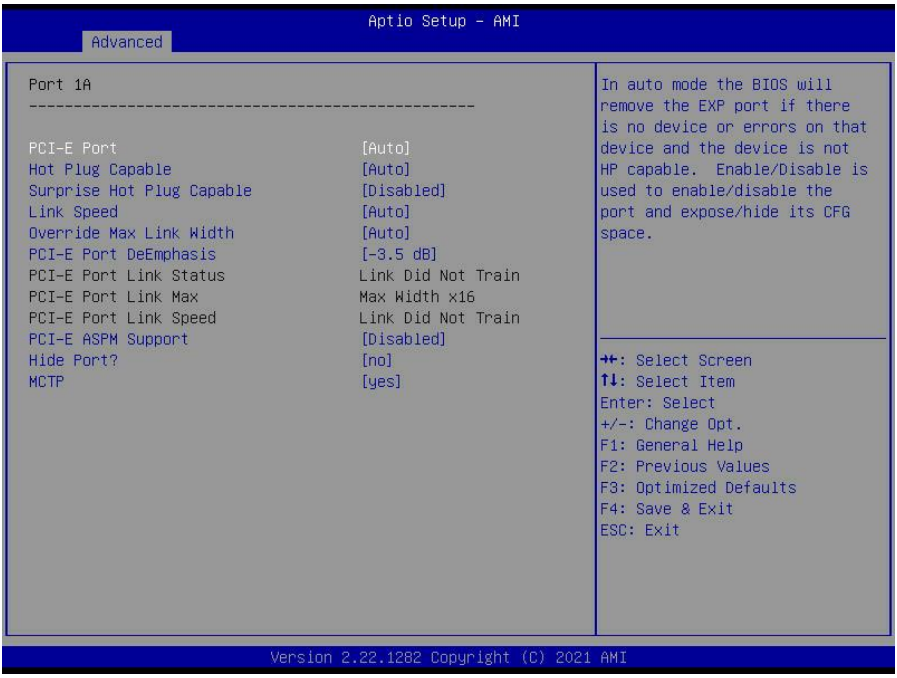
IOU2 (IIO PCIe Port 4)
Selects PCIe port Bifurcation for selected slot(s).
Auto / x4x4x4x4 / x4x4x8 / x8x4x4 / x8x8 / x16

IOU3 (IIO PCIe Port 4)
Selects PCIe port Bifurcation for selected slot(s).
Auto / x4x4x4x4 / x4x4x8 / x8x4x4 / x8x8 / x16

IOU4 (IIO PCIe Port 5)
Selects PCIe port Bifurcation for selected slot(s).
Auto / x4x4x4x4 / x4x4x8 / x8x4x4 / x8x8 / x16

Port 1A/1B/2A/4A/5A/5B/5C/5D
Settings related to PCI Express Ports (0/1A/1B/1C/1D/2A/2B/2C/2D/3A/3B/3C/3D/4A/4B/4C/4D/5A/5B/5C/5D).

3.3.9.5.1.1 Port 1A/1B/2A/4A/5A/5B/5C/5D



PCI-E Port
In auto mode the BIOS will remove the EXP port if there is no device or errors on that device and the device is not HP capable. Disable is used to disable the port and hide its CFG space.

Auto / Disabled / Enabled

Hot Plug Capable
This option specifies if the link is considered Hot Plug capable.

Auto / Disabled / Enabled

Surprise Hot Plug Capable
This option specifies if the link is considered Hot Plug capable.

Disabled / Enabled

Link Speed
Choose Link Speed for this PCIe port.
Auto / Gen1 (2.5 GT/s) / Gen2 (5 GT/s) / Gen3 (8 GT/s) / Gen4 (16 GT/s)

Override Max Link Width
Override the max link width that was set by bifurcation.
Auto / x1 / x2 / x4 / x8 / x16

PCIE Port DeEmphasis
De-Emphasis control (LNKCON2[6]) for this PCIe port.
-6.0 dB / **-3.5 dB**

PCI-E ASPM Support
This option enables/disables the ASPM (L1) support for the downstream devices.
Auto / **L1 Only** / L0s only / Disabled

Hide Port?
User can force to hide this root port from OS.
no / yes

MCTP
Enable/Disable MCTP
no / **yes**

3.3.9.4.2 Intel® VT for Directed I/O (VT-d)

Intel® VT for Directed I/O (VT-d)
Enable/Disable Intel® Virtualization Technology for Directed I/O (VT-d) by reporting the I/O device assignment to VMM through DMAR ACPI Tables.

Enabled / Disabled

DMA Control Opt-In Flag
Enable/Disable DMA_CTRL_PLATFORM_OPT_IN _FLAG in DMAR table in ACPI. Not compatible with Direct Device Assignment (DDA).

Enabled / **Disabled**

Interrupt Remapping
Enable/Disable VT_D Interrupt Remapping Support

Auto / Enabled / Disabled

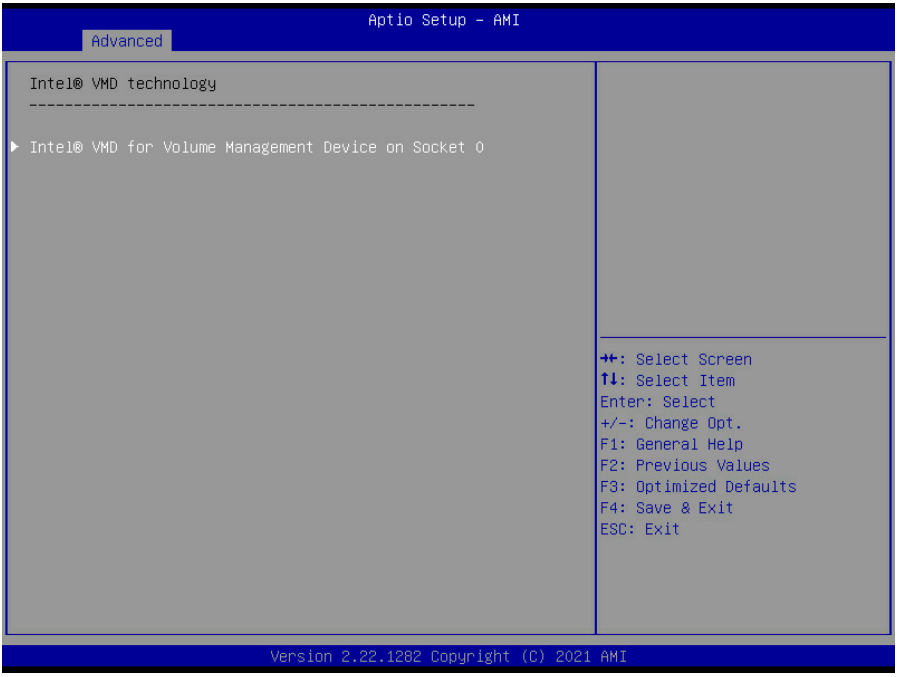
X2APIC Opt Out
Enable/Disable X2APIC_OPT_OUT bit

Enabled / **Disabled**

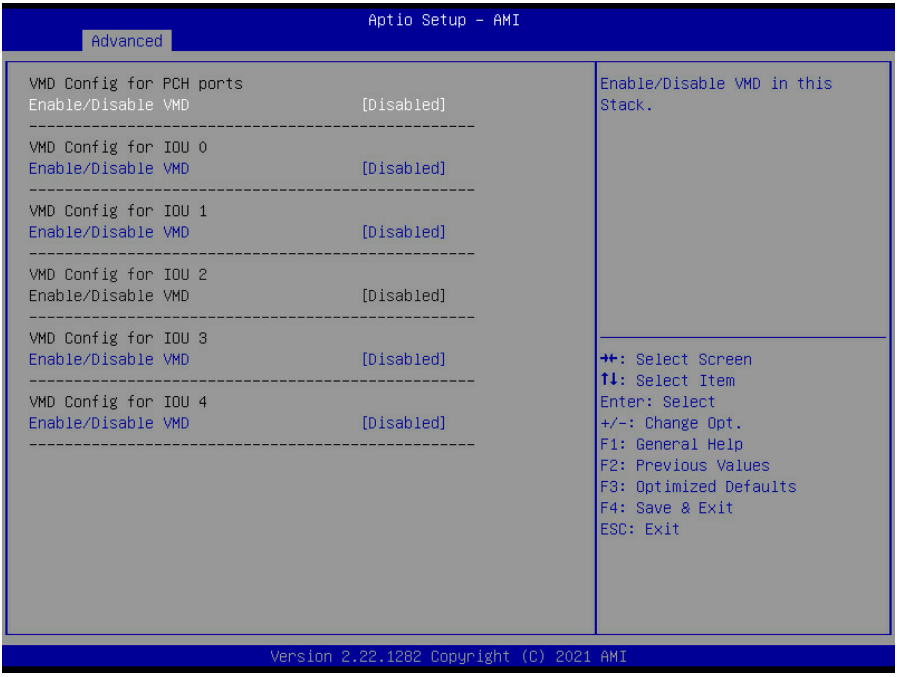
Pre-boot DMA Protection
Enable DMA Protection in Pre-boot environment (If DMAR table is installed in DXE and If VTD_INFO_PPI is installed in PEI.)

Enabled / **Disabled**

3.3.9.4.3 Intel® VMD Technology



3.3.9.4.3.1 Intel VMD for Volume Management for Socket 0



VMD Config for PCH ports
Enable/Disable VMD in this Stack.
Disabled / Enabled

VMD Config for IOU0
Enable/Disable VMD in this Stack.
Disabled / Enabled

VMD Config for IOU1
Enable/Disable VMD in this Stack.
Disabled / Enabled

VMD Config for IOU2
Enable/Disable VMD in this Stack.
Disabled / Enabled

VMD Config for IOU3
Enable/Disable VMD in this Stack.
Disabled / Enabled

VMD Config for IOU4
Enable/Disable VMD in this Stack.
Disabled / Enabled

3.3.9.4.4 Intel AIC Retimer/AIC SSD Technology Configuration

Intel AIC Retimer/AIC SSD HW at Stack1
Announce Intel AIC Retimer/AIC SSD HW at stack1(Port1A-1D).
Override IOU0 bifurcation if required
Disabled / Enabled

Intel AIC Retimer/AIC SSD HW at Stack2
Announce Intel AIC Retimer/AIC SSD HW at stack2(Port2A-2D).
Override IOUx bifurcation if required
Disabled / Enabled

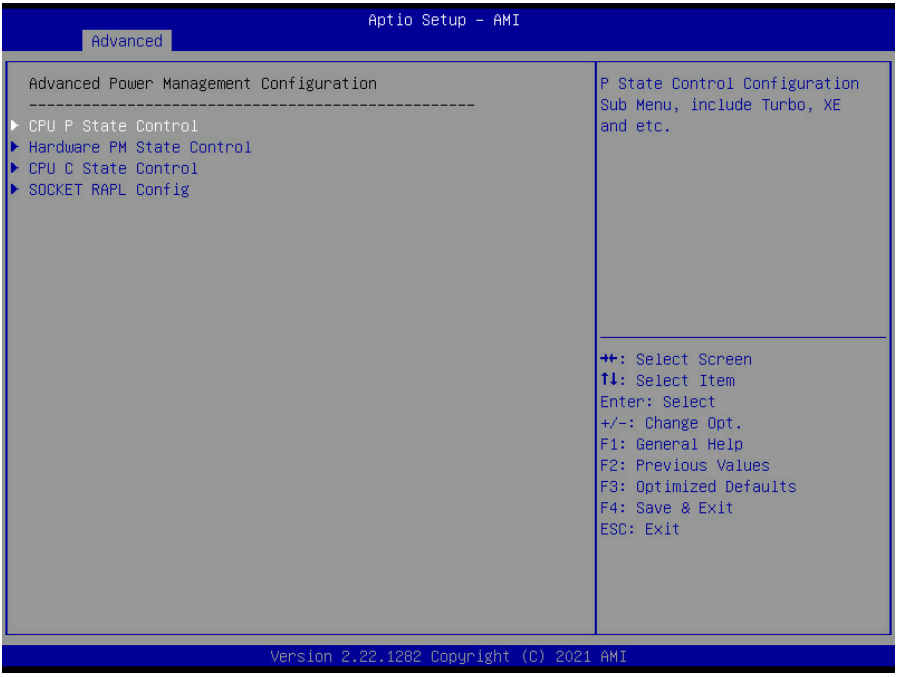
Intel AIC Retimer/AIC SSD HW at Stack3
Announce Intel AIC Retimer/AIC SSD HW at stack3(Port3A-3D).
Override IOUx bifurcation if required
Disabled / Enabled

Intel AIC Retimer/AIC SSD HW at Stack4
Announce Intel AIC Retimer/AIC SSD HW at stack4(Port4A-4D).

Override IOUx bifurcation if required
Disabled / Enabled

Intel AIC Retimer/AIC SSD HW at Stack5
Announce Intel AIC Retimer/AIC SSD HW at stack5(Port5A-5D).
Override IOUx bifurcation if required
Disabled / Enabled

3.3.9.5 Advanced Power Management Configuration



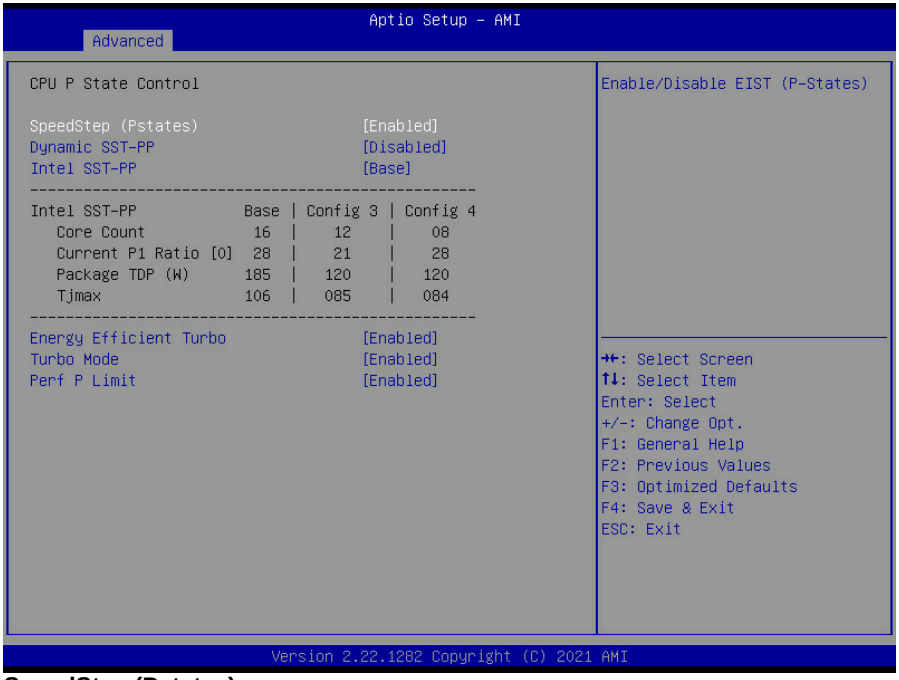
CPU P State Control
P State Control Configuration Sub Menu, include Turbo, XE and ete.

Hardware PM State Control
Hardware P-State setting

CPU C State Control
CPU C State setting.

SOCKET RAPL Config
SOCKET RAPL Configuration Sub Menu – TURBO_POWER_LIMIT CSR & MSR

3.3.9.5.1 CPU P State Control Configuration



SpeedStep (Pstates)
Enable/Disable EIST (P-States).
Disabled / **Enabled**

Dynamic SST-PP
Support Dynamic SST-PP Select.
Disabled / **Enabled**

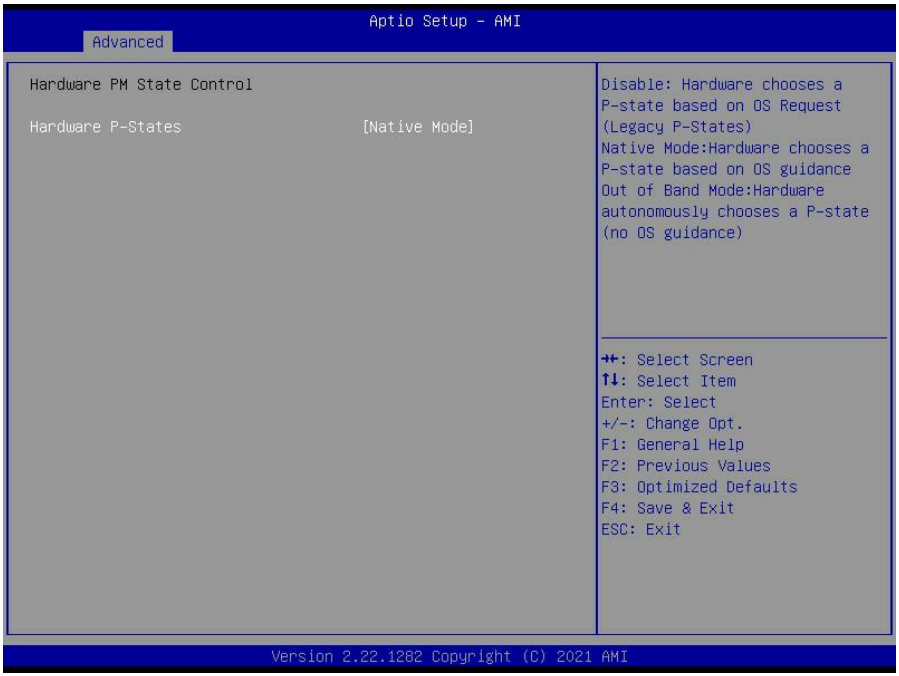
Intel SST-PP
Intel SST-PP Select allows user to choose from up to two additional base frequency conditions.
Base / Config 3 / Config 4

Energy Efficient Turbo
Energy Efficient Turbo Disable, MSR 0x1FC [19].
Enabled / Disabled

Turbo Mode
Enable/Disable processor Turbo Mode (requires EMTTM enabled too).
Disabled / **Enabled**

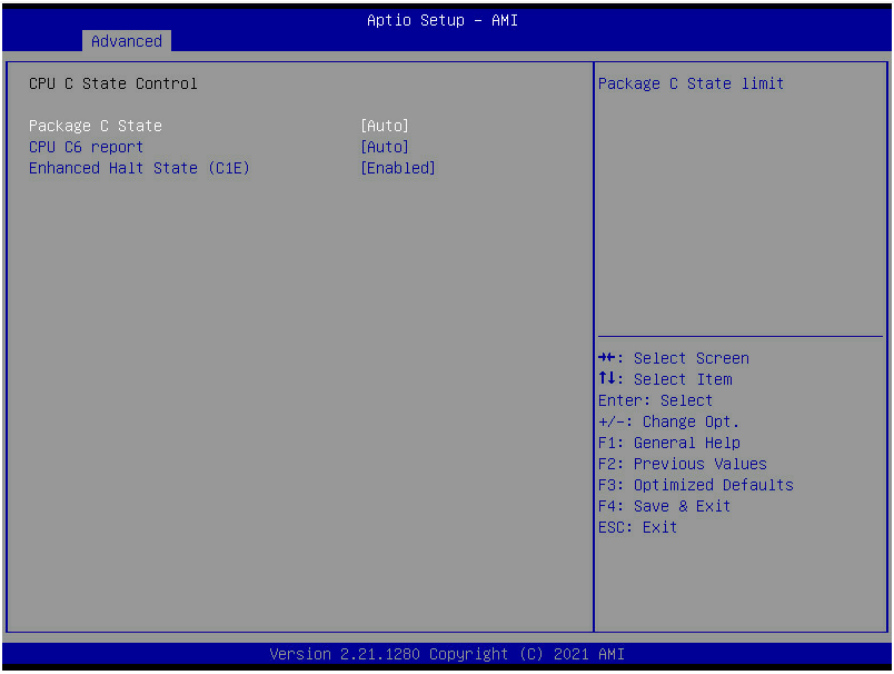
Perf P Limit
Enable/Disable Performance P-Limit.
Disabled / **Enabled**

3.3.9.5.2 Hardware PM State Control



Hardware P-States
Disable: Hardware choose a P-state based on OS Request (Legacy P-States)
Native Mode: Hardware choose a P-state based on OS guidance Out of Band Mode: Hardware autonomously choose a P-state (no OS guidance)
Disabled / **Native Mode** / Out of Band Mode / Native Mode with No Legacy Support

3.3.9.5.3 CPU C State Control

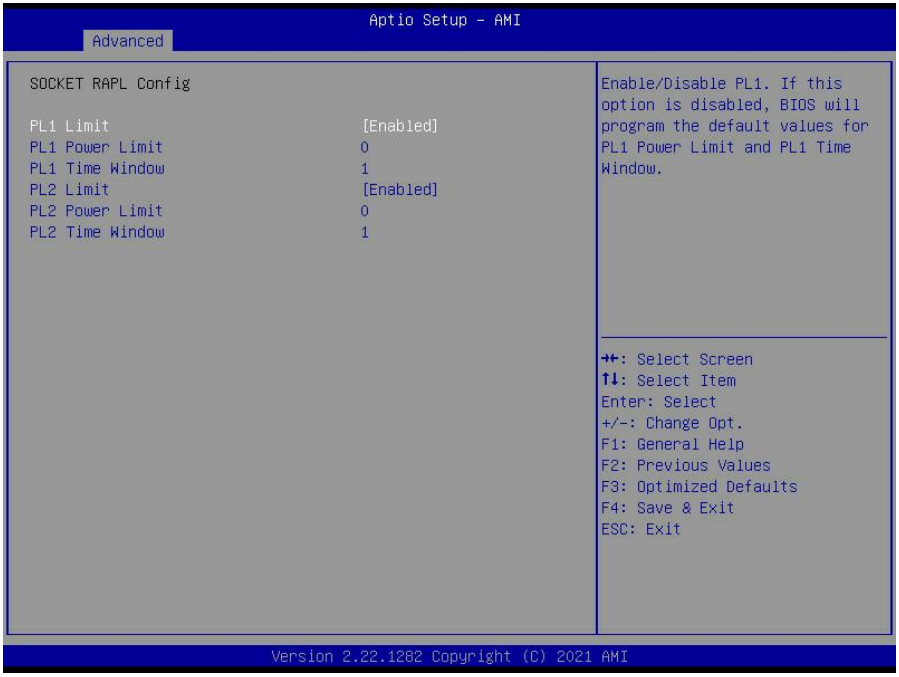


Package C State
Package C State limit.
C0/C1 state / C2 state / C6 (non Retention) state / **Auto**

CPU C6 report
Enable/Disable CPU C6 (ACPI C3) report to OS.
Disabled / Enabled / **Auto**

Enhanced Halt State (C1E)
Core C1E auto promotion Control. Take effect after reboot.
Disabled / **Enabled**

3.3.9.5.4 SOCKET RAPL Configuration



PL1 Limit
Enable/Disable PL1. If this option is disabled, BIOS will program the default values for PL1 Power Limit and PL1 Time Window.

Disabled / **Enabled**

PL1 Power Limit
PL1 Power Limit in watts. The value may vary from 0 to Fused Value. If the value is 0, the fused value will be programmed. A value greater than fused TDP value will not be programmed.

0

PL1 Time Window
PL1 value in seconds. The value may vary from 0 to 448. Indicates the time window over which TDP value should be maintained. If the value is 0, the fused value will be programmed.

1

PL2 Limit
Enable/Disable PL2. If this option is disabled, BIOS will program the default values for PL2 Power Limit and PL2 Time Window.

Disabled / **Enabled**

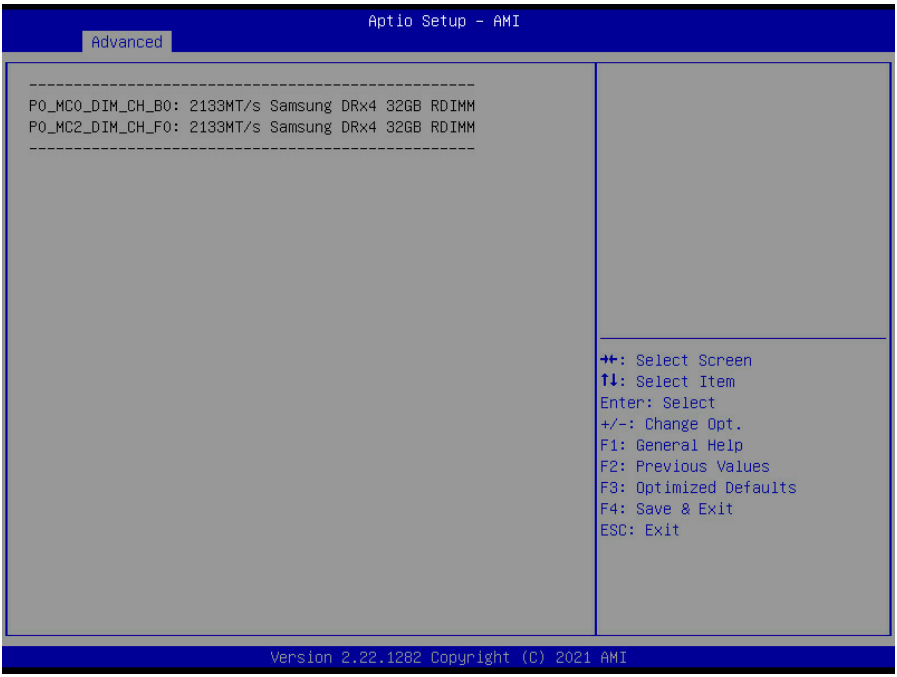
PL2 Power Limit
PL2 Power Limit in Watts. The value may vary from 0 to Fused Value. If the value is 0, BIOS programs 125%*TDP

0

PL2 Time Window
PL2 value in seconds. The value may vary from 0 to 448. Indicates the time window over which TDP value should be maintained. If the value is 0, the fused value will be programmed.

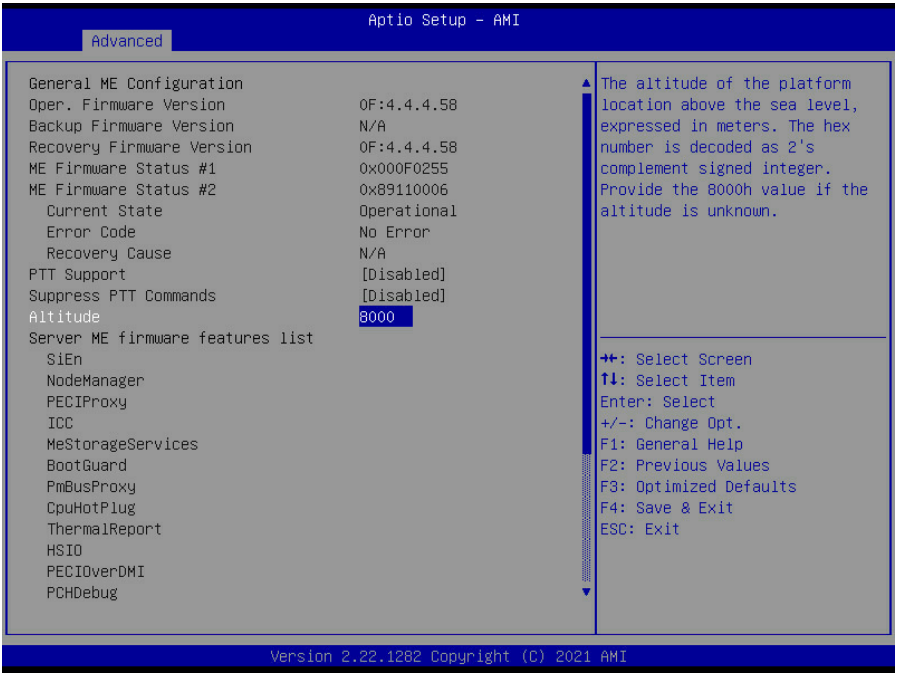
1

3.3.10 Memory Topology



Read only.

3.3.11 Server ME Configuration



Altitude

The altitude of the platform location above the sea level, expressed in meters. The hex number is decoded as 2's complement signed integer. Provide the 8000h value if the altitude is unknown.

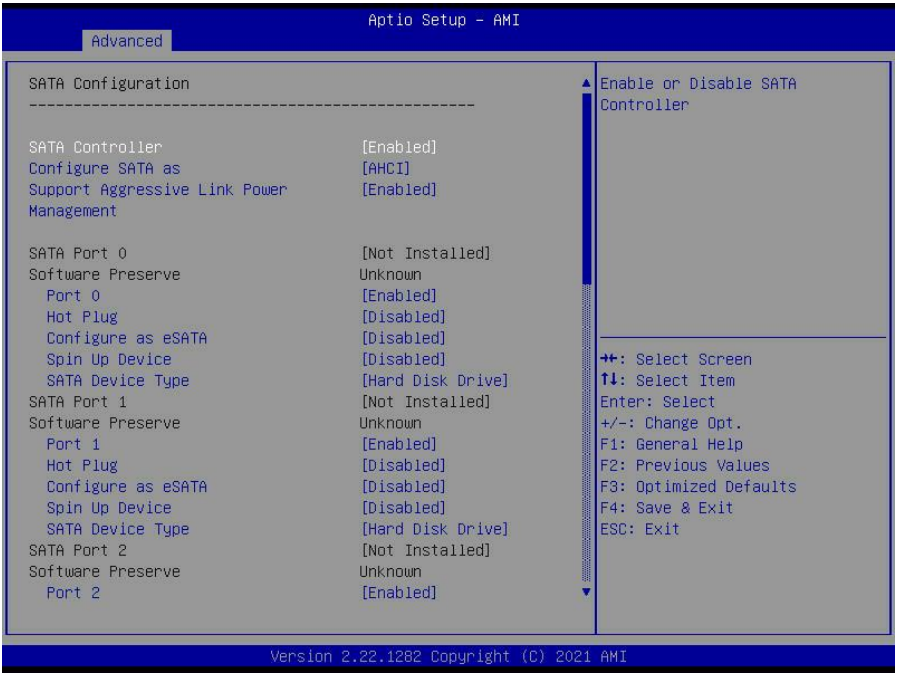
8000

3.3.12 SATA Configuration

SATA Configuration
SATA devices and settings.

SSATA Configuration
sSATA devices and settings.

3.3.12.1 SATA Configuration



SATA Controller
Enable or Disable SATA Controller.
Disabled / **Enabled**

Configure SATA as
Identify the SATA port is connected to Solid State Drive or Hard Disk Drive.
AHCI / RAID

Support Aggressive Link Power Management
Enables/Disables SALP.
Disabled / **Enabled**

Port 0/1/2/3/4/5/6/7
Enable or Disable SATA Port.
Disabled / **Enabled**

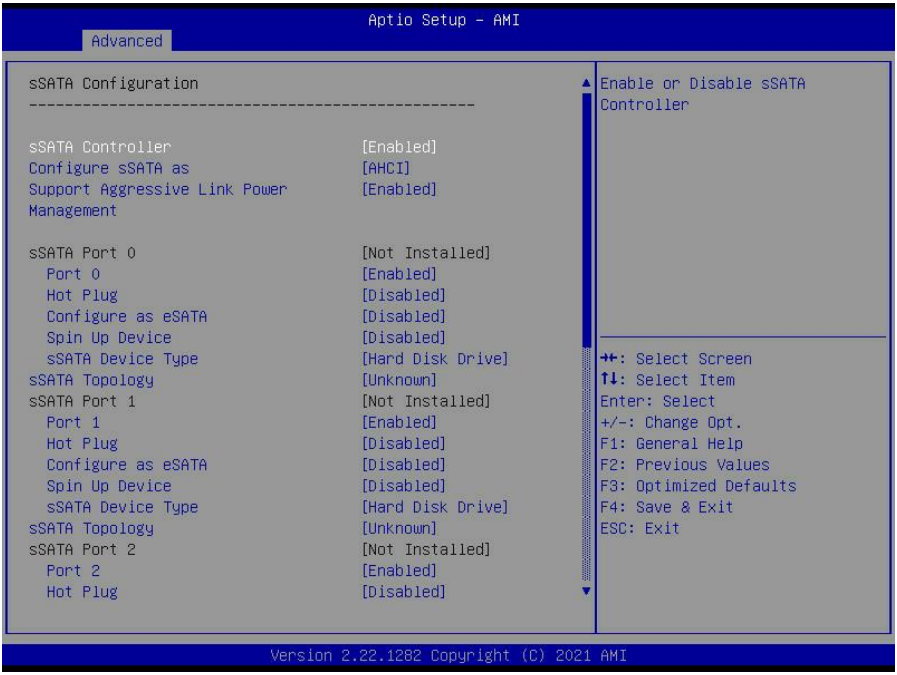
Hot Plug
Designates this port as Hot Pluggable.
Disabled / Enabled

Configure as eSATA
Configures port as External SATA (eSATA).
Disabled / Enabled

Spin Up Device
If enabled for any of ports Staggered Spin Up will be performed and only the drives witch have this option enabled will spin up at boot. Otherwise all drives spin up at boot.
Disabled / Enabled

SATA Device Type
Identify the SATA port is connected to Solid State Drive or Hard disk Drive.
Hard Disk Drive / Solid State Drive

3.3.12.2 sSATA Configuration



sSATA Controller
Enable or Disable sSATA Controller.
Disabled / **Enabled**

Configure sSATA as
Identify the sSATA port is connected to Solid State Drive or Hard Disk Drive.
AHCI / RAID

Support Aggressive Link Power Management
Enables/Disables SALP.
Disabled / **Enabled**

Port 0/1/2/3/4/5
Enable or Disable sSATA Port.
Disabled / **Enabled**

Hot Plug
Designates this port as Hot Pluggable.
Disabled / Enabled

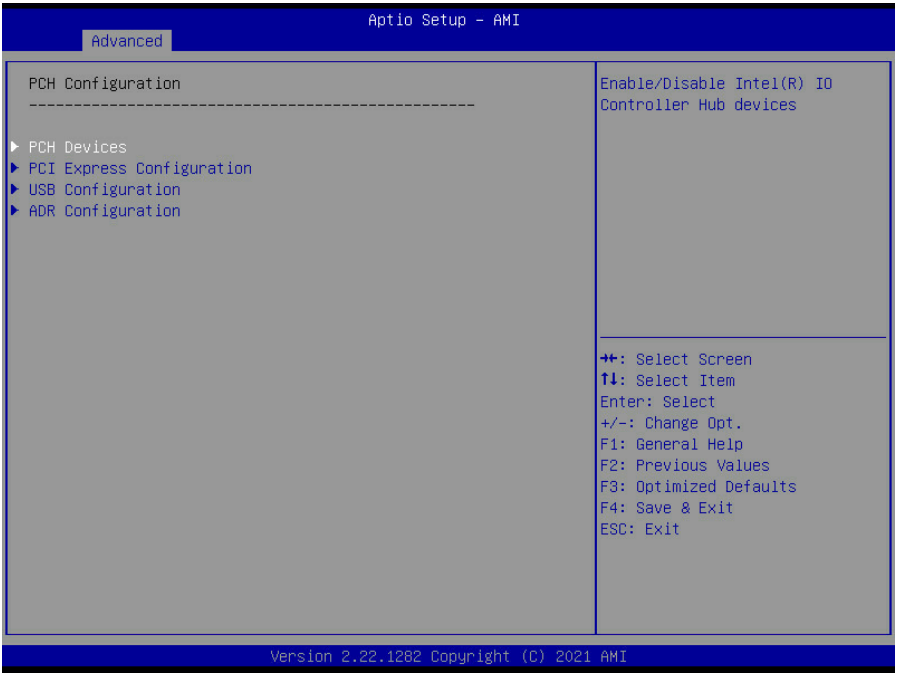
Configure as eSATA
Configures port as External SATA (eSATA).
Disabled / Enabled

Spin Up Device
If enabled for any of ports Staggered Spin Up will be performed and only the drives witch have this option enabled will spin up at boot. Otherwise all drives spin up at boot.
Disabled / Enabled

sSATA Device Type
Identify the SATA port is connected to Solid State Drive or Hard disk Drive.
Hard Disk Drive / Solid State Drive

sSATA Topology
Identify the Secondary SATA Topology if it is Default or ISATA or Flex or DirectConnect or M2.
Unknown / ISATA / Direct Connect / Flex / M2

3.3.13 PCH Configuration



PCH Devices
Enable/Disable Intel® IO Controller Hub devices.

PCI Express Configuration
PCI Express Configuration settings.

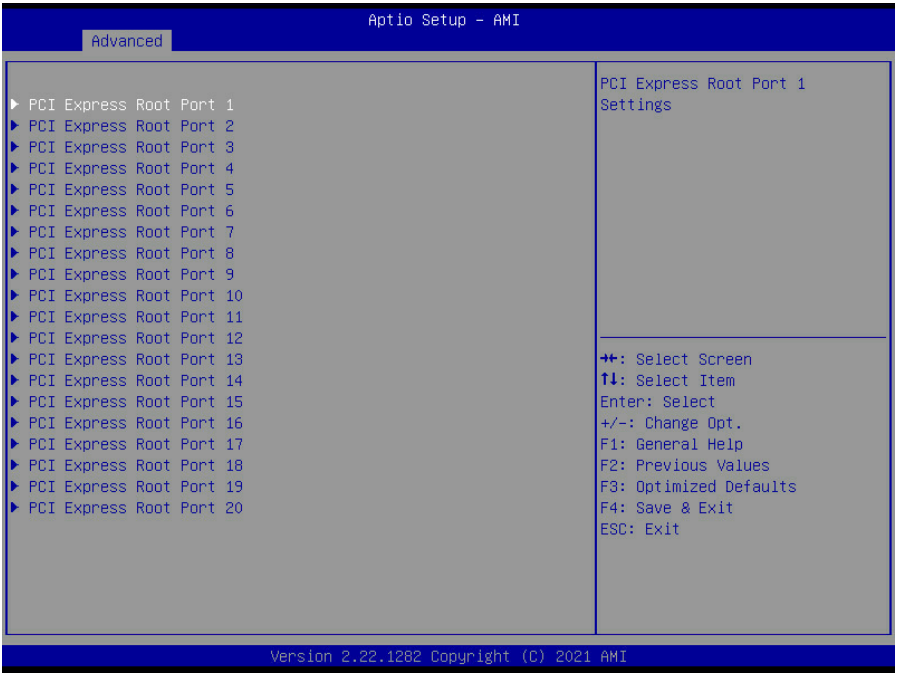
USB Configuration
USB Configuration Settings.

ADR Configuration
Automatic DIMM Refresh (ADR) Configuration.

3.3.13.1 PCH Devices

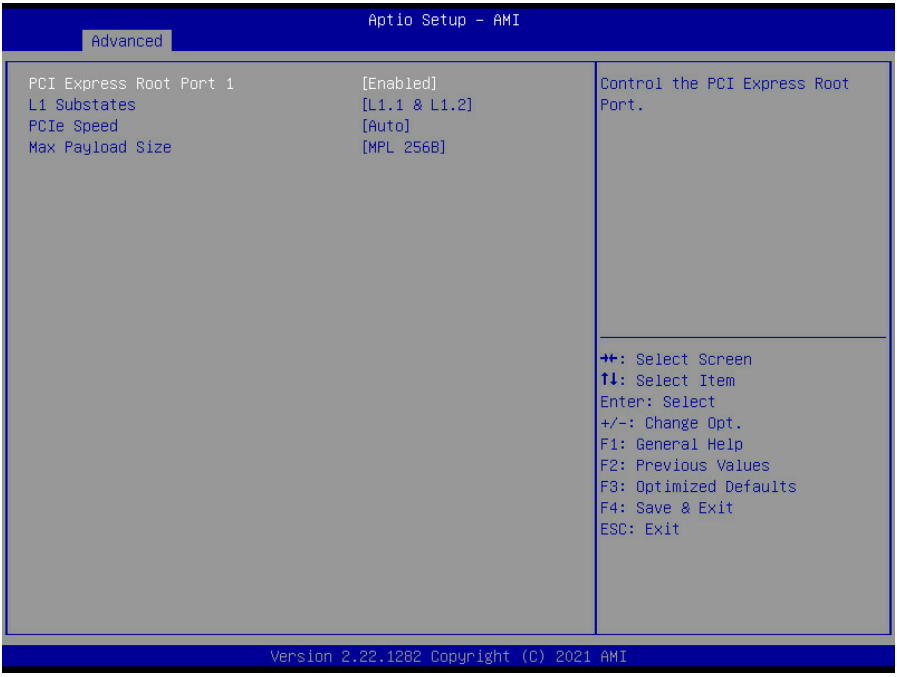
PCH state after G3
Select S0/S5 for ACPI state after a G3.
S0 / S5 / **Leave power state unchanged**

3.3.13.2 PCI Express Configuration



PCI Express Root Port 1~20
PCI Express Root Port 1~20 Settings.

3.3.13.2.1 PCI Express Root Port 1 ~ 20



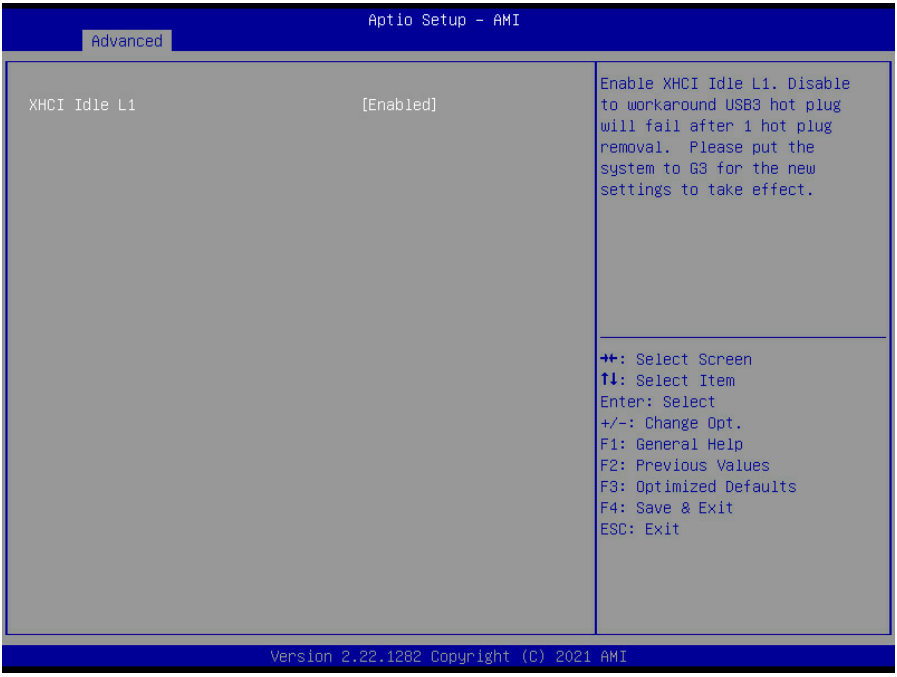
PCI Express Root Port 1~20
Control the PCI Express Root Port.
Disabled / **Enabled**

L1 Substates
PCI Express L1 Substates settings.
Disabled / L1.1 / L1.2 / **L1.1 & L1.2**

PCIe Speed
Configure PCIe Speed.
Auto / Gen1 / Gen2 / Gen3

Max Payload Size
PCIE Max Payload Size Selection.
MPL128B / **MPL256B**

3.3.13.3 USB Configuration

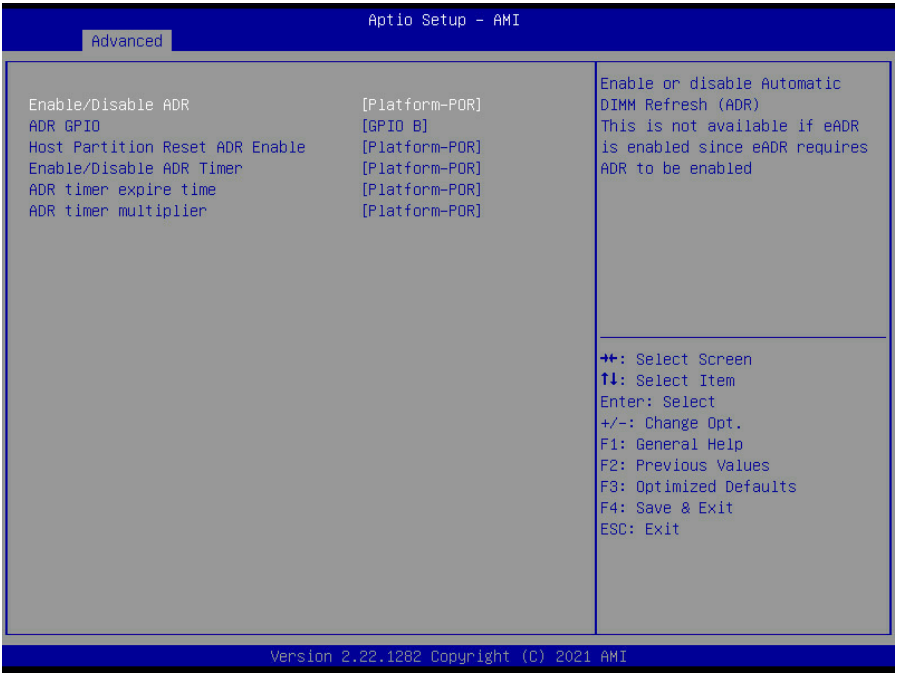


XHCI Idle L1

Enabled XHCI Idle L1. Disabled to workaround USB3 hot plug will fail after 1 hot plug removal. Please put the system to G3 for the new settings to take effect.

Disabled **/ Enabled**

3.3.13.4 ADR Configuration



Enable/Disable ADR
Enable or disable Automatic DIMM Refresh (ADR). This is not available if eADR is enabled since eADR requires ADR to be enabled.

Platform-POR / Enabled / Disabled

ADR GPIO
Select between GPIO_B or GPIO_C.

GPIO_B / GPIO_C

Host Partition Reset ADR Enable
Enables/Disables ADR on Host Partition Reset.

Platform-POR / Enabled / Disabled

Enable/Disable ADR Timer
Held-off for DEBUG PURPOSES ONLY!.

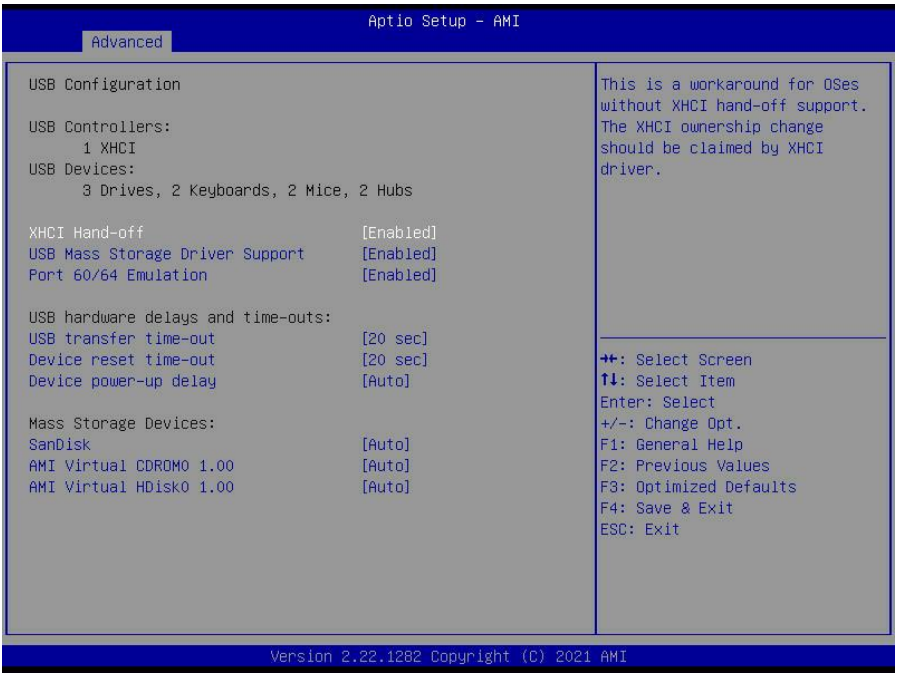
Platform-POR / Enabled / Held-off

ADR timer expire time
Select proper ADR timer value: 25uS, 50uS, 100uS or 0.

Platform-POR / 25 uS / 50 uS / 100 uS / 0 us

ADR timer multiplier
Select proper ADR timer multiplier: x1, 8, 24, 40, 56, 64, 72, 80, 88, 96.
Platform-POR / x1 / x8 / x24 / x40 / x56 / x64 / x72 / x80 / x88 / x96

3.3.14 USB Configuration



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

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

Port 60/64 Emulation
Enables 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

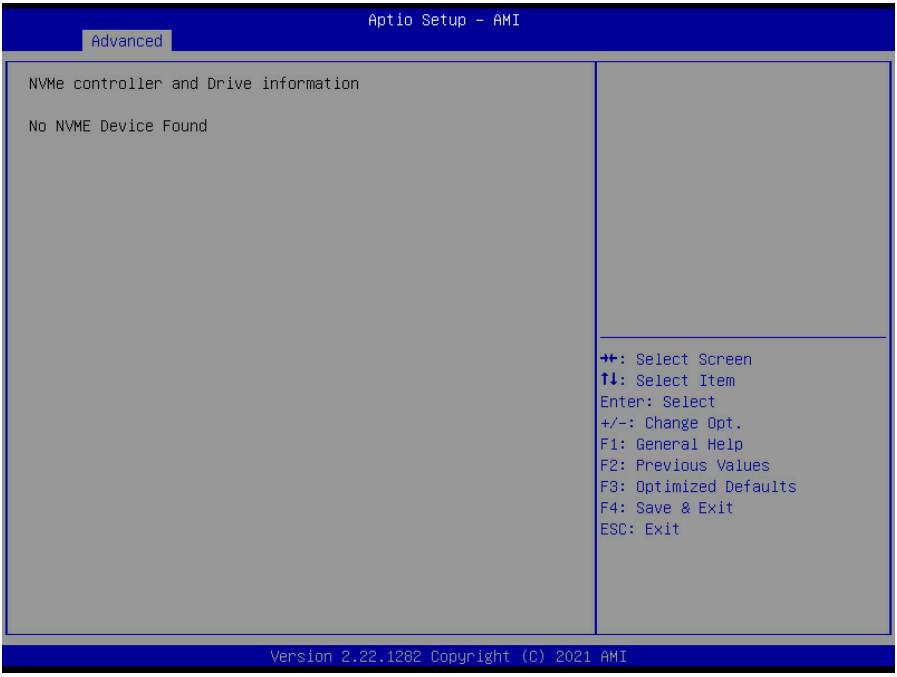
Device power-up delay
Maximum time the device will take before it properly reports itself to the Host Controller. 'AUTO' uses default value: for a Root port it is 100 ms, for a Hub port the delay is taken from Hub descriptor.
Auto / Manual
NOTE: Device power up delay in seconds is available when **Device power-up delay** is set to [Manual].

SanDisk
Mass storage device emulation type. 'AUTO' enumerates devices according to their media format. Optical drives are emulated as 'CDROM', drives with no media will be emulated according to a drive type
Auto / Floppy / Forced FDD / Hard Disk / CD-ROM

AMI Virtual CDROM0 1.00
Mass storage device emulation type. 'Auto' enumerates devices according to their media format. Optical drives are emulated as 'CDROM', drives with no media will be emulated according to a drive type.
Auto / Floppy / Forced FDD / Hard Disk / CD-ROM

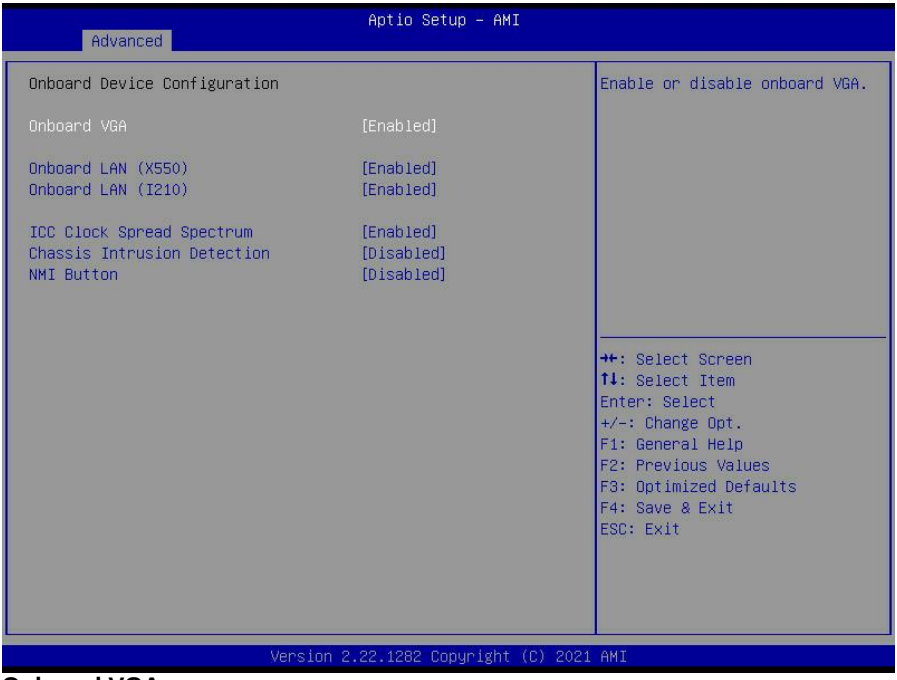
AMI Virtual HDisk0 1.00
Mass storage device emulation type. 'Auto' enumerates devices according to their media format. Optical drives are emulated as 'CDROM', drives with no media will be emulated according to a drive type.
Auto / Floppy / Forced FDD / Hard Disk / CD-ROM

3.3.15 NVMe Configuration



This page shows the Device Name you installed. Press Enter to read the device information. If no NVME device is installed, it shows no NVME device is found. Read only.

3.3.16 Onboard Device Configuration



Onboard VGA
Enable or disable onboard VGA.
Enabled / Disabled

Onboard LAN (X550)
LAN Enable/Disable control function.
Enabled / Disabled

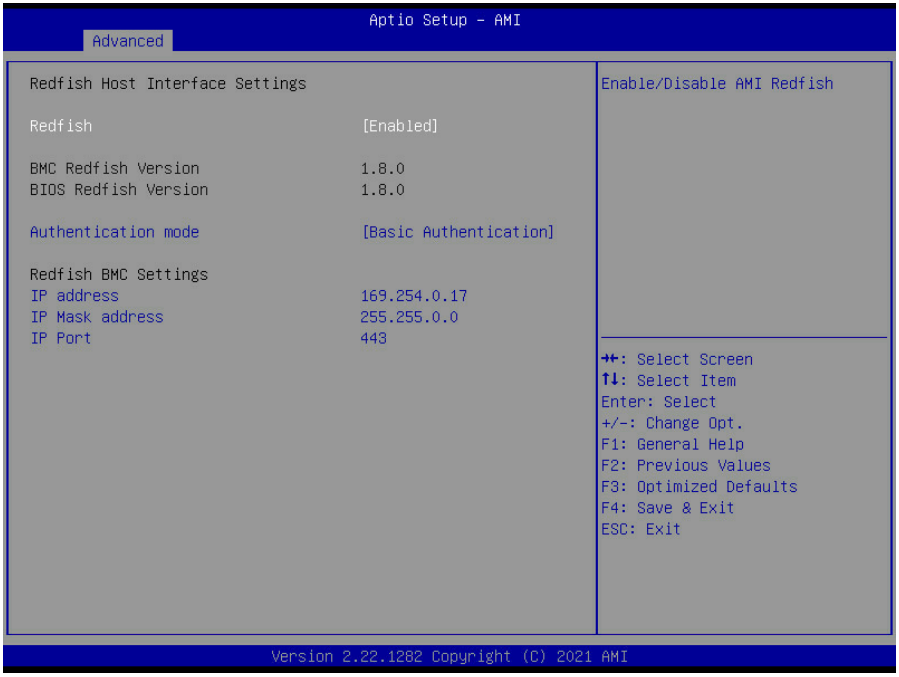
Onboard LAN (I210)
LAN Enable/Disable control function.
Enabled / Disabled

ICC Clock Spread Spectrum
Turn on/off Spread Spectrum Setting for IsCLK.
Enabled / Disabled

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

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

3.3.17 Redfish Host Interface Configuration



Redfish
Enable/Disable AMI Redfish.
Enabled / Disabled

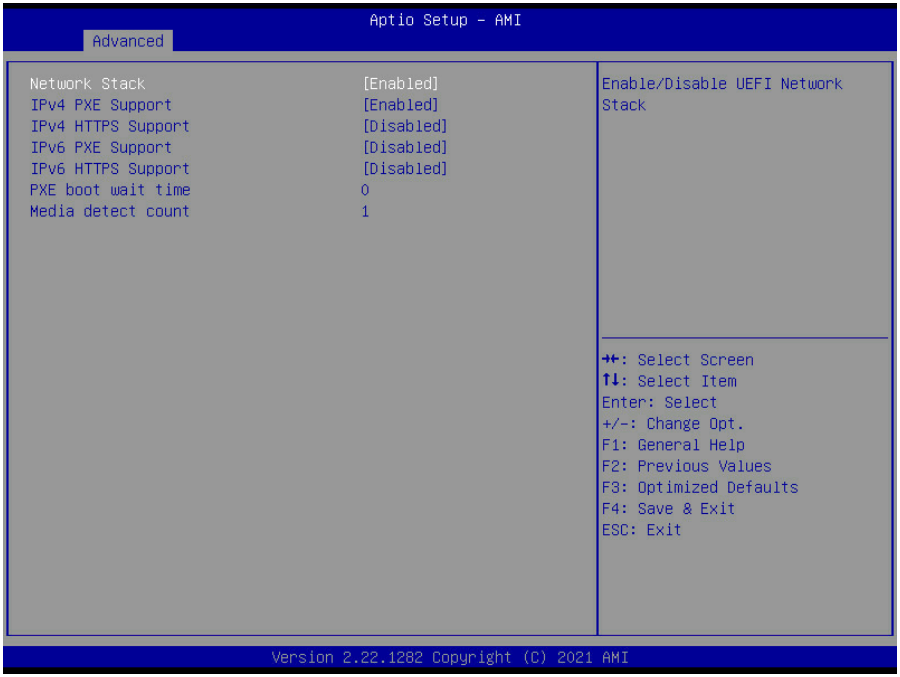
Authentication mode
Select authentication mode
Basic Authentication / Session Authentication

IP address
Enter IP address

IP Mask address
Enter IP Mask address

IP Port
Enter IP Port

3.3.18 Network Stack Configuration



NOTE: The BIOS will automatically read the onboard LAN controller.

Network Stack
Enable/Disable UEFI Network Stack.
Disabled / **Enabled**
NOTE: The following items are available when Network Stack is set to [Enabled].

Ipv4 PXE Support
Enable Ipv4 PXE Boot Support. If disabled IPV4 PXE boot option will not be created.
Disabled / **Enabled**

Ipv4 HTTPS Support
Enable Ipv4 HTTP Boot Support. If disabled IPV4 HTTP boot option will not be created.
Disabled / Enabled

Ipv6 PXE Support
Enable Ipv6 PXE Boot Support. If disabled IPV6 PXE boot option will not be created.
Disabled / Enabled

Ipv6 HTTPS Support
Enable Ipv6 HTTP Boot Support. If disabled IPV6 HTTP boot option will not be created.

Disabled / Enabled

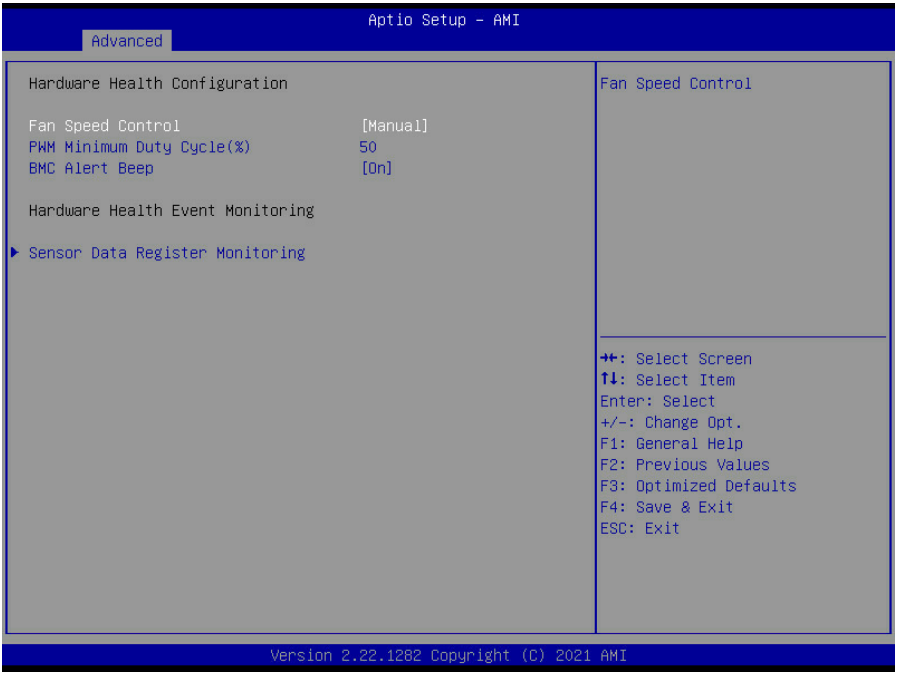
PXE boot wait time
Wait time to press ESC key to abort the PXE boot.

0

Media detect count
Number of times presence of media will be checked.

5

3.3.19 Hardware Health Configuration



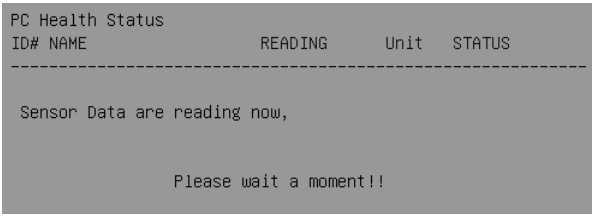
Fan Speed Control
Fan Speed Control.
Manual / Full Speed
NOTE: Change the **Fan Speed Control** BIOS setting from [Manual] to [Full Speed] when installing the Nvidia GeForce / Quardro GPU and any VGA card.

PWM Minimal Duty Cycle
PWM Minimal Duty Cycle (%).
30
NOTE: This item is available when **Fan Speed Control** is set to [Manual].

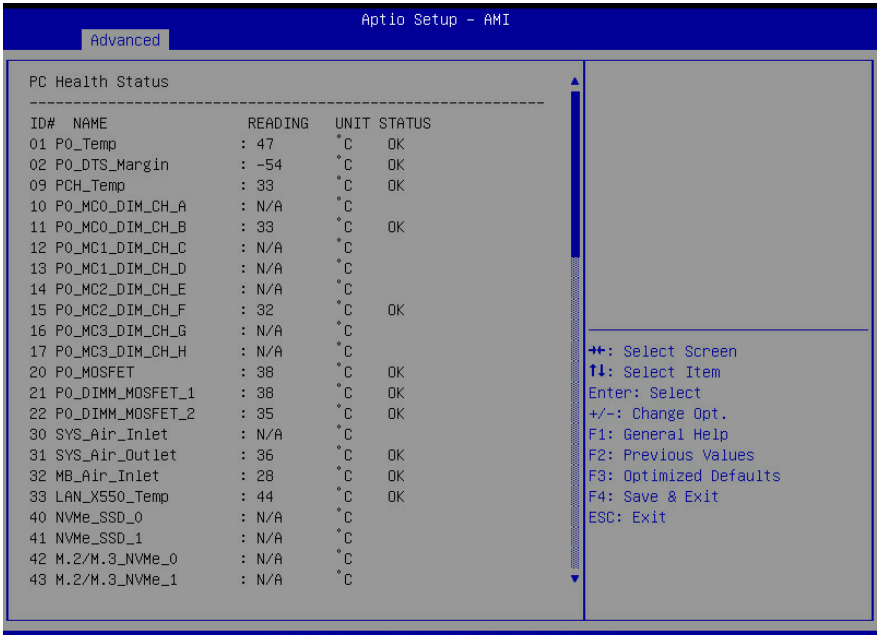
BMC Alert Beep
Enable/Disable BMC Alert Beep.
On / Off

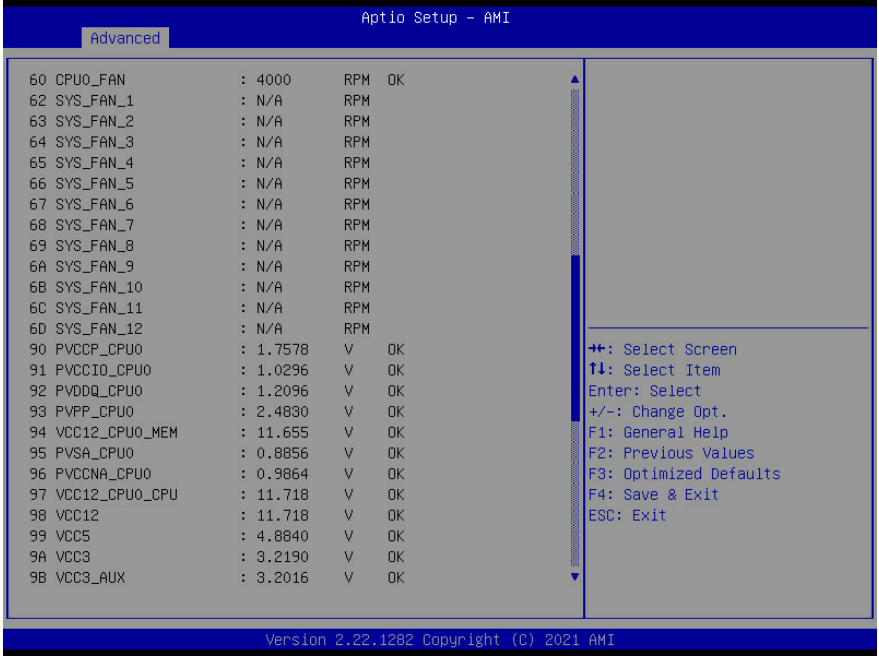
3.3.19.1 Sensor Data Register Monitoring

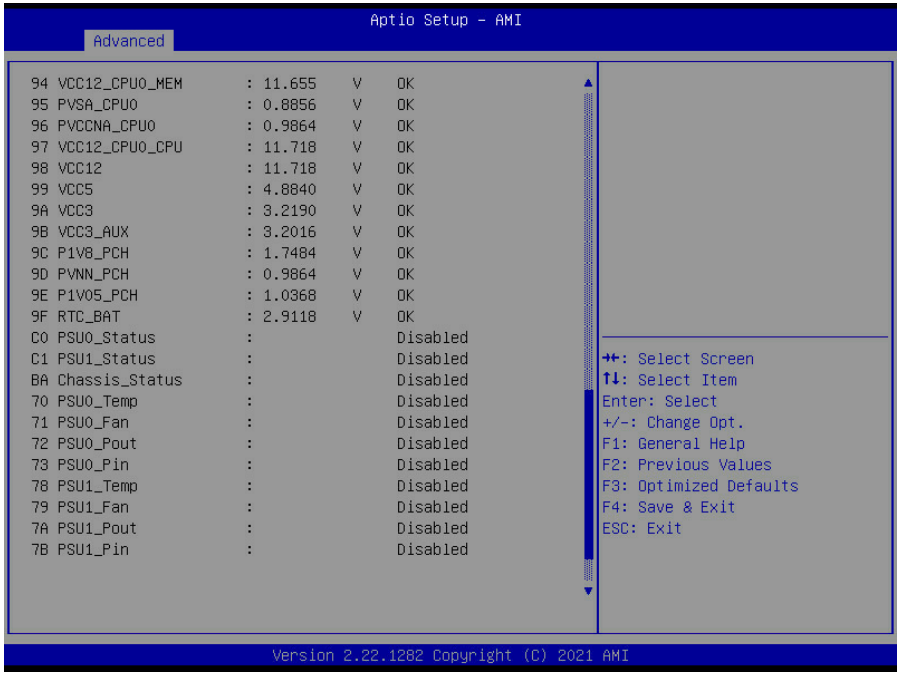
When you enter the **Sensor Data Register Monitoring** submenu, you will see the following dialog window pop out. Please wait 8~10 seconds.



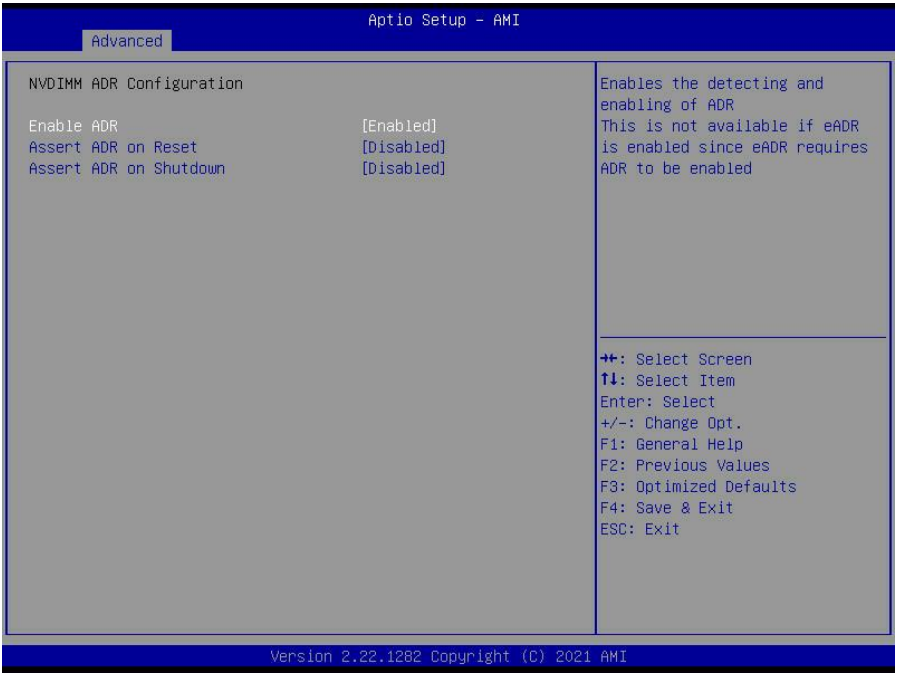
NOTE 1: SDR can not be modified. Read only.


Aptio Setup – AMI
Advanced
PC Health Status
ID# NAME READING UNIT STATUS
01 P0_Temp : 47 °C OK
02 P0_DTS_Margin : -54 °C OK
09 PCH_Temp : 33 °C OK
10 P0_MC0_DIM_CH_A : N/A °C
11 P0_MC0_DIM_CH_B : 33 °C OK
12 P0_MC1_DIM_CH_C : N/A °C
13 P0_MC1_DIM_CH_D : N/A °C
14 P0_MC2_DIM_CH_E : N/A °C
15 P0_MC2_DIM_CH_F : 32 °C OK
16 P0_MC3_DIM_CH_G : N/A °C
17 P0_MC3_DIM_CH_H : N/A °C
20 P0_MOSFET : 38 °C OK
21 P0_DIMM_MOSFET_1 : 38 °C OK
22 P0_DIMM_MOSFET_2 : 35 °C OK
30 SYS_Air_Inlet : N/A °C
31 SYS_Air_Outlet : 36 °C OK
32 MB_Air_Inlet : 28 °C OK
33 LAN_X550_Temp : 44 °C OK
40 NVMe_SSD_0 : N/A °C
41 NVMe_SSD_1 : N/A °C
42 M.2/M.3_NVMe_0 : N/A °C
43 M.2/M.3_NVMe_1 : N/A °C
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.22.1282 Copyright (C) 2021 AMI


Aptio Setup – AMI
Advanced
60 CPU0_FAN : 4000 RPM OK
62 SYS_FAN_1 : N/A RPM
63 SYS_FAN_2 : N/A RPM
64 SYS_FAN_3 : N/A RPM
65 SYS_FAN_4 : N/A RPM
66 SYS_FAN_5 : N/A RPM
67 SYS_FAN_6 : N/A RPM
68 SYS_FAN_7 : N/A RPM
69 SYS_FAN_8 : N/A RPM
6A SYS_FAN_9 : N/A RPM
6B SYS_FAN_10 : N/A RPM
6C SYS_FAN_11 : N/A RPM
6D SYS_FAN_12 : N/A RPM
90 PVCCP_CPU0 : 1.7578 V OK
91 PVCCIO_CPU0 : 1.0296 V OK
92 PVDDQ_CPU0 : 1.2096 V OK
93 PVPP_CPU0 : 2.4830 V OK
94 VCC12_CPU0_MEM : 11.655 V OK
95 PVSA_CPU0 : 0.8856 V OK
96 PVCCNA_CPU0 : 0.9864 V OK
97 VCC12_CPU0_CPU : 11.718 V OK
98 VCC12 : 11.718 V OK
99 VCC5 : 4.8840 V OK
9A VCC3 : 3.2190 V OK
9B VCC3_AUX : 3.2016 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 2.22.1282 Copyright (C) 2021 AMI


Aptio Setup – AMI
Advanced
94 VCC12_CPU0_MEM : 11.655 V OK
95 PVSA_CPU0 : 0.8856 V OK
96 PVCCNA_CPU0 : 0.9864 V OK
97 VCC12_CPU0_CPU : 11.718 V OK
98 VCC12 : 11.718 V OK
99 VCC5 : 4.8840 V OK
9A VCC3 : 3.2190 V OK
9B VCC3_AUX : 3.2016 V OK
9C P1V8_PCH : 1.7484 V OK
9D PVNN_PCH : 0.9864 V OK
9E P1V05_PCH : 1.0368 V OK
9F RTC_BAT : 2.9118 V OK
C0 PSU0_Status : Disabled
C1 PSU1_Status : Disabled
BA Chassis_Status : Disabled
70 PSU0_Temp : Disabled
71 PSU0_Fan : Disabled
72 PSU0_Pout : Disabled
73 PSU0_Pin : Disabled
78 PSU1_Temp : Disabled
79 PSU1_Fan : Disabled
7A PSU1_Pout : Disabled
7B PSU1_Pin : Disabled
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.22.1282 Copyright (C) 2021 AMI

3.3.20 NVDIMM ADR Configuration



Enable ADR
Enables the detecting and enabling of ADR. This is not available if eADR is enabled since eADR requires ADR to be enabled.

Enabled / Disabled

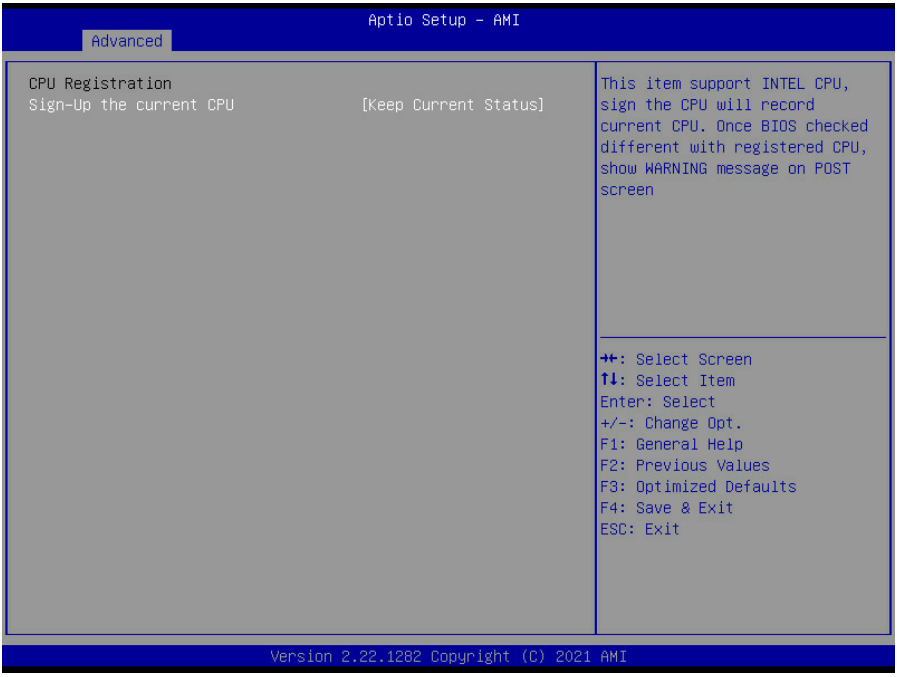
Assert ADR on Reset
Assert ADR on Reset.

Enabled / **Disabled**

Assert ADR on Shutdown
Assert ADR on Shutdown.

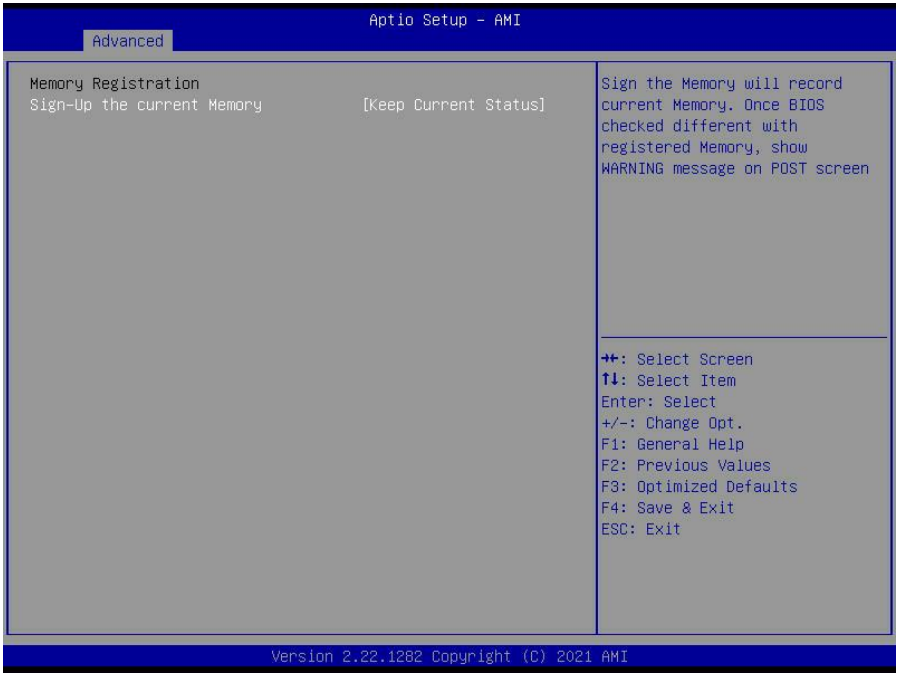
Enabled / **Disabled**

3.3.21 CPU Registration



Sign-up the current CPU
This item support INTEL CPU, sign the CPU will record current CPU. Once BIOS checked different with registered CPU, show WARNING message on POST screen.
Deregistration / Sign-up / **Keep Current Status**

3.3.22 Memory Registration

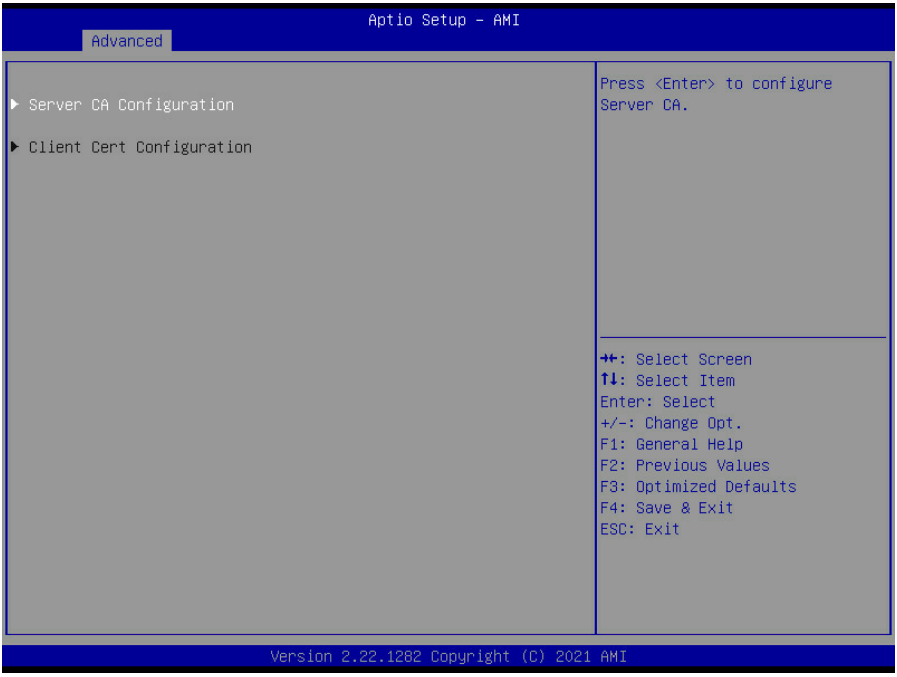


Sign-up the current Memory

Sign the Memory will record current Memory. Once BIOS checked different with registered Memory, show WARNING message on POST screen.

Deregistration / Sign-up / **Keep Current Status**

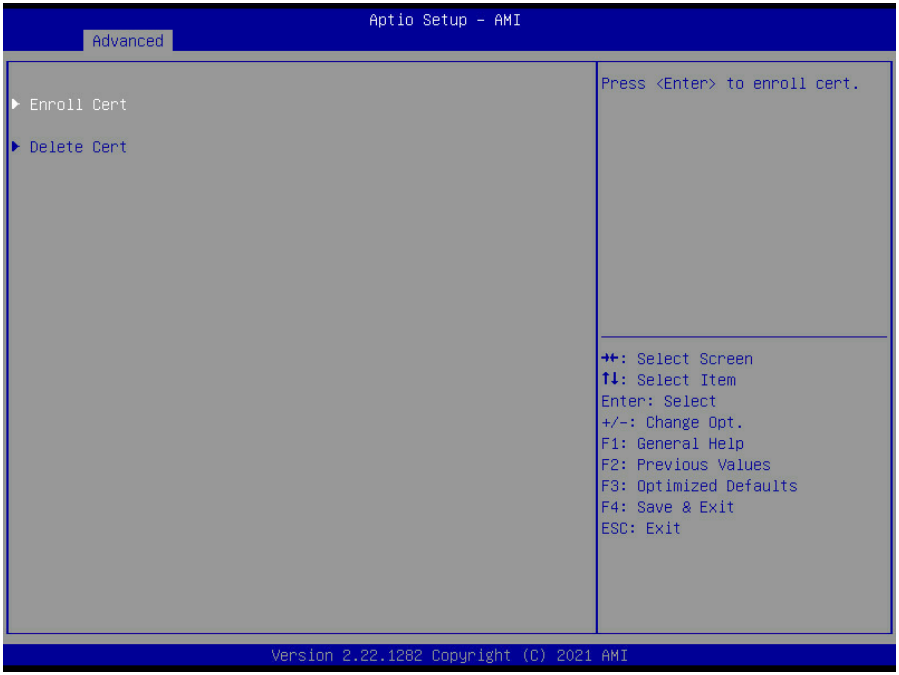
3.3.23 Tls Auth Configuration



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

Client Cert Configuration
Press <Enter> to configure Client Cert.

3.3.23.1 Server CA Configuration



Enroll Cert
Press <Enter> to enroll cert.

Delete Cert
Press <Enter> to delete cert.

3.3.23.1.1 Enroll Cert

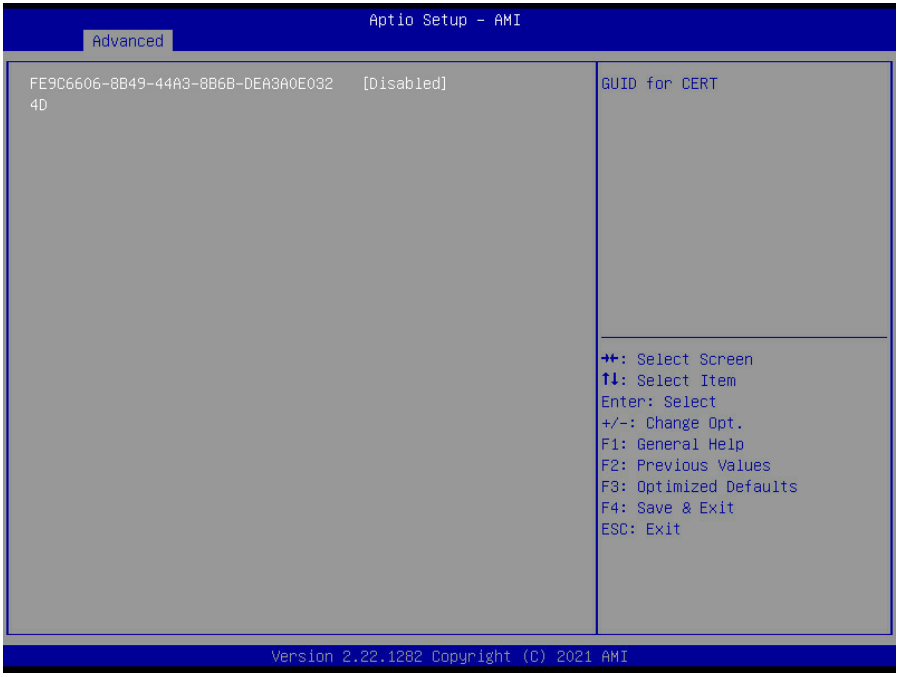
Enroll Cert Using File
Enroll Cert Using File.

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.

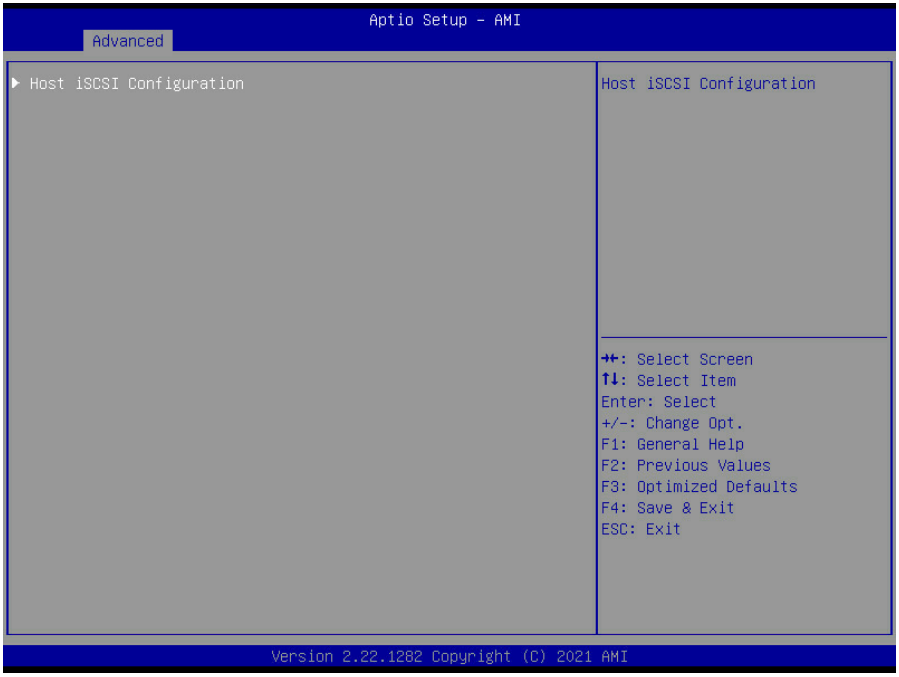
3.3.23.1.2 Delete Cert



FE9C6606-8B49-44A3-8B6B-DEA3A0E032
GUID for CERT.

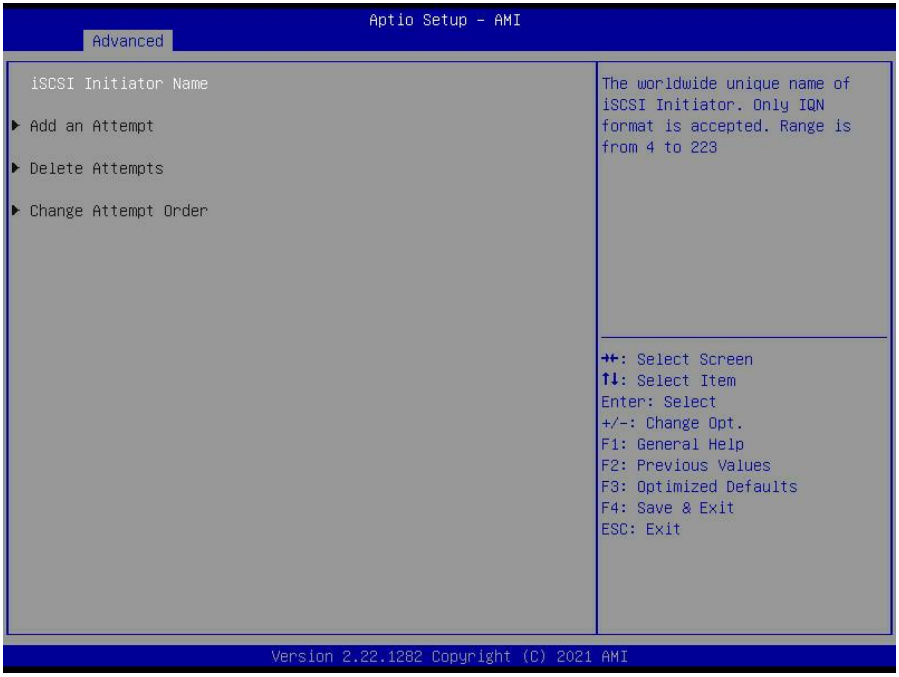
Disabled / Enabled

3.3.24 iSCSI Configuration



Host iSCSI Configuration
Host iSCSI Configuration

3.3.24.1 Host iSCSI Configuration



iSCSI Initiator Name
The worldwide unique name of iSCSI Initiator. Only IQN format is accepted. Enter [**iqn.xxx**]. xxx ranges from 4 to 223.

Add an Attempt
Add an Attempt.

Delete Attempts
Delete one or more attempts.

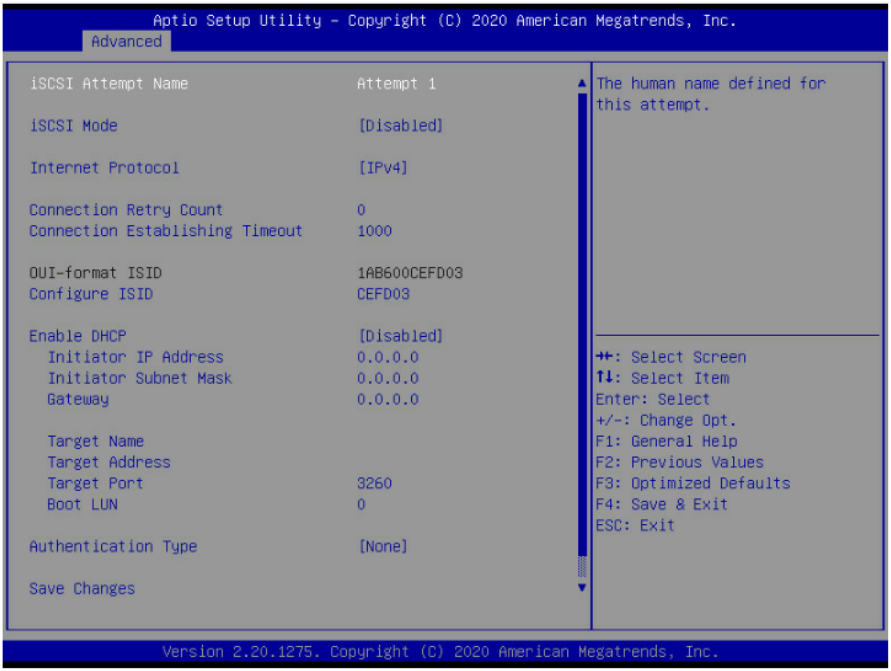
Change Attempt Order
Change the order of Attempts using +/- keys. Use arrow keys to select the attempt then press +/- to move the attempt up/down in the attempt order list.

3.3.24.1.1 Add an Attempt

NOTE: Only LAN1 supports iSCSI function.

MAC xx:xx:xx:xx:xx:xx (Intel® I210 Gigabit Network Connection)
PFA: Bus 2 / Dev 0 / Func 0.

3.3.24.1.1.1 MAC xx:xx:xx:xx:xx:xx (Intel® I210 Gigabit Network Connection)



iSCSI Attempt Name
The human name defined for this attempt. Maximum length is up to 12 characters.
Attempt 1 / Attempt #

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.

iqu. xxx

Target IP Address

Enter IP address in dotted-decimal notation.

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**

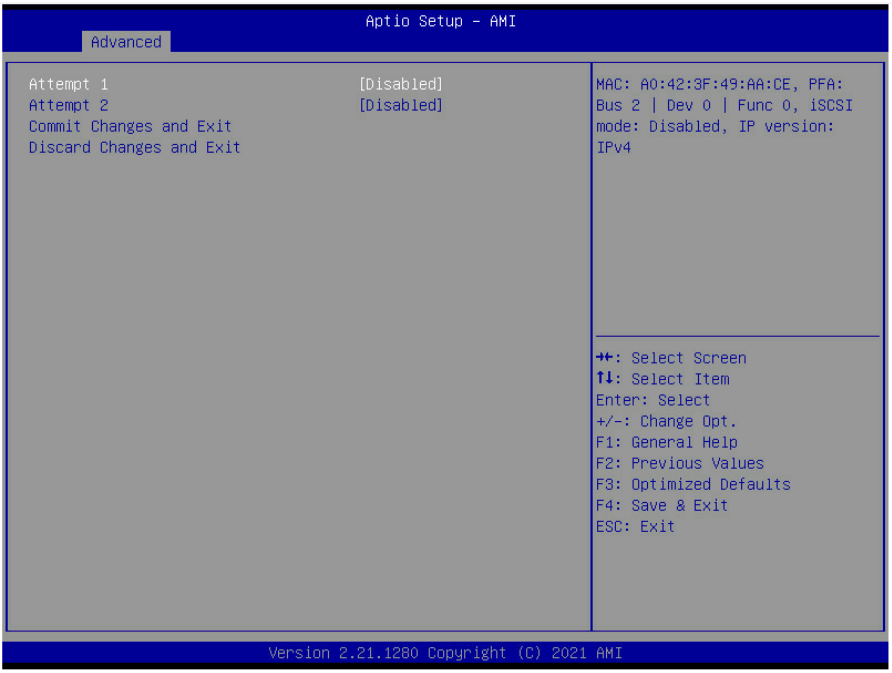
Save Changes

Must reboot system manually for changes to take place.

Back to Previous Page

Back to Previous Page.

3.3.24.1.2 Delete Attempts



Attempt 1
MAC xx:xx:xx:xx:xx:xx, PFA: Bus 2 / Dev 0 / Func 0, iSCSI mode: Disabled, IP version: IPv4.

Disabled / Enabled

Attempt 2
MAC xx:xx:xx:xx:xx:xx, PFA: Bus 2 / Dev 0 / Func 0, iSCSI mode: Disabled, IP version: IPv4.

Disabled / Enabled

Commit Changes and Exit
Commit Changes and Exit.

Discard Changes and Exit
Discard Changes and Exit.

3.3.24.1.3 Change Attempt Order

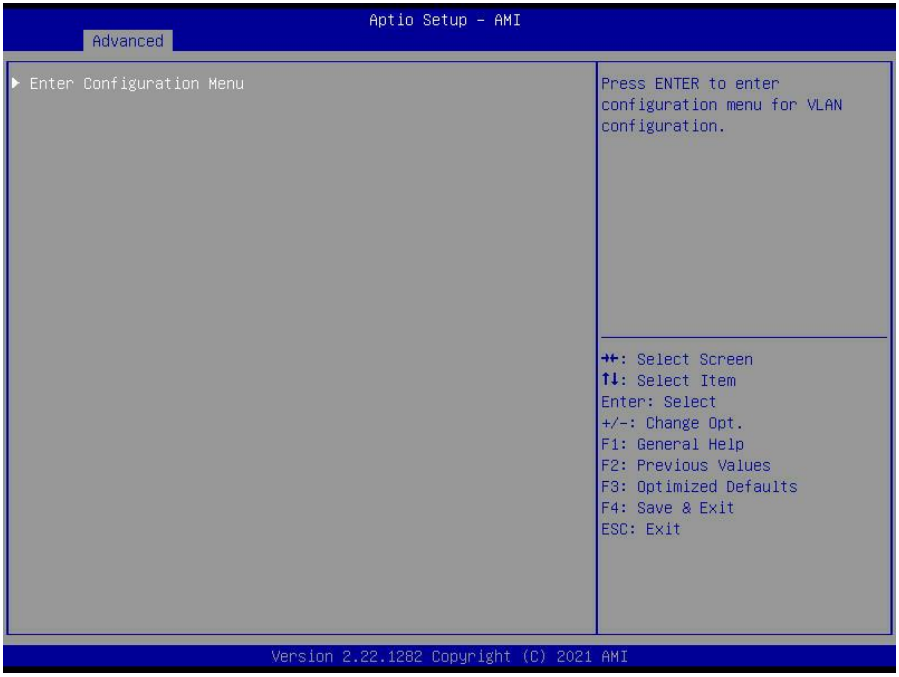
Change Attempt Order
Change the order of Attempts using +/- keys. Use arrow keys to select the attempt then press +/- to move the attempt up/down in the attempt order list.

Attempt 1 / Attempt 2

Commit Changes and Exit
Commit Changes and Exit.

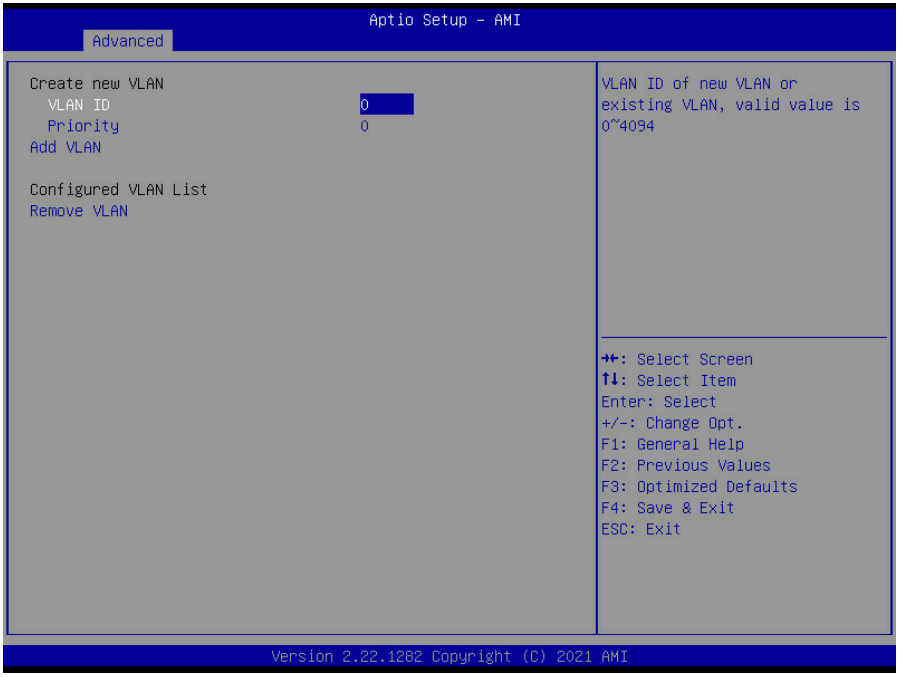
Discard Changes and Exit
Discard Changes and Exit.

3.3.24 VLAN Configuration (MAC:xxxxxxxxxxxx)



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

3.3.24.1 Enter Configuration Menu



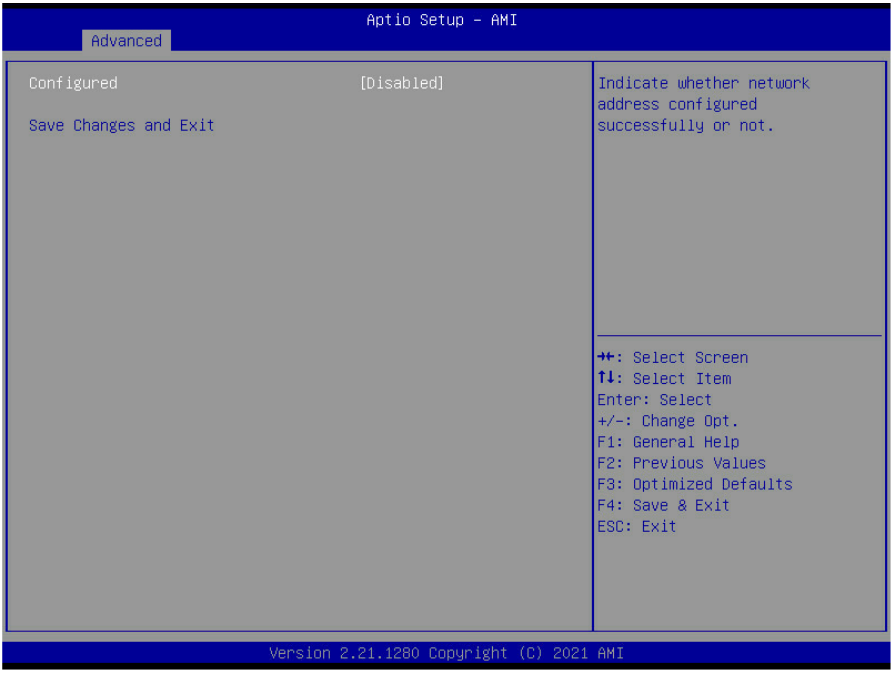
VLAN ID
VLAN ID of new VLAN or existing VLAN, valid value is 0~4094.

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

Add VLAN
Create a new VLAN or update existing VLAN.

Remove VLAN
Remove selected VLANs.

3.3.24 MAC:xxxxxxxxxxxx - IPv4 Network Configuration



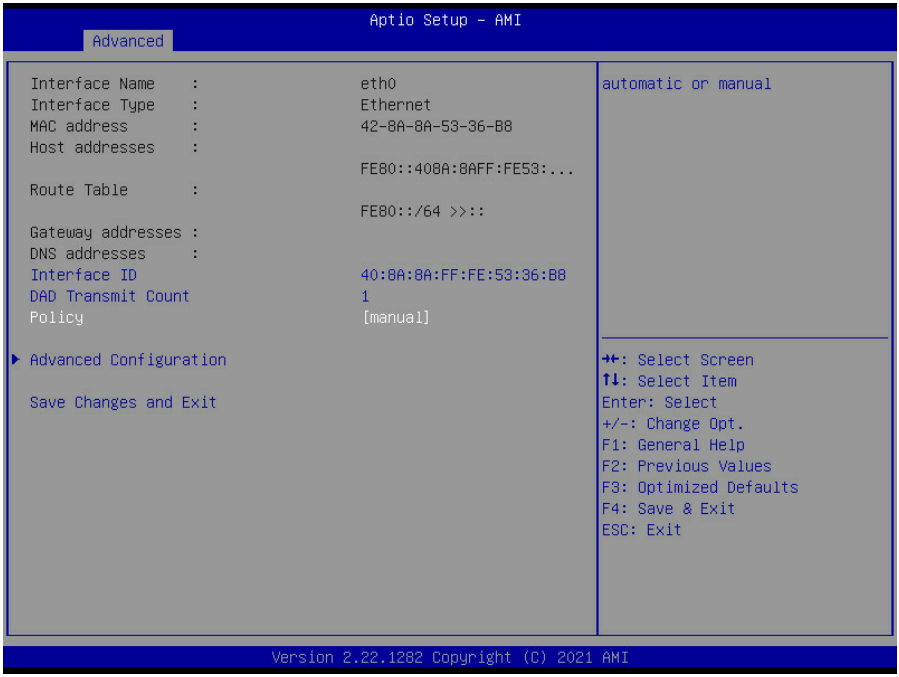
Configured
Indicate whether network address configured successfully or not.
Disabled / Enabled

Save Changes and Exit
Save Changes and Exit.

3.3.25 MAC:xxxxxxxxxxxx - IPv6 Network Configuration

Enter Configuration Menu
Press ENTER to enter configuration menu for IPv6 configuration.

3.3.25.1 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

xx:xx:x:xx:xx:xx:xx:xx

DAD Transmit Count

The number of consecutive Neighbor Solicitation messages sent while performing Duplicate Address Detection on a tentative address. A value of zero indicates that Duplicate Address Detection is not performed.

1

Policy

Automatic or manual.

Automatic / Manual

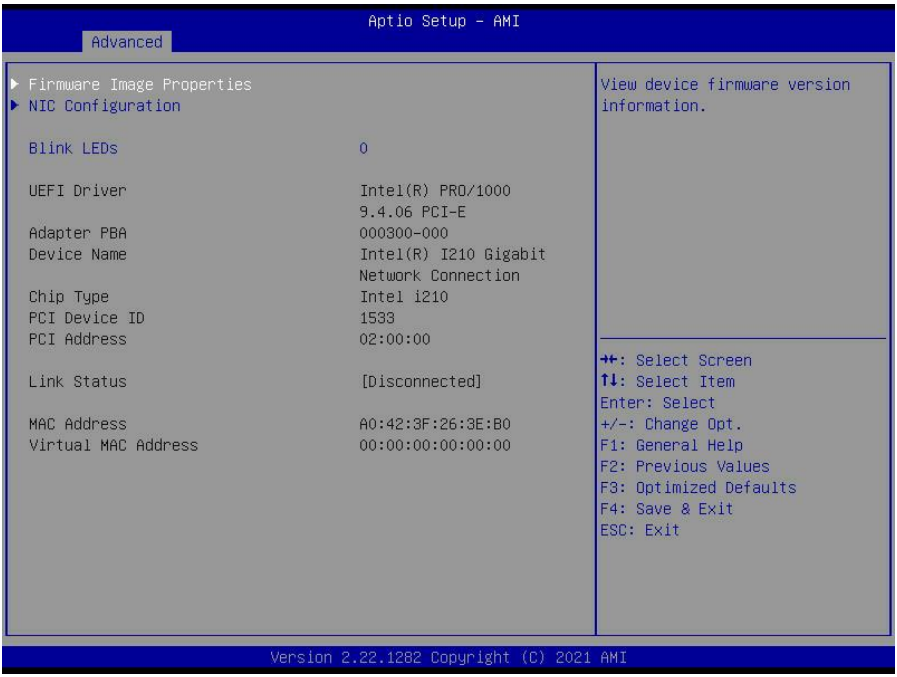
NOTE: The **Advanced Configuration** submenu is available when **Policy** is set to [Manual].

Advanced Configuration

Configure the interface manually. IP address, gateway address, and DNS server address can be configured.

Save Changes and Exit
Save Changes and Exit.

3.3.26 Intel® I210 Gigabit Network Connection Configuration

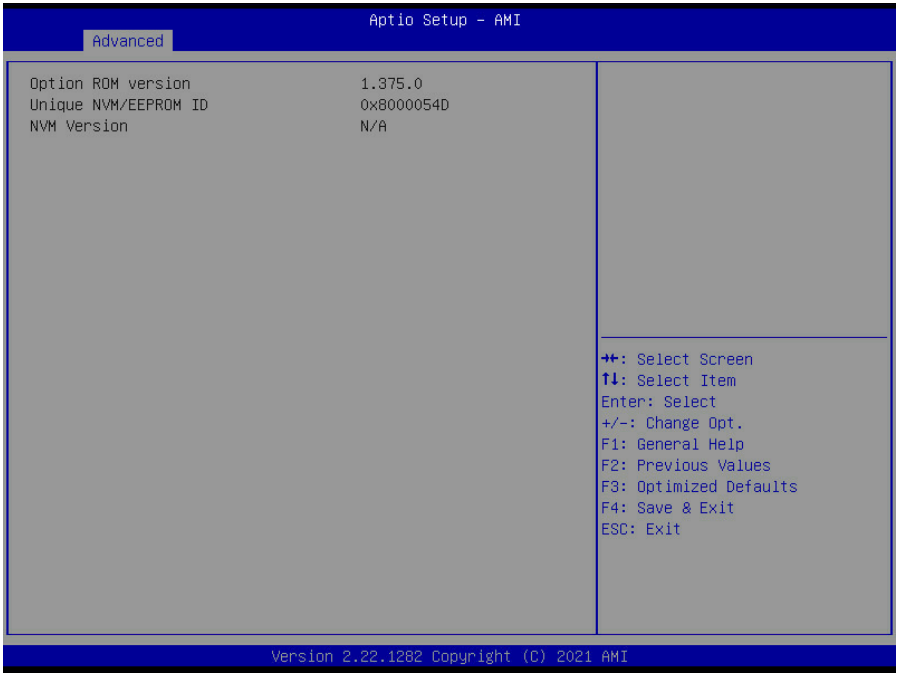


Firmware Image Properties
View device firmware version information.

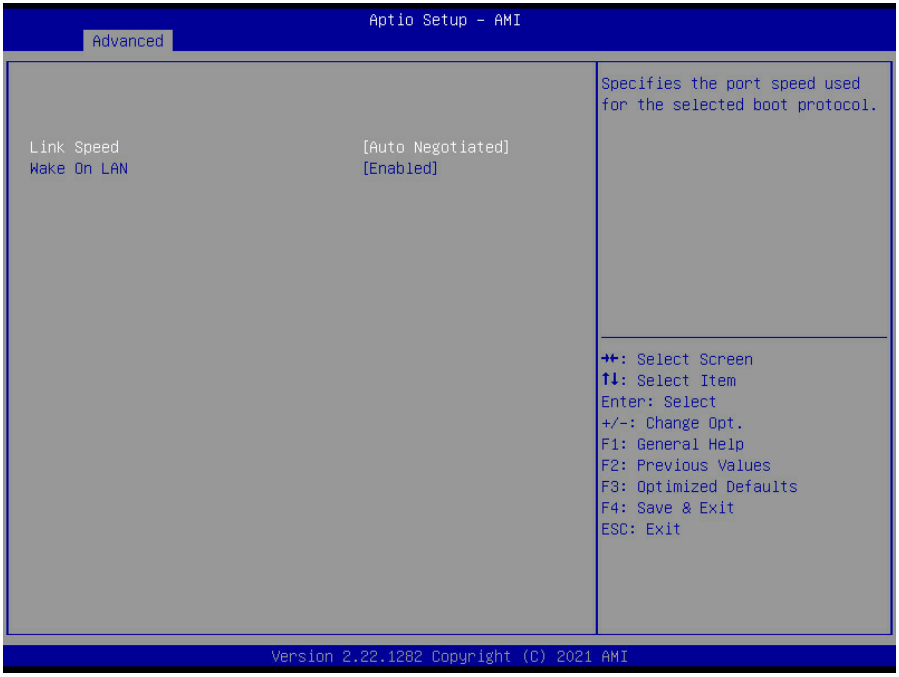
NIC Configuration
Click to configure the network device port.

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

3.3.26.1 Firmware Image Properties Configuration



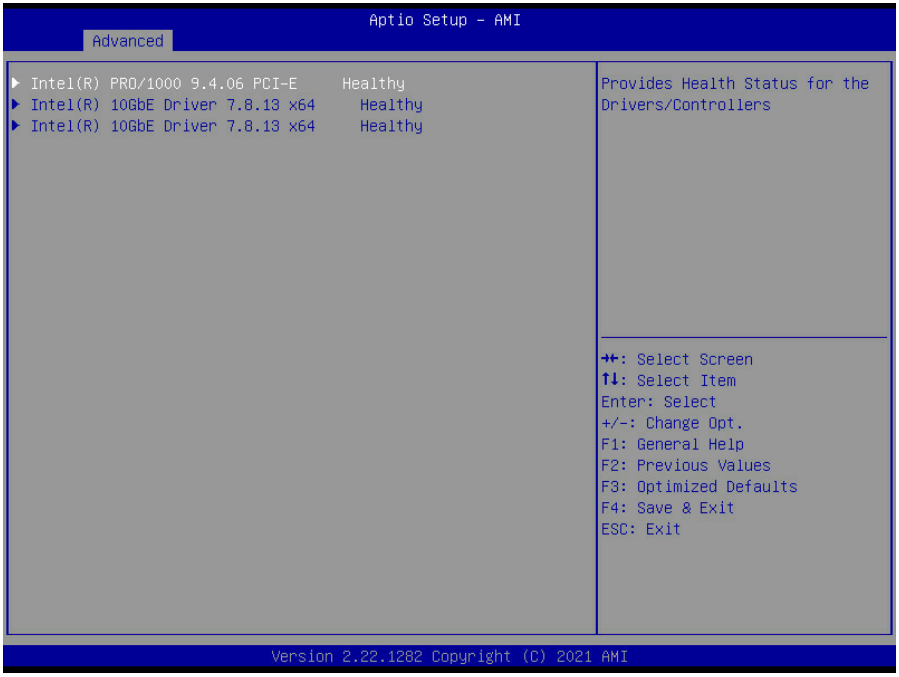
3.3.26.2 NIC Configuration



Link Speed
Specifies the port speed used for the selected boot protocol.
Auto Negotiated / 10 Mbps Half / 10 Mbps Full / 100 Mbps Half / 100Mbps Full

Wake On LAN
Specifies the port speed used for the selected boot protocol.
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**

3.3.27 Driver Health Configuration



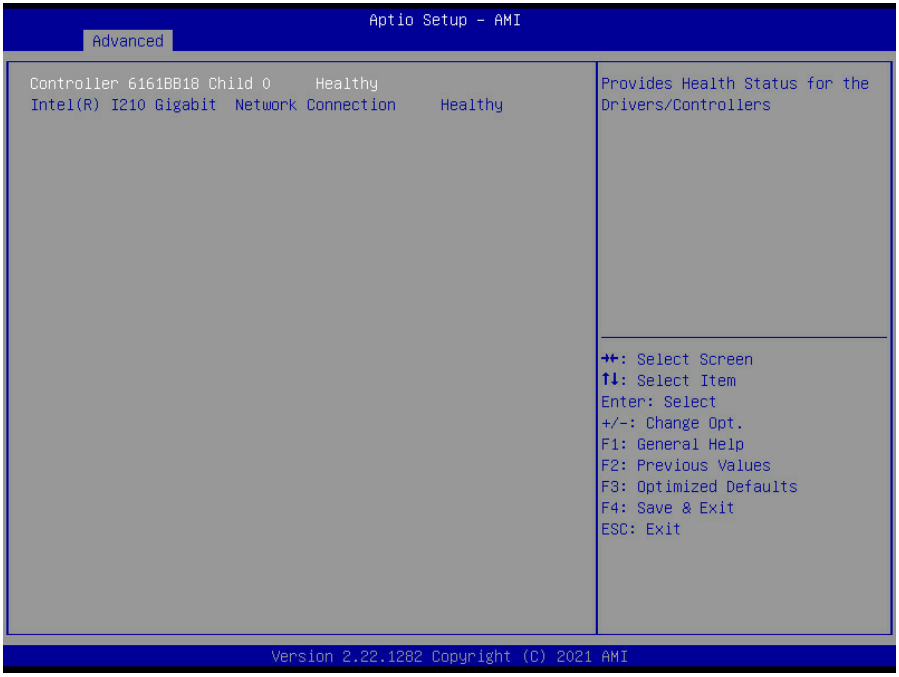
NOTE: This is a sample screenshot of the Driver Health. The information displayed in this page may vary in accordance with the cards you installed.

Intel® PRO/1000 9.4.06 PCI-E
Provides Health Status for the Drivers/Controllers.
Healthy

Intel® 10GbE Driver 7.8.13x64
Provides Health Status for the Drivers/Controllers.
Healthy

Intel® 10GbE Driver 7.8.13x64
Provides Health Status for the Drivers/Controllers.
Healthy

3.3.27.1 Intel® PRO/1000 9.4.06 PCI-E

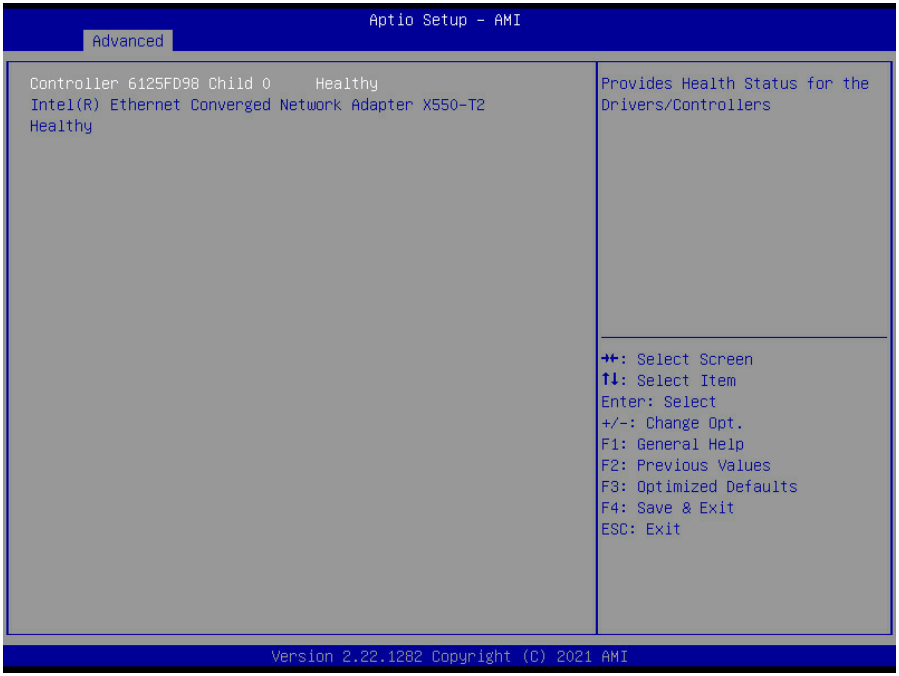


NOTE: This is a sample screenshot of the Driver Health. The information displayed here may vary in accordance with the card you installed.

Controller 6161BB18 Child 0
Provides Health Status for the Drivers/Controllers.
Healthy

Intel® I210 Gigabit Network Connection
Provides Health Status for the Drivers/Controllers.
Healthy

3.3.27.2 Intel® 10GbE Driver

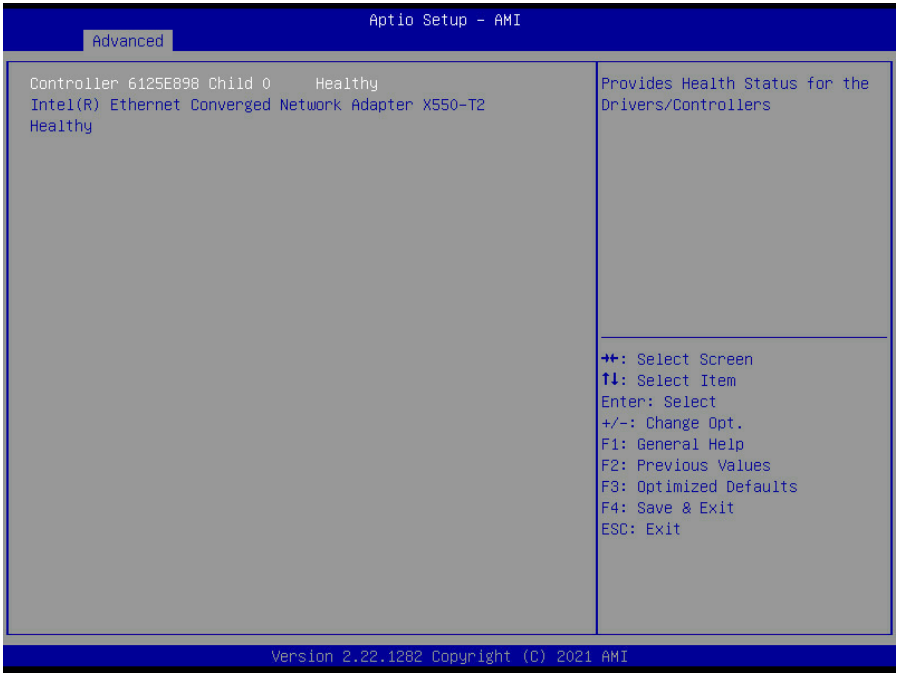


NOTE: This is a sample screenshot of the Driver Health. The information displayed here may vary in accordance with the card you installed.

Controller 6125FD98 Child 0
Provides Health Status for the Drivers/Controllers.
Healthy

Intel® Ethernet Converged Network Adapter X550-T2
Provides Health Status for the Drivers/Controllers.
Healthy

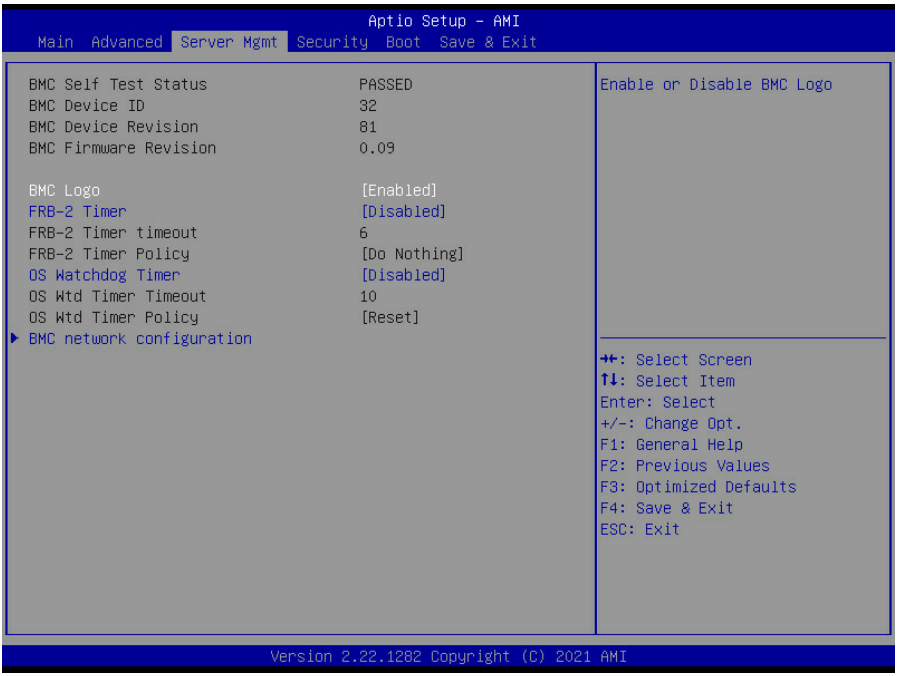
3.3.27.3 Intel® 10GbE Driver



Controller 6125E898 Child 0
Provides Health Status for the Drivers/Controllers
Healthy

Intel® Ethernet Converged Network Adapter X550-T2
Provides Health Status for the Drivers/Controllers
Healthy

3.4 Server Management



BMC Logo
Enable or Disable BMC Logo.
Enabled / Disabled

FRB-2 Timer
Enable or Disable FRB-2 timer (POST timer).
Enabled / **Disabled**
NOTE: When FRB-2 Timer was set to [Enabled], the following 3 items will be available.

FRB-2 Timer timeout
Enter value Between 3 to 6 min for FRB-2 Timer Expiration value.
6

FRB-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.

Enabled / **Disabled**

NOTE: When OS Watchdog Timer was set to [Enabled], the following 2 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.

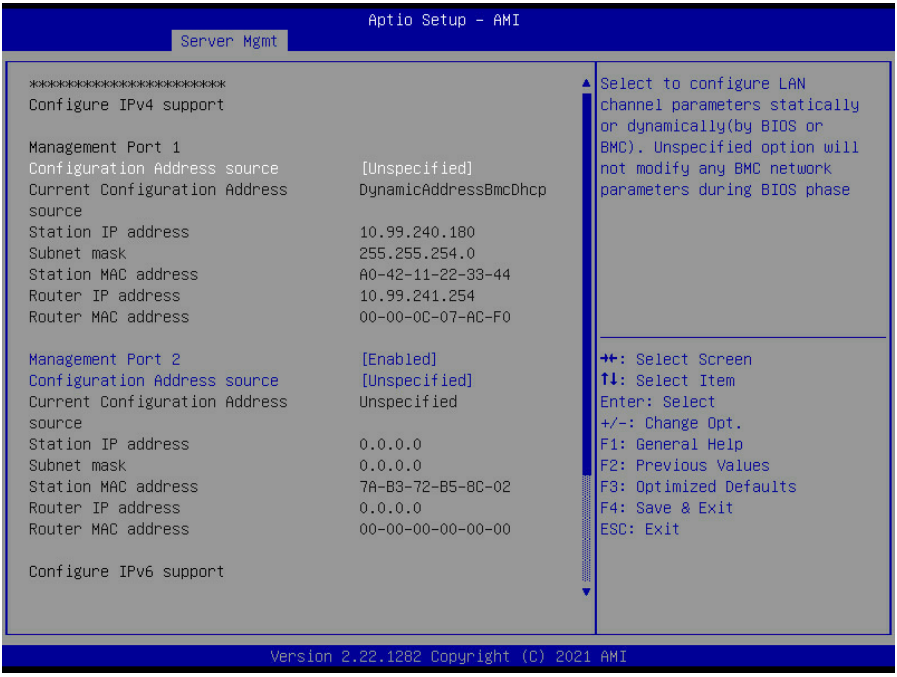
10

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 network configuration
Configure BMC network parameters.

3.4.1 BMC Network Configuration



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.

Enabled / **Disabled**

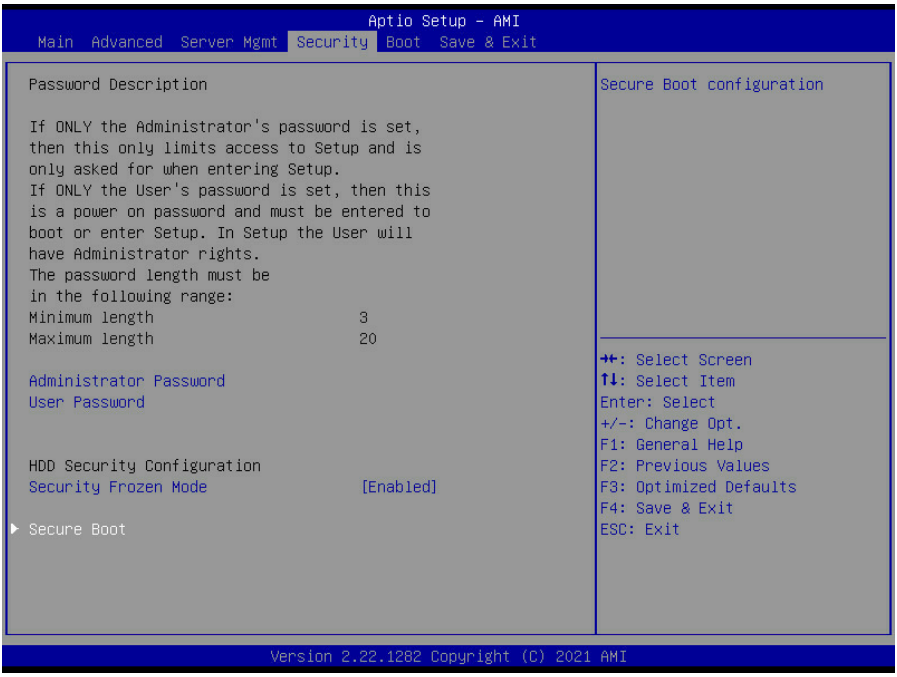
Configuration Address Source
Select the configure LAN channel parameters statically or dynamically (by BIOS or BMC). Unspecified option will not modify any BMC network parameters during BIOS phase.

Unspecified / Static / DynamicBmcDhcp / DynamicBmcNonDhcp

Configure IPV6 Support
Server Management Port 1
IPV6 Support
Enable or Disable LAN1 IPV6 Support.
Enabled / **Disabled**

Server Management Port 2
IPV6 Support
Enable or Disable LAN1 IPV6 Support.
Enabled / **Disabled**

3.5 Security



Password Description
Read only.

Administrator Password
Set administrator password in the ***Create New Password*** window. After you key in the password, the ***Confirm New Password*** window will pop out to ask for confirmation.

User Password
Set user password in the ***Create New Password*** window. After you key in the password, the ***Confirm New Password*** window will pop out to ask for confirmation.

Security Frozen Mode
Enable or disable HDD security freeze lock. Disable to support secure erase function. For AHCI SATA ports only.

Enabled / Disabled

3.5.1 Secure Boot

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

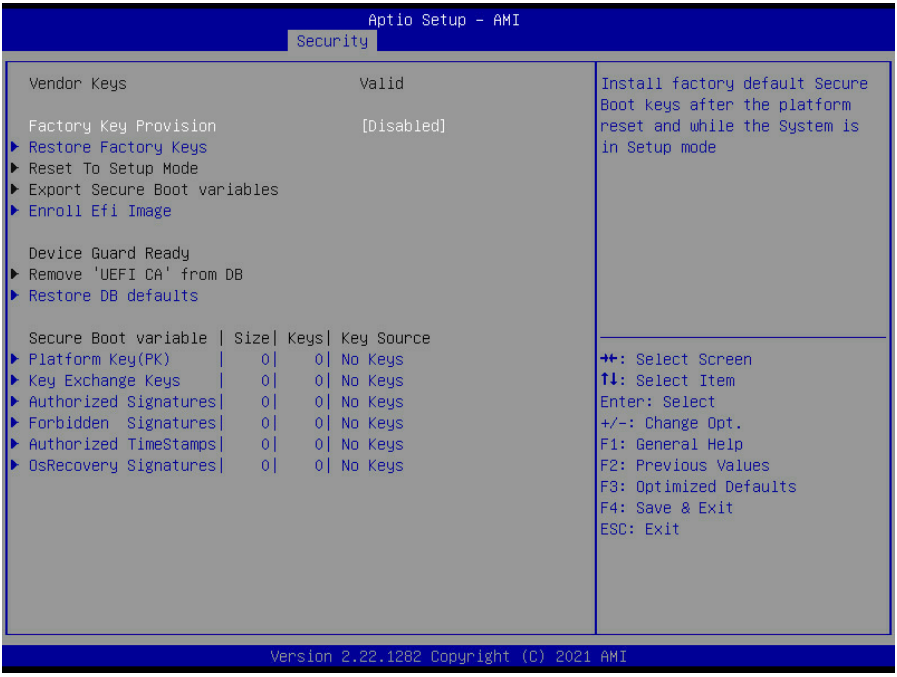
Secure Boot Mode
Secure Boot mode selector: Standard/Custom. In Custom mode Secure Boot Variables can be configured without authentication.
Standard / **Custom**
NOTE: When Secure Boot Mode was set to [Custom], the following items will be available to change.

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.

3.5.1.1 Key Management



Provision Factory Default keys
Allow to provision factory default Secure Boot keys when System is in Setup Mode.
Disabled / Enabled

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

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

Enroll Efi Image
Allow the image to run in Secure Boot mode. Enroll SHA256 has of the binary into Authorized signature Database (db).

Remove 'UEFI CA' from DB
Device Guard ready system must not list ' Microsoft UEFI CA' Certificate in Authorized Signature database(db).

Restore DB defaults
Restore DB variable to factory defaults

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 (bin)
2. Authenticated UEFI Variable
3. EFI PE/C0FF Image (SHA256)
Key source: Default, External, Mixed, Test
Details / Export / Update / Delete

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 (bin)
2. Authenticated UEFI Variable
3. EFI PE/C0FF Image (SHA256)
Key source: Default, External, Mixed, Test
Details / Export / Update / Append / Delete

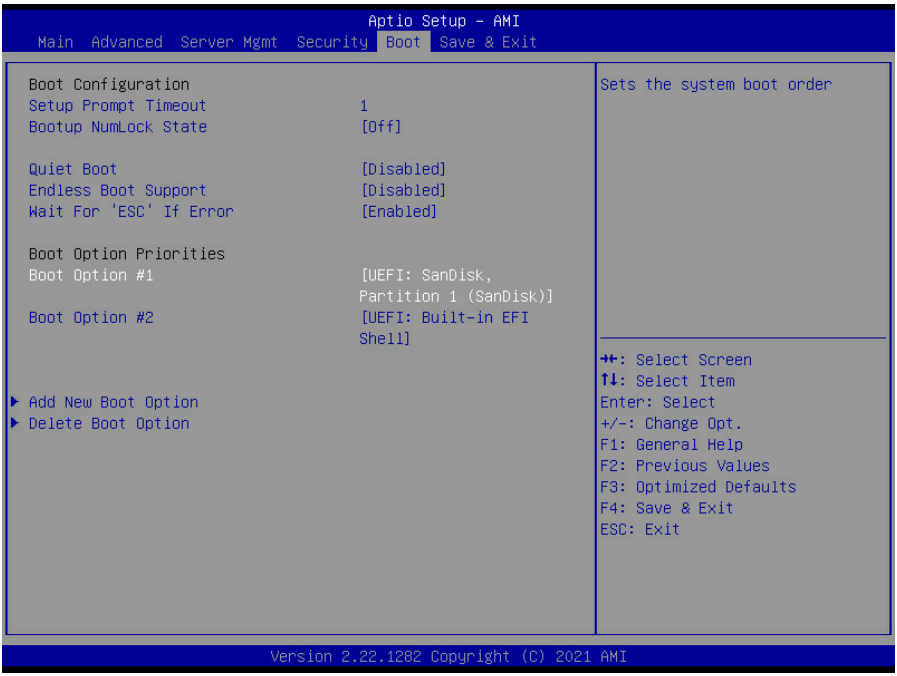
Authorized Signatures
Enroll Factory Defaults or load certificates from a file:
1. Public Key Certificate in:
a) EFI_SIGNATURE_LIST
b) EFI_CERT_X509 (DER encoded)
c) EFI_CERT_RSA2048 (bin)
d) EFI_CERT_SHA256, 384, 512 (bin)
2. Authenticated UEFI Variable
3. EFI PE/C0FF Image (SHA256)
Key source: Default, External, Mixed, Test
Details / Export / Update / Append / Delete

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 encoded)
c) EFI_CERT_RSA2048 (bin)
d) EFI_CERT_SHA256, 384, 512 (bin)
2. Authenticated UEFI Variable
3. EFI PE/C0FF Image (SHA256)
Key source: Default, External, Mixed, Test
Details / Export / Update / Append / Delete

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_SHA256, 384, 512 (bin)
2. Authenticated UEFI Variable
3. EFI PE/C0FF Image (SHA256)
Key source: Default, External, Mixed, Test
Update / Append

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_SHA256, 384, 512 (bin)
2. Authenticated UEFI Variable
3. EFI PE/C0FF Image (SHA256)
Key source: Default, External, Mixed, Test
Update / Append

3.6 Boot



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

1

Bootup NumLock State
Select the keyboard NumLock state.

Off / On

Quiet Boot
Enable or disable Quiet Boot option.

Disabled / Enabled

Endless Boot Support
Enables or disables Endless Boot Support option.

Disabled / Enabled

Wait for 'ESC' If Error
Wait for 'ESC' key to be pressed if error occurs.

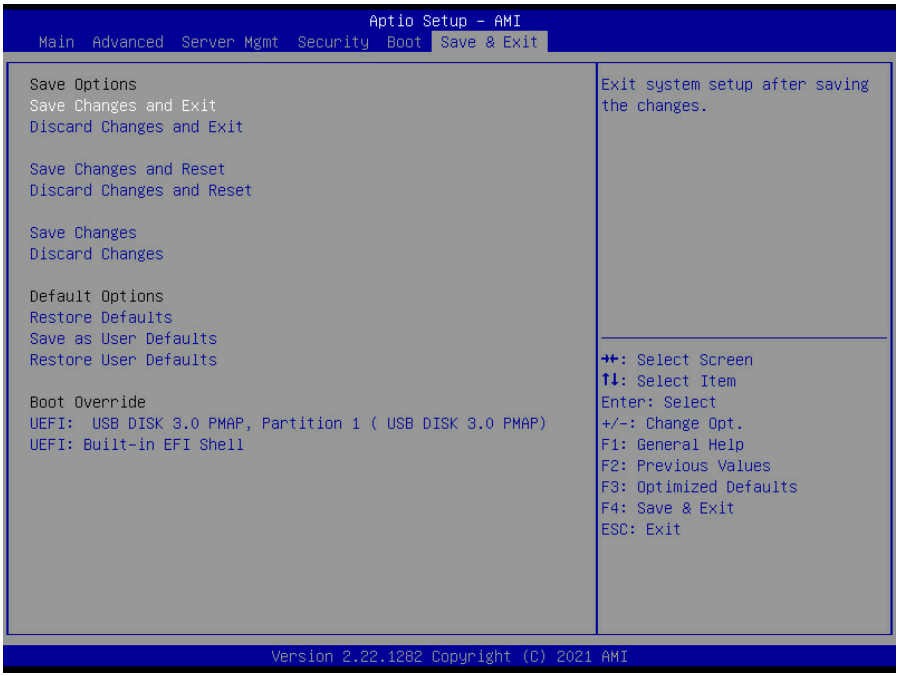
Disabled **/ Enabled**

Boot Option Priorities
Boot Option #1~#2
Select the first/second boot device.
Device Name / Disabled

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

3.7 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
Read only.

Appendix I: How to recover UEFI BIOS

Important Notes:

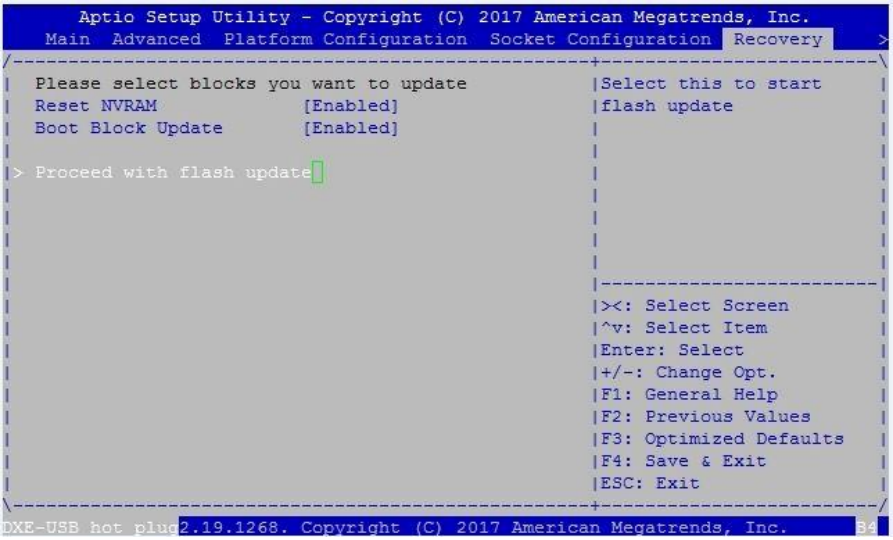
The emergency UEFI BIOS Recovery process is only used to rescue a system with a failed or corrupted BIOS image that fails to boot to an OS. It is not intended to be used as a general purpose BIOS flashing procedure and should not be used as such. Please do not shutdown or reset the system while the BIOS 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 II: Cable Connection Tables

1. FP Ctrl & USB Cable

M1713G24-FPB to S5642 MB		
M1713G24-FPB	**Connect to**	**S5642 M/B**
FP ctrl cable J3	→	FPIO_1 P/N: 422T57700006
USB cable J34	→	USB3_FPIO1 P/N: 422T56500001

2. Mini-SAS HD & Fan ctrl Cable

M1309F65T to S5642 MB		
M1309F65T	**Connect to**	**S5642 M/B**
Mini-SAS HD Cable-1 CN10	→	PCH_SATA_0_7 P/N: 422T51400004
Mini-SAS HD Cable-2 CN11	→	PCH_SATA_0_7 P/N: 422T53400017
Fan Ctrl Cable J4	→	FAN_HD1 P/N: 422T53400003

3. Slim-SAS & SATA Cable

M1298T65-BP12E-2 to S5642 MB		
M1298T65-BP12E-2	**Connect to**	**S5642 M/B**
Slim-SAS Cable J1	→	SLIMSAS1 P/N: 422T60900003
Slim-SAS Cable 7P HDR1	→	HDR_3 P/N: 422T60900011
SATA Cable-1 SATA0	→	SSATA4 P/N: 422T51900001
SATA Cable-2 SATA1	→	SSATA5 P/N: 422T51900001

4. 2x12P & 2x4P MB PWR Cable

PSU to S5642 MB		
PSU	**Connect to**	**S5642 M/B**
2x12P PWR Cable MB	→	PWR1
2x4P to 2x2P PWR Cable P2 CPU CPU	→	PWR3
2x4P PWR Cable P3 CPU CPU	→	PWR2

5. 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

6. 4P 2.5” HDD BP PWR Cable

PSU to M1298T65-BP12E-2		
PSU	**Connect to**	**M1298T65-BP12E-2**
4P PWR Cable P21	→	PW1

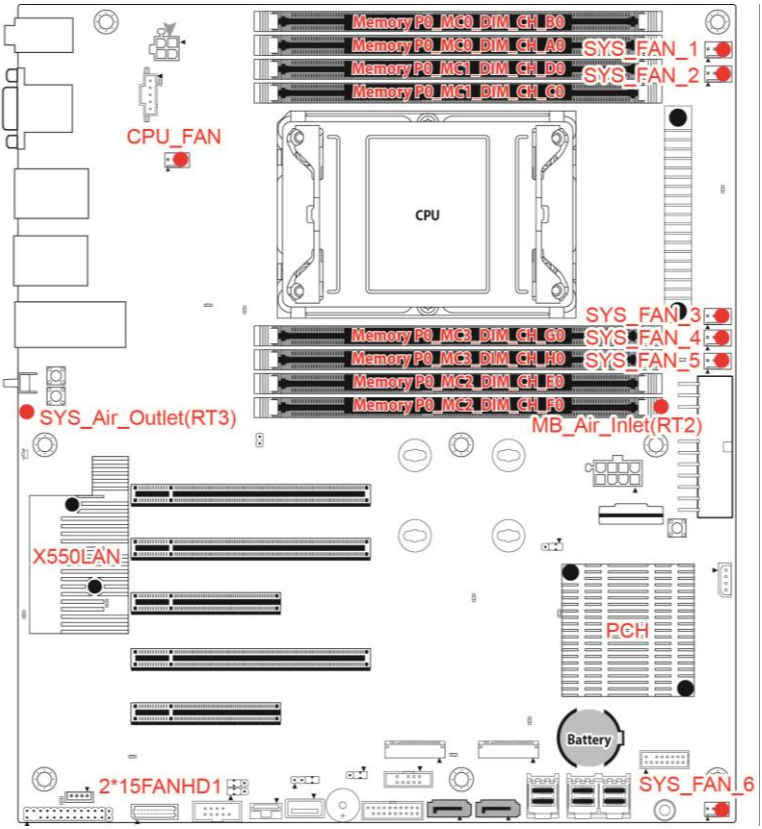
7. System & Rear FAN extend Cable

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 P/N: 422T63200006
Real FAN5 (Need to FAN extend cable)	→	J12 P/N: 422T63200006

Appendix III: 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.

Figure 1: Sensor Location

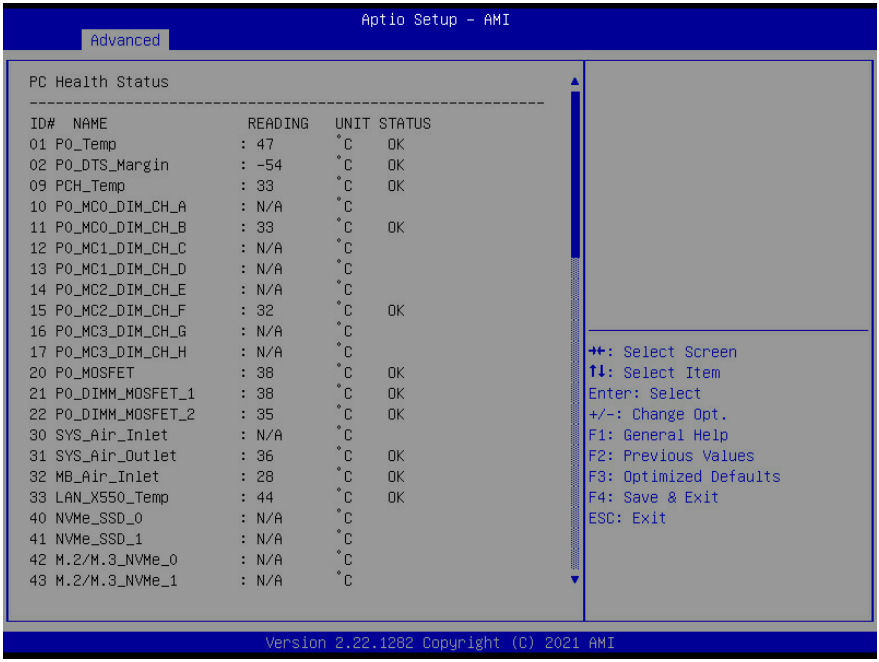


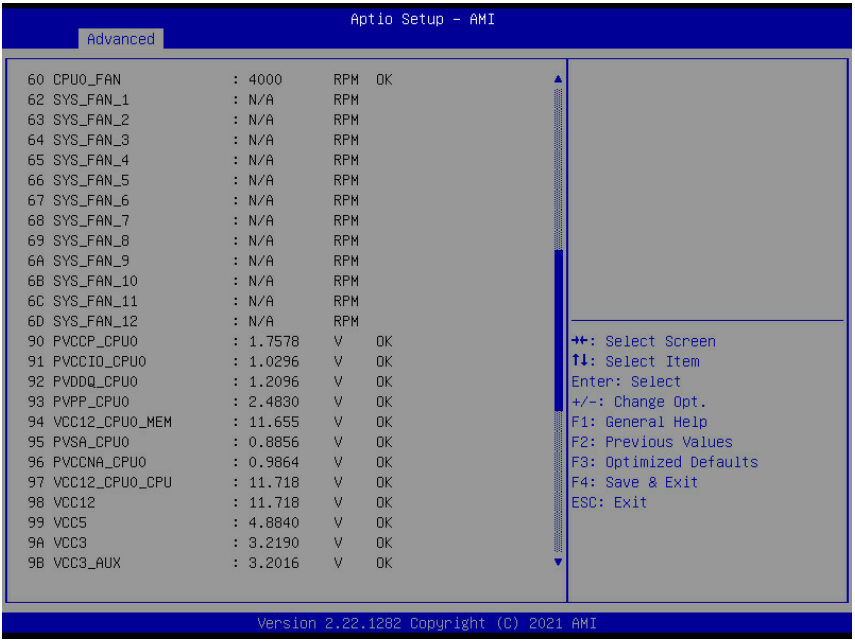
NOTE: The red spot indicates the sensor.

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) , MB_Air_Inlet(RT2) and SYS_FAN1~6/CPU_FAN etc. They detect the system temperature around. **NOTE:** The system temperature is measured in a scale defined by **Intel**, not in Fahrenheit or Celsius.

BIOS Temp Sensor Name Explanation:




Aptio Setup – AMI
Advanced
60 CPU0_FAN : 4000 RPM OK
62 SYS_FAN_1 : N/A RPM
63 SYS_FAN_2 : N/A RPM
64 SYS_FAN_3 : N/A RPM
65 SYS_FAN_4 : N/A RPM
66 SYS_FAN_5 : N/A RPM
67 SYS_FAN_6 : N/A RPM
68 SYS_FAN_7 : N/A RPM
69 SYS_FAN_8 : N/A RPM
6A SYS_FAN_9 : N/A RPM
6B SYS_FAN_10 : N/A RPM
6C SYS_FAN_11 : N/A RPM
6D SYS_FAN_12 : N/A RPM
90 PVCCP_CPU0 : 1.7578 V OK
91 PVCCIO_CPU0 : 1.0296 V OK
92 PVDDQ_CPU0 : 1.2096 V OK
93 PVPP_CPU0 : 2.4830 V OK
94 VCC12_CPU0_MEM : 11.655 V OK
95 PVSA_CPU0 : 0.8856 V OK
96 PVCCNA_CPU0 : 0.9864 V OK
97 VCC12_CPU0_CPU : 11.718 V OK
98 VCC12 : 11.718 V OK
99 VCC5 : 4.8840 V OK
9A VCC3 : 3.2190 V OK
9B VCC3_AUX : 3.2016 V OK
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
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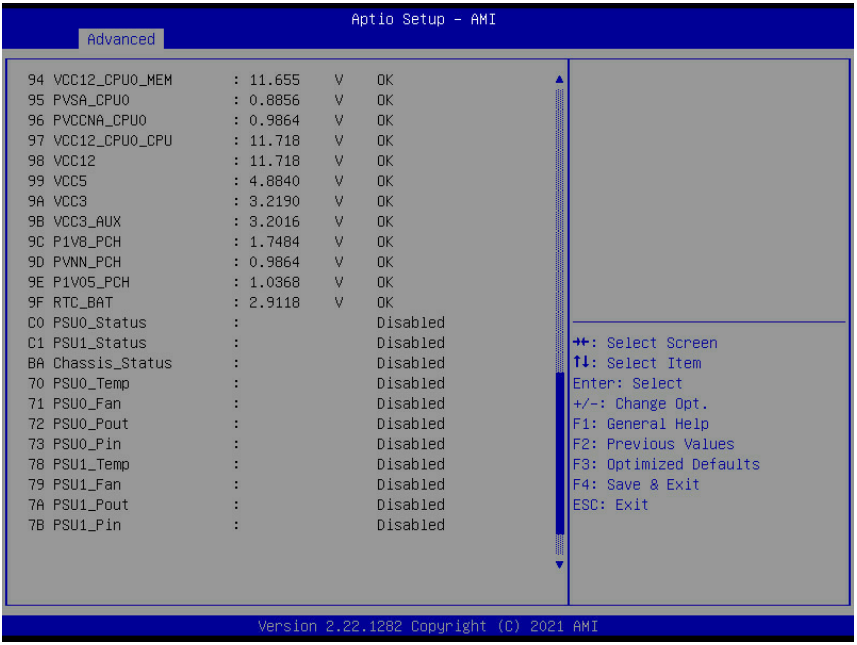
Aptio Setup – AMI
Advanced
94 VCC12_CPU0_MEM : 11.655 V OK
95 PVSA_CPU0 : 0.8856 V OK
96 PVCCNA_CPU0 : 0.9864 V OK
97 VCC12_CPU0_CPU : 11.718 V OK
98 VCC12 : 11.718 V OK
99 VCC5 : 4.8840 V OK
9A VCC3 : 3.2190 V OK
9B VCC3_AUX : 3.2016 V OK
9C P1V8_PCH : 1.7484 V OK
9D PVNN_PCH : 0.9864 V OK
9E P1V05_PCH : 1.0368 V OK
9F RTC_BAT : 2.9118 V OK
C0 PSU0_Status : Disabled
C1 PSU1_Status : Disabled
BA Chassis_Status : Disabled
70 PSU0_Temp : Disabled
71 PSU0_Fan : Disabled
72 PSU0_Pout : Disabled
73 PSU0_Pin : Disabled
78 PSU1_Temp : Disabled
79 PSU1_Fan : Disabled
7A PSU1_Pout : Disabled
7B PSU1_Pin : Disabled
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.22.1282 Copyright (C) 2021 AMI

BIOS Temp Sensor	Name Explanation
CPU_Tctl_Value	CPU Temperature
SYS_Air_Inlet	Sensor connected to the Front Panel
MB_Air_Inet	Temperature of the M/B Air Inlet Area
SYS_Air_Outlet	Temperature of the System Air Outlet Area
X550_Temp	Temperature of Intel LAN X550 chipset
CPU_CORE_MOSFET	Max Temperature of CPU_CORE_MOSFET
CPU_SOC_MOSFET	Max Temperature of CPU_SOC_ MOSFET
DIMM_MOSFET_1	Max Temperature of CPU DIMM Area1 MOSFET
DIMM_MOSFET_2	Max Temperature of CPU DIMM Area2 MOSFET
P0_UMC0_CH_A	Temperature of CPU0 DIMM Channel A
P0_UMC1_CH_B	Temperature of CPU0 DIMM Channel B
P0_UMC3_CH_C	Temperature of CPU0 DIMM Channel C
P0_UMC2_CH_D	Temperature of CPU0 DIMM Channel D
P0_UMC6_CH_E	Temperature of CPU0 DIMM Channel E
P0_UMC7_CH_F	Temperature of CPU0 DIMM Channel F
P0_UMC5_CH_G	Temperature of CPU0 DIMM Channel G
P0_UMC4_CH_H	Temperature of CPU0 DIMM Channel H
CPU_FAN	Fan Speed of CPU_FAN
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
SYS_FAN_6	Fan Speed of SYS_FAN_6
SYS_FAN_7	Fan Speed of SYS_FAN_7
SYS_FAN_8	Fan Speed of SYS_FAN_8
SYS_FAN_9	Fan Speed of SYS_FAN_9
SYS_FAN_10	Fan Speed of SYS_FAN_10
SYS_FAN_11	Fan Speed of SYS_FAN_11
SYS_FAN_12	Fan Speed of SYS_FAN_12
PSU0_STATUS	Current status of PSU0
PSU0_Temp	Temperature of PSU0
PSU0_FAN	Fan Speed of PSU0
PSU1_STATUS	Current status of PSU1
PSU1_Temp	Temperature of PSU1
PSU1_FAN	Fan Speed of PSU1

Appendix IV: FRU Parts Table

FT65T-B5642 FRU Parts				
Item	**Model Number**	**Part Number**	**Picture**	**Description**
CPU Heatsink	FRU-TH-0380	343T63700001		HF-HEATSINK;Active,SBU,Intel Whitely,1U<H≤2U,78x113x64,Al Fin,Base_Die-casting+ Cu block,3 HP,TC-5026,6025 FAN, TSM-002007-HS5,FT65T-B5642
FAN module	FRU-TH-0390	422T63200001		System FAN, 120*120*38mm,6PIN
Rear FAN module	FRU-TH-0400	336210000065		80*80*38mm,4 PIN
rack mount FRU kit	FRU-AS-9230	5412T6320006		FT65T-B5642 SLIDE RAIL KIT+HANDLE R+HANDLE L
Cable	FRU-CS-0500	422T51400004		450 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-0210	422T51900001		700 mm,SATA CABLE (SAS WIRE),SATA
	FRU-CS-0880	332810000555		US,125V,12 AWG(3.31mm²),1800mm，PWR CORD
	FRU-CS-1830	332810000348		EU,250V,EL202+711,3PIN.1.5MM2,16A，PWR CORD

NOTE

Appendix VI: 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-B5642 Service Engineer's Manual V1.0

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