



GC70-B8033

Service Engineer's Manual



PREFACE

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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 A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Notice for Canada

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

● Notice for Europe (CE Mark)



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

Warning

This equipment is compliant with Class A 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.

● Safety: UL/IEC/EN 62368-1

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

About this Manual

This manual is intended for skilled person with hardware knowledge of computers. Components inside the compartments should be serviced only by a skilled person. This manual is aimed to provide you with instructions on installing your TYAN GC70-B8033.

How this guide is organized

This guide contains the following parts:

Chapter 1: Overview

This chapter provides an introduction to the TYAN GC70-B8033 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.

Chapter 4: Motherboard Information

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

Chapter5: BIOS Setup

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

Chapter 6: Diagnostics

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

Appendix:

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

Safety and Compliance Information

Before installing and using TYAN GC70-B8033, 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.
- Connection the equipment protective earthing conductor to the installation protective earthing conductor. (for example, by means of a power cord connected to a socket-outlet with earthing connection).

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

	<p>Caution. This symbol indicates a potential hazard. The potential for injury exists if cautions are not observed. Consult equipment documentation for specific details.</p>
	<p>Caution. Slide-mounted equipment is not to be used as a shelf or a work space.</p>
	<p>Warning. This symbol indicates the presence of hazardous energy circuits or electric shock hazards. Refer all servicing to qualified personnel.</p>
	<p>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.</p>
	<p>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 rebut les batteries usagées selon les instructions.</p>
	<p>Multiple power connections. Prior to servicing, disconnect all power cords. Raccordements de puissance multiples. Avant l'entretien, vous devez débrancher tous les cordons d'alimentation.</p>

General Precautions

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

Machine Room Environment

- This device is for use only in a restricted access location, such as a machine room or IT room.
- 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 skilled person who are knowledgeable about the procedures, precautions, and hazards associated with equipment containing hazardous energy levels.
- Do not exceed the level of repair specified in the procedures in the product documentation. Improper repairs can create a safety hazard.
- 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	17
1.1 About the TYAN GC70-B8033	17
1.2 Product Models.....	18
1.3 Features.....	19
1.4 About the Product.....	24
1.4.1 System Front View	24
1.4.2 System Rear View	26
1.4.3 PSU and LAN LED Indications	27
1.4.4 System Top View.....	28
1.4.5 System Configuration	30
Chapter 2: Setting Up	33
2.0.1 Before you Begin	33
2.0.2 Work Area	33
2.0.3 Tools	33
2.0.4 Precautions.....	34
2.1 Installing Motherboard Components	35
2.1.1 Removing the Chassis Cover	35
2.1.2 Replacing the Chassis Cover	36
2.1.3 Installing the CPU and Heat sink.....	37
2.1.4 Installing the Air Duct.....	40
2.1.5 Installing the Memory	41
2.1.6 Installing the 2.5" Hard Drive	44
2.1.7 Installing the M.2 Card.....	46
2.1.8 Installing the OCP Mezz Card	47
2.1.9 Installing the GPU Card.....	48
Chapter 3: Replacing Pre-Installed Components	51
3.1 Introduction	51
3.2 Disassembly Flowchart.....	51
3.3 Removing the Cover	52
3.4 Replacing the Power Supply	52
3.5 Replacing the Front Panel Board	53
3.5.1 Front Panel Board Features	54
3.5.2 Connector Definitions	54
3.6 Replacing Power Distribution Board.....	55
3.6.1 Power Distribution Board Features	56
3.7 Replacing the Riser Card	57
3.7.1 Riser card Features	58
3.8 Replacing the Fan	59
3.9 Replacing the Motherboard	60

Chapter 4: Mainboard Information	61
4.1 Board Image	62
4.2 Block Diagram	63
4.3 Mainboard Mechanical Drawing	64
4.4 Board Parts, Jumpers and Connectors	65
4.5 Tips on Installing Motherboard in Chassis	76
4.6 Installing the Memory	78
4.7 Installing Add-In Cards	81
4.8 Finishing Up.....	82
Chapter 5: BIOS Setup	83
5.1 About the BIOS.....	83
5.1.1 Setup Basics.....	83
5.1.2 Getting Help.....	84
5.1.3 In Case of Problems	84
5.1.4 Setup Variations	84
5.2 Main Menu.....	85
5.3 Advanced Menu.....	86
5.3.1 T1s Auth Configuration.....	88
5.3.2 iSCSI Configuration.....	92
5.3.3 VLAN Configuration (MAC:xxxxxxxxxxxx).....	101
5.3.4 MAC:xxxxxxxxxxxx - IPv4 Network Configuration.....	103
5.3.5 MAC:xxxxxxxxxxxx - IPv6 Network Configuration.....	104
5.3.6 Network Stack Configuration.....	107
5.3.7 ACPI Settings	109
5.3.8 S5 RTC Wake Settings.....	110
5.3.9 Serial Port Console Redirection	111
5.3.10 USB Configuration.....	117
5.3.11 Onboard Device Configuration	119
5.3.12 AST2500 Super IO Configuration.....	120
5.3.13 Hardware Health Configuration	122
5.3.14 CSM Configuration	125
5.3.15 CPU Configuration.....	127
5.3.16 NVMe Configuration	129
5.3.17 Trusted Computing	130
5.3.18 PCI Subsystem Settings.....	132
5.3.19 Option ROM Dispatch Policy.....	134
5.3.20 PCIe Slot Configuration	136
5.3.21 Redfish Host Interface Settings.....	137
5.4 Chipset.....	138
5.4.1 North Bridge Configuration.....	139
5.5 AMD CBS	141
5.5.2 DF Common Options	146

5.5.5	FCH Common Options.....	166
5.6	Server Management.....	169
5.6.1	System Event Log.....	171
5.6.2	BMC Network Configuration.....	172
5.6.3	BMC User Settings.....	173
5.7	Security.....	177
5.7.1	Secure Boot.....	178
5.8	Boot.....	183
5.8.1	Delete Boot Option.....	185
5.9	Save & Exit.....	186
Chapter 6:	Diagnostics.....	189
6.1	Flash Utility.....	189
6.2	AMIBIOS Post Code (Aptio).....	190
Appendix I:	How to recover UEFI BIOS.....	197
Appendix II:	Cable Connection Tables.....	199
Appendix III:	Technical Support.....	201

Chapter 1: Overview

1.1 About the TYAN GC70-B8033

Congratulations on your purchase of the TYAN® GC70-B8033, a highly optimized 1U rack-mountable barebone system. The GC70-B8033 is designed to support single AMD® EYPC 7003 Series Processor and up to 1024GB RDIMM / 4,096GB LRDIMM 3DS DDR4, providing a rich feature set and incredible performance. Leveraging advanced technology from AMD®, the GC70-B8033 server system is capable of offering scalable 32 and 64-bit computing, high bandwidth memory design, and lightning-fast PCI-E bus implementation. The GC70-B8033 not only empowers your company in nowadays IT demand but also offers a smooth path for future application usage.

TYAN® also offers GC70-B8033 (**B8033G70E2HR-DB**) in a version that supports up to (2) 2.5" NVMe U.2 devices with Delta 800W CRPS power option, while GC70-B8033 (**B8033G70E2HR-CB**) supports (2) 2.5" NVMe U.2 devices and Chicony 800W CRPS power supply type. The GC70-B8033 uses TYAN's latest chassis featuring a robust structure and a solid mechanical enclosure. All of this provides GC70-B8033 the power and flexibility to meet the needs of nowadays server applications.



1.2 Product Models

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

- **B8033G70E2HR-DB**: Single-socket AMD EPYC 7003 barebone platform with (2) 2.5" NVMe U.2 SSDs and (1) 22110/2280 M.2 connector by PCIe Gen4 interface, RPSU power supply type, Delta 800 Watts
- **B8033G70E2HR-CB**: Single-socket AMD EPYC 7003 barebone platform with (2) 2.5" NVMe U.2 SSDs and (1) 22110/2280 M.2 connector by PCIe Gen4 interface, RPSU power supply type, Chicony 800 Watts

1.3 Features

GC70-B8033 (B8033G70E2HR-CB)

System	Form Factor	1U Rackmount
	Chassis Model	GC70
	Dimension (D x W x H)	27.4" x 17.32" x 1.7" (697 x 440 x 43.2mm)
	Motherboard Name	S8033GME #
	Motherboard Notification	# The motherboard not sold separately
	Board Dimension	16" x 15.1" (408 x 384mm)
Front Panel	Buttons	(1) PWR w/ LED / (1) UID / (1) RST
	LEDs	(1) PWR / (1) UID / (1) System Event / (1) BMC event / (1) PSU Event
	I/O Ports	(1) USB 3.2 Gen.1 port / (1) LAN Port (IPMI)
System Cooling Configuration	FAN	(5) 4028 fans
	Redundancy	Yes
Power Supply	Type	RPSU
	Input Range	AC 100-127V/10A / AC 200-240V/5A
	Frequency	50-60 Hz
	Output Watts	Chicony 800 Watts
	Efficiency	80 plus Platinum
	Redundancy	1+1
Processor	Serviceability	Hot-swap
	Q'ty / Socket Type	(1) AMD Socket SP3
	Supported CPU Series	(1) AMD EPYC™ 7003 Series Processor
	Thermal Design Power Wattage	Max up to 240W (cTDP)
Memory	Supported DIMM Qty	(16) DIMM slots
	DIMM Type / Speed	RDIMM DDR4 3200 w/ ECC up to 1,024GB (64GB*16) / LRDIMM DDR4 3200 w/ ECC up to 4,096GB (256GB*16) / 3DS DDR4 3200 w/ ECC up to 4,096GB (256*16)
	Capacity	Up to 1,024GB RDIMM / 4,096GB LRDIMM 3DS
	Memory channel	8 Channels per CPU
	Memory voltage	1.2V
Expansion Slots	PCIe	(1) PCIe Gen.4 x16 slot (FH/HL)
	Others	(1) PCIe Gen.4 x16 OCP 3.0 mezz. slot
LAN	Q'ty / Port	(1) GbE dedicated for IPMI

	PHY	Realtek RTL8211E-VB-CG
Storage NVMe	Connector (M.2)	(1) 22110/2280 (by PCIe Gen.4 interface)
	Connector (U.2)	(2) 2.5"NVMe SSD
Graphic	Connector type	D-Sub 15-pin
	Resolution	Up to 1920x1200
	Chipset	Aspeed AST2500
I/O Ports	USB	(1) USB3.2 Gen.1 header (Type-A) / (2) USB3.2 Gen.1 headers
	COM	(1) 2x5 pin-header
	VGA	(1) D-Sub 15-pin port
	RJ-45	(1) GbE port dedicated for IPMI
TPM (Optional)	TPM Support	Please refer to our TPM supported list.
	Interface	SPI
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 / Over voltage warning indicator
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 / 64MB
	Feature	Hardware Monitor / Boot from USB device/PXE via LAN/Storage / Console Redirection / User Configurable FAN PWM Duty Cycle / SMBIOS 3.2/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 A
	CE (DoC)	Class A
Operating Environment	Operating Temp.	10° C ~ 35° C (50° F ~ 95° F)
	Non-operating Temp.	- 40° C ~ 70° C (-40° F ~ 158° F)
Package Contains	Barebone	(20) GC70-B8033 Barebone
	Manual	(20) Quick Installation Guide on Top Cover
	Others	Separately orderable items: 1U quick-released sliding rail

RoHS	RoHS 6/6 Compliant	Yes
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GC70-B8033 (B8033G70E2HR-DB)

System	Form Factor	1U Rackmount
	Chassis Model	GC70
	Dimension (D x W x H)	27.4" x 17.32" x 1.7" (697 x 440 x 43.2mm)
	Motherboard Name	S8033GME #
	Motherboard Notification	# The motherboard not sold separately
Front Panel	Board Dimension	16" x 15.1" (408 x 384mm)
	Buttons	(1) PWR w/ LED / (1) UID / (1) RST
	LEDs	(1) PWR / (1) UID / (1) System Event / (1) BMC event / (1) PSU Event
	I/O Ports	(1) USB 3.2 Gen.1 port / (1) LAN Port (IPMI)
System Cooling Configuration	FAN	(5) 4028 fans
	Redundancy	Yes
Power Supply	Type	RPSU
	Input Range	AC 100-127V/8.5A / AC 200-240V/5A
	Frequency	50-60 Hz
	Output Watts	Delta 800 Watts
	Efficiency	80 plus Platinum
	Redundancy	1+1
Processor	Serviceability	Hot-swap
	Q'ty / Socket Type	(1) AMD Socket SP3
	Supported CPU Series	(1) AMD EPYC™ 7003 Series Processor
	Thermal Design Power Wattage	Max up to 240W (cTDP)
Memory	Supported DIMM Qty	(16) DIMM slots
	DIMM Type / Speed	RDIMM DDR4 3200 w/ ECC up to 1,024GB (64GB*16) / LRDIMM DDR4 3200 w/ ECC up to 4,096GB (256GB*16) / 3DS DDR4 3200 w/ ECC up to 4,096GB (256*16)
	Capacity	Up to 1,024GB RDIMM / 4,096GB LRDIMM 3DS
	Memory channel	8 Channels per CPU
	Memory voltage	1.2V

Expansion Slots	PCIe	(1) PCIe Gen.4 x16 slot (FH/HL)
	Others	(1) PCIe Gen.4 x16 OCP 3.0 mezz. slot
LAN	Q'ty / Port	(1) GbE dedicated for IPMI
	PHY	Realtek RTL8211E-VB-CG
Storage NVMe	Connector (M.2)	(1) 22110/2280 (by PCIe Gen.4 interface)
	Connector (U.2)	(2) 2.5"NVMe SSD
Graphic	Connector type	D-Sub 15-pin
	Resolution	Up to 1920x1200
	Chipset	Aspeed AST2500
I/O Ports	USB	(1) USB3.2 Gen.1 header (Type-A) / (2) USB3.2 Gen.1 headers
	COM	(1) 2x5 pin-header
	VGA	(1) D-Sub 15-pin port
	RJ-45	(1) GbE port dedicated for IPMI
TPM (Optional)	TPM Support	Please refer to our TPM supported list.
	Interface	SPI
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 / Over voltage warning indicator
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 / 64MB
	Feature	Hardware Monitor / Boot from USB device/PXE via LAN/Storage / Console Redirection / User Configurable FAN PWM Duty Cycle / SMBIOS 3.2/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 A
	CE (DoC)	Class A
Operating Environment	Operating Temp.	10° C ~ 35° C (50° F ~ 95° F)
	Non-operating Temp.	- 40° C ~ 70° C (-40° F ~ 158° F)

Package Contains	Barebone	(20) GC70-B8033 Barebone
	Manual	(20) Quick Installation Guide on Top Cover
	Others	Separately orderable items: 1U quick-released sliding rail
RoHS	RoHS 6/6 Compliant	Yes

NOTE:

1. The specifications are subject to change without prior notice.
2. Please visit our Web site for the latest specifications.

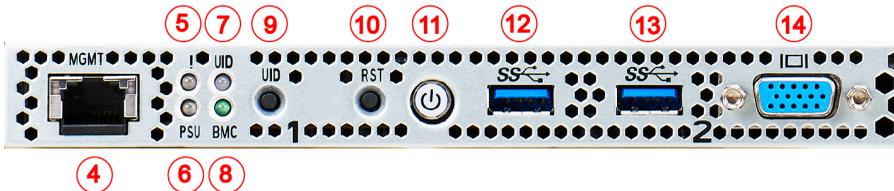
1.4 About the Product

The following views show you the product.

1.4.1 System Front View

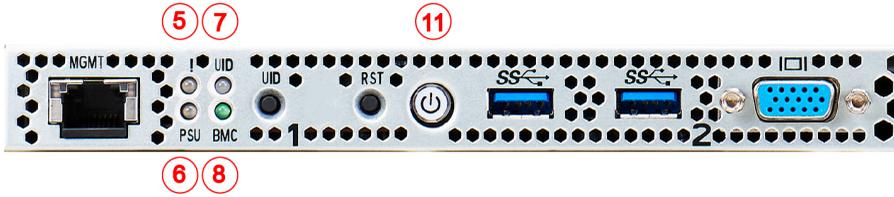


Front Panel Display (M1726G70-FPB pre-installed)



No.	Item	No.	Item
1	Front Panel (M1726G70-FPB pre-installed)	8	BMC Health LED
2	Drive Trays	9	UID Button
3	OCP 3.0 Mezz Tray	10	Reset Button
4	1000Base-T dedicated MGMT LAN Port	11	Power Button w/LED
5	System Event LED	12	USB3.2 Gen1 Port 2
6	PSU Status LED	13	USB3.2 Gen1 Port 1
7	UID LED	14	VGA Port

Front Panel LED Definitions



LED	Color	Behavior
5. System Alert LED	Amber Blinking	FAN failed/Over temperature/ PSU failed/Critical system errors
6. PWROK LED (CRPS SKU)	Solid Green	Both PSU statue good
	Solid Amber	One PSU status failed
6. PWROK LED (PDB SKU)	Solid Green	Normal
	Solid Amber	OC/OT/UT of +12V
7. UID LED	Solid Blue	Remote Located
8. BMC Health LED	Green Blinking	Normal
11. Power Button w/LED	Green/Red	System Power On / Green Solid On System Power Off / All Off System Warning / Red Solid On

HDD LED Definitions



Drive Status	Activity LED (Green)	Status LED (Red)
Drive present, no activity	Green Solid On	Off
Drive present with activity	Green Blinking	Off
Drive Fail	Don't care	Red Solid On
Drive identify	Don't care	Red Blinking @ 1Hz
Drive Rebuild	Don't care	Red Blinking @ 4Hz

1.4.2 System Rear View

CRPS SKU



PDB SKU



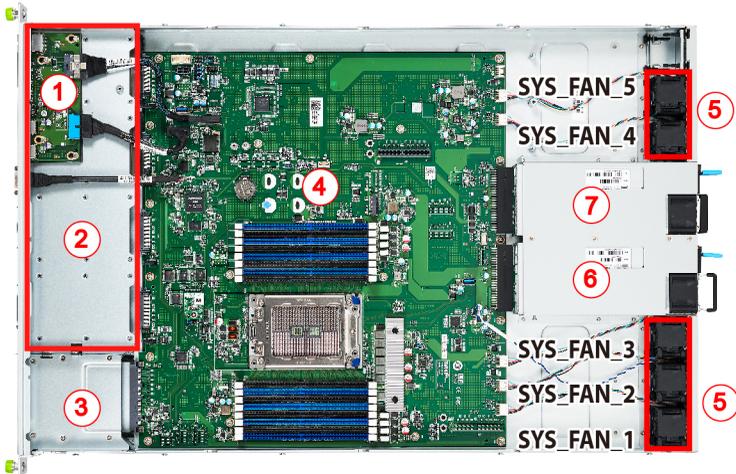
CRPS SKU		PDB SKU	
No.	Description	No.	Description
1	SYS_FAN_1	1	SYS_FAN_1
2	SYS_FAN_2	2	SYS_FAN_2
3	SYS_FAN_3	3	SYS_FAN_3
4	PSU1	4	M8033G70-PDB (pre-installed)
5	PSU2	5	SYS_FAN_4
6	SYS_FAN_4	6	SYS_FAN_5
7	SYS_FAN_5	7	SYS_FAN_6 (reserved)
8	SYS_FAN_6 (reserved)	8	ID LED
9	ID LED		

Rear Panel LED Indication

LED	Color	Behavior
ID LED	Blue	Remote located / Blue Sold On

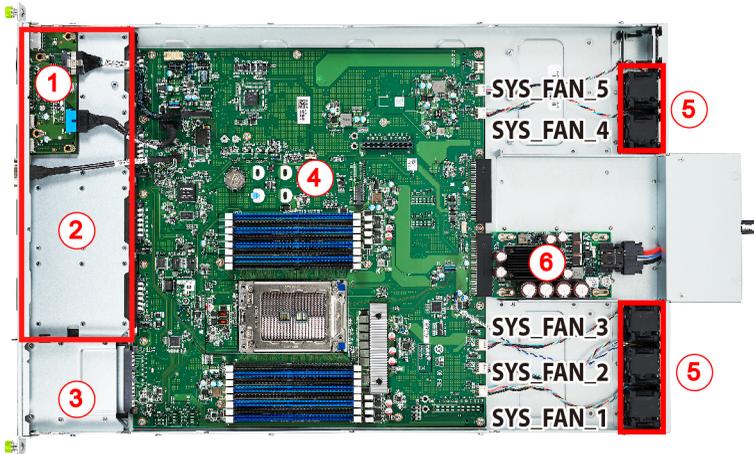
1.4.4 System Top View

CRPS SKU



No.	Description	No.	Description
1	M1726G70-FPB (pre-installed)	5	System Fans
2	Drive Trays	6	PSU1
3	OCP 3.0 Mezz Tray	7	PSU2
4	S8033 Mainboard (pre-installed)		

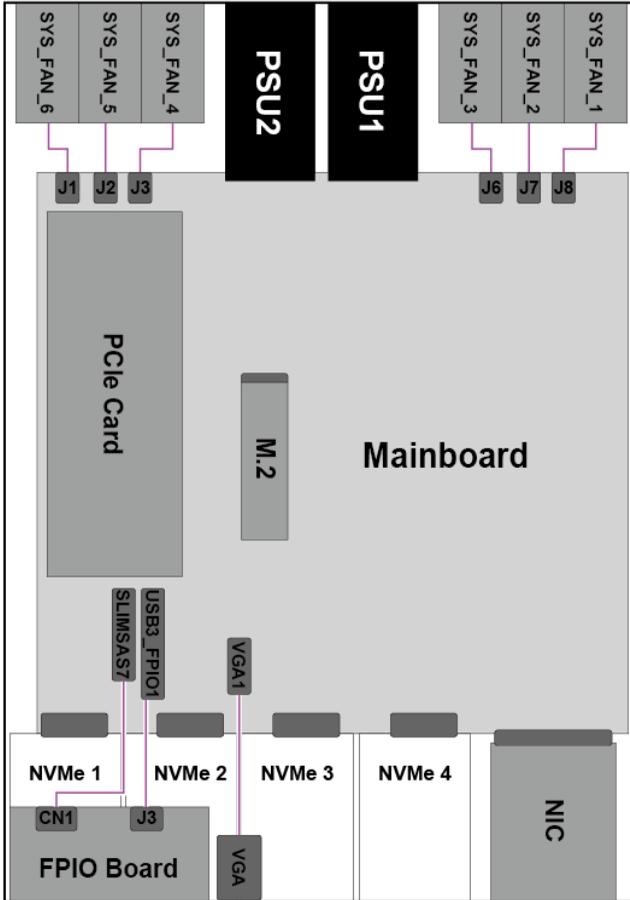
PDB SKU



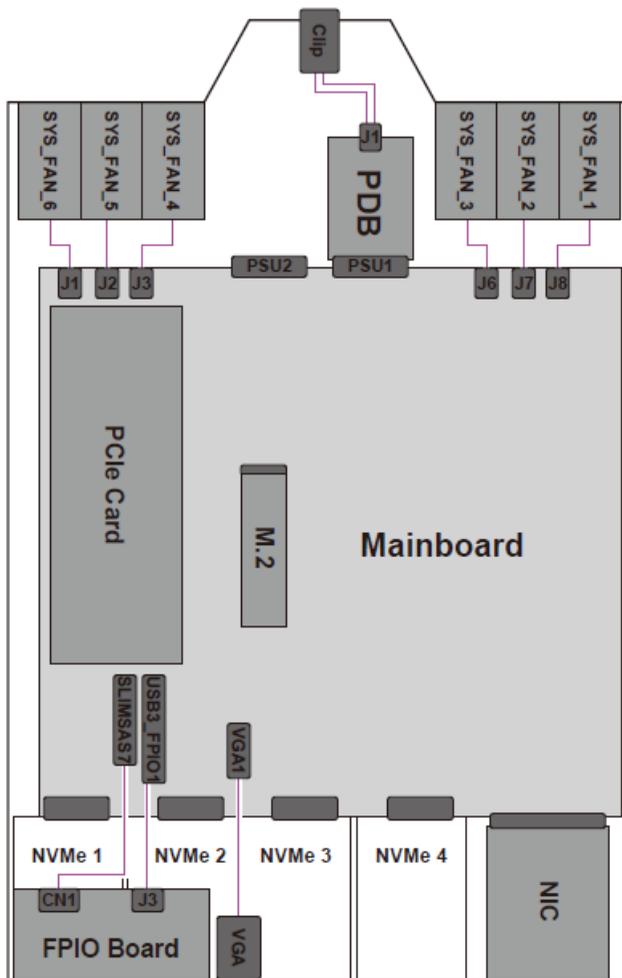
No.	Description	No.	Description
1	M1726G70-FPB (pre-installed)	5	System Fans
2	Drive Trays	6	M8033G70-PDB (pre-installed)
3	OCP 3.0 Mezz Tray		
4	S8033 Mainboard (pre-installed)		

1.4.5 System Configuration

CRPS SKU



PDB SKU



NOTE

Chapter 2: Setting Up

2.0.1 Before you Begin

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

2.0.2 Work Area

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

2.0.3 Tools

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

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

Most of the electrical and mechanical connections can be disconnected using your fingers. It is recommended that you do not use needle-nosed pliers to remove connectors as these can damage the soft metal or plastic parts of the connectors.



Caution!

1. To avoid damaging the motherboard and associated components, use torque force within the range **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 GC70-B8033 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.

2.1 Installing Motherboard Components

This section describes how to install components on to the motherboard, including CPUs, memory modules and Add-on cards.

2.1.1 Removing the Chassis Cover

Follow these instructions to remove the GC70-B8033 chassis cover.

1. Use a screw driver to loosen the thumb screw.



2. Slide to lift up the top cover.



2.1.2 Replacing the Chassis Cover

Follow these instructions to replace the GC70-B8033 chassis cover.

1. Place the top cover on the chassis and slide it forwards.



2. Use a screw driver to fasten the thumb screw.

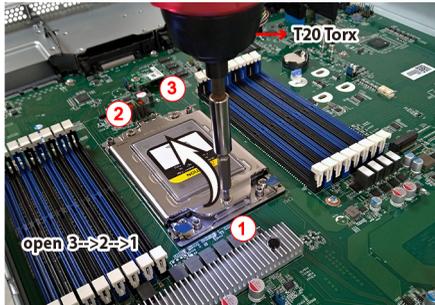


2.1.3 Installing the CPU and Heat sink

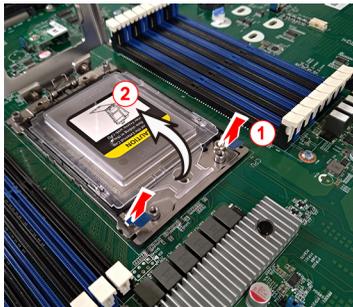
Follow the steps below on installing CPU and CPU heat sink. The GC70-B8033 supports single AMD Socket SP3. The following installation is based on an AMD Socket SP3.

1. Use a T20 Torx screwdriver to loosen the screws securing the force frame in a sequential order (3->2->1).

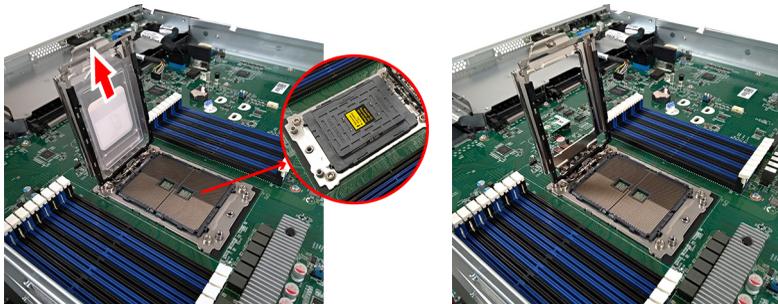
NOTE: The force frame will automatically eject after the captive screws are being released.



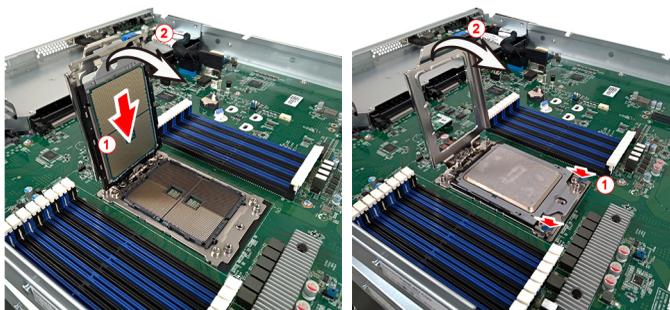
2. By placing your both index fingers on the sides on the metal handle, pull to release the rail frame. Then lift the rail frame to its fully open position.

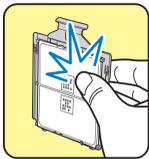


3. Remove the external cap from the rail frame. Use your thumb and forefinger, remove the PnP cap by lifting it up vertically. NOTE: Keep the cap for future DOA/RMA usage.

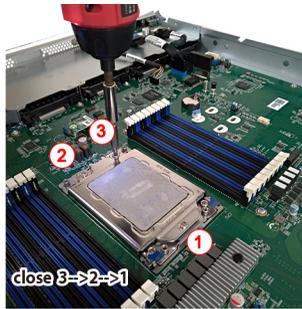


4. Align and install the carrier frame with package into the slot on the rail frame. Carefully close the rail frame with the installed package. Then push both edges of the rail frame firmly until it locks in place.

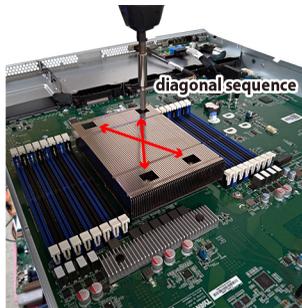
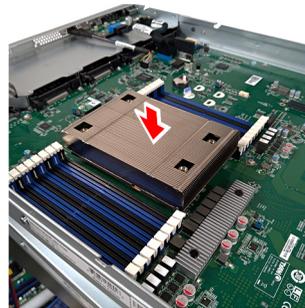
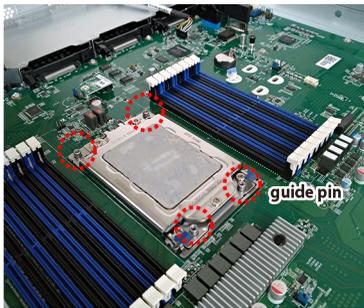


	<p>NOTE:</p> <p>During installation, observe the following:</p> <ol style="list-style-type: none">1. Make sure to push the carrier frame with package towards the end of the rail frame until it clicks into place.2. Do not drop the carrier frame or touch the package pad to avoid component damage.
---	---

6. Close the force frame. Then use a T20 Torx screwdriver to tighten the screws to secure the force frame in a sequential order (1 ->2->3).



7. Place a heatsink on top of the processor. Use a T20 Torx screwdriver to tighten four screws in a diagonal sequence to secure the heat sink.



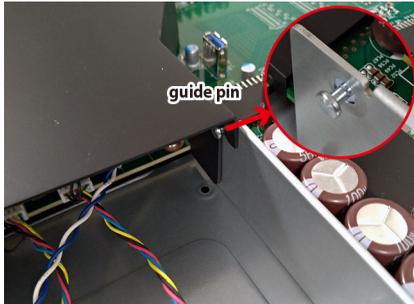
2.1.4 Installing the Air Duct

Follow these instructions to install the air duct.

1. Take out the air duct.



2. Align the guide pins on the air duct with the guide pins on the chassis.



3. Place the air duct onto the chassis.



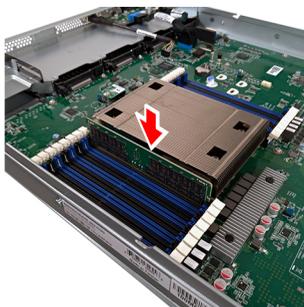
2.1.5 Installing the Memory

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

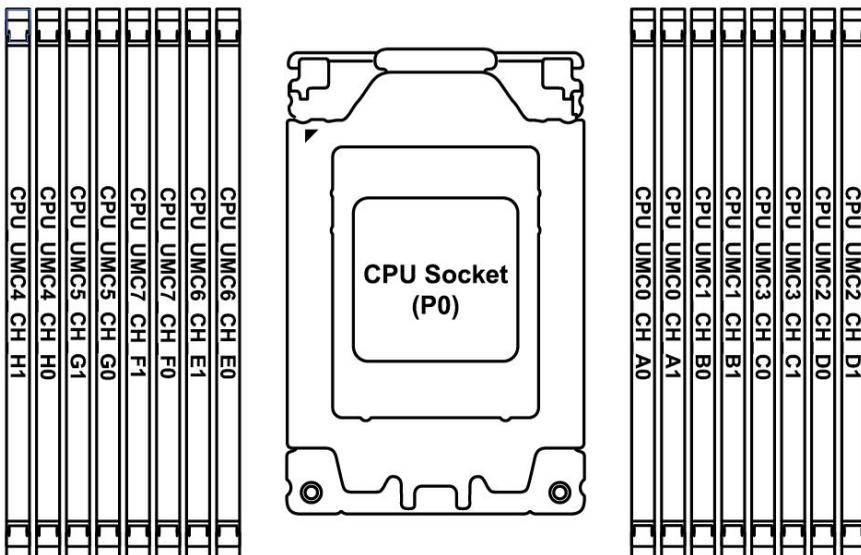
1. Press the memory slot locking levers in the direction of the arrows as shown in the following illustration.



2. 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.



Memory Population table



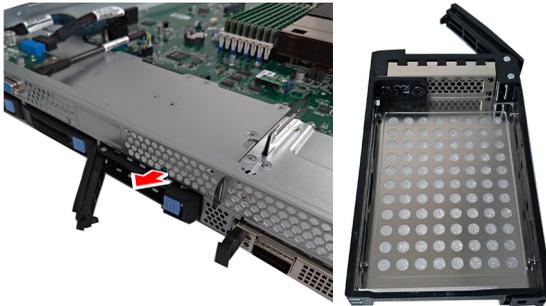
2.1.6 Installing the 2.5" Hard Drive

Follow these instructions to install the 2.5" SSD/NVMe drives.

1. Press the locking tab to pull the lever open.



2. Slide the drive tray out.



3. Press the locking tab to pull the tray side rail open.



4. Align the hard drive with the guide pins and install the hard drive into the drive tray. Close the tray side rail.



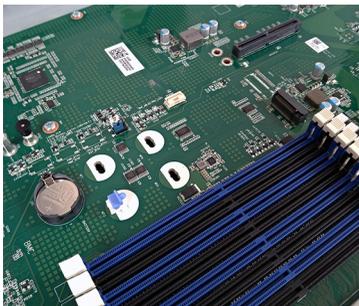
5. Insert the drive tray into the chassis and close the lever.



2.1.7 Installing the M.2 Card

Follow these instructions to install the M.2 Card.

1. The M.2 Latch is pre-installed on the mainboard.



2. Insert the M.2 card into the slot.



3. Pull the M.2 Latch to lock the M.2 card in place.



2.1.8 Installing the OCP Mezz Card

Follow these instructions to install the OCP Mezz Card.

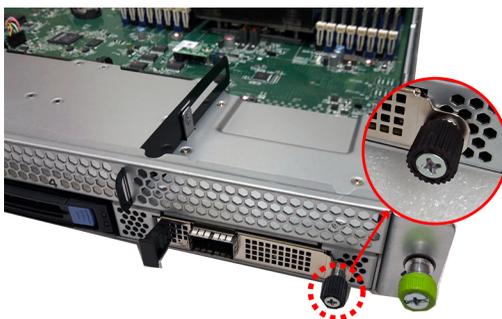
1. Take out the OCP Mezz card.



2. Insert and slide the OCP Mezz card all the way into the chassis until it clicks.



3. Use a screw driver to fasten the thumb screw.



2.1.9 Installing the GPU Card

Follow these instructions to install the GPU Card.

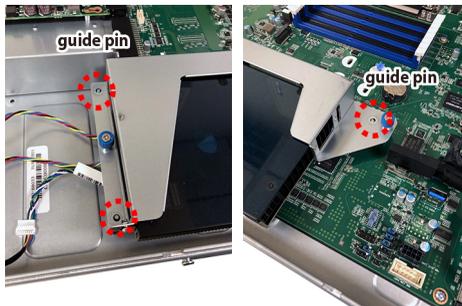
1. Take out the GPU Bracket.



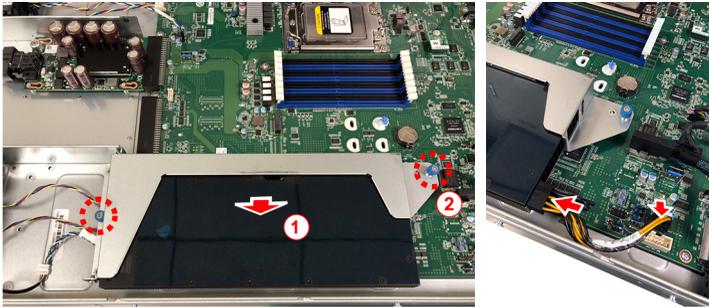
2. Insert the GPU card into the GPU bracket. Use a screw driver to secure three screws.



3. Align the GPU Bracket with the guide pins on the chassis.



4. Use a screw driver to fasten the thumb screws. Finally connect the GPU PWR cable.



NOTE

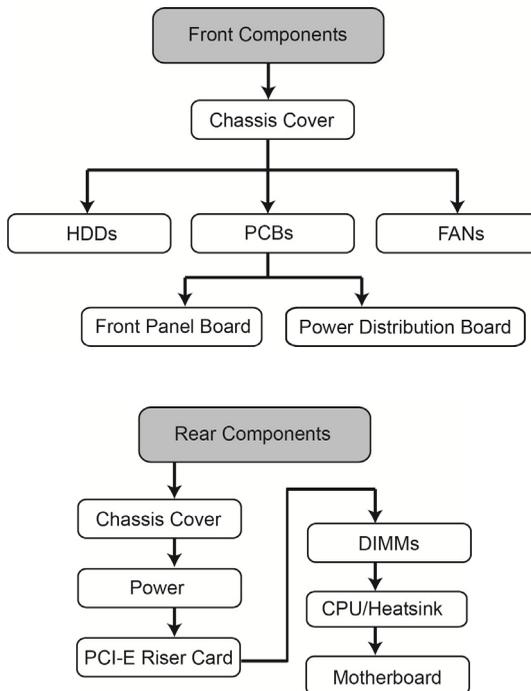
Chapter 3: Replacing Pre-Installed Components

3.1 Introduction

This chapter explains how to replace the pre-installed components, including the [S8033](#) Motherboard, [M1726G70-FPB](#) Front Panel Board, [M8033G70-L16-1F](#) Riser Card, [M8033G70-PDB](#) Power Distribution Board, System Fan and Power Supply etc.

3.2 Disassembly Flowchart

The following flowchart outlines the disassembly procedure.



3.3 Removing the Cover

Follow Chapter 2.1.1 to remove the cover of GC70-B8033.

3.4 Replacing the Power Supply

To replace the power supply follow these instructions.

1. Press the latch as shown to pull out the power supply module.

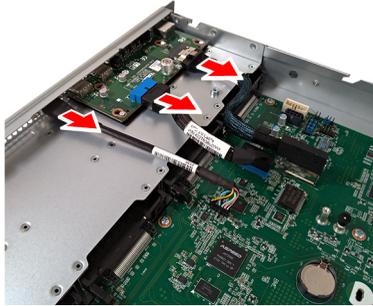


2. Replace a new single power and reinsert it into the power cage following the above steps in reverse.

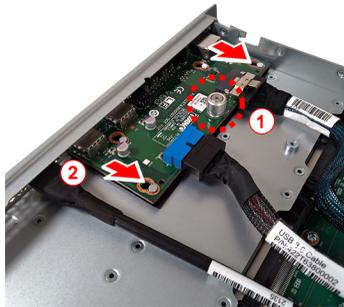
3.5 Replacing the Front Panel Board

Follow these instructions to replace the [M1726G70-FPB](#) Front Panel Board.

1. Disconnect all cables.

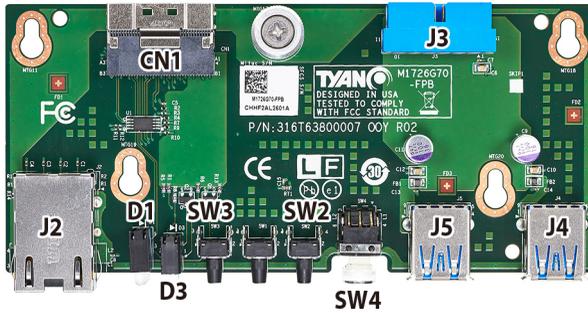


2. Use a screw driver to loosen the thumb screw and push the front panel board backwards to lift it up.



3. After replacing with a new Front Panel Board, follow the steps described earlier in reverse order to reinstall the front panel bezel.

3.5.1 Front Panel Board Features



M1726G70-FPB Front Panel Board	
Form Factor	D 60 x W 132 mm, 6-Layer PCB, thickness: 1.57 mm
Connectors	(1) 10x2 pin header for USB (1) 74-pin header for FPIO (2) USB Type A ports with shielding (1) RJ45 (management port)

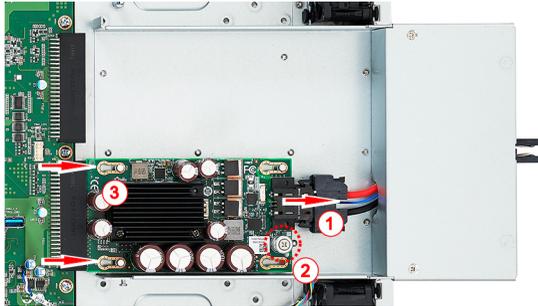
3.5.2 Connector Definitions

Location	Definition
J2	RJ45 LAN (management port)
J3	FP USB Header
J4/J5	Type-A USB3.2 Gen1 Port
D1	System Alert (top) / PWROK LED (bottom)
D3	UID LED (top) / BMC Health LED (bottom)
SW3	UID Button
SW2	Reset Button
SW4	PWR Button w/LED
CN1	FPIO Connector

3.6 Replacing Power Distribution Board

Follow these instructions to replace the [M8033G70-PDB](#) Power Distribution Board.

1. Disconnect the power cable from the Power Distribution Board. Use a screw driver to loosen the thumb screw and then push the PDB forwards to unlock.



2. After replacing with a new PDB, follow the steps described earlier in reverse order to reinstall the power distribution board into the chassis.

3.6.1 Power Distribution Board Features



M8033G70-PDB Power Distribution Board	
Form Factor	D71.5 x W140 mm, 6-layer PCB, thickness: 1.62mm
Connectors	It is a conversion board from 48Vdc Busbar clip to CRPS (common redundant power supply) connection. (1) PWRBP Connector (J1) (1) CRPS 50-pin Gold Finger (GF1)

3.7 Replacing the Riser Card

Follow these instructions to replace the [M8033G70-L16-1F](#) Riser Card.

1. Lift up the Riser Card Bracket from the chassis. Unscrew to replace with a new riser card [M8033G70-L16-1F](#).



2. Follow the steps described earlier in reverse order to reinstall the riser card bracket into the chassis.

3.7.1 Riser card Features

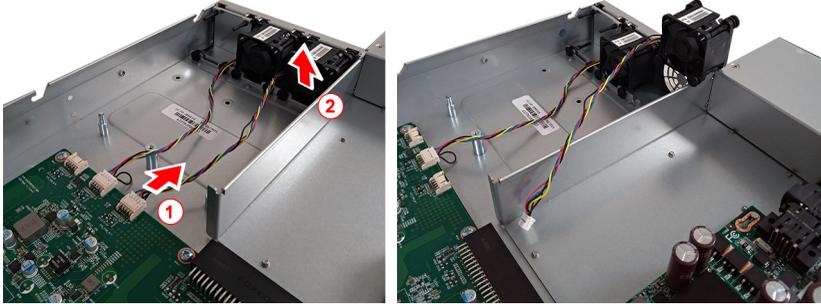


M8033G70-L16-1F Riser Card	
Form Factor	123 x 32mm, 6-layer PCB, thickness=1.57 mm
Connectors	(1) PCI-e x16 Gen3 Slot connector (SLOT1) (1) PCI-e x16 Gen3 Gold Finger connector (GF1)

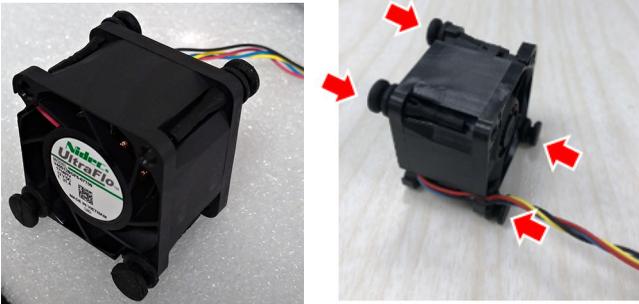
3.8 Replacing the Fan

Follow these instructions to replace the fan module.

1. Disconnect the fan cable to lift up the fan module from the chassis.



2. Release the rubber screws from the fan module. Replace with a new fan and then insert the rubber screws.

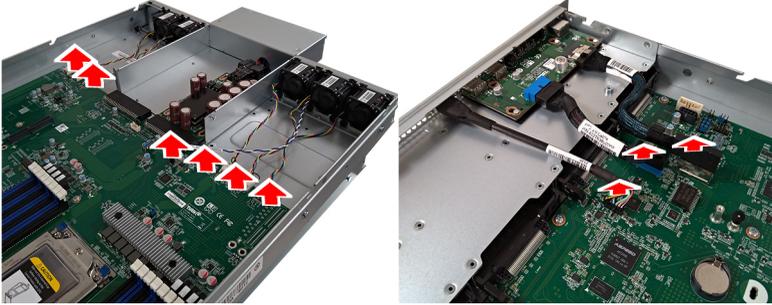


4. Place the new fan module into the chassis and reconnect the fan cable.

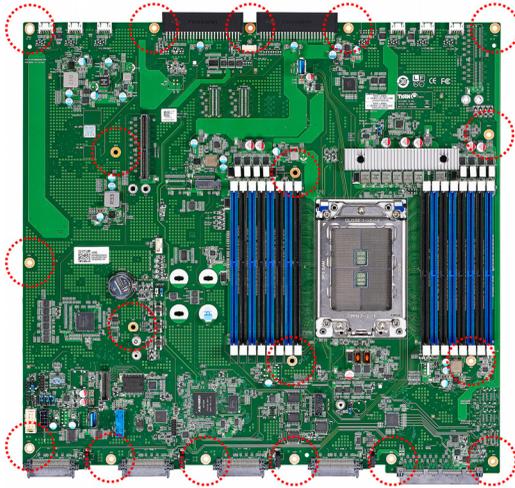
3.9 Replacing the Motherboard

After removing all of the aforementioned components, follow these instructions to remove the motherboard from the chassis.

1. Disconnect all MB cables.



2. Unscrew the motherboard to lift it up for replacement.



Chapter 4: Mainboard Information

You are now ready to install your motherboard.

How to install our products right... the first time

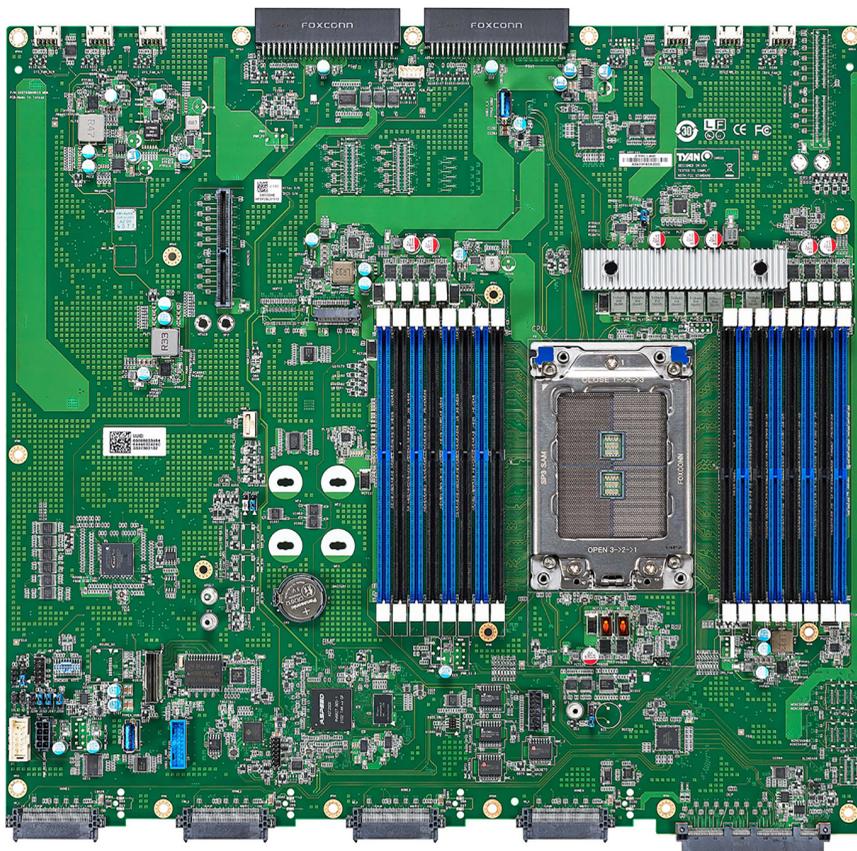
The first thing you should do is reading this user's manual. It contains important information that will make configuration and setup much easier. Here are some precautions you should take when installing your motherboard:

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

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

	<p>Caution!</p> <ol style="list-style-type: none">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.
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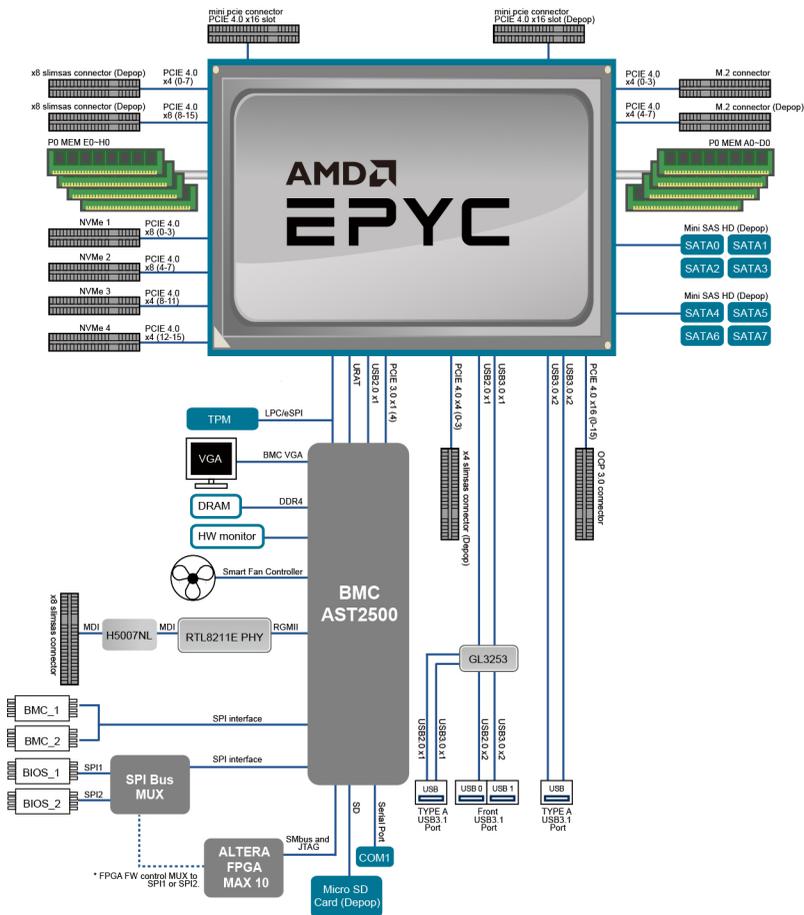
4.1 Board Image



S8033

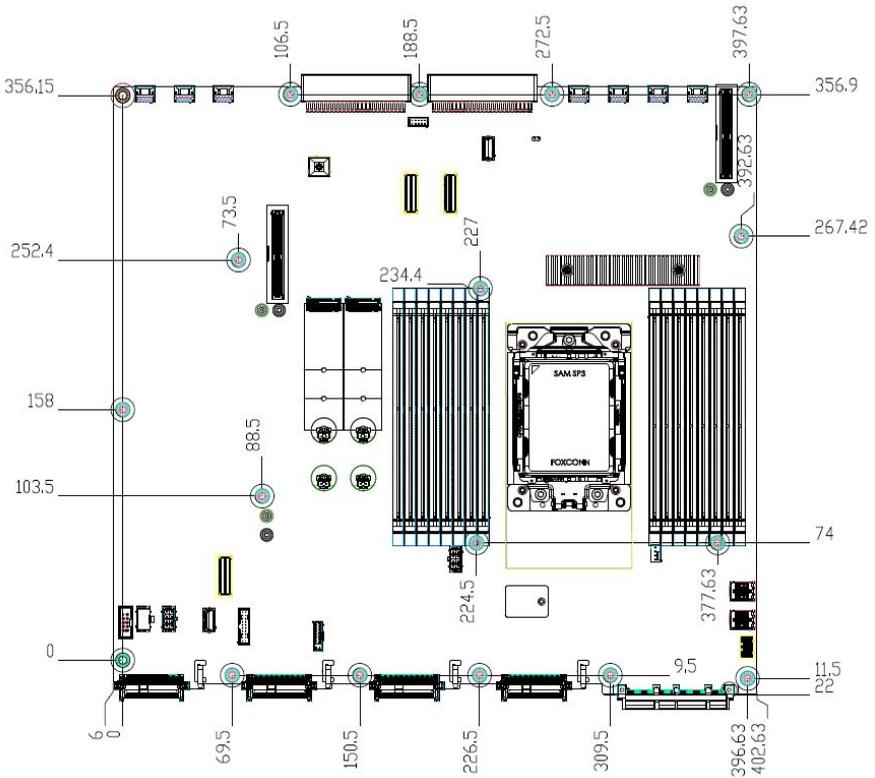
This picture is representative of the latest board revision available at the time of publishing. The board you receive may not look exactly like the above picture.

4.2 Block Diagram

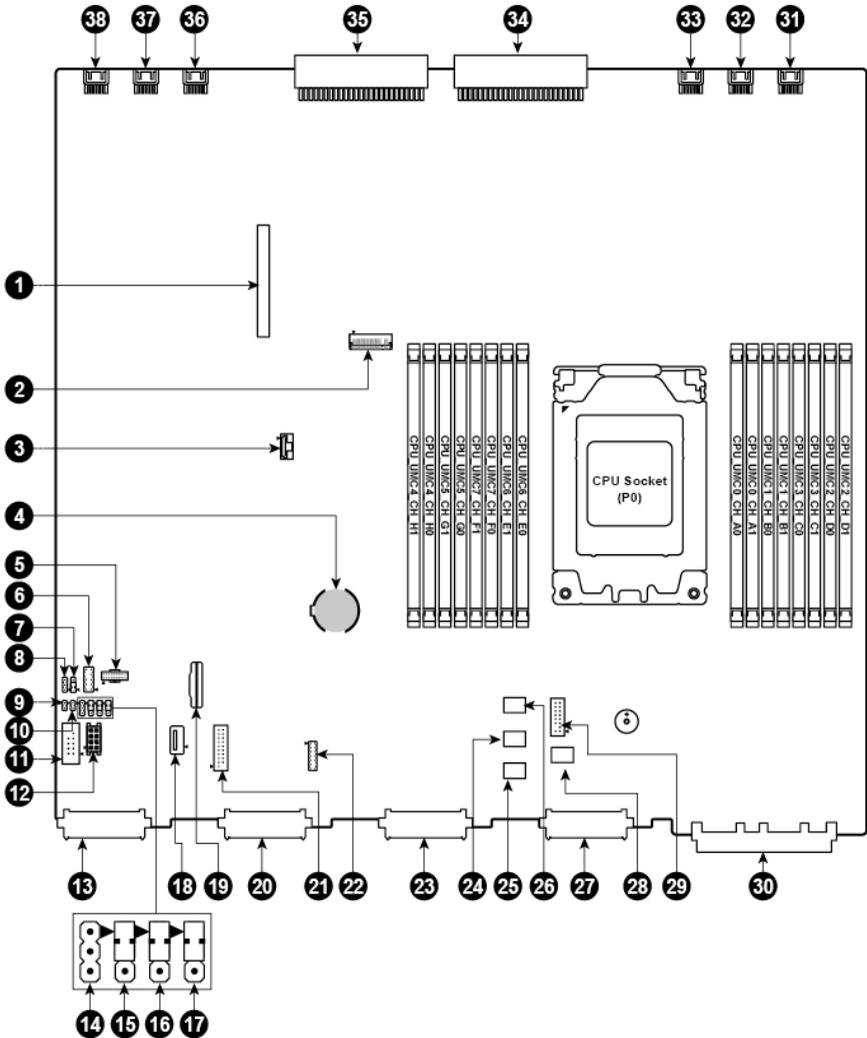


S8033

4.3 Mainboard Mechanical Drawing



4.4 Board Parts, Jumpers and Connectors



This diagram is representative of the latest board revision available at the time of publishing. The board you receive may not look exactly like the above diagram. But for the DIMM number please refer to the above placement for memory installation. For the latest board revision, please visit our web site at <http://www.tyan.com>.

CONNECTORS

- 1 PCIe CONN (MINIPCIE)
- 2 M.2 CONN (M2_1)
- 3 CPU HP Header (HDR_1)
- 4 Coin Battery (CR1)
- 5 HDT HEADER (HDT1)
- 6 JTAG CONN (JTAG1)
- 7 JTAG SWITCH (J198)
1-2: BMC (Default) / 2-3: JTAG Cable
- 8 BMC_HDT#_SEL (J199)
1-2: BMC / 2-3: HDT
- 9 FPGA TEST MODE HEADER (J123)
- 10 INTRUDER HEADER (J122)
- 11 COM PORT (COM1)
- 12 PCIe PWR CONN (PW2)
- 13 U.2_1 (NVME1)
- 14 BMC DEBUG HEADER (J209)
- 15 COM TXD5 (J193)
1-2: BMC (Default) / 2-3: CPU
- 16 COM RXD5 (J197)
1-2: BMC (Default) / 2-3: CPU
- 17 FPIO PWR SWITCH (J200)
1-2: VDD_33_DUAL (Default) / 2-3: VDD_33_RUN
- 18 Internal USB CONN (TYPEA_USB1)
- 19 FPIO CONN (SLIMSAS7)
- 20 U.2_2 (NVME2)
- 21 FPIO_USBx2 (USB3_FPIO1)
- 22 VGA HEADER (VGA)
- 23 U.2_3 (NVME3)
- 24 BIOS2 (BIOS_SPI2)
- 25 BMC1 (BMC_SOCKET1)
- 26 BIOS1 (BIOS_SPI1)
- 27 U.2_4 (NVME4)
- 28 BMC2 (BMC_SOCKET2)
- 29 DEBUG/TPM HEADER (DBG_HD1)
- 30 OCP 3.0 (OCP)
- 31 SYS_FAN 1 (J8)
- 32 SYS_FAN 2 (J7)
- 33 SYS_FAN 3 (J6)
- 34 CRPS PSU CONN (PSU1)
- 35 CRPS PSU CONN (PSU2)
- 36 SYS_FAN 4 (J3)
- 37 SYS_FAN 5 (J2)
- 38 SYS_FAN 6 (J1)

PSU1/PSU2: CRPS 50-pin Power Connector

PSU1				Pin	Signal	Pin	Signal
A1	A1	B1	B1	A1	GND	B1	GND
A2	A2	B2	B2	A2	GND	B2	GND
A3	A3	B3	B3	A3	GND	B3	GND
A4	A4	B4	B4	A4	GND	B4	GND
A5	A4	B4	B5	A5	GND	B5	GND
A6	A5	B5	B6	A6	GND	B6	GND
A7	A6	B6	B7	A7	GND	B7	GND
A8	A7	B7	B8	A8	GND	B8	GND
A9	A8	B8	B9	A9	GND	B9	GND
A10	A9	B9	B10	A10	+12V	B10	+12V
A11	A10	B10	B11	A11	+12V	B11	+12V
A12	A11	B11	B12	A12	+12V	B12	+12V
A13	A12	B12	B13	A13	+12V	B13	+12V
A14	A13	B13	B14	A14	+12V	B14	+12V
A15	A14	B14	B15	A15	+12V	B15	+12V
A16	A15	B15	B16	A16	+12V	B16	+12V
A17	A16	B16	B17	A17	+12V	B17	+12V
A18	A17	B17	B18	A18	+12V	B18	+12V
A19	A18	B18	B19	A19	+12V	B19	+12V
A20	A19	B19	B20	A20	+12V	B20	+12V
A21	A20	B20	B21	A21	+12V	B21	+12V
A22	A21	B21	B22	A22	+12V	B22	+12V
A23	A22	B22	B23	A23	+12V	B23	+12V
A24	A23	B23	B24	A24	+12V	B24	+12V
A25	A24	B24	B25	A25	+12V	B25	+12V
	A25	B25		A19	PMBUS SDA	B19	A0 (SMBus address)
				A20	PMBUS SCL	B20	A1 (SMBus address)
				A21	PSON#	B21	+12Vstby
				A22	AMBAIert#	B22	CR_BUS
				A23	Return sense	B23	ISHARE
				A24	+12V Remote sense	B24	PRESENT
				A25	PWOK	B25	VIN_GOOD

50P

PW2: PCIe Power Connector

PW2				Pin	Signal	Pin	Signal
5	5	1	1	5	+12V	1	+12V
6	6	2	2	6	+12V	2	+12V
7	7	3	3	7	+12V	3	+12V
8	8	4	4	8	+12V	4	+12V
GND2		GND1		GND2	GND	GND1	GND

J1/J2/J3/J4/J6/J7/J8: FAN Connector

J1				Pin	Signal	Pin	Signal
2	2	1	1	2	PRESENT	1	PRESENT
4	4	3	3	4	GND	3	GND
6	6	5	5	6	+12V	5	+12V
8	8	7	7	8	TACHOMETER	7	TACHOMETER
10	10	9	9	10	PWM	9	PWM

MINIPCIE: MiniPCIe Connector

MINIPCIE1			
Pin	Signal	Pin	Signal
119	+12V	120	GND
117	+12V	118	+12V
115	GND	116	+12V
113	+3.3Vstby	114	GND
111	+3.3V	112	+3.3V
109	GND	110	+3.3V
107	TX_P0	108	GND
105	TX_N0	106	RX_N0
103	GND	104	RX_P0
101	TX_P1	102	GND
99	TX_N1	100	RX_N1
97	GND	98	RX_P1
95	TX_P2	96	GND
93	TX_N2	94	RX_N2
91	GND	92	RX_P2
89	TX_P3	90	GND
87	TX_N3	88	RX_N3
85	GND	86	RX_P3
83	TX_P4	84	GND
81	TX_N4	82	RX_N4
79	GND	80	RX_P4
77	TX_P5	78	GND
75	TX_N5	76	RX_N5
73	GND	74	RX_P5
71	TX_P6	72	GND
69	TX_N6	70	RX_N6
67	GND	68	RX_P6
65	SCL	66	GND
63	SDA	64	RESET#
61	GND	62	WAKE#
59	TX_P7	60	GND
57	TX_N7	58	RX_N7
55	GND	56	RX_P7
53	TX_P8	54	GND
51	TX_N8	52	RX_N8
49	GND	50	RX_P8
47	TX_P9	48	GND
45	TX_N9	46	RX_N9
43	GND	44	RX_P9
41	TX_P10	42	GND
39	TX_N10	40	RX_N10
37	GND	38	RX_P10
35	TX_P11	36	GND

	33	TX_N11	34	RX_N11
	31	GND	32	RX_P11
	29	TX_P12	30	GND
	27	TX_N12	28	RX_N12
	25	GND	26	RX_P12
	23	TX_P13	24	GND
	21	TX_N13	22	RX_N13
	19	GND	20	RX_P13
	17	TX_P14	18	GND
	15	TX_N14	16	RX_N14
	13	GND	14	RX_P14
	11	TX_P15	12	GND
	9	TX_N15	10	RX_N15
	7	GND	8	RX_P15
	5	REFCLK_P	6	GND
	3	REFCLK_N	4	PRESENT
	1	GND	2	RESERVED

HDT1: HDT Header

HDT1		Pin	Signal	Pin	Signal
1	CPU_VDDIO	1	CPU_VDDIO	2	CPU_TCK
3	GND	3	GND	4	CPU_TMS
5	GND	5	GND	6	CPU_TDI
7	GND	7	GND	8	CPU_TDO
9	CPU_TRST_L	9	GNCPU_TRST#	10	CPU_PWROK
11	CPU_DBRDY3	11	NC	12	CPU_RST#
13	CPU_DBRDY2	13	NC	14	NC
15	CPU_DBRDY1	15	NC	16	CPU_DBREQ#
17	GND	17	GND	18	NC
19	CPU_VDDIO	19	CPU_VDDIO	20	NC

JTAG1: FPGA JTAG Header

JTAG1		Pin	Signal	Pin	Signal
1	1	1	JTAG_TCK	2	GND
3	3	3	JTAG_TDO	4	+3.3Vaux
5	5	5	JTAG_TMS	6	NC
7	7	7	NC	8	KEY
9	9	9	JTAG_TDI	10	JTAG_HDR#

U2_1/U2_2/U2_3/U2_4: U.2 Connector

U2_1				Pin	Signal	Pin	Signal
E7	E7	S1	S1	E7	REFCLK_P	S1	GND
E8	E8	S2	S2	E8	REFCLK_N	S2	NC
E9	E9	S3	S3	E9	GND	S3	NC
E10	E10	S4	S4	E10	TX_N15	S4	GND
E11	E11	S5	S5	E11	TX_P15	S5	NC
E12	E12	S6	S6	E12	GND	S6	NC
E13	E13	S7	S7	E13	RX_P15	S7	GND
E14	E14	E1	E1	E14	RX_N15	E1	NC
E15	E15	E2	E2	E15	GND	E2	NC
E16	E16	E3	E3	E16	NC	E3	+3.3Vaux
S8	S8	E4	E4	S8	GND	E4	NC
S9	S9	E5	E5	S9	NC	E5	RESET#
S10	S10	E6	E6	S10	NC	E6	NC
S11	S11	P1	P1	S11	GND	P1	WAKE#
S12	S12	P2	P2	S12	NC	P2	NC
S13	S13	P3	P3	S13	NC	P3	NC
S14	S14	P4	P4	S14	GND	P4	IFDET#
S15	S15	P5	P5	S15	NC	P5	GND
S16	S16	P6	P6	S16	GND	P6	GND
S17	S17	P7	P7	S17	TX_N14	P7	NC
S18	S18	P8	P8	S18	TX_P14	P8	NC
S19	S19	P9	P9	S19	GND	P9	NC
S20	S20	P10	P10	S20	RX_P14	P10	PRESENT#
S21	S21	P11	P11	S21	RX_N14	P11	RDYLED#
S22	S22	P12	P12	S22	GND	P12	GND
S23	S23	P13	P13	S23	TX_N13	P13	+12V
S24	S24	P14	P14	S24	TX_P13	P14	+12V
S25	S25	P15	P15	S25	GND	P15	+12V
S26	S26	GND1	GND1	S26	RX_P13	GND1	GND
S27	S27	GND2	GND2	S27	RX_N13	GND2	GND
S28	S28			S28	GND		
E17	E17			E17	TX_N12		
E18	E18			E18	TX_P12		
E19	E19			E19	GND		
E20	E20			E20	RX_P12		
E21	E21			E21	RX_N12		
E22	E22			E22	GND		
E23	E23			E23	SCL		
E24	E24			E24	SDA		
E25	E25			E25	NC		

J198: FPGA JTAG SWITCH Header

	Pin	Signal	Pin	Signal
	1	NC	2	GND
	3	JTAG_HDR_OE#		
	PIN1-2 CLOSED: BMC (DEFAULT) PIN2-3 CLOSED: JTAG CABLE			

J123: FPGA JTAG SWITCH Header

	Pin	Signal	Pin	Signal
	1	TEST9	2	GND
	TEST9 Pulled down: Enter TEST MODE			

J122: Chassis Intrusion Header

	Pin	Signal	Pin	Signal
	1	INTRUDER#	2	GND
	High: Normal Low: Case Open			

COM1: COM PORT Header

	Pin	Signal	Pin	Signal
	1	DCD	2	DSR
	3	SIN	4	RTS
	5	SOUT	6	CTS
	7	DTR	8	RI
	9	GND	10	KEY

J197/J193: BMC DEGUT SWITCH Header

	Pin	Signal	Pin	Signal
	1	BMC_RXD5 (J197) BMC_TXD5 (J193)	2	RXD_OUT (J197) TXD_OUT (J193)
	3	CPU_RX (J197) CPU_TX (J193)		
	PIN1-2 CLOSED: BMC COM PORT (DEFAULT) PIN2-3 CLOSED: CPU COM PORT			

J209: BMC DEGUT Header

	Pin	Signal	Pin	Signal
	1	BMC_RXD5	2	GND
	3	BMC_TXD5		

J200: FPIO POWER SWITCH Header

<p>J200 1 1 2 2 3 3 3P*1_2.54MM</p>	Pin	Signal	Pin	Signal
	1	VDD_33_DUAL	2	FPIO_PWR
	3	VDD_33_RUN		
	PIN1-2 CLOSED: VDD_33_DUAL (DEFAULT) PIN2-3 CLOSED: VDD_33_RUN			

TYPEA_USB1: TYPE-A USB Header

<p>TYPEA_USB1 1 VBUS1 2 D-1 3 D+1 4 GND1 5 STAD_SSRX-1 6 STAD_SSRX+1 7 GND_DRAIN1 8 STAD_SSTX-1 9 STAD_SSTX+1 GND1 GND_1 GND2 GND_2 9P</p>	Pin	Signal	Pin	Signal
	1	VCC	GND1	GND
	2	USB_DN	GND2	GND
	3	USB_DP		
	4	GND		
	5	USB_SSRXN		
	6	USB_SSRXP		
	7	GND		
	8	USB_SSTXN		
9	USB_SSTXP			

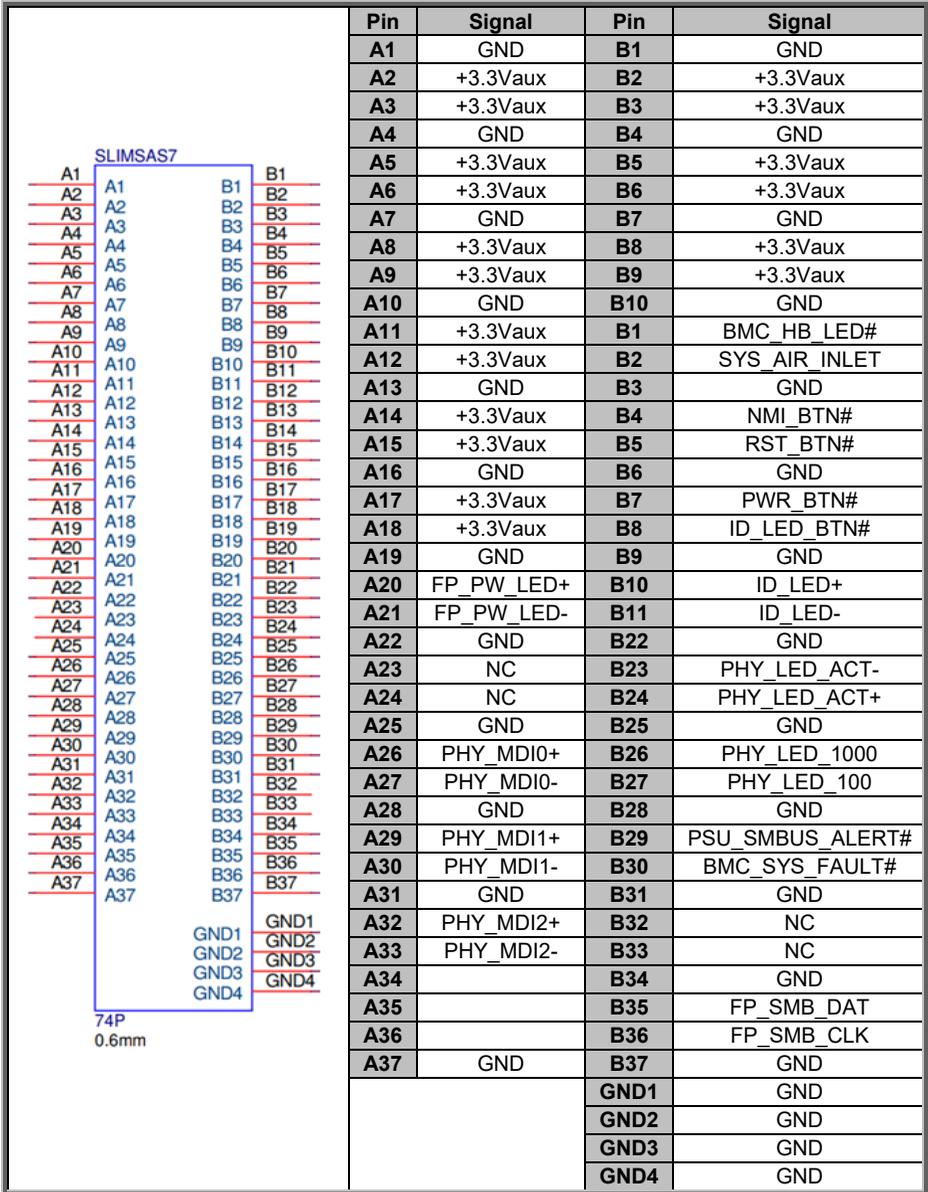
USB3_FPIO1: FP USB Header

<p>USB3_FPIO1 1 Vbus 2 IntA_P1_SSRX- Vbus 3 IntA_P1_SSRX+ IntA_P2_SSRX- 4 GND IntA_P2_SSRX+ 5 IntA_P1_SSTX- GND 6 IntA_P1_SSTX+ IntA_P2_SSTX- 7 GND IntA_P2_SSTX+ 8 IntA_P1_D- GND 9 IntA_P1_D+ IntA_P2_D- 10 ID IntA_P2_D+ 10Pin*2_-.P20 2.0mm</p>	Pin	Signal	Pin	Signal
	1	VCC_USB		KEY
	2	USB_SSRXN1	19	VCC_USB
	3	USB_SSRXP1	18	USB_SSRXN2
	4	GND	17	USB_SSRXP2
	5	USB_SSTXN1	16	GND
	6	USB_SSTXP1	15	USB_SSTXN2
	7	GND	14	USB_SSTXP2
	8	USB_DN1	13	GND
	9	USB_DP1	12	USB_DN2
10	ID	11	USB_DP2	

VGA1: VGA Header

<p>VGA1 1 2 3 4 5 6 7 8 9 10 11 12 13 14</p>	Pin	Signal	Pin	Signal
	1	GND	2	+5V
	3	GND	4	VGA_R
	5	GND	6	VGA_G
	7	GND	8	VGA_B
	9	GND	10	VGA_DAT
	11	VGA_HS		KEY
	13	VGA_CLK	14	VGA_VS

SLIMSAS7: FPIO Connector



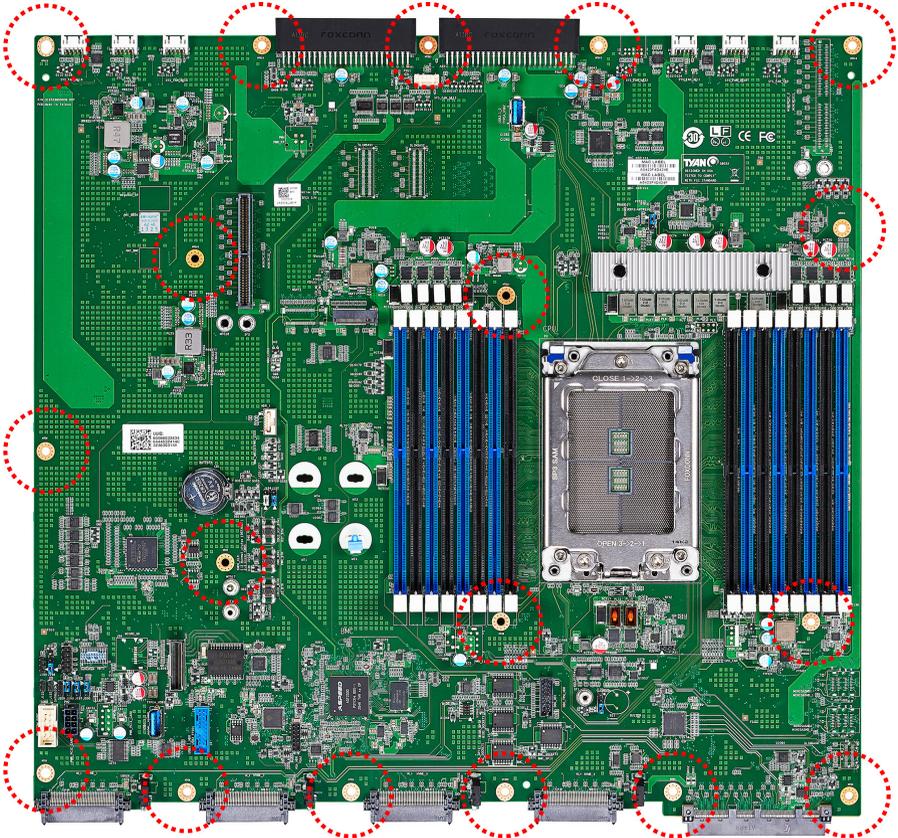
OCPI: OCP Connector

OCPI				Pin	Signal	Pin	Signal
OA1	OA1	OB1	OB1	OA1	PERST2#	OB1	NIC_PWR_GOOD
OA2	OA2	OB2	OB2	OA2	PERST3#	OB2	MAIN_PWR_EN
OA3	OA3	OB3	OB3	OA3	WAKE#	OB3	LD#
OA4	OA4	OB4	OB4	OA4	RBT_ARB_IN	OB4	DATA_IN
OA5	OA5	OB5	OB5	OA5	RBT_ARB_OUT	OB5	DATA_OUT
OA6	OA6	OB6	OB6	OA6	SLOT_ID1	OB6	CLK
OA7	OA7	OB7	OB7	OA7	RBT_TX_EN	OB7	SLOT_ID0
OA8	OA8	OB8	OB8	OA8	RBT_TXD1	OB8	RBT_RXD1
OA9	OA9	OB9	OB9	OA9	RBT_TXD0	OB9	RBT_RXD0
OA10	OA10	OB10	OB10	OA10	GND	OB10	GND
OA11	OA11	OB11	OB11	OA11	REFCLKn3	OB11	REFCLKn2
OA12	OA12	OB12	OB12	OA12	REFCLKp3	OB12	REFCLKp2
OA13	OA13	OB13	OB13	OA13	GND	OB13	GND
OA14	OA14	OB14	OB14	OA14	RBT_CLK_IN	OB14	RBT_CRS_DV
A1	A1	B1	B1	A1	GND	B1	+12V_EDGE
A2	A2	B2	B2	A2	GND	B2	+12V_EDGE
A3	A3	B3	B3	A3	GND	B3	+12V_EDGE
A4	A4	B4	B4	A4	GND	B4	+12V_EDGE
A5	A5	B5	B5	A5	GND	B5	+12V_EDGE
A6	A6	B6	B6	A6	GND	B6	+12V_EDGE
A7	A7	B7	B7	A7	SMCLK	B7	BIF0#
A8	A8	B8	B8	A8	SMDAT	B8	BIF1#
A9	A9	B9	B9	A9	SMRST#	B9	BIF2#
A10	A10	B10	B10	A10	PRSNТА#	B10	PERST0#
A11	A11	B11	B11	A11	PERST1#	B11	+3.3V_EDGE
A12	A12	B12	B12	A12	PRSNТB2#	B12	AUX_PWR_EN
A13	A13	B13	B13	A13	GND	B13	GND
A14	A14	B14	B14	A14	REFCLKn1	B14	FEFCLKn0
A15	A15	B15	B15	A15	REFCLKp1	B15	REFCLKp0
A16	A16	B16	B16	A16	GND	B16	GND
A17	A17	B17	B17	A17	PERn0	B17	PETn0
A18	A18	B18	B18	A18	PERp0	B18	PETp0
A19	A19	B19	B19	A19	GND	B19	GND
A20	A20	B20	B20	A20	PERn1	B20	PETn1
A21	A21	B21	B21	A21	PERp1	B21	PETn1
A22	A22	B22	B22	A22	GND	B22	GND
A23	A23	B23	B23	A23	PERn2	B23	PETn2
A24	A24	B24	B24	A24	PERp2	B24	PETp2
A25	A25	B25	B25	A25	GND	B25	GND
A26	A26	B26	B26	A26	PERn3	B26	PETn3
A27	A27	B27	B27	A27	PERp3	B27	PETp3
A28	A28	B28	B28	A28	GND	B28	GND

A29	GND	B29	GND
A30	PERn4	B30	PETn4
A31	PERp4	B31	PETn4
A32	GND	B32	GND
A33	PERn5	B33	PETn5
A34	PERp5	B34	PETp5
A35	GND	B35	GND
A36	PERn6	B36	PETn6
A37	PERp6	B37	PETp6
A38	GND	B38	GND
A39	PERn7	B39	PETn7
A40	PERp7	B40	PETp7
A41	GND	B41	GND
A42	PRSNTB1#	B42	PRSNTB0#
A43	GND	B43	GND
A44	PERn8	B44	PETn8
A45	PERp8	B45	PETp8
A46	GND	B46	GND
A47	PERn9	B47	PETn9
A48	PERp9	B48	PETp9
A49	GND	B49	GND
A50	PERn10	B50	PETn10
A51	PERp10	B51	PETp10
A52	GND	B52	GND
A53	PERn11	B53	PETn11
A54	PERp11	B54	PETp11
A55	GND	B55	GND
A56	PERn12	B56	PETn12
A57	PERp12	B57	PETp12
A58	GND	B58	GND
A59	PERn13	B59	PETn13
A60	PERp13	B60	PETp13
A61	GND	B61	GND
A62	PERn14	B62	PETn14
A63	PERp14	B63	PETp14
A64	GND	B64	GND
A65	PERn15	B65	PETn15
A66	PERp15	B66	PETp15
A67	GND	B67	GND
A68	USB DATn	B68	RFU1_N/C
A69	USB DATp	B69	RFU2_N/C
A70	PWRBKO#	B70	PRSNTB3#

4.5 Tips on Installing Motherboard in Chassis

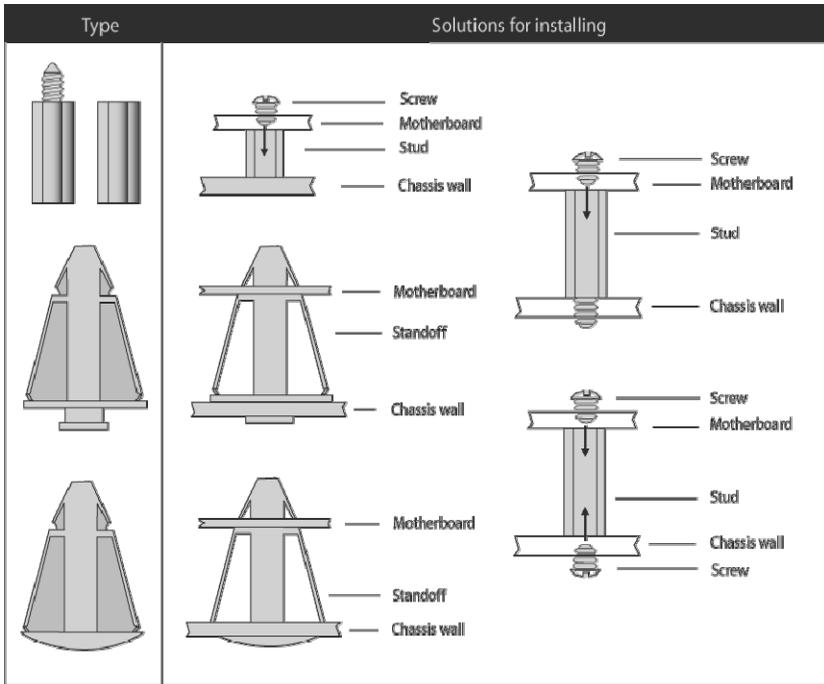
Before installing your motherboard, make sure your chassis has the necessary motherboard support studs installed. These studs are usually metal and are gold in color. Usually, the chassis manufacturer will pre-install the support studs. If you are unsure of stud placement, simply lay the motherboard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



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

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

Mounting the Motherboard

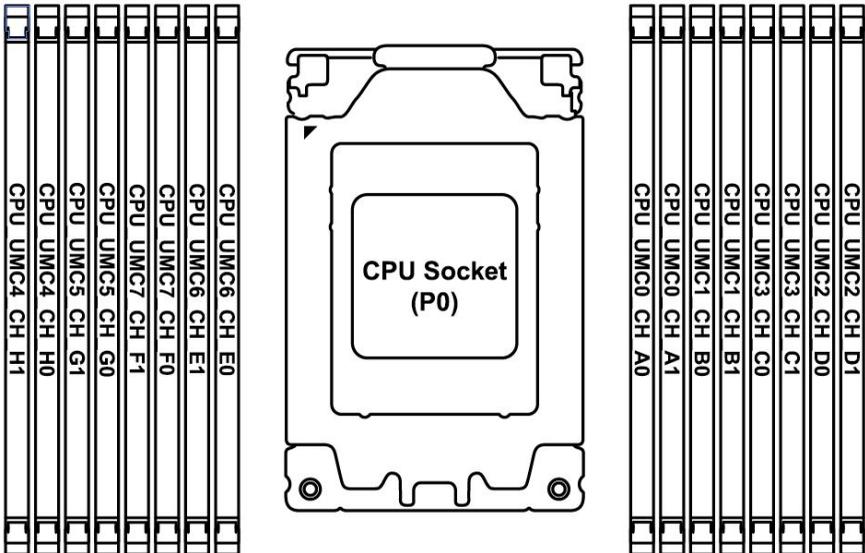


4.6 Installing the Memory

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

- This platform supports (8)+(8) DDR4 slots
- RDIMM DDR4 3200 w/ECC up to 1,024GB (64GB*4) / LRDIMM DDR4 3200 w/ECC up to 4,096GB (256GB*16) / 3DS DDR4 3200 w/ECC up to 4, 096GB (256GB*16)
- All installed memory will automatically be detected. No jumpers or settings need to be changed for memory detection.
- All memory must be of the same type and density. **Different memory types can NOT be mixed and matched on the same motherboard.**

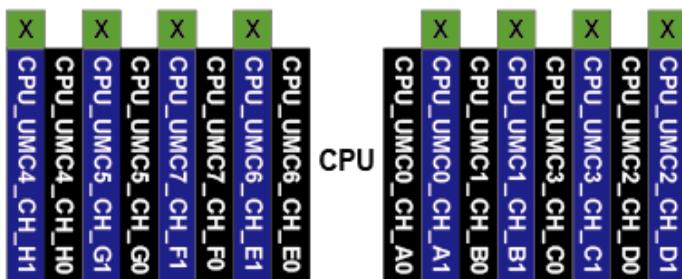
Memory Population table



8 DIMM Config

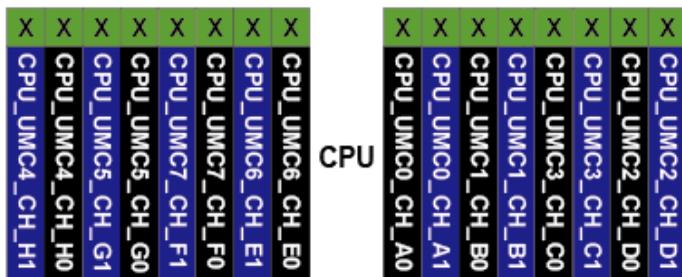
Only install DIMMs in blue sockets

A1, B1, C1, D1, E1, F1, G1, H1



16 DIMM Config 1

Install all DIMM sockets

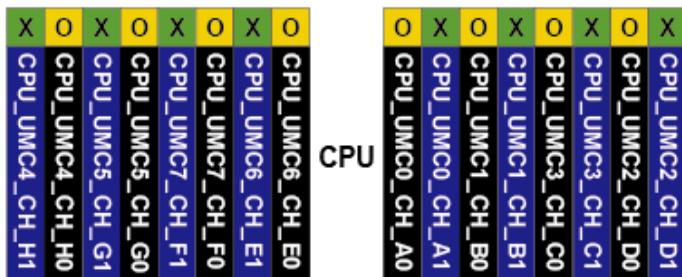


16 DIMM Config 2

Install all DIMM sockets

x 64GB DIMM

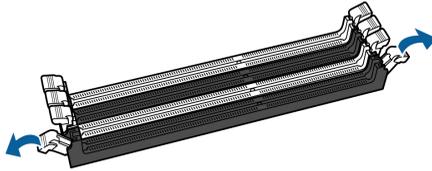
o 32GB DIMM



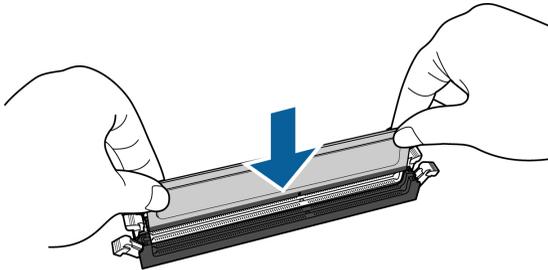
Memory Installation Procedure

Follow these instructions to install memory modules into the S8033.

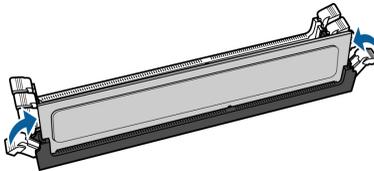
1. Unlock the clips as shown in the illustration.



2. Insert the memory module firmly into the socket by gently pressing down until it sits flush with the socket.



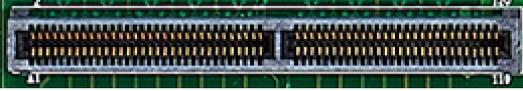
3. Lock the clips to secure the memory module into place.



4.7 Installing Add-In Cards

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

PCIe Slot (MINIPCIe)



M.2 Slot (M2_1)



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

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

4.8 Finishing Up

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

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

Chapter 5: BIOS Setup

5.1 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 **** or **<F2>** during POST (**Del** on remote console) to start the BIOS setup utility.

5.1.1 Setup Basics

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

Key	Function
Left/Right Arrow Keys	Change from one menu to the next
Up/Down Arrow Keys	Move between selections
Enter	Open highlighted section
PgUp/PgDn Keys	Change pages
+/-	Change options
ESC	Exit

5.1.2 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.

5.1.3 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.

5.1.4 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 noticed that the BIOS menu are continually changing due to the BIOS updating. The BIOS menu provided are the most updated ones when this manual is written. Please visit TYAN's website at <http://www.tyan.com> for the information of BIOS updating.

5.2 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.



System Language

Choose the system default language.

English / Simplified Chinese / Japanese

System Date

Set the Date. Use Tab to switch between Date elements. Default Ranges:

Year: 1998~2999

Months: 1-12

Days: dependent on month

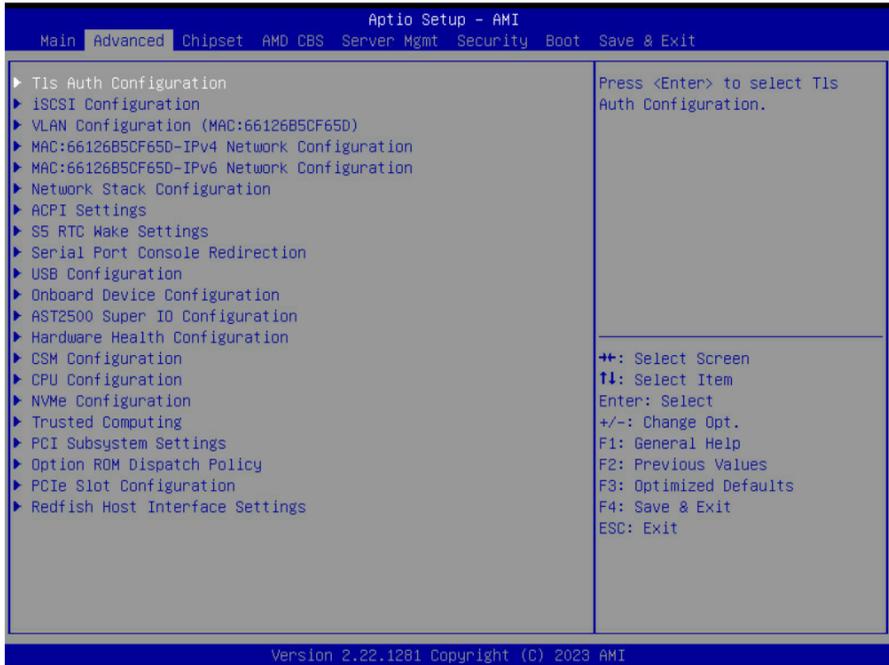
Range of Years may vary.

System Time

Set the Time. Use Tab to switch between Time elements.

5.3 Advanced Menu

This section facilitates configuring advanced BIOS options for your system.



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

T1s Auth Configuration

Press <Enter> to select T1s 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)

Network Stack Configuration

Network Stack Settings.

ACPI Settings

System ACPI Parameters.

S5 RTC Wake Settings

Enable system to wake from S5 using RTC alarm.

Serial Port Console Redirection

Serial Port Console Redirection.

USB Configuration

USB Configuration Parameters.

Onboard Device Configuration

Onboard Device and Function Configuration.

AST2500 Super IO Configuration

System Super IO Chip Parameters.

Hardware Health Configuration

Hardware health Configuration Parameters.

CSM Computing

Enable/Disable, Option ROM execution settings, etc.

CPU Configuration

CPU Configuration Parameters.

NVMe Configuration

NVMe Devices Information.

Trusted Computing

Trusted Computing Settings.

PCI Subsystem Settings

PCI, PCI-X and PCI Express Settings.

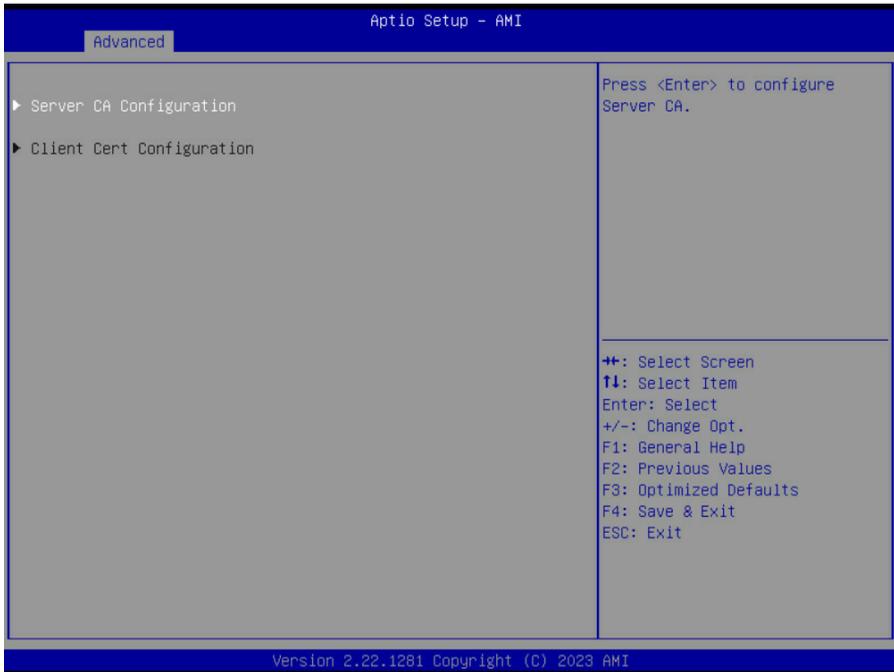
Option ROM Dispatch Policy

Option ROM Dispatch Policy.

PCIe Slot Configuration**Redfish Host Interface Settings**

Redfish Host Interface Parameters.

5.3.1 T1s Auth Configuration



Server CA Configuration

Press <Enter> to configure Server CA.

Client Cert Configuration

Press <Enter> to configure Client Cert.

5.3.1.1 Server CA Configuration



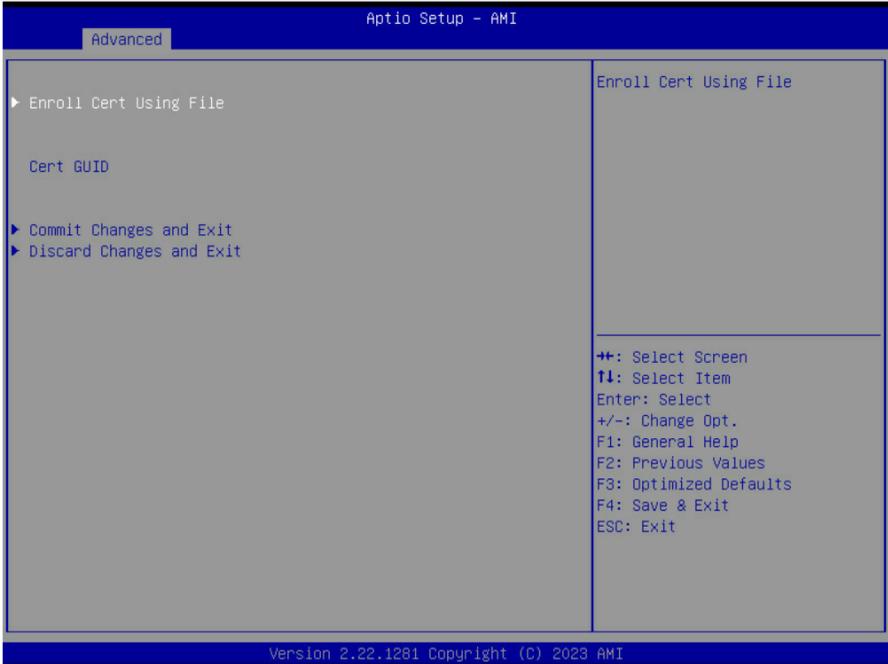
Enroll Cert

Press <Enter> to enroll cert.

Delete Cert

Press <Enter> to delete cert.

5.3.1.1.1 Enroll Cert



Enroll Cert Using File

Enroll Cert Using File.

Cert GUID

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

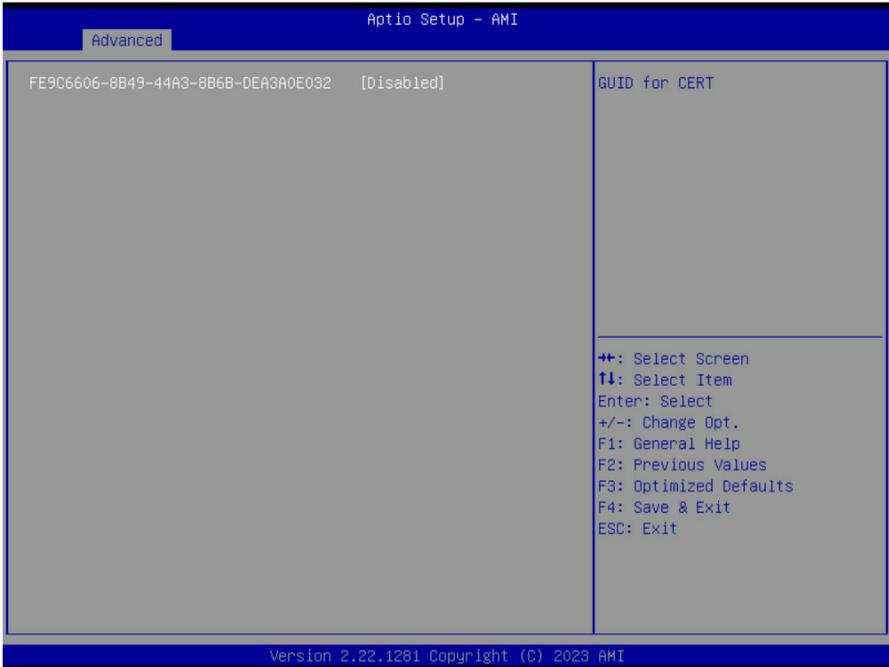
Commit Changes and Exit

Commit Changes and Exit.

Discard Changes and Exit

Discard Changes and Exit.

5.3.1.1.2 Delete Cert

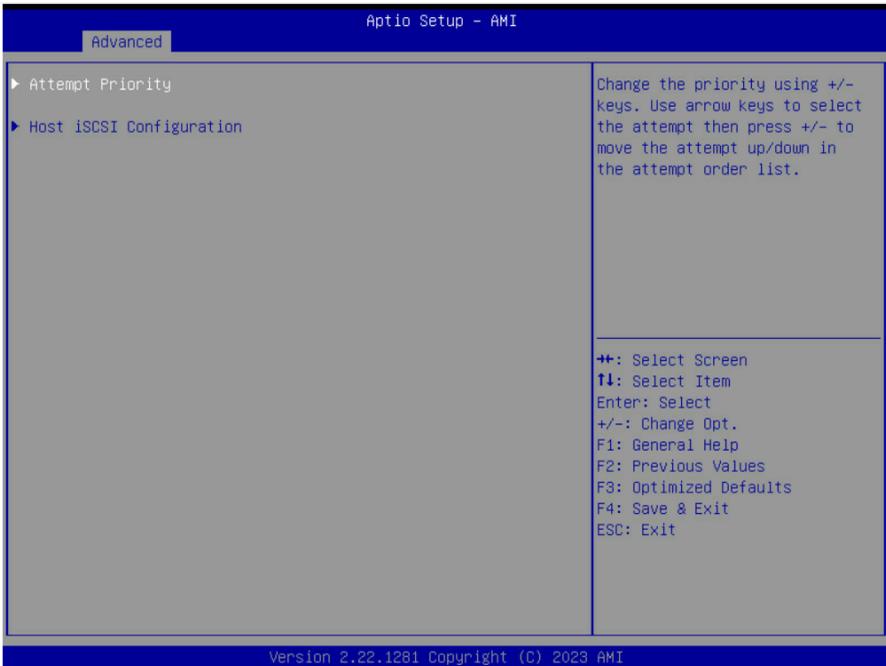


XXXXX

GUID for CERT.

Disabled / Enabled

5.3.2 iSCSI Configuration



Please follow the instructions to initiate the iSCSI function.

Step 1.

Select **Advanced** → **CSM Configuration** → **Network** → [UEFI].

Step 2.

Select **Advanced** → **Network Stack Configuration** → **Network Stack** → [Enabled]

Step 3.

Save changes and reboot.

Attempt Priority

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

Host iSCSI Configuration

Host iSCSI Configuration.

5.3.2.1 Attempt Priority



Attempt Priority

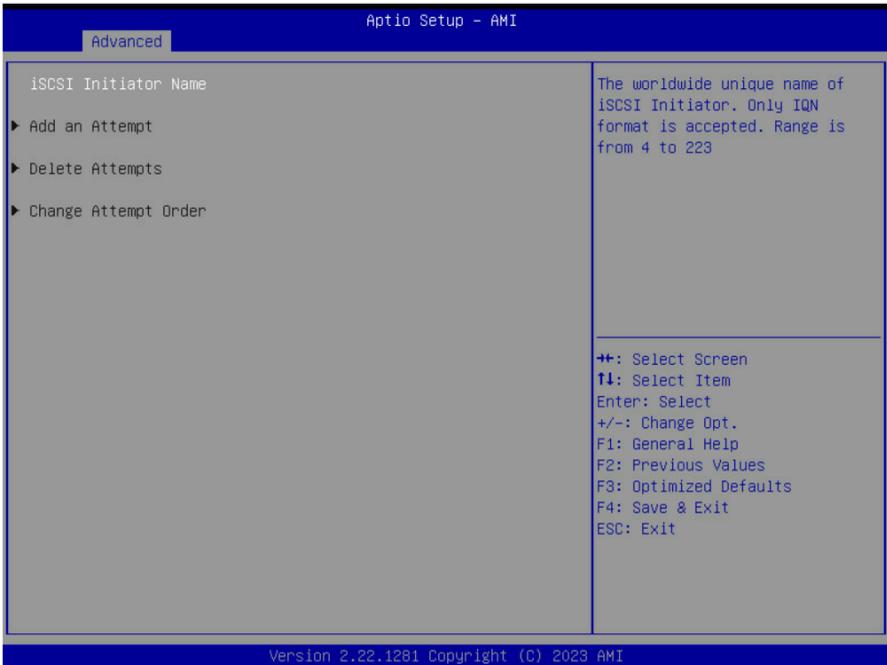
Change the priority using +/- keys. Use arrow keys to select the attempt then press +/- to move the attempt up/down in the attempt order list.

Host Attempt / Redfish Attempt

Commit Changes and Exit

Commit Changes and Exit.

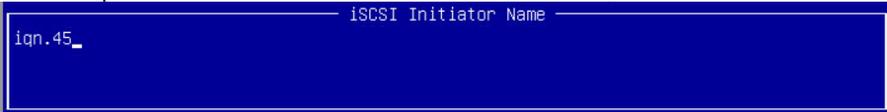
5.3.2.2 Host iSCSI Configuration

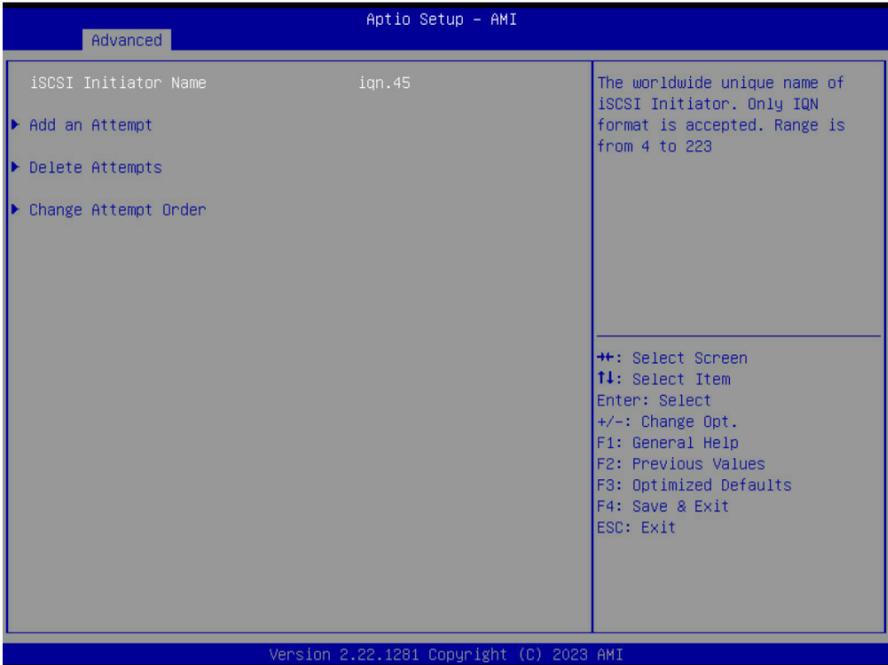


iSCSI Initiator Name

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

For example:





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.

5.3.2.2.1 Add an Attempt

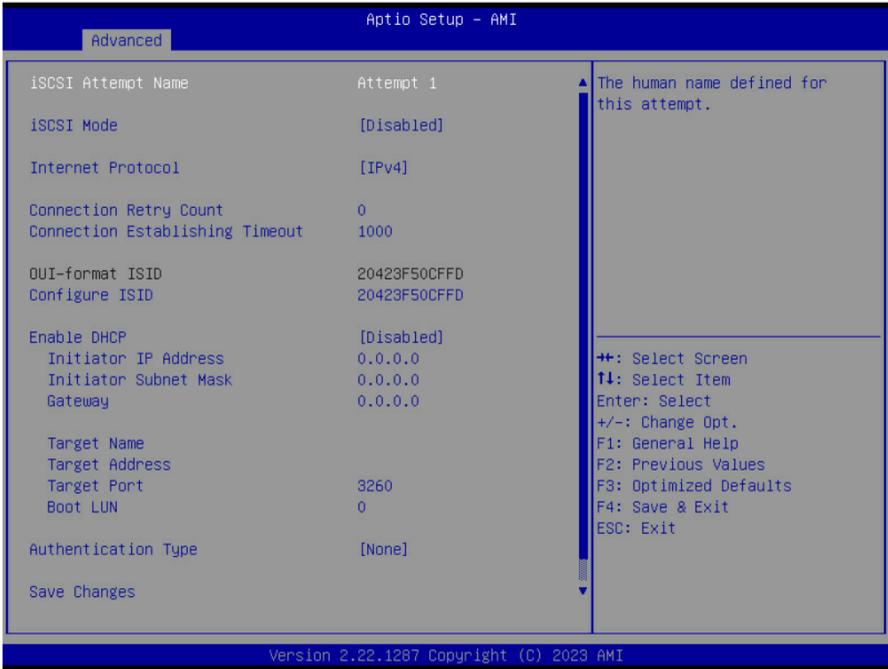


The screen shows the network protocols installed. If no network protocols are installed, the screen displays the message “Necessary network protocols are not available to retrieve....”

MAC xx:xx:xx:xx:xx:xx (Intel® Ethernet Network Adapter)

PFA: Bus 184 / Dev 0 / Func 0.

5.3.2.2.1.1 MAC XXX Intel® Ethernet Network Adapter



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. Range is from 4 to 223.

iqn.xxx

Target Address

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

Target Port

Target Port.

Boot LUN

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

Authentication Type

Authentication method: CHAP, Kerberos, or None.

CHAP / **None**

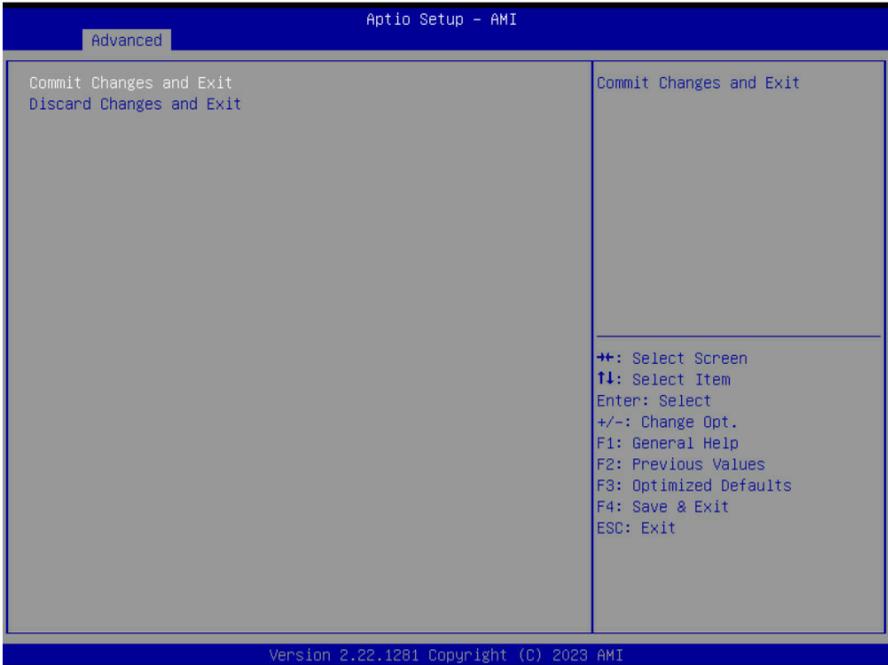
Save Changes

Must reboot system manually for changes to take place.

Back to Previous Page

Back to Previous Page.

5.3.2.2.2 Delete Attempts



Commit Changes and Exit

Commit Changes and Exit.

Discard Changes and Exit

Discard Changes and Exit.

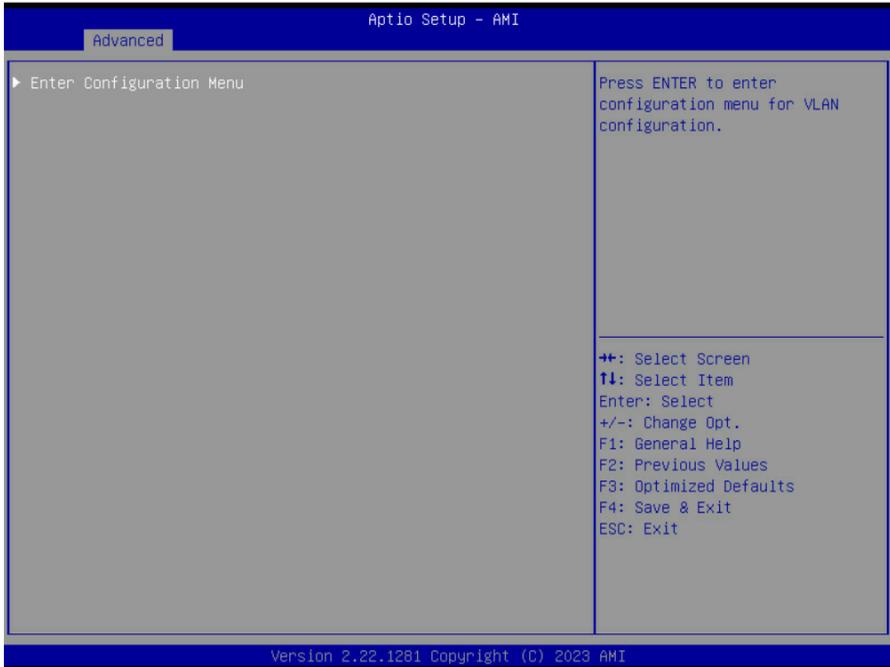
5.3.2.2.3 Change Attempt Order



Commit Changes and Exit
Commit Changes and Exit.

Discard Changes and Exit
Discard Changes and Exit.

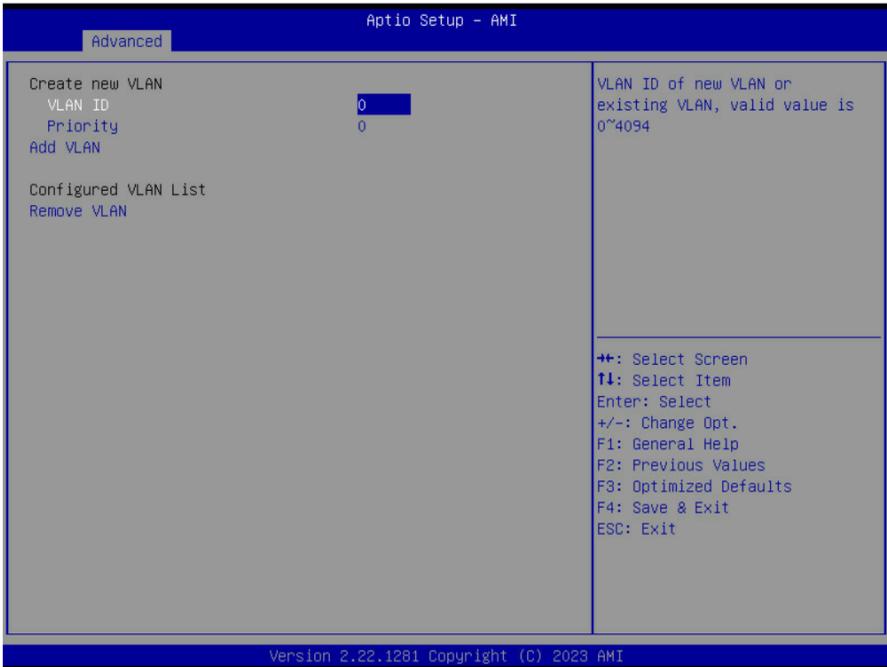
5.3.3 VLAN Configuration (MAC:xxxxxxxxxxxx)



Enter Configuration Menu

Press ENTER to enter configuration menu for VLAN configuration.

5.3.3.1 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.

5.3.4 MAC:xxxxxxxxxxxx - IPv4 Network Configuration



Configured

Indicate whether network address configured successfully or not.

Disabled / Enabled

Save Changes and Exit

Save Changes and Exit.

5.3.5 MAC:xxxxxxxxxxxx - IPv6 Network Configuration



Enter Configuration Menu

Press ENTER to enter configuration menu for IPv6 configuration.

5.3.5.1 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].

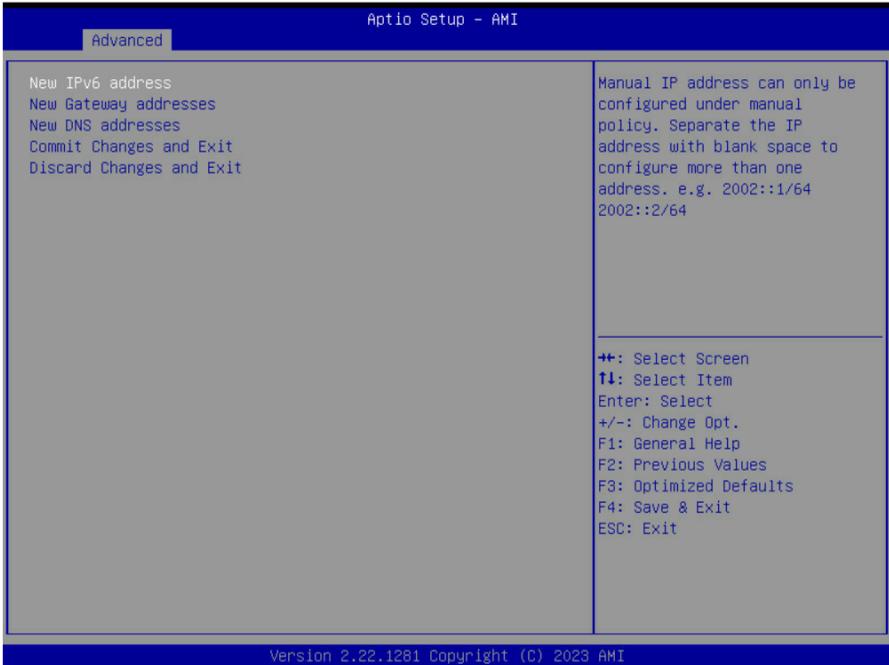
Advanced Configuration

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

Save Changes and Exit

Save Changes and Exit.

5.3.5.1.1 Advanced Configuration



New IPv6 address

Manual IP address can only be configured under manual policy. Separate the IP address with blank space to configure more than one address. e.g. 2002::1/64 2002::2/64

New Gateway addresses

Gateway IP address can only be configured under manual policy. e.g. 2002::3. Separate the IP address with blank space to configure more than one address.

New DNS addresses

DNS addresses can only be configured under manual policy. e.g. 2002::4. Separate the IP address with blank space to configure more than one address.

Commit Changes and Exit

Commit Changes and Exit.

Discard Changes and Exit

Discard Changes and Exit.

5.3.6 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 support will not be available.

Disabled / **Enabled**

Ipv4 HTTP Support

Enable Ipv4 HTTP Boot Support. If disabled IPV4 HTTP boot support will not be available.

Disabled / Enabled

Ipv6 PXE Support

Enable Ipv6 PXE Boot Support. If disabled IPV6 PXE boot support will not be available.

Disabled / Enabled

Ipv6 HTTP Support

Enable Ipv6 HTTP Boot Support. If disabled IPV6 HTTP boot support will not be available.

Disabled / Enabled

PXE boot wait time

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

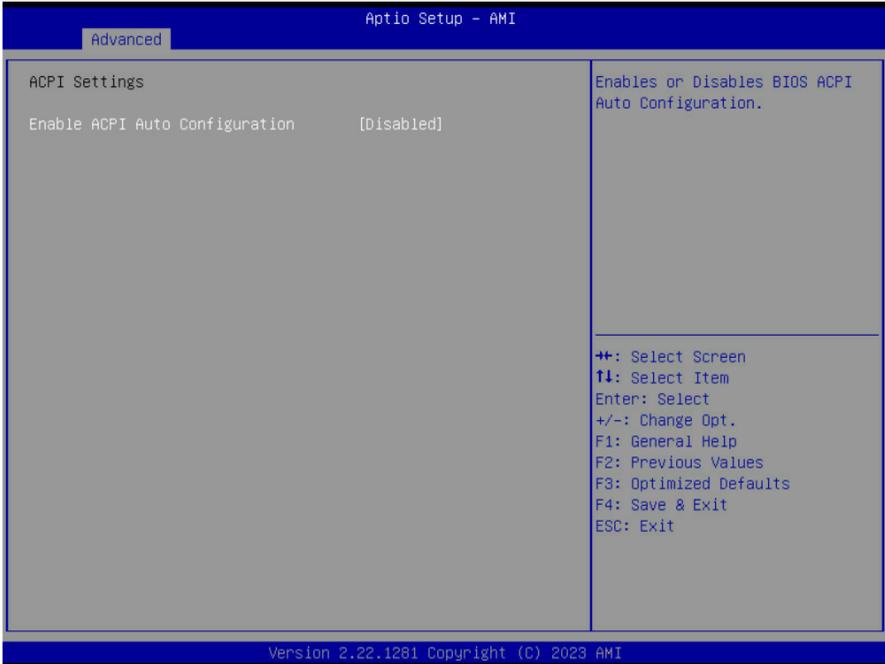
0

Media detect count

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

1

5.3.7 ACPI Settings



Enable ACPI Auto Configuration

Enables or Disables BIOS ACPI Auto Configuration.

Disabled / Enabled

5.3.8 S5 RTC Wake Settings



Wake system from S5

Enable or disable System wake on alarm event. Select FixedTime, system will wake on the hr::min::sec specified. Select DynamicTime, system will wake on the current time + Increase minute(s).

Disabled / Fixed Time / Dynamic Time

When Wake system from S5 is set to **[Fixed Time]**

Wake up hour

Select 0-23. For example enter 3 for 3am and 15 for 3pm.

Wake up minute

Select 0-59 for Minute.

Wake up second

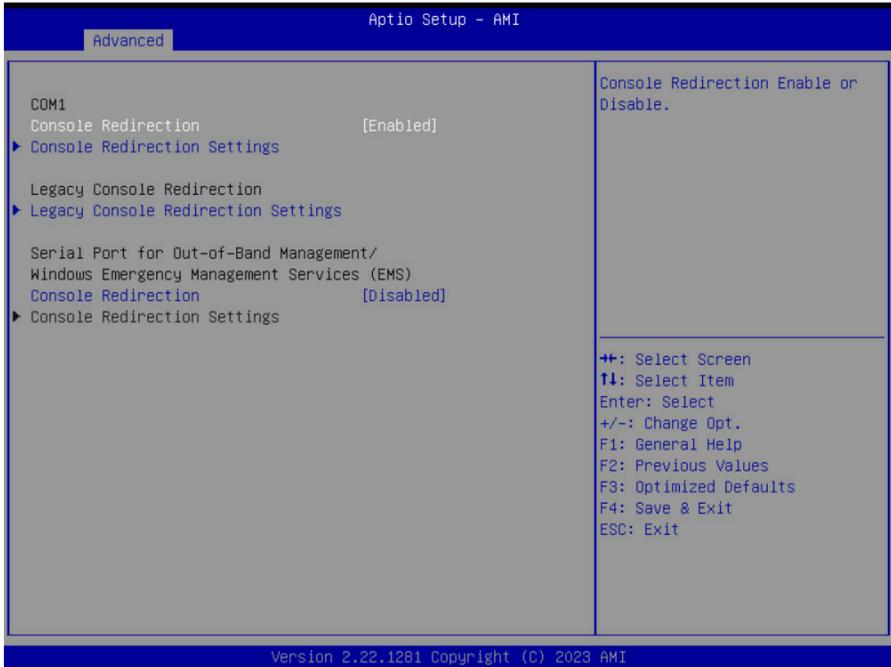
Select 0-59 for Second.

When Wake system from S5 is set to **[Dynamic Time]**

Wake up Minute increase

1-5.

5.3.9 Serial Port Console Redirection



Console Redirection / Console Redirection EMS

Console redirection enable or disable.

Disabled / Enabled

Legacy Console Redirection Settings

Legacy Console redirection settings.

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.

5.3.9.1 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.
VT100+ / VT100 / VT-UTF8 / ANSI

Bits per Second

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

Data Bits

8 / 7

Parity

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

Stop Bits

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

1 / 2

Flow Control

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

On this mode enabled only text will be sent. This is to capture Terminal data.

Disabled / Enabled

Resolution 100x31

Enable or disable extended terminal resolution.

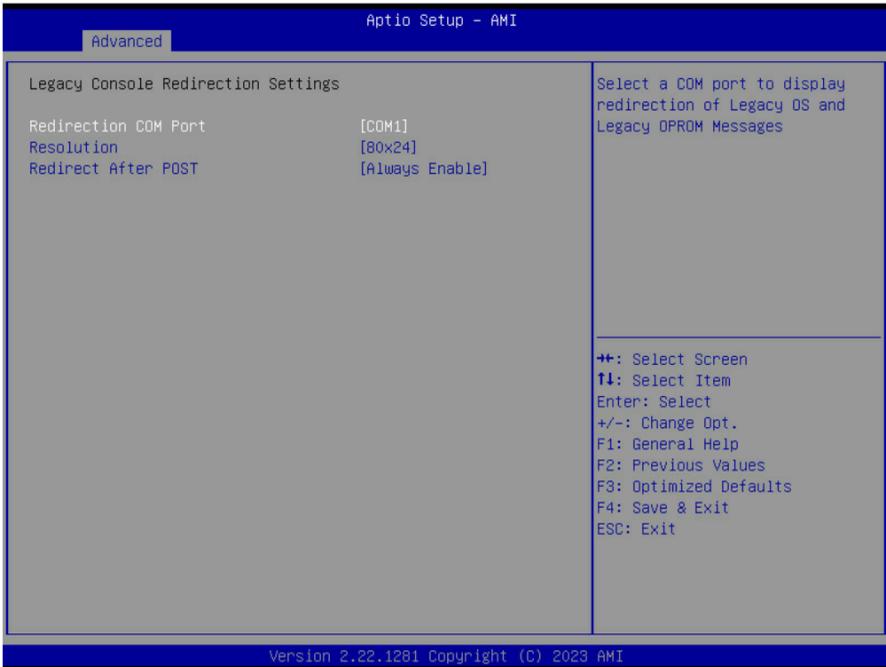
Disabled / Enabled

Putty KeyPad

Select FunctionKey and KeyPad on Putty.

VT100 / LINUX / XTERMR6 / SCO / ESCN / VT400

5.3.9.2 Legacy Console Redirection Settings



Legacy Serial Redirection Port

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

COM1

Resolution

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

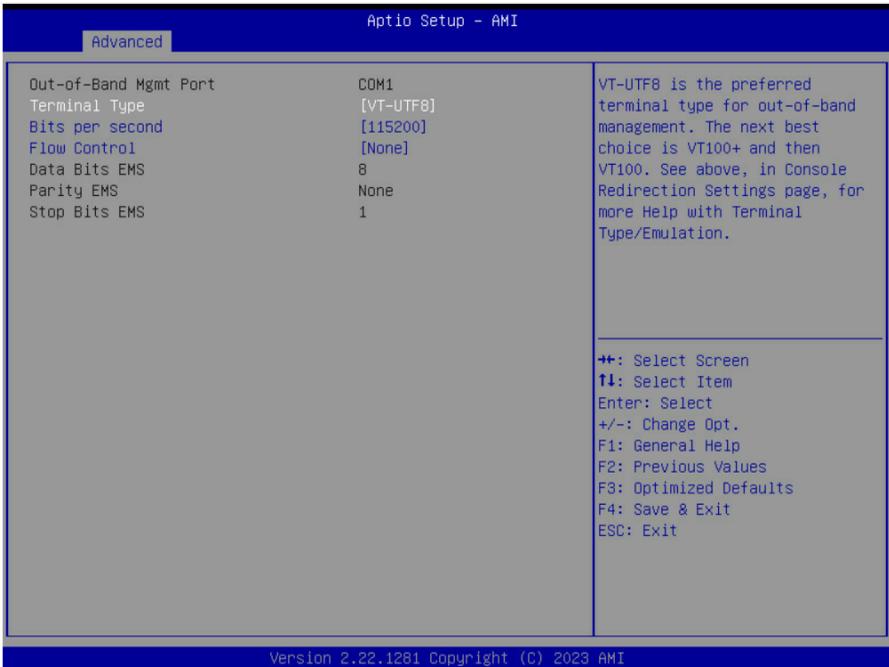
80x24 / 80x25

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

5.3.9.3 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

Terminal Type

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

VT-UTF8 / VT100 / VT100+ / ANSI

Bits per Second

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

115200 / 9600 / 19200 / 57600

Flow Control

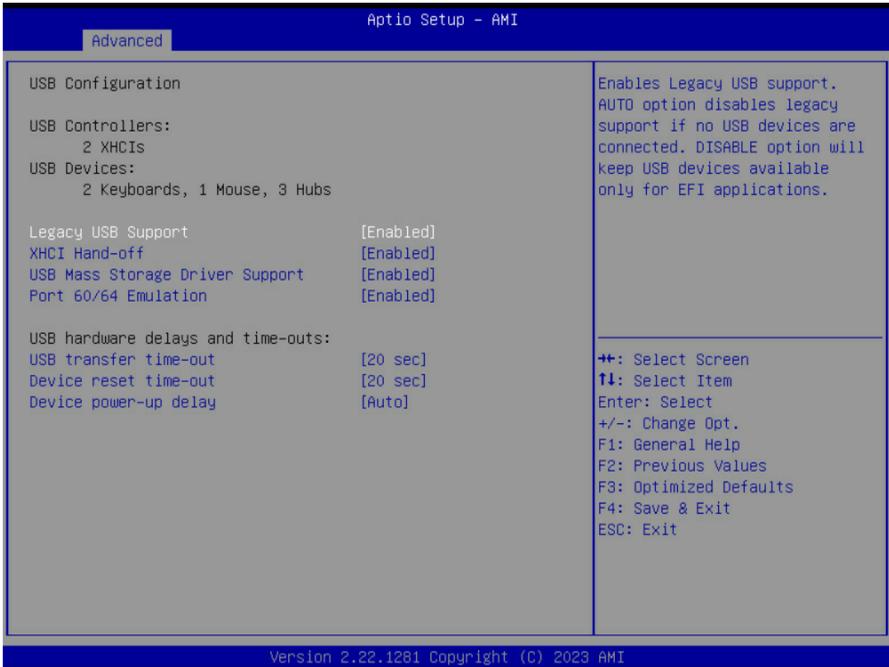
Flow Control can prevent data loss from buffer overflow. When sending data, if the receiving buffers are full, a 'stop' signal can be sent to stop the data flow. Once the buffers are empty, a 'start' signal can be sent to restart the flow. Hardware flow control uses two wires to send start/stop signal.

None / Hardware RTS/CTS / Software Xon/Xoff

Data Bits EMS / Parity EMS / Stop Bits EMS

Read only.

5.3.10 USB Configuration



Legacy USB Support

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

Disabled / **Enabled** / Auto

XHCI Hand-off

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

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].

Device power-up delay in seconds

Delay range is 1...40 seconds, in one second increments.

5

5.3.11 Onboard Device Configuration



Onboard VGA

Enable/Disable ASPEED VGA.

Enabled / Disabled

Active Video

Select between onboard or external VGA support.

Onboard / External

NMI Function

Enable or Disable NMI function.

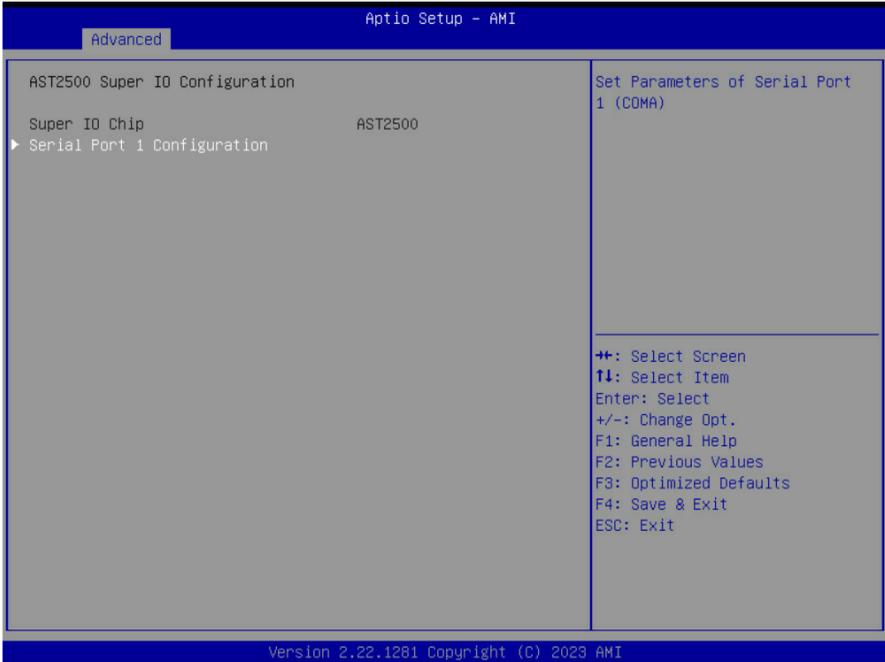
Enabled / **Disabled**

Clock Spread Spectrum

Enable/Disable Clock Spread Spectrum.

Enabled / **Disabled**

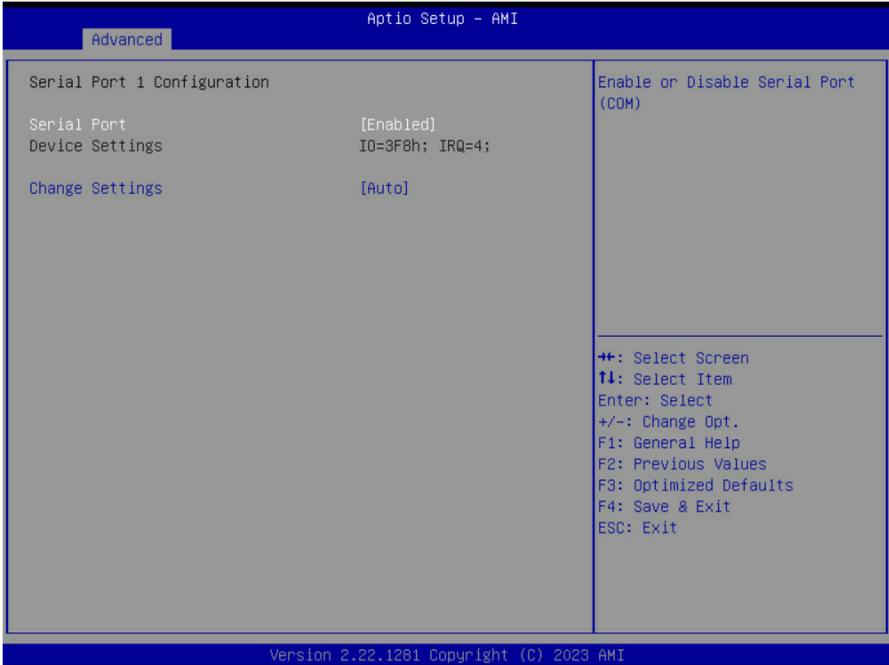
5.3.12 AST2500 Super IO Configuration



Serial Port 1 Configuration

Set Parameters of Serial Port 1 (COMA).

5.3.12.1 Serial Port 1 Configuration



Serial Port

Enable or disable Serial Port (COM).

Enabled / Disabled

Device Settings

Read only.

Change Settings

Select an optimal setting for Super IO Device.

Auto ;

/ IO=3F8h; IRQ=4;

/ IO=2F8h, IRQ=4;

/ IO=3E8h, IRQ=4;

/ IO=2E8h, IRQ=4;

5.3.13 Hardware Health Configuration



Fan Speed Control

Fan Speed Control.

Automatic / Manual / Full Speed

NOTE: When **Fan Speed Control** is set to [Enabled], the following item appears.

PWM Minimal Duty Cycle

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

30

BMC Alert Beep

Enable/Disable BMC Alert Beep.

On / Off

PMBus support

PMBus Support.

Enabled / Disabled

Number of PSU

User can select PSU number for needed.

1 / 2

5.3.13.1 Sensor Data Register Monitoring

Aptio Setup - AMI

Advanced

Pc Health Status

ID#	NAME	READING	UNIT	STATUS
01	CPU_Temp	: N/A	°C	
10	P0_UMCO_CH_A0	: N/A	°C	
11	P0_UMCO_CH_A1	: N/A	°C	
12	P0_UMC1_CH_B0	: N/A	°C	
13	P0_UMC1_CH_B1	: N/A	°C	
14	P0_UMC3_CH_C0	: N/A	°C	
15	P0_UMC3_CH_C1	: N/A	°C	
16	P0_UMC2_CH_D0	: N/A	°C	
17	P0_UMC2_CH_D1	: N/A	°C	
18	P0_UMC6_CH_E0	: N/A	°C	
19	P0_UMC6_CH_E1	: N/A	°C	
1A	P0_UMC7_CH_F0	: N/A	°C	
1B	P0_UMC7_CH_F1	: N/A	°C	
1C	P0_UMC5_CH_G0	: N/A	°C	
1D	P0_UMC5_CH_G1	: N/A	°C	
1E	P0_UMC4_CH_H0	: N/A	°C	
1F	P0_UMC4_CH_H1	: N/A	°C	
20	CPU_CORE_MOSFET	: N/A	°C	
21	DIMM_MOSFET_1	: N/A	°C	
22	DIMM_MOSFET_2	: N/A	°C	
23	CPU_SOC_MOSFET	: N/A	°C	
2E	NIC_Temp	: 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

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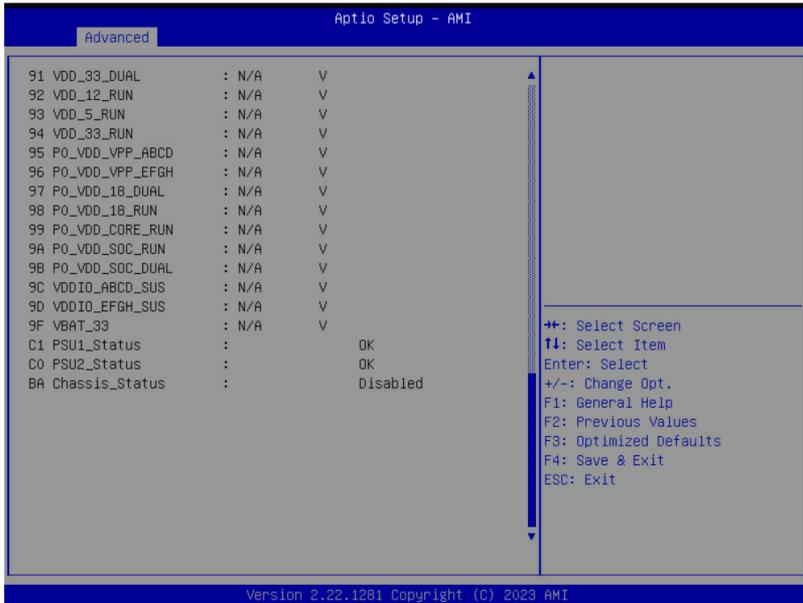
Aptio Setup - AMI

Advanced

30	SYS_Air_Inlet	: N/A	°C	
31	MB_Air_Inlet	: N/A	°C	
32	SYS_Air_Outlet_1	: N/A	°C	
33	SYS_Air_Outlet_2	: N/A	°C	
40	NVME1_Temp	: N/A	°C	
41	NVME2_Temp	: N/A	°C	
42	NVME3_Temp	: N/A	°C	
43	NVME4_Temp	: N/A	°C	
50	M2_Temp	: N/A	°C	
60	SYS_FAN_1	: N/A	RPM	
61	SYS_FAN_2	: N/A	RPM	
62	SYS_FAN_3	: N/A	RPM	
65	SYS_FAN_4	: N/A	RPM	
66	SYS_FAN_5	: N/A	RPM	
78	PSU1_Temp	: N/A	°C	
79	PSU1_Fan	: N/A	RPM	
7A	PSU1_Pout	: N/A	W	
7B	PSU1_Pin	: N/A	W	
70	PSU2_Temp	: N/A	°C	
71	PSU2_Fan	: N/A	RPM	
72	PSU2_Pout	: N/A	W	
73	PSU2_Pin	: N/A	W	
90	VDD_5_DUAL	: N/A	V	
91	VDD_33_DUAL	: N/A	V	
92	VDD_12_RUN	: N/A	V	

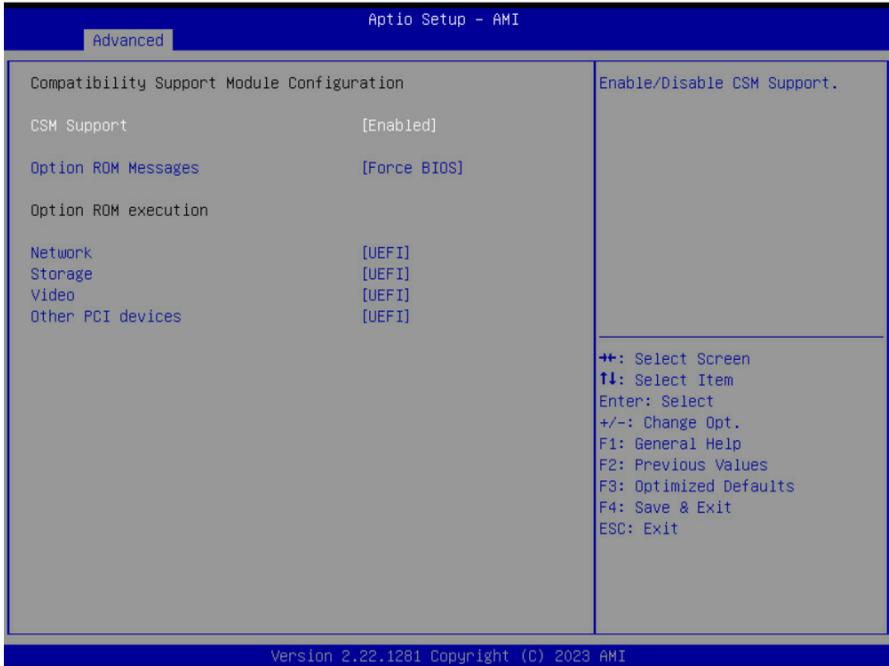
++: Select Screen
 !!: Select Item
 Enter: Select
 +/-: Change Opt.
 F1: General Help
 F2: Previous Values
 F3: Optimized Defaults
 F4: Save & Exit
 ESC: Exit

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NOTE: SDR can not be modified. Read only.

5.3.14 CSM Configuration



CSM support

Enable/Disable CSM Support

Enabled / Disabled

Option ROM Messages

Set display mode for Option ROM

Force BIOS / Keep Current

Network

Controls the execution of UEFI and Legacy PXE OpROM

UEFI / Legacy

Storage

Controls the execution of UEFI and Legacy Storage OpROM

UEFI / Legacy

Video

Controls the execution of UEFI and Legacy Video OpROM

UEFI / Legacy

Other PCI devices

Determines OpRom execution policy for devices other than network, storage, or video

UEFI / Legacy

5.3.15 CPU Configuration



SVM Mode

Enable/disable CPU Virtualization.

Enabled / Disabled

SMEE Mode

Control secure memory encryption enable.

Enabled / Disabled

CPU0 Information

View Information related to CPU 0.

5.3.15.1 CPU0 Information

The screenshot displays the 'Advanced' menu of the Aptio Setup - AMI BIOS. The 'CPU 0 Information' section provides the following details:

- AMD EPYC 7C13 64-Core Processor
- 64 Cores 128 Threads
- Running @ 2015 MHz 1100 mV
- Processor Family: 19h
- Processor Model: 00h-0Fh
- Microcode Patch Level: A0011CE

Cache information is shown as follows:

- Cache per Core -----
- L1 Instruction Cache: 32 KB/8-way
- L1 Data Cache: 32 KB/8-way
- L2 Cache: 512 KB/8-way
- L3 Cache per Socket: 256 MB/16-way

Navigation and function keys are listed on the right side of the screen:

- ←+: Select Screen
- ↑↓: Select Item
- Enter: Select
- +/-: Change Opt.
- F1: General Help
- F2: Previous Values
- F3: Optimized Defaults
- F4: Save & Exit
- ESC: Exit

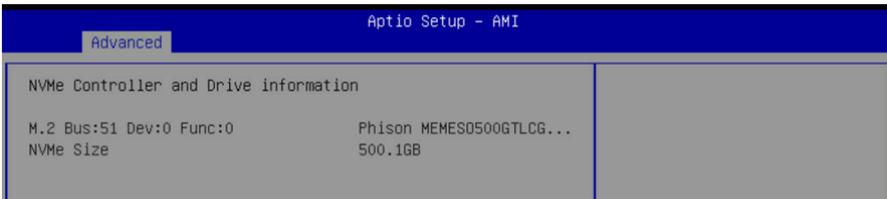
At the bottom of the screen, the version and copyright information are displayed: Version 2.22.1281 Copyright (C) 2023 AMI.

Read only.

5.3.16 NVMe Configuration



If no NVME device is installed, it shows no NVME Device Found. If a NVME device is installed, this page shows the Device Name you installed as shown below.



5.3.17 Trusted Computing



Security Device Support

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

Disabled / **Enabled**

SHA-1 PCR Bank

Enable or Disable SHA-a PCR Bank.

Disabled / **Enabled**

SHA256 PCR Bank

Enable or Disable SHA256 PCR Bank.

Disabled / **Enabled**

Pending operation

Schedule an Operation for the Security Device. NOTE: Your Computer will reboot during restart in order to change State of Security Device.

None / TPM Clear

Platform Hierarchy

Enable or Disable Platform Hierarchy.

Disabled / **Enabled**

Storage Hierarchy

Enable or Disable Storage Hierarchy.

Disabled / **Enabled**

Endorsement Hierarchy

Enable or Disable Endorsement Hierarchy.

Disabled / **Enabled**

TPM2.0 UEFI Spec Version

Select the TCG_2 Spec Version Support,

TCG_1_2: the Compatible mode for Win8/Win10,

TCG_2: Support new TCG2 protocol and event format for Win10 or later.

TCG_1_2 / **TCG_2**

Physical Presence Spec Version

Select to Tell O.S. to support PPI Spec Version 1.2 or 1.3. Note some HCK tests might not support 1.3.

1.2 / **1.3**

PH Randomization

Enables or Disables Platform Hierarchy randomization. DO NOT ENABLE THIS QUESTION IN PRODUCTION PLATFORMS. THIS IS FOR DEVELOPMENT TESTING. OVERRIDE ChangePlatformAuth ELINK for production platforms supporting TXT.

Disabled / **Enabled**

Device Select

TPM 1.2 will restrict support to TPM 1.2 devices, TPM 2.0 will restrict support to TPM 2.0 devices, Auto will support both with the default set to TPM 2.0 devices if not found, TPM 1.2 devices will be enumerated.

TPM 1.2 / TPM 2.0 / **Auto**

5.3.18 PCI Subsystem Settings



Above 4G Decoding

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

Enabled / Disabled

SR-IOV Support

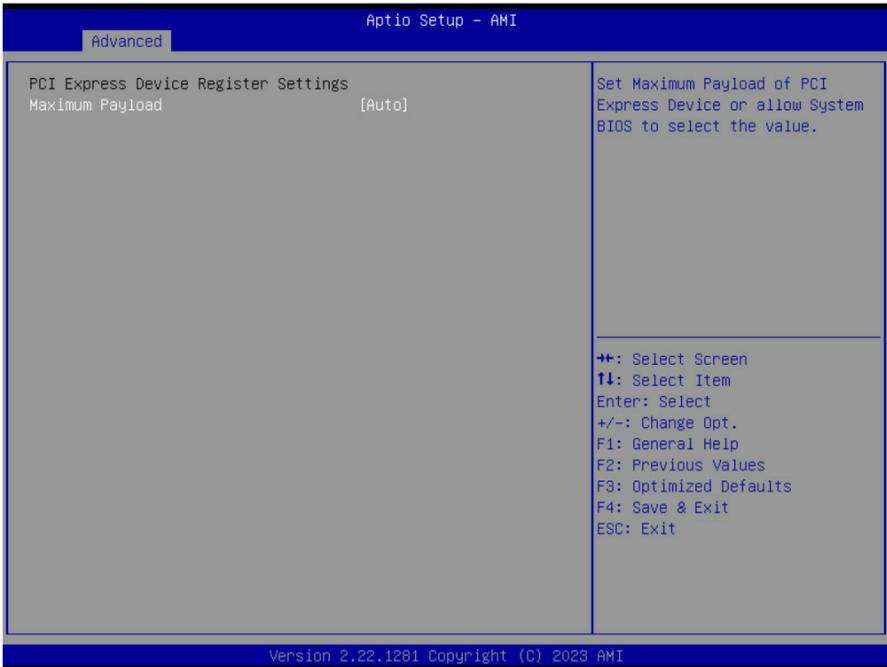
If system has SR-IOV capable PCIe Devices, this option Enables or Disables Single Root IO Virtualization Support.

Enabled / Disabled

PCI Express Settings

Change PCI Express Devices Settings.

5.3.18.1 PCI Express Settings



Max Payload

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

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

5.3.19 Option ROM Dispatch Policy



OCP1

Enable or Disable Option ROM execution for selected Slot.

Disabled / **Enabled**

MINIPCIE_1

Enable or Disable Option ROM execution for selected Slot.

Disabled / **Enabled**

5.3.20 PCIe Slot Configuration



PCIe Slot Bifurcation Configuration

OCP1

Selects PCIe port Bifurcation for OCP1 slot.

Auto / x16 / x8x8 / x4x4x4x4

MINIPCIIE_1

Selects PCIe port Bifurcation for MINIPCIIE_1 slot.

Auto / x16 / x8x8 / x4x4x4x4

PCIe Slot Link Speed Configuration

OCP1

Maximum Link Speed for OCP1 slot.

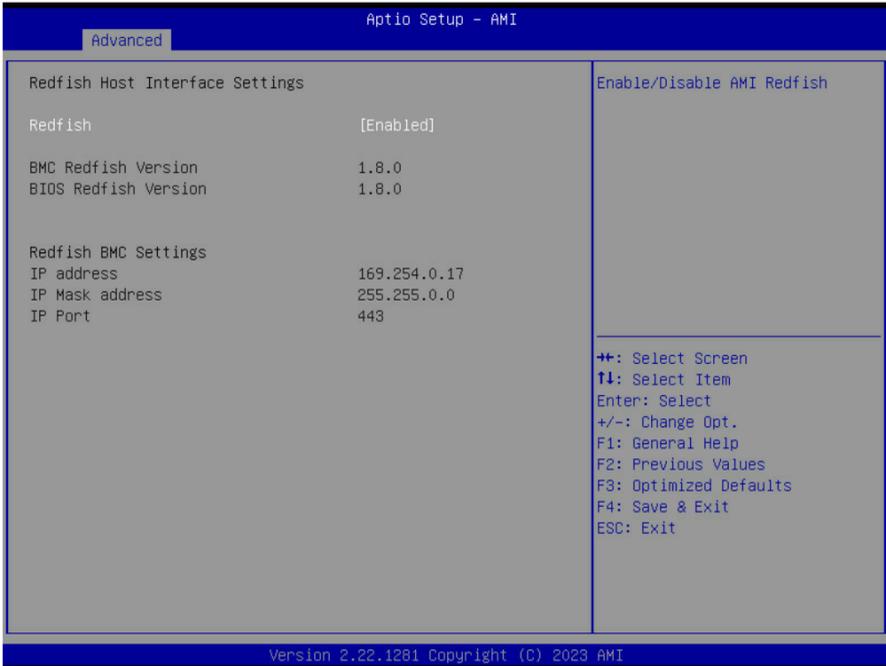
Auto / GEN1 (2.5G T/s) / GEN2 (5 GT/s) / GEN3 (8 GT/s) / GEN4 (16 GT/s)

MINIPCIIE_1

Maximum Link Speed for MINIPCIIE_1 slot.

Auto / GEN1 (2.5G T/s) / GEN2 (5 GT/s) / GEN3 (8 GT/s) / GEN4 (16 GT/s)

5.3.21 Redfish Host Interface Settings



Redfish

Enable/Disable AMI Redfish.

Enabled / Disabled

BMC Redfish Version / BIOS Redfish Version

Read only.

IP Address

Enter IP address.

IP Mask Address

Enter IP Mask address.

IP Port

Enter IP Port.

5.4 Chipset



PCIe Compliance Mode

PCIe Link Compliance Mode.

Disabled / Enabled

North Bridge

North Bridge Parameters.

5.4.1 North Bridge Configuration



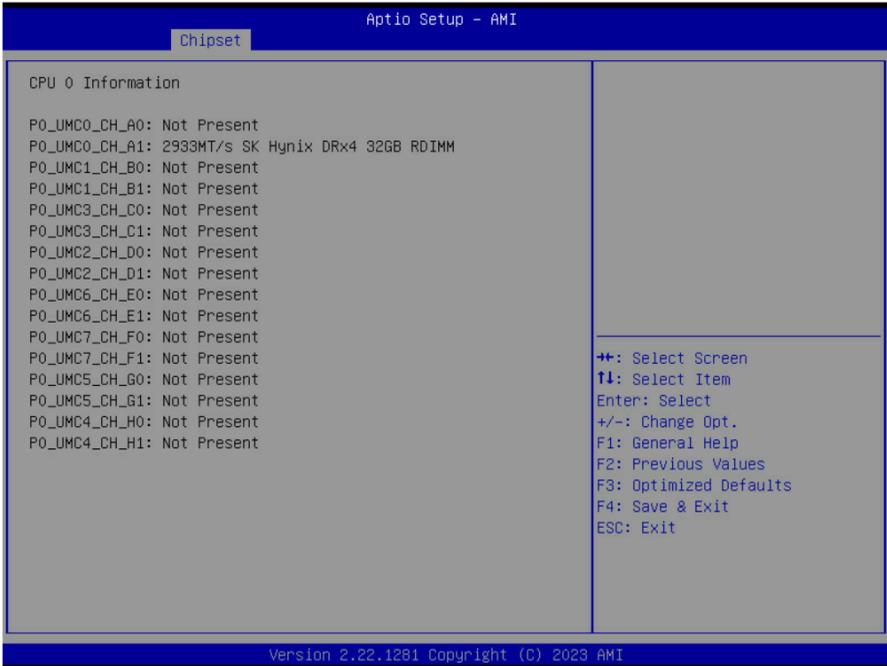
Memory Information

Total Memory: xxxxx MB

CPU 0 Information

View Memory Information related to CPU 0.

5.4.1.1 CPU 0 Information



Read only.

5.5 AMD CBS



CPU Common Options

CPU Common Options.

DF Common Options

DF Common Options.

UMC Common Options

UMC Common Options.

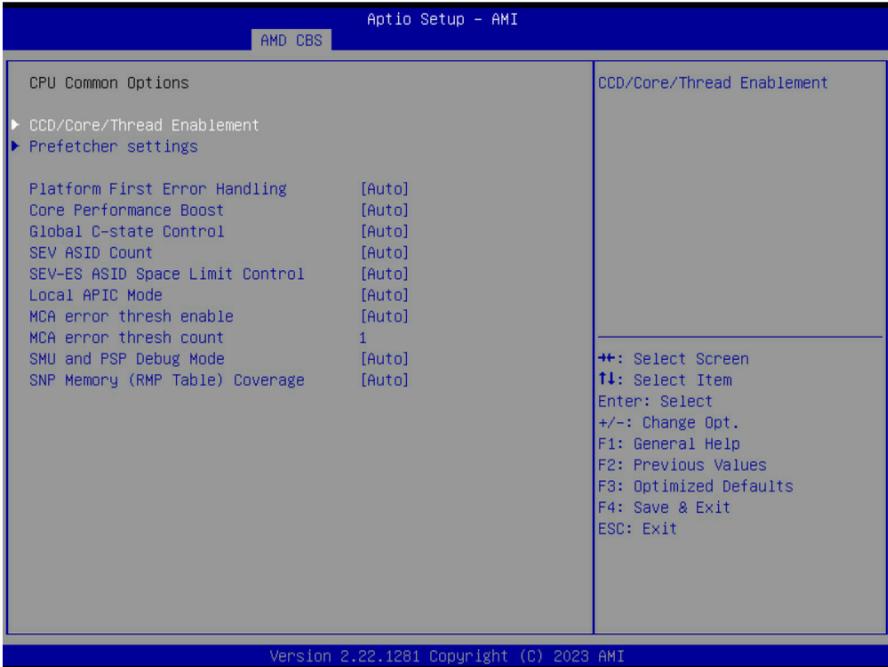
NBIO Common Options

NBIO Common Options.

FCH Common Options

FCH Common Options.

5.5.1 CPU Common Options



CCD/Core/Thread Enablement

CCD/Core/Thread Enablement.

Prefetcher settings

Prefetcher settings.

Platform First Error Handling

Enable/Disable PFEH, cloak individual banks, and mask deferred error interrupts from each bank.

Enabled / Disabled / **Auto**

Core Performance Boost

Disable CPB.

Disabled / **Auto**

Global C-state Control

Controls IO based C-state generation and DF C-states.

Disabled / Enabled / **Auto**

SEV ASID Count

This field specifies the maximum valid ASID, which affects the maximum system physical address space. 16TB of physical address space is available for systems that support 253 ASIDs, while 8TB of physical address space is available for systems that support 509 ASIDs.

263 ASIDs / 509 ASIDs / **Auto**

SEV-ES ASID Space Limit Control

SEV-ES ASID Space Limit Control.

Auto / Manual

SEV-ES ASID Space Limit (available if **SEV-ES ASID Space Limit Control** is set to [Manual])

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

1

Local APIC Mode

Local APIC Mode.

Compatibility / xAPIC / x2APIC / **Auto**

MCA error thresh enable

Enable MCA error thresholding.

False / True / **Auto**

MCA error thresh count

Default is 10, and the threshold range is from 1 to 4095.

1

SMU and PSP Debug Mode

When this option is enabled, specific uncorrected errors detected by the PSP FW or SMU FW will hang and not reset the system.

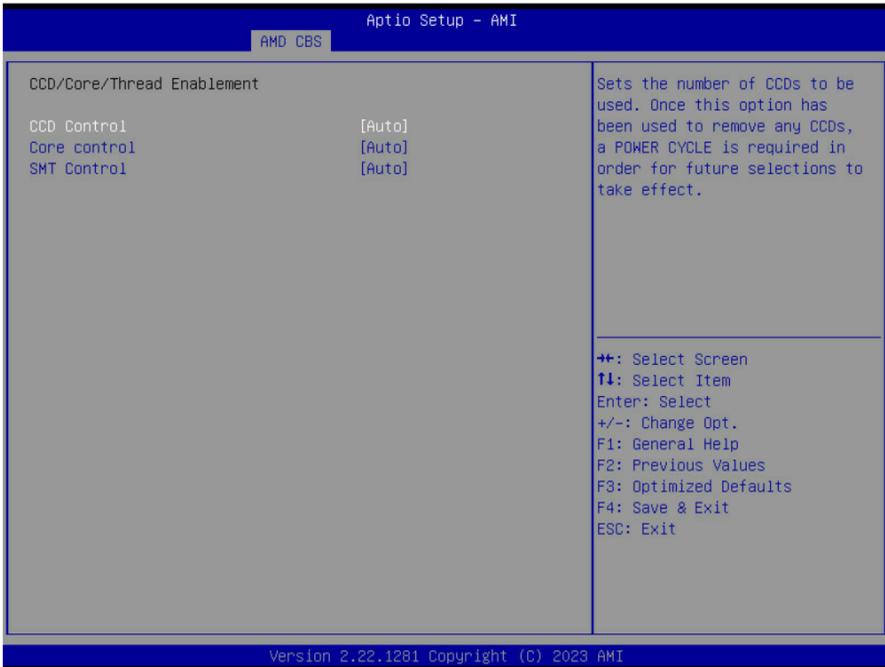
Disabled / Enabled / **Auto**

SNP Memory (RMP Table) Coverage

Enabled=ENTIRE system memory is covered.

Disabled / Enabled / Custom / **Auto**

5.5.1.1 CCD/Core/Thread Enablement



CCD Control

Sets the number of CCDs to be used. Once this option has been used to remove any CCDs, a POWER CYCLE is required in order for future selections to take effect.

Auto / 2 CCDs / 4 CCDs / 6 CCDs

Core Control

Sets the number of cores to be used. Once this option has been used to remove any cores, a POWER CYCLE is required in order for future selections to take effect.

Auto / ONE (1+0) / TWO (2+0) / THREE (3+0) / FOUR (4+0) / FIVE (5+0) / SIX (6+0) / SEVEN (7+0)

SMT Control

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

Disabled / Enabled / **Auto**

5.5.1.2 Prefetcher settings



L1 Stream HW Prefetcher

Option to Enable/Disable L1 Stream HW Prefetcher.

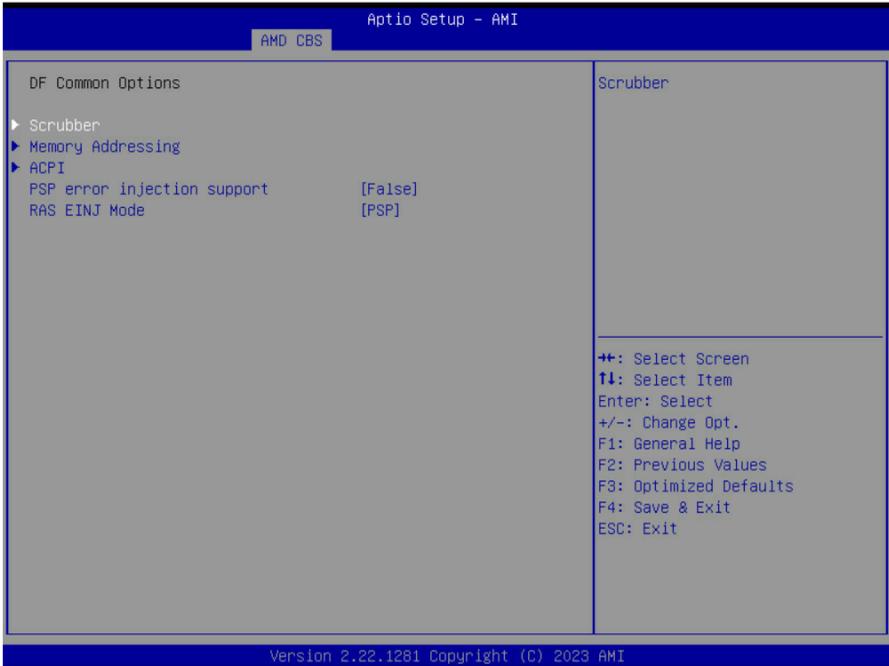
Disabled / Enabled / **Auto**

L2 Stream HW Prefetcher

Option to Enable/Disable L2 Stream HW Prefetcher.

Disabled / Enabled / **Auto**

5.5.2 DF Common Options



Scrubber

Scrubber.

Memory Addressing

Memory Addressing.

ACPI

ACPI.

PSP error injection support

'True' enables error injection.

False / True

RAS EINJ Mode

BIOS: Send APEI EINJ actions to PSP via CPM EINJ SMI callback;

PSP: Send APEI EINJ actions to PSP via PSP Mailbox.

BIOS / **PSP**

5.5.2.1 Scrubber



DRAM Scrub time

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

Disabled / 1 hour / 4 hours / 8 hours / 16 hours / 24 hours / 48 hours / **Auto**

Poison scrubber control

Poison scrubber control.

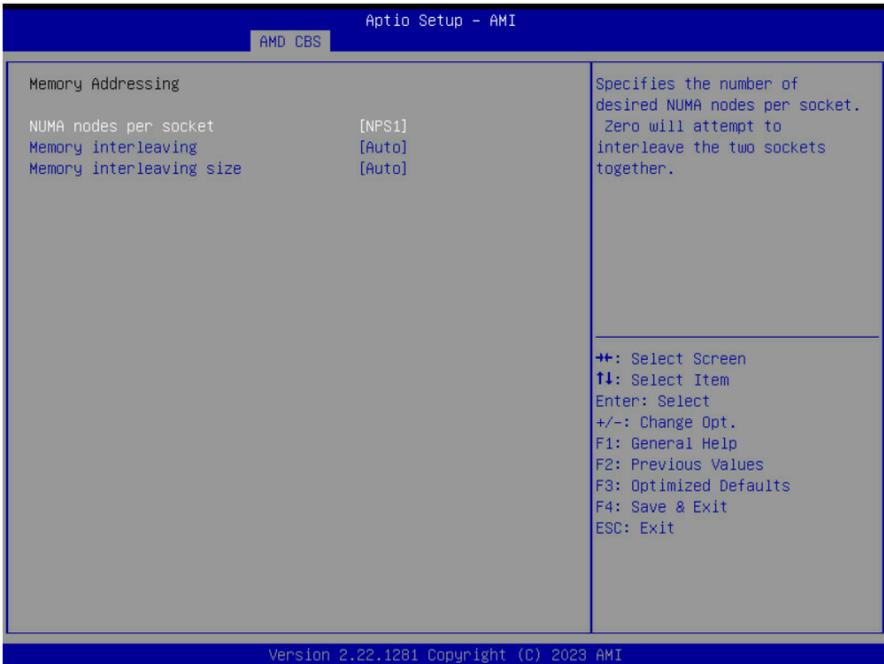
Disabled / Enabled / **NPS4**

Redirect scrubber control

Redirect scrubber control.

Disabled / Enabled / **Auto**

5.5.2.2 Memory Addressing



NUMA nodes per socket

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

NPS0 / **NPS1** / NPS2 / NPS4

Memory interleaving

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

Disabled / **Auto**

Memory interleaving size

Controls the memory interleaving size. The valid values are AUTO, 256bytes, 512 bytes, 1 Kbytes, 2 Kbytes and 4 Kbytes. This determines the starting address of the interleave (bit 8, 9, 10, 11 or 12).

256 Bytes / 512 Bytes / 1 KB / 2 KB / 4 KB / **Auto**

5.5.2.3 ACPI



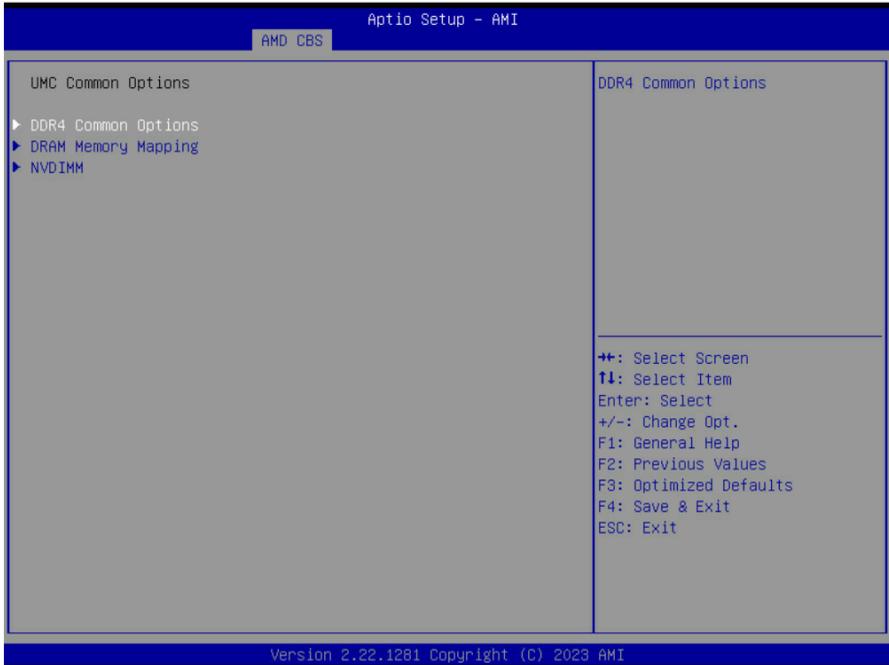
ACPI SRAT L3 Cache As NUMA Domain

Enabled: Each CCX in the system will be declared as a separate NUMA domain.

Disabled: Memory Addressing \ NUMA nodes per socket will be declared.

Disabled / Enabled / **Auto**

5.5.3 UMC Common Options



DDR4 Common Options

DDR4 Common Options.

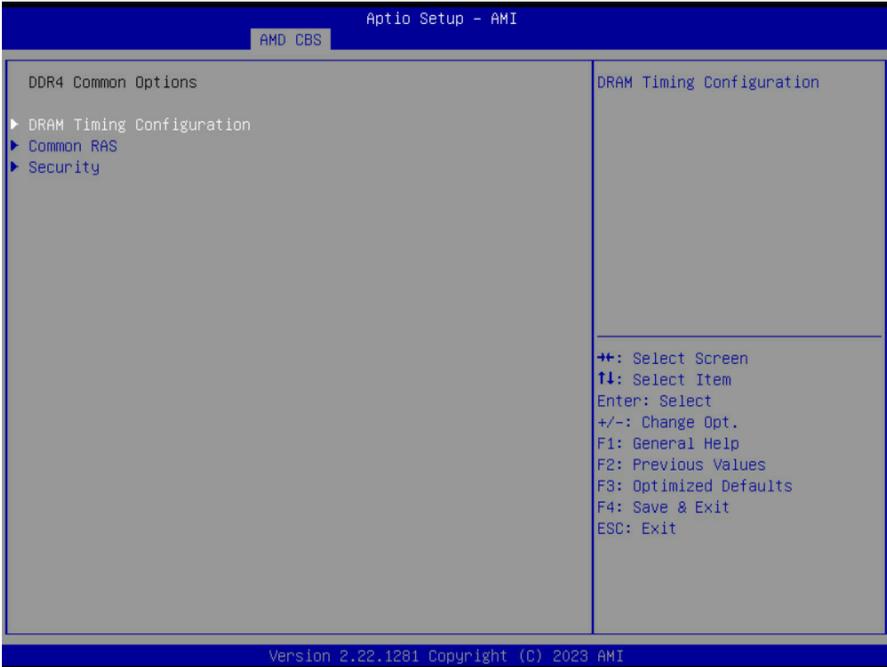
DRAM Memory Mapping

DRAM Memory Mapping.

NVDIMM

NVDIMM.

5.5.3.1 DDR4 Common Options



DRAM Timing Configuration

DRAM Timing Configuration.

Common RAS

Common RAS.

Security

Security.

5.5.3.1.1 DRAM Time Configuration



Overclock

Memory Overclock settings.

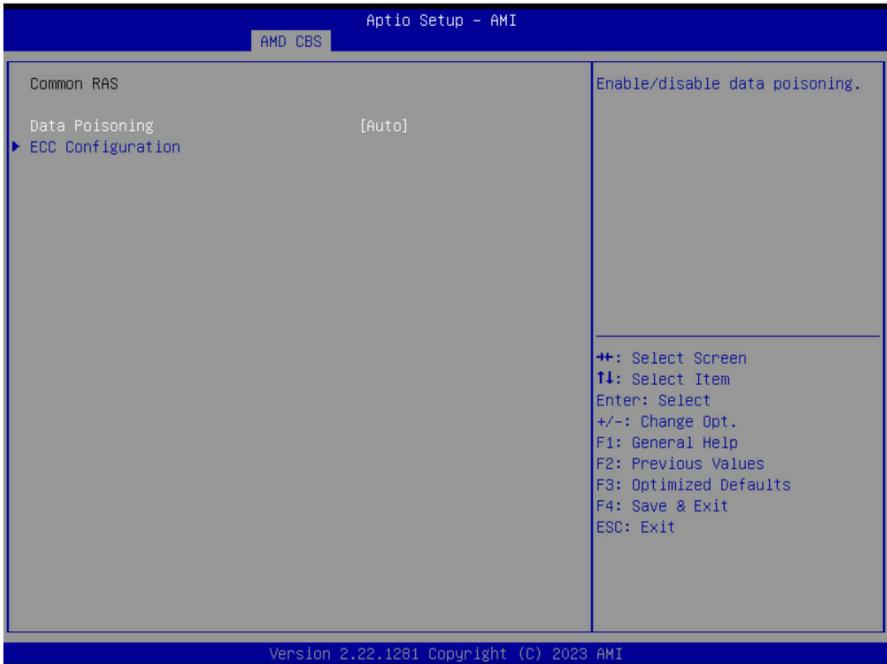
Auto / Enabled

Memory Clock Speed (available if **Overclock** is set to [Enabled])

Specifies the memory clock frequency.

Auto / 2666MT/s / 2933MT/s / 3200MT/s

5.5.3.1.2 Common RAS



Data Poisoning

Enable/Disable data poisoning.

Disabled / Enabled / **Auto**

ECC Configuration

ECC Configuration.

5.5.3.1.2.1 ECC Configuration



DRAM ECC Symbol Size

DRAM ECC Symbol Size (x4/x8/x16).

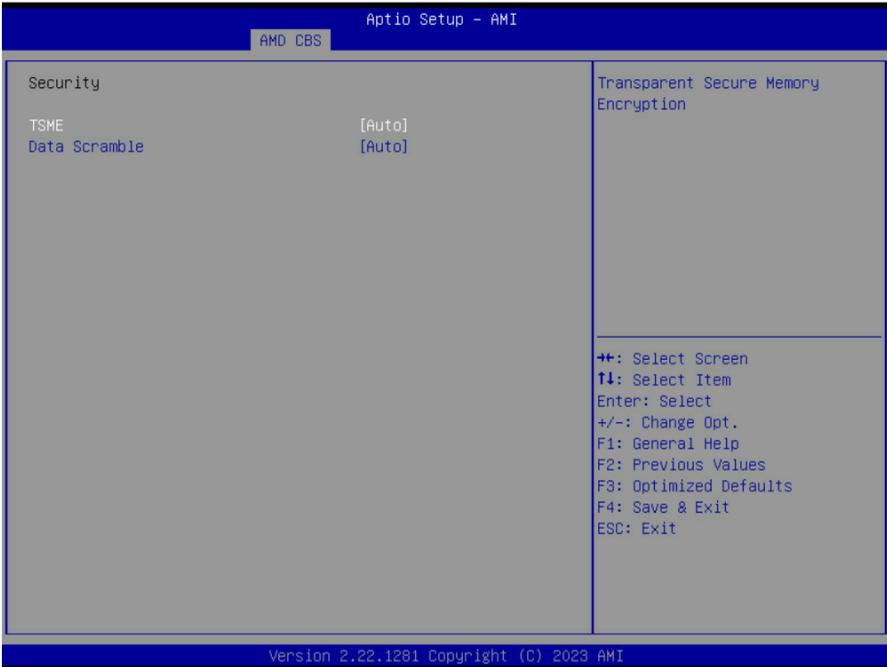
x4 / x8 / x16 / **Auto**

DRAM ECC Enable

Use this option to enable/disable DRAM ECC. Auto will set ECC to enable.

Disabled / Enabled / **Auto**

5.5.3.1.3 Security



TSME

Transparent Secure Memory Encryption.

Auto / Disabled / Enabled

Data Scramble

Data Scrambling.

Auto / Disabled / Enabled

5.5.3.2 DRAM Memory Mapping



Chipselect Interleaving

Interleave memory blocks across the DRAM chip selects for node 0.

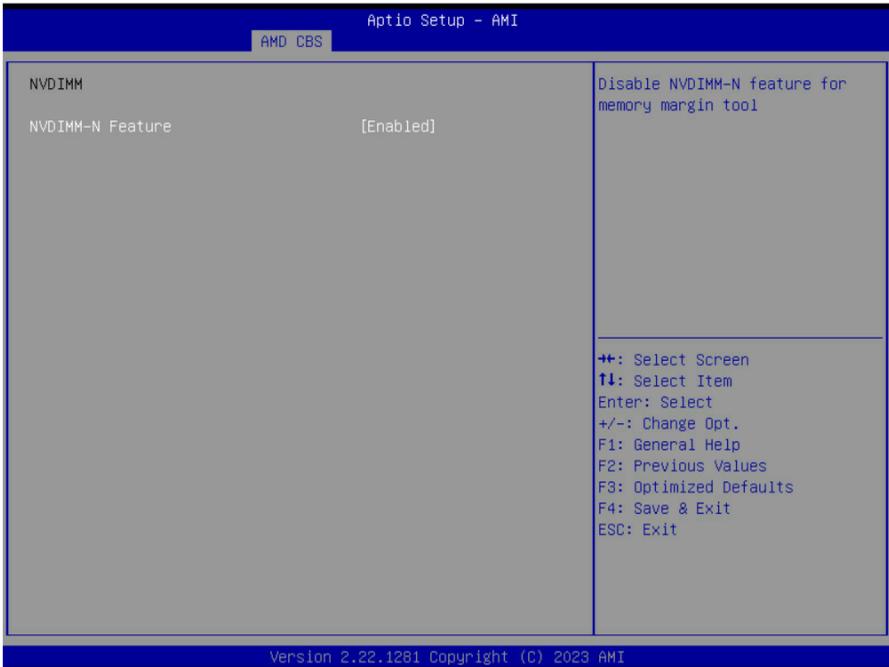
Disabled / **Auto**

BankGroupSwap

Bank Group Swap settings.

Enabled / Disabled / **Auto**

5.5.3.3 NVDIMM

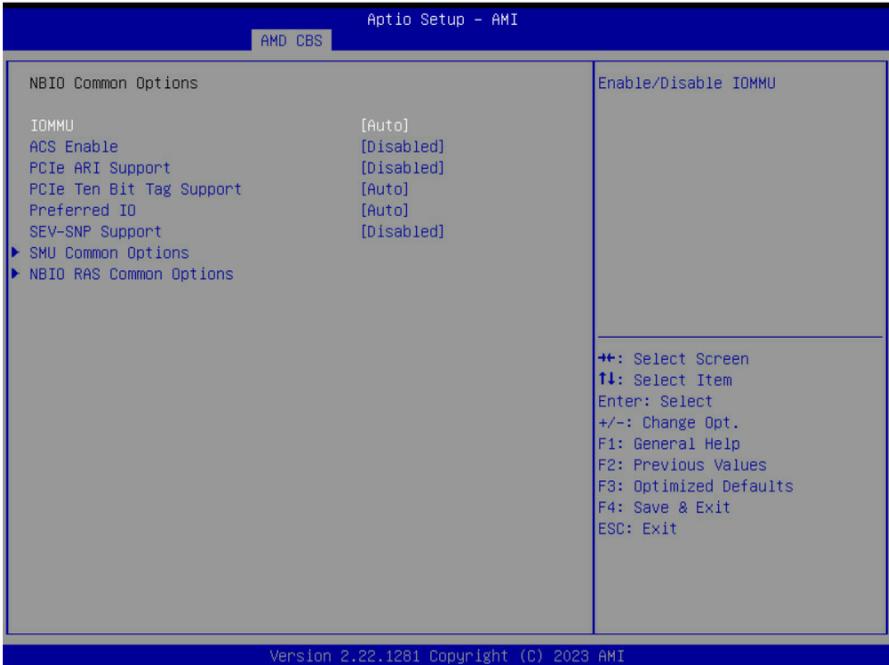


NVDIMM-N Feature

Disable NVDIMM-N feature for memory margin tool.

Enabled / Disabled

5.5.4 NBIO Common Options



IOMMU

Enable/Disable IOMMU.

Disabled / Enabled / **Auto**

ACS Enable

AER must be enabled for ACS enable to work.

Enabled / **Disabled** / Auto

PCIe ARI Support

Enables Alternative Routing-ID Interpretation.

Disabled / Enabled / Auto

PCIe Ten Bit Tag Support

Enables PCIe ten bit tags for supported devices. Auto=Disable.

Auto / Enabled / Disabled

Preferred IO

Preferred IO Select Type

Auto: Default.

Manual / **Auto**

Preferred IO Bus (available if **Preferred IO** is set to [Manual])

Preferred IO Bus Number

0x0-0xFF: Bus Number.

0

SEV-SNP Support

Enable or Disable SEV-SNP Support.

Disabled / Enabled

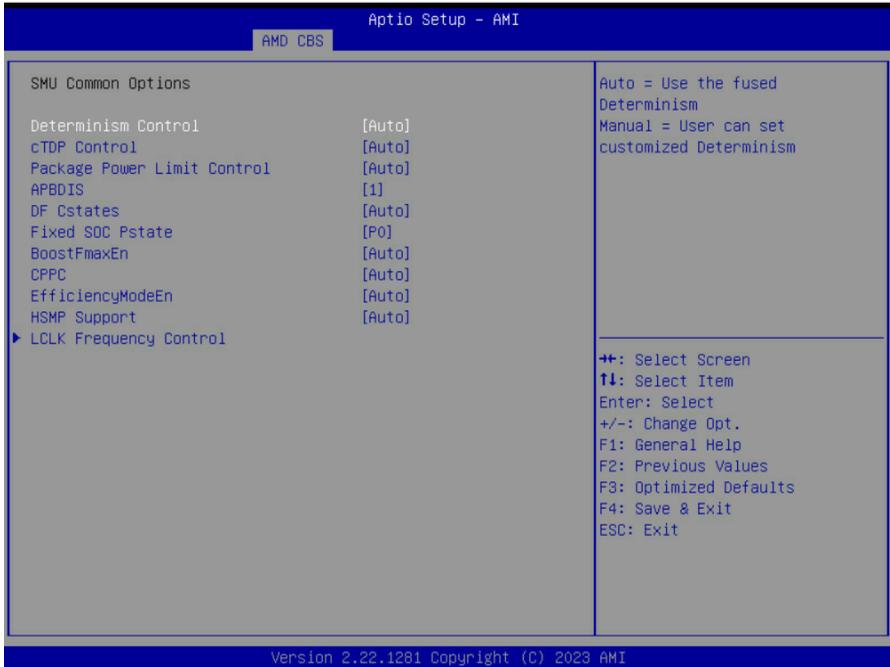
SMU Common Options

SMU Common Options.

NBIO RAS Common Options

NBIO RAS Common Options.

5.5.4.1 SMU Common Options



Determinism Control

Auto=Use the fused TDP

Manual=User can set customized TDP

Manual / **Auto**

Determinism Slider

Auto=Use default performance determinism settings.

Power

Performance

Auto / Power / Performance

cTDP Control

Auto=Use the fused TDP

Manual=User can set customized TDP

Manual / **Auto**

cTDP (available if **cTDP Control** is set to [Manual])

cTDP [W] 0 = Invalid value.

0

Package Power Limit Control

Auto=Use the fused PPT

Manual=User can set customized PPT

PPT will be used as the ASIC power limit

Manual / **Auto**

Package Power Limit (available if **Package Power Limit Control** is set to [Manual])

Package Power Limit (PPT) [W].

0

APBDIS

Algorithm Performance Boost Disable

0 / **1** / Auto

DF Cstates

Enable or Disable Data Fabric to go to a low-power state when the processor has entered Cx states.

Disabled / Enabled / **Auto**

Fixed SOC Pstate

Fixed SOC Pstate.

P0 / P1 / P2 / P3 / Auto

BoostFmaxEn

Auto=Use the default max frequency.

Manual=User can set the boot max frequency.

Manual / **Auto**

BoostFmax (available if **BoostFmaxEn** is set to [Manual])

Specify the boost max frequency limit to apply to all cores (MHz).

0

CPPC

Collaborative Processor Performance/Power Control.

Disabled / Enabled / **Auto**

EfficiencyModeEn

Auto=use performance optimized settings.

Enabled=use power efficiency optimized settings.

Auto / Enabled

HSMP Support

Select Host System Management Port support.

Disabled / Enabled / **Auto**

LCLK Frequency Control

LCLK Frequency Control.

5.5.4.1.1 LCLK Frequency Control



Root Complex 0x00 LCLK Frequency

Set Root Complex LCLK Frequency (Bus range 0x00-0x3F). Auto=Dynamic Frequency Control. 593Mhz=Set LCLK Frequency at 593MHz.

Auto / 593Mhz

Root Complex 0x40 LCLK Frequency

Set Root Complex LCLK Frequency (Bus range 0x40-0x7F). Auto=Dynamic Frequency Control. 593Mhz=Set LCLK Frequency at 593MHz.

Auto / 593Mhz

Root Complex 0x80 LCLK Frequency

Set Root Complex LCLK Frequency (Bus range 0x80-0xBF). Auto=Dynamic Frequency Control. 593Mhz=Set LCLK Frequency at 593MHz.

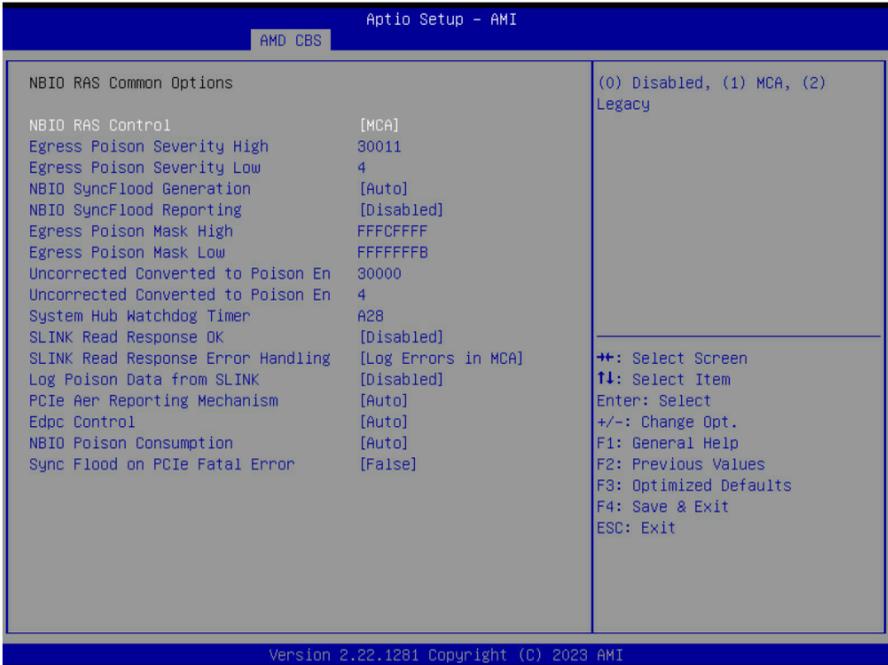
Auto / 593Mhz

Root Complex 0xC0 LCLK Frequency

Set Root Complex LCLK Frequency (Bus range 0xC0-0xFF). Auto=Dynamic Frequency Control. 593Mhz=Set LCLK Frequency at 593MHz.

Auto / 593Mhz

5.5.4.2.2 NBIO RAS Common Options



NBIO RAS Control

(0) Disabled, (1) MCA

Disabled / **MCA** / Auto

Egress Poison Severity High

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

30011

Egress Poison Severity Low

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

4

NBIO SyncFlood Generation

This value may be used to mask SyncFlood caused by NBIO RAS options. When set to TRUE SyncFlood from NBIO is masked. When set to FALSE NBIO is capable of generating SyncFlood.

Enabled / Disabled / **Auto**

NBIO SyncFlood Reporting

This value may be used to enable SyncFlood will be reported to APML. When set to FALSE that reporting will be disabled.

Enabled / **Disabled** / Auto

Egress Poison Mask High

These set the enable mask for masking of errors logged in EGRESS_POISON_STATUS. For each bit set to 1, errors are masked. For each bit set to 0, errors trigger response actions.

FFFCFFFF

Egress Poison Mask Low

These set the enable mask for masking of errors logged in EGRESS_POISON_STATUS. For each bit set to 1, errors are masked. For each bit set to 0, errors trigger response actions.

FFFFFFFB

Uncorrected Converted to Poison En

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

30000

Uncorrected Converted to Poison En

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

4

System Hub Watchdog Timer

This value specifies the timer interval of the SYSHUB Watchdog timer in milliseconds.

A28

SLINK Read Response OK

This value specifies whether SLINK read response errors are converted to an Okey response. When this value is set to TRUE, read response errors are converted to Okay responses with data of all FFs. When set to FALSE read response errors are not converted.

Enabled / **Disabled**

SLINK Read Response Error Handling

This value specifies whether SLINK write response errors are converted to an Okay response. When this value is set to 0, write response errors will be logged in the MCA. When set to 1, write response errors will trigger an MCOMMIT error. When this value is set to 2, write response errors are converted to Okay responses.

Enabled / Trigger MCOMMIT Error / **Log Errors in MCA**

Log Poison Data from SLINK

This value specifies whether poison data propagated from SLINK will generate a deferred error. When set to TRUE, deferred errors are enabled. When set to FALSE, errors are not generated.

Enabled / **Disabled**

PCIe Aer Reporting Mechanism

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

Firmware First / OS First / OS First / **Auto**

Edpc Control

(0) Disabled; (1) Enabled; (3) Auto.

Disabled / Enabled / **Auto**

NBIO Poison Consumption

NBIO Poison Consumption.

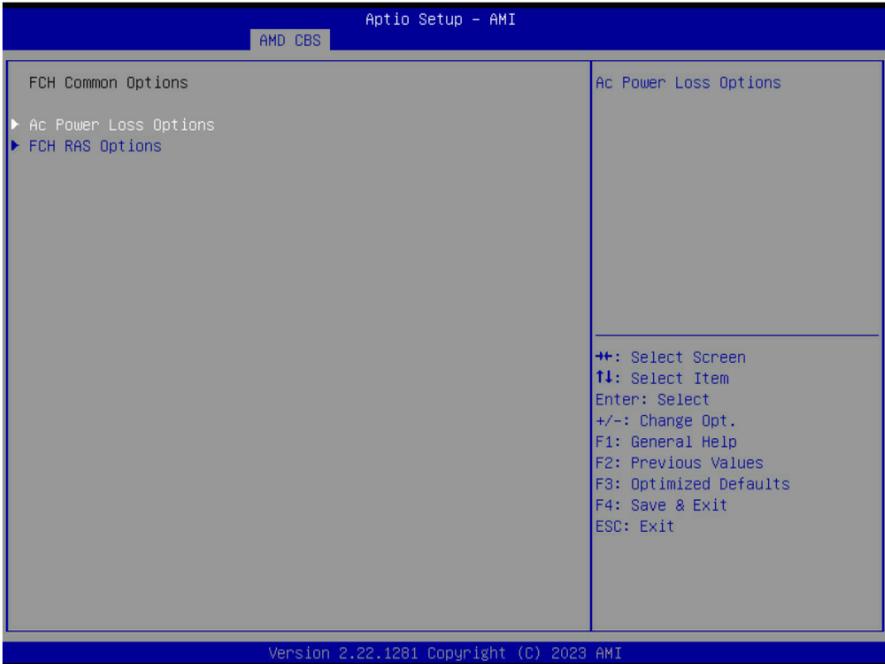
Auto / Enabled / Disabled

Sync Flood on PCIe Fatal Error

When 'Sync Flood on PCIe Fatal Error' is True, PcdAmdPciesSyncFloodOnFatal should be set to True. When 'Sync Flood on PCIe Fatal Error' is False, PcdAmdPcieSyncFloodOnFatal should be set to False. When 'Sync Flood on PCIe Fatal Error' is Auto, PcdAmdPcieSyncFloodOnFatal should retain its AGESA default.

Auto / True / **False**

5.5.5 FCH Common Options



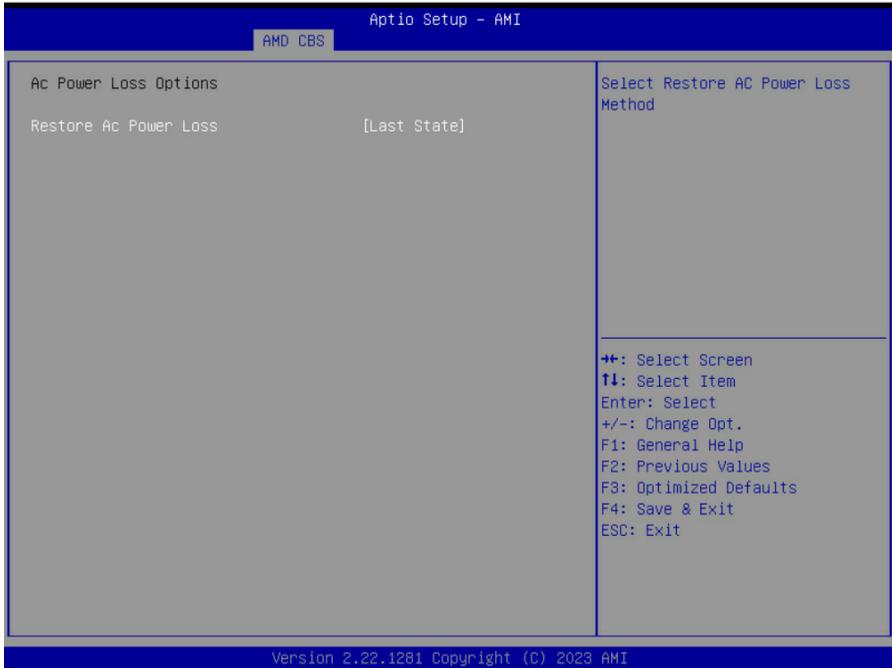
Ac Power Loss Options

Ac Power Loss Options.

FCH RAS Options

FCH RAS Options.

5.5.5.1 AC Power Loss Options

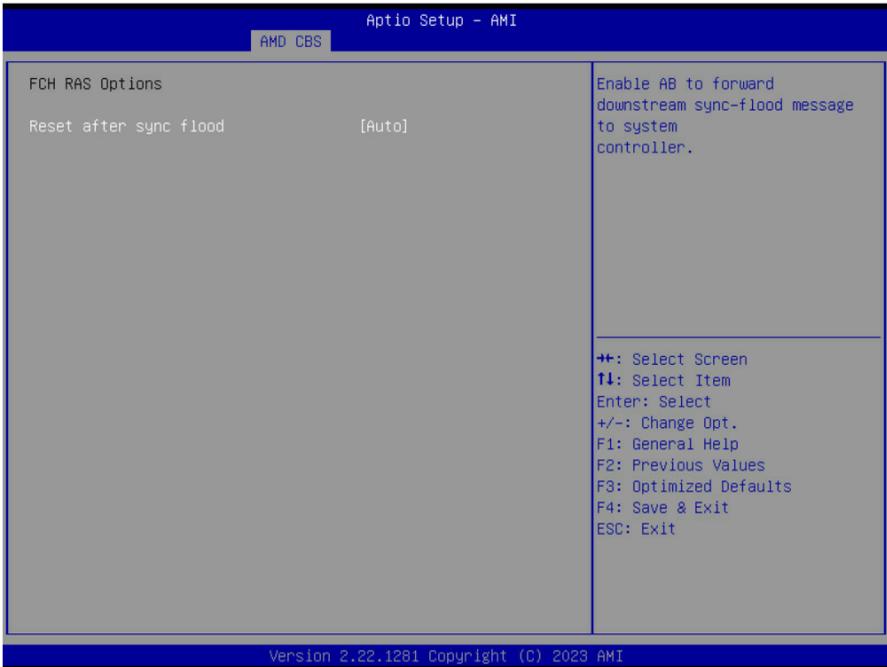


AC Loss Control

Select Restore AC Power Loss Method.

Power Off / Power On / **Last State**

5.5.5.2 FCH RAS Options

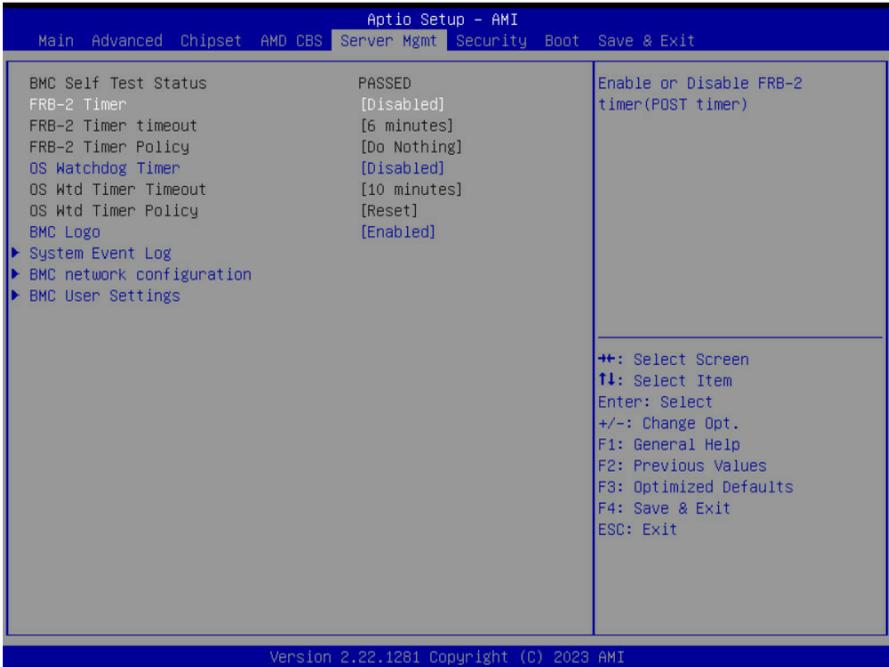


Reset after Sync flood

Enable AB to forward downstream sync-flood message to system controller.

Enabled / Disabled / **Auto**

5.6 Server Management



FRB-2 Timer

Enable or Disable FRB-2 timer (POST timer).

Enabled / **Disabled**

NOTE: when **FRB-2 Timer** is set to [Enabled], **FRB-2 Timer timeout** and **FRB-2 Timer Policy** are available.

FRB-2 Timer timeout

Enter value Between 3 to 6 min for FRB-2 Timer Expiration value. Not available if FRB-2 Timer is disabled.

3 minutes / 4 minutes / 5 minutes / **6 minutes**

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: **OS Wtd Timer timeout** and **OS Wtd Timer Policy** are available when **OS Watchdog Timer** is set to [Enabled].

OS Wtd Timer timeout

Configure the length of the OS Boot Watchdog Timer. Not available if OS Boot Watchdog timer is disabled.

5 minutes / **10 minutes** / 15 minutes / 20 minutes

OS Wtd Timer Policy

Configure how the system should respond if the OS Boot Watchdog Timer expires. Not available if OS Boot Watchdog timer is disabled.

Do Nothing / **Reset** / Power Down / Power Cycle

BMC Logo

Enable or Disable BMC Logo.

Enabled / Disabled

System Event Log

Press <Enter> to change the SEL event log configuration.

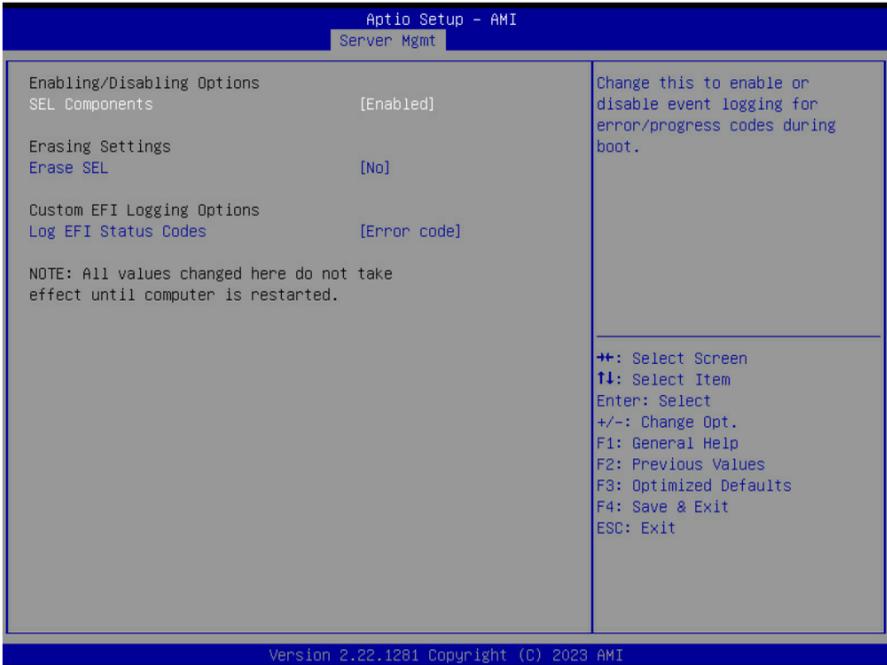
BMC network configuration

Configure BMC network parameters.

BMC User Settings

Press <Enter> to Add, Delete and Set Privilege level for users.

5.6.1 System Event Log



SEL Components

Change this to enable or disable all features of System Event Logging during boot.
Disabled / **Enabled**

NOTE: When **SEL Components** is set to [Disabled], the following items are read only.

Erase SEL

Choose options for erasing SEL.

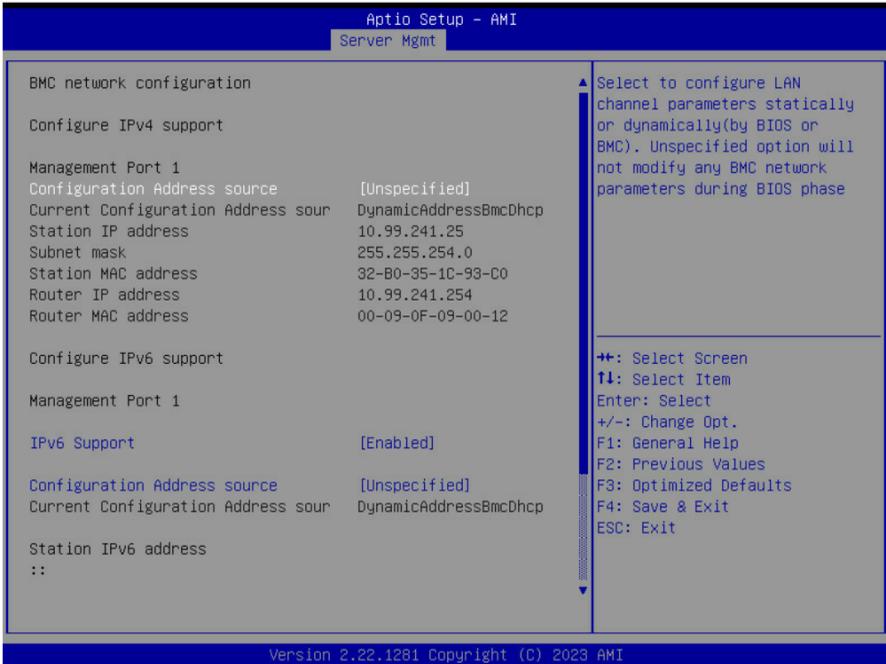
No / Yes, on next reset / Yes, on every reset

Log EFI Status Codes

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

Disabled / Both / **Error Code** / Progress Code

5.6.2 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

Configure IPv6 support

Management Port 1

IPv6 Support

Enable or Disable LAN1 IPV6 Support.

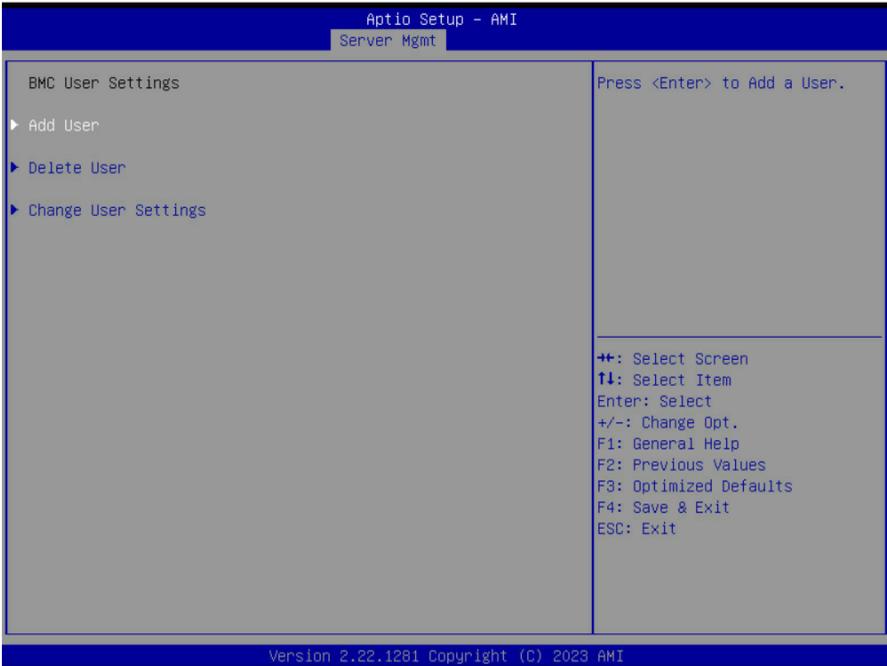
Enabled / Disabled

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

5.6.3 BMC User Settings



Add User

Press <Enter> to Add a user.

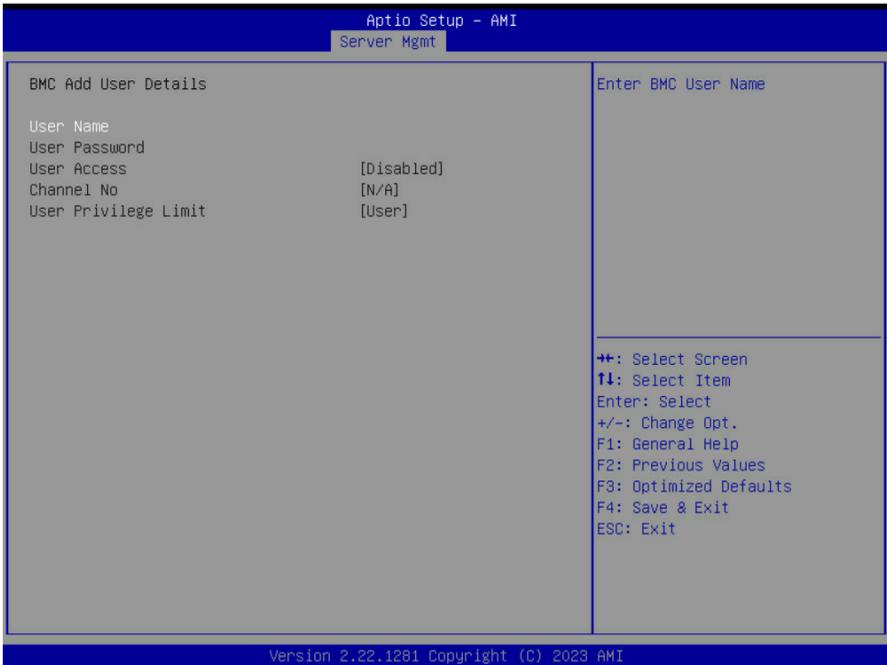
Delete User

Press <Enter> to Delete a user.

Change User Settings

Press <Enter> to change User Settings.

5.6.3.1 Add User



User Name

Enter BMC User Name.

User Password

Enter New Password to change. Password at least 8 characters.

User Access

Enable/Disable the BMC User's Access.

Enabled / **Disabled**

Channel No

Enter BMC Channel Number.

N/A / 1 / 8

User Privilege Limit

Enter BMC User Privilege Limit for Selected Channel.

None / **User** / Operator / Administrator

5.6.3.2 Delete User



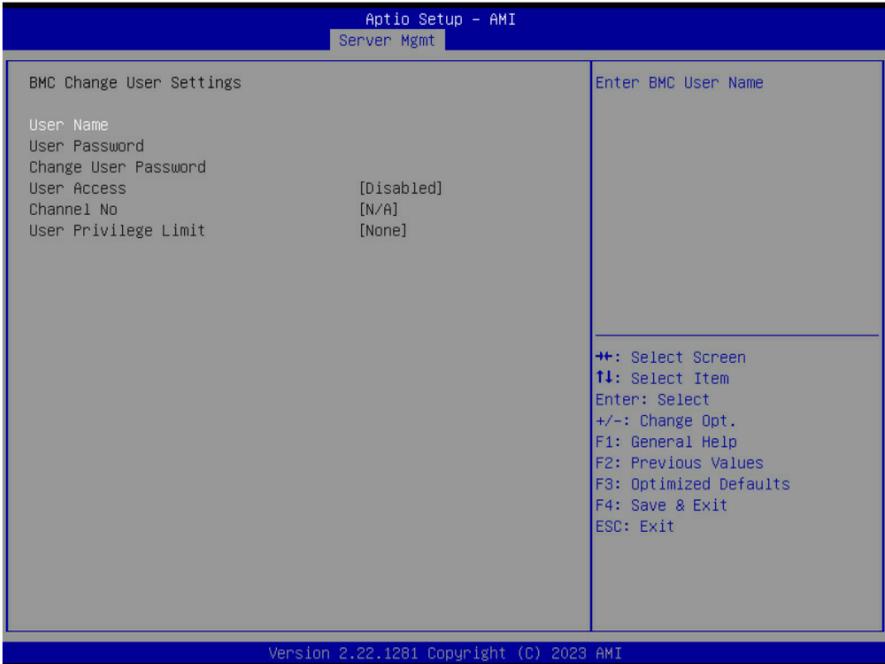
User Name

Enter BMC User Name.

User Password

Enter New Password to change. Password at least 8 characters.

5.6.3.3 Change User Settings



User Name

Enter BMC User Name.

User Password

Enter New Password to change. Password at least 8 characters.

Change User Password

Enter New Password to change. Password at least 8 characters.

User Access

Enable/Disable the BMC User's Access.

Enabled / **Disabled**

Channel No

Enter BMC Channel Number.

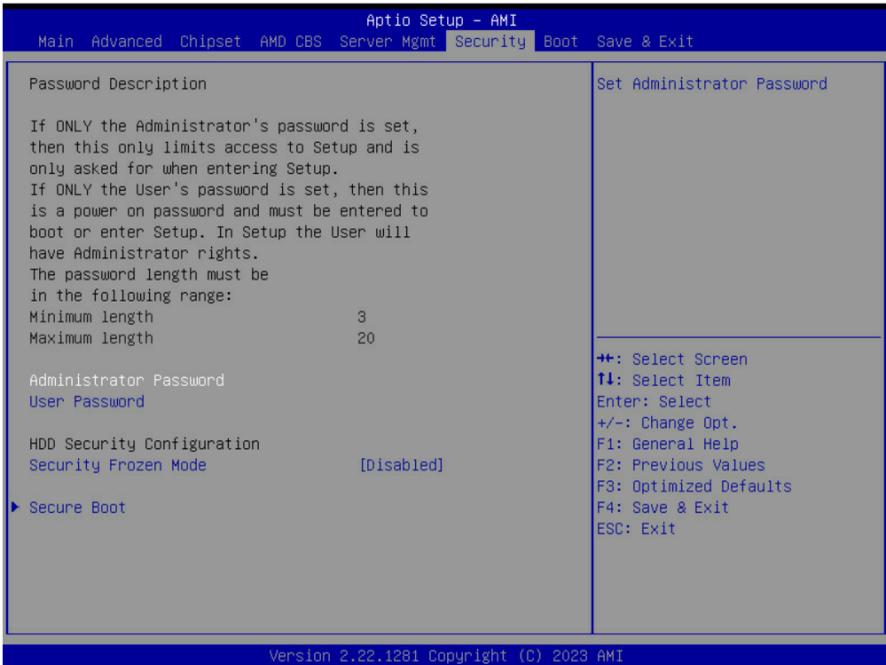
N/A / 1 / 8

User Privilege Limit

Enter BMC User Privilege Limit for Selected Channel.

None / User / Operator / Administrator

5.7 Security



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.

Secure Frozen Mode

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

Enabled / **Disabled**

Secure Boot

Secure Boot Configuration.

5.7.1 Secure Boot



Secure Boot

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

Enabled / Disabled

Secure Boot Mode

Secure Boot mode options: Standard/Custom. In Custom mode, Secure Boot Policy variables can be configured by a physically present user without full authentication.

Standard / Custom

Restore Factory Keys

Force System to User Mode. Install factory default Secure Boot key databases. Press 'Yes' to proceed 'No' to cancel.

Reset to Setup Mode

Delete all Secure Boot key database from NVRAM. Deleting all variables will reset the System to Setup Mode. Press 'Yes' to proceed 'No' to cancel.

Key Management

Enables expert users to modify Secure Boot Policy variables without full authentication.

5.7.1.1 Key Management



Factory Key Provision

Install factory default Secure Boot keys after the platform reset and while the System is in Setup mode.

Enabled / **Disabled**

Restore Factory Keys

Force System to User Mode. Install factory default Secure Boot key databases. Press 'Yes' to proceed 'No' to cancel.

Reset to Setup Mode

Delete all Secure Boot key database from NVRAM. Deleting all variables will reset the System to Setup Mode.

Press 'Yes' to proceed 'No' to cancel.

Enroll Efi Image

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

Export Secure Boot variables

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

Platform Key (PK)

Enroll Factory Defaults or load certificates from a file:

1. Public Key Certificate in:
 - a) EFI_SIGNATURE_LIST
 - b) EFI_CERT_X509 (DER)
 - c) EFI_CERT_RSA2048 (bin)
 - d) EFI_CERT_SHAXXX
 2. Authenticated UEFI Variable
 3. EFI PE/COFF Image (SHA256)
- Key source: Factory, External, Mixed
Update

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)
 - c) EFI_CERT_RSA2048 (bin)
 - d) EFI_CERT_SHAXXX
 2. Authenticated UEFI Variable
 3. EFI PE/COFF Image (SHA256)
- Key source: Factory, External, Mixed
Update / Append

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)
 - c) EFI_CERT_RSA2048 (bin)
 - d) EFI_CERT_SHAXXX
 2. Authenticated UEFI Variable
 3. EFI PE/COFF Image (SHA256)
- Key source: Factory, External, Mixed
Update / Append

Forbidden Signatures

Enroll Factory Defaults or load certificates from a file:

1. Public Key Certificate in:
 - a) EFI_SIGNATURE_LIST
 - b) EFI_CERT_X509 (DER)
 - c) EFI_CERT_RSA2048 (bin)
 - d) EFI_CERT_SHAXXX
 2. Authenticated UEFI Variable
 3. EFI PE/COFF Image (SHA256)
- Key source: Factory, External, Mixed
Update / Append

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)
 - c) EFI_CERT_RSA2048 (bin)
 - d) EFI_CERT_SHAXXX
 2. Authenticated UEFI Variable
 3. EFI PE/COFF Image (SHA256)
- Key source: Factory, External, Mixed
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)
 - c) EFI_CERT_RSA2048 (bin)
 - d) EFI_CERT_SHAXXX
 2. Authenticated UEFI Variable
 3. EFI PE/COFF Image (SHA256)
- Key source: Factory, External, Mixed
Update / Append

5.8 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.

Enabled / **Disabled**

Wait for 'ESC' If Error

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

Enabled / **Disabled**

Endless Boot

Enable or disable Endless Boot.

Enabled / Disabled

Boot Option Priorities

Boot Option #1

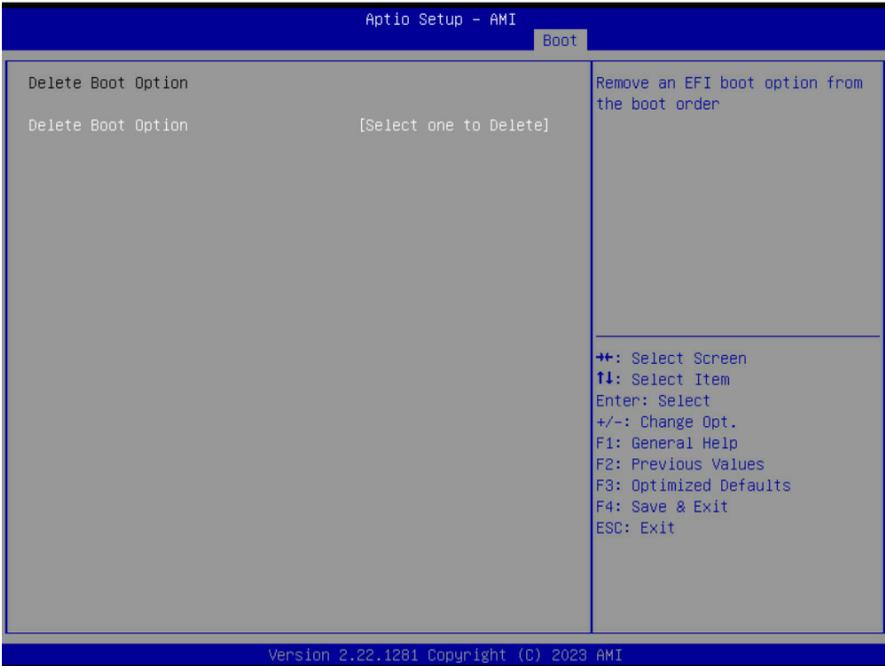
Select the system boot order.

Device Name / Disabled

Delete Boot Option

Remove an EFI boot option from the boot order.

5.8.1 Delete Boot Option

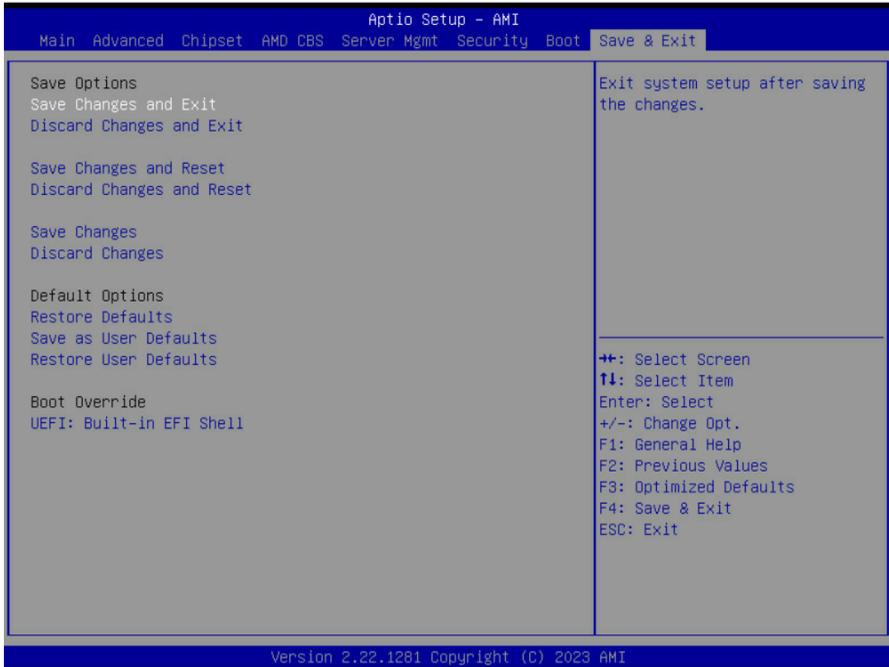


Delete Boot Option

Remove an EFI boot option from the boot order.

Select one to delete / Device Name

5.9 Save & Exit



Save Changes and Exit

Exit system setup after saving the changes.

Discard Changes and Exit

Exit system setup without saving any changes.

Save Changes and Reset

Reset the system after saving the changes.

Discard Changes and Reset

Reset system setup without saving any changes.

Save Changes

Save changes done so far to any of the setup options.

Discard Changes

Discard changes done so far to any of the setup options.

Restore Defaults

Restore/Load Default values for all the setup options.

Save as User Defaults

Save the changes done so far as User Defaults.

Restore User Defaults

Restore the User Defaults to all the setup options.

Boot Override

Read only.

NOTE

Chapter 6: Diagnostics

NOTE: if you experience problems with setting up your system, always check the following things in the following order:

Memory, Video, CPU

By checking these items, you will most likely find out what the problem might have been when setting up your system. For more information on troubleshooting, check the TYAN website at <http://www.tyan.com>.

6.1 Flash Utility

Every BIOS file is unique for the motherboard it was designed for. For Flash Utilities, BIOS downloads, and information on how to properly use the Flash Utility with your motherboard, please check the TYAN web site at <http://www.tyan.com>

NOTE: Please be aware that by flashing your BIOS, you agree that in the event of a BIOS flash failure, you must contact your dealer for a replacement BIOS. There are no exceptions. TYAN does not have a policy for replacing BIOS chips directly with end users. In no event will TYAN be held responsible for damages done by the end user.

6.2 AMIBIOS Post Code (Aptio)

The POST code checkpoints are the largest set of checkpoints during the BIOS pre-boot process. The following table describes the type of checkpoints that may occur during the POST portion of the BIOS:

Checkpoint Ranges

Status Code Range	Description
0x01 – 0x0B	SEC execution
0x0C – 0x0F	SEC errors
0x10 – 0x2F	PEI execution up to and including memory detection
0x30 – 0x4F	PEI execution after memory detection
0x50 – 0x5F	PEI errors
0x60 – 0x8F	DXE execution up to BDS
0x90 – 0xCF	BDS execution
0xD0 – 0xDF	DXE errors
0xE0 – 0xE8	S3 Resume (PEI)
0xE9 – 0xEF	S3 Resume errors (PEI)
0xF0 – 0xF8	Recovery (PEI)
0xF9 – 0xFF	Recovery errors (PEI)

Standard Checkpoints

SEC Phase

Status Code	Description
0x00	Not used
Progress Codes	
0x01	Power on. Reset type detection (soft/hard).
0x02	AP initialization before microcode loading
0x03	North Bridge initialization before microcode loading
0x04	South Bridge initialization before microcode loading
0x05	OEM initialization before microcode loading
0x06	Microcode loading
0x07	AP initialization after microcode loading
0x08	North Bridge initialization after microcode loading
0x09	South Bridge initialization after microcode loading
0x0A	OEM initialization after microcode loading
0x0B	Cache initialization

SEC Error Codes	
0x0C – 0x0D	Reserved for future AMI SEC error codes
0x0E	Microcode not found
0x0F	Microcode not found

SEC Beep Codes

None

PEI Phase

Status Code	Description
Progress Codes	
0x10	PEI Core is started
0x11	Pre-memory CPU initialization is started
0x12	Pre-memory CPU initialization (CPU module specific)
0x13	Pre-memory CPU initialization (CPU module specific)
0x14	Pre-memory CPU initialization (CPU module specific)
0x15	Pre-memory North Bridge initialization is started
0x16	Pre-Memory North Bridge initialization (North Bridge module specific)
0x17	Pre-memory North Bridge initialization (North Bridge module specific)
0x18	Pre-Memory North Bridge initialization (North Bridge module specific)
0x19	Pre-memory South Bridge initialization is started
0x1A	Pre-Memory South Bridge initialization (South Bridge module specific)
0x1B	Pre-memory South Bridge initialization (South Bridge module specific)
0x1C	Pre-Memory South Bridge initialization (South Bridge module specific)
0x1D – 0x2A	OEM pre-memory initialization codes
0x2B	Memory initialization. Serial Presence Detect (SPD) data reading
0x2C	Memory initialization. Memory presence detection
0x2D	Memory initialization. Programming memory timing information
0x2E	Memory initialization. Configuring memory
0x2F	Memory initialization (other)
0x30	Reserved for ASL (see ASL Status Codes section below)
0x31	Memory Installed
0x32	CPU post-memory initialization is started
0x33	CPU post-memory initialization. Cache initialization
0x34	CPU post-memory initialization. Application Processor(s) (AP) initialization
0x35	CPU post-memory initialization. Boot Strap Processor (BSP) selection
0x36	CPU post-memory initialization. System Management Mode(SMM) initialization
0x37	Post-Memory North Bridge initialization is started

Status Code	Description
0x38	Post-Memory North Bridge initialization (North Bridge module specific)
0x39	Post-Memory North Bridge initialization (North Bridge module specific)
0x3A	Post-Memory North Bridge initialization (North Bridge module specific)
0x3B	Post-Memory South Bridge initialization is started
0x3C	Post-Memory South Bridge initialization (South Bridge module specific)
0x3D	Post-Memory South Bridge initialization (South Bridge module specific)
0x3E	Post-Memory South Bridge initialization (South Bridge module specific)
0x3F – 0x4E	OEM post memory initialization codes
0x4F	DXE IPL is started
PEI Error Codes	
0x50	Memory initialization error. Invalid memory type or incompatible memory speed
0x51	Memory initialization error. SPD reading has failed
0x52	Memory initialization error. Invalid memory size or memory modules do not match
0x53	Memory initialization error. No usable memory detected
0x54	Unspecified memory initialization error
0x55	Memory not installed
0x56	Invalid CPU type or speed
0x57	CPU mismatch
0x58	CPU self test failed or possible CPU cache error
0x59	CPU microcode is not found or microcode update is failed
0x5A	Internal CPU error
0x5B	Reset PPI is not available
0x5C – 0x5F	Reserved for future AMI error codes
S3 Resume Progress Codes	
0xE0	S3 Resume is started (S3 Resume PPI is called by the DXE IPL)
0xE1	S3 Boot Script execution
0xE2	Video repost
0xE3	OS S3 wake vector call
0xE4 – 0xE7	Reserved for future AMI progress codes
S3 Resume Error Codes	
0xE8	S3 Resume Failed
0xE9	S3 Resume PPI not Found
0xEA	S3 Resume Boot Script Error
0xEB	S3 OS Wake Error
0xEC – 0xEF	Reserved for future AMI error codes

Recovery Progress Codes	
0xF0	Recovery condition triggered by firmware (Auto recovery)
0xF1	Recovery condition triggered by user (Forced recovery)
0xF2	Recovery process started
0xF3	Recovery firmware image is found
0xF4	Recovery firmware image is loaded
0xF5 – 0xF7	Reserved for future AMI progress codes
Recovery Error Codes	
0xF8	Recovery PPI is not available
0xF9	Recovery capsule is not found
0xFA	Invalid recovery capsule
0xFB – 0xFF	Reserved for future AMI error codes

DXE Phase

Status Code	Description
0x60	DXE Core is started
0x61	NVRAM initialization
0x62	Installation of the South Bridge Runtime Services
0x63	CPU DXE initialization is started
0x64	CPU DXE initialization (CPU module specific)
0x65	CPU DXE initialization (CPU module specific)
0x66	CPU DXE initialization (CPU module specific)
0x67	CPU DXE initialization (CPU module specific)
0x68	PCI host bridge initialization
0x69	North Bridge DXE initialization is started
0x6A	North Bridge DXE SMM initialization is started
0x6B	North Bridge DXE initialization (North Bridge module specific)
0x6C	North Bridge DXE initialization (North Bridge module specific)
0x6D	North Bridge DXE initialization (North Bridge module specific)
0x6E	North Bridge DXE initialization (North Bridge module specific)
0x6F	North Bridge DXE initialization (North Bridge module specific)
0x70	South Bridge DXE initialization is started
0x71	South Bridge DXE SMM initialization is started
0x72	South Bridge devices initialization
0x73	South Bridge DXE initialization (South Bridge module specific)
0x74	South Bridge DXE initialization (South Bridge module specific)

Status Code	Description
0x75	South Bridge DXE initialization (South Bridge module specific)
0x76	South Bridge DXE initialization (South Bridge module specific)
0x77	South Bridge DXE initialization (South Bridge module specific)
0x78	ACPI module initialization
0x79	CSM initialization
0x7A – 0x7F	Reserved for future AMI DXE codes
0x80 – 0x8F	OEM DXE initialization codes
0x90	Boot Device Selection (BDS) phase is started
0x91	Driver connecting is started
0x92	PCI Bus initialization is started
0x93	PCI Bus Hot Plug Controller initialization
0x94	PCI Bus Enumeration
0x95	PCI BUS Request Resources
0x96	PCI Bus Assign Resources
0x97	Console Output devices connect
0x98	Console Input devices connect
0x99	Super IO initialization
0x9A	USB initialization is started
0x9B	USB Reset
0x9C	USB Detect
0x9D	USB Enable
0x9E -0x9F	Reserved for future AMI codes
0xA0	IDE initialization is started
0xA1	IDE Reset
0xA2	IDE Detect
0xA3	IDE Enable
0xA4	SCSI initialization is started
0xA5	SCSI Reset
0xA6	SCSI Detect
0xA7	SCSI Enable
0xA8	Setup Verifying Password
0xA9	Start of Setup
0xAA	Reserved for ASL (see ASL Status Codes section below)
0xAB	Setup Input Wait
0xAC	Reserved for ASL (see ASL Status Codes section below)
0xAD	Ready To Boot event

Status Code	Description
0xAE	Legacy Boot event
0xAF	Exit Boot Services event
0xB0	Runtime Set Virtual Address MAP Begin
0xB1	Runtime Set Virtual Address MAP End
0xB2	Legacy Option ROM initialization
0xB3	System Reset
0xB4	USB hot plug
0xB5	PCI bus hot plug
0xB6	Clean-up of NVRAM
0xB7	Configuration Reset (reset of NVRAM settings)
0xB8 – 0xBF	Reserved for future AML codes
0xC0 – 0xCF	OEM BDS initialization codes
DXE Error Codes	
0xD0	CPU initialization error
0xD1	North Bridge initialization error
0xD2	South Bridge initialization error
0xD3	Some of the Architectural Protocols are not available
0xD4	PCI resource allocation error. Out of Resources
0xD5	No Space for Legacy Option ROM
0xD6	No Console Output Devices are found
0xD7	No Console Input Devices are found
0xD8	Invalid password
0xD9	Error loading Boot Option (LoadImage returned error)
0xDA	Boot Option is failed (StartImage returned error)
0xDB	Flash update is failed
0xDC	Reset protocol is not available

ACPI/ASL Checkpoints

Status Code	Description
0x01	System is entering S1 sleep state
0x02	System is entering S2 sleep state
0x03	System is entering S3 sleep state
0x04	System is entering S4 sleep state
0x05	System is entering S5 sleep state
0x10	System is waking up from the S1 sleep state

Status Code	Description
0x20	System is waking up from the S2 sleep state
0x30	System is waking up from the S3 sleep state
0x40	System is waking up from the S4 sleep state
0xAC	System has transitioned into ACPI mode. Interrupt controller is in PIC mode.
0xAA	System has transitioned into ACPI mode. Interrupt controller is in APIC mode.

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 cursor to "Proceed with flash update" and press the "Enter" key on the keyboard to start the BIOS recovery process.

```
Aptio Setup Utility - Copyright (C) 2017 American Megatrends, Inc.
Main Advanced Platform Configuration Socket Configuration Recovery >
-----
Please select blocks you want to update
Reset NVRAM [Enabled]
Boot Block Update [Enabled]

> Proceed with flash update

Select this to start
flash update

-----
|>: Select Screen
|^v: Select Item
|Enter: Select
|+/-: Change Opt.
|F1: General Help
|F2: Previous Values
|F3: Optimize Defaults
|F4: Save & Exit
|ESC: Exit
-----
DXE-USB hot plug 2.19.1268. Copyright (C) 2017 American Megatrends, Inc. B4
```

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. System Fan Connector

System Fan to MB		
System Fan	Connect to	S8033GME
Fan1	→	SYS_FAN 1 (J8)
Fan2	→	SYS_FAN 2 (J7)
Fan3	→	SYS_FAN 3 (J6)
Fan4	→	SYS_FAN 4/7 (J3)
Fan5	→	SYS_FAN 5/8 (J2)
Fan6	→	SYS_FAN 6/7 (J1)

2. FP Slim-SAS Cable & USB 3.2 Gen1 Cable

Front Panel Board (FPB) to S8033 (MB)			
	M1726G70-FPB	Connect to	S8033GME
FP CTRL Cable	CN1	→	SLIMSAS7
USB 3.2 Gen1 Cable	J3	→	USB3_FPIO1

3. VGA Cable

Chassis to S8033 (MB)			
		Connect to	S8033GME
VGA Cable	in front of Chassis	→	VGA1

4. LED Cable

Chassis to S8033 (MB)			
		Connect to	S8033GME
LED Cable	Rear plate of Chassis	→	J208

NOTE

Appendix III: 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® GC70-B8033 Service Engineer's Manual V1.0a

Document No.: D2530-100