GA80-B7081

Service Engineer's Manual

PREFACE

Copyright

Version 1.0b

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FCC Declaration

Notice for the USA
Compliance Information Statement (Declaration of Conformity Procedure) DoC 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 must not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesirable 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 2004/108/EC.

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.

About this Manual

This manual provides you with instructions on installing your TYAN GA80-B7081. This Manual is intended for trained service technician /personnel with hardware knowledge of personal computers.

This manual consists of the following parts:

Chapter 1: Overview
Provides an introduction to the TYAN GA80-B7081 barebones, standard parts list, describes the external components, gives a table of key components, and provides block diagram of the system.

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 removal and replacement procedures for pre-installed components.

Chapter 4: Installing the GPU cards
This chapter covers procedures on installing the GPU cards.

Chapter 5: Motherboard Information
This chapter lists the hardware setup procedures that you need to abide by when installing system components. It includes description of the jumpers and connectors on the motherboard.

Chapter 6: BIOS Setup
This chapter tells how to change system settings through the BIOS setup menu. Detailed descriptions of the BIOS parameters are also provided.

Chapter 7: Diagnostics
This chapter introduces some BIOS codes and technical terms to provide better service for the customers.

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

Safety and Compliance Information

Before installing and using TYAN GA80-B7081, take note of the following precautions:

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

Safety Information

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

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

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

Symbols on Equipment

	**Warning.** This symbol indicates the presence of hazardous energy circuits or electric shock hazards. Refer all servicing to qualified personnel.
	**Warning**. This symbol indicates the presence of a hot surface or hot component. If this surface is contacted, the potential for injury exists. To reduce risk of injury from a hot component, allow the surface to cool before touching.
	**Caution**. This symbol indicates a potential hazard. The potential for injury exists if cautions are not observed. Consult equipment documentation for specific details.
	**Caution.** Slide-mounted equipment is not to be used as a shelf or a work space.

General Precautions

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

Machine Room Environment

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

Equipment Chassis

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

Equipment Racks

To avoid injury or damage to the equipment:

- Observe local occupational health and safety requirements and guidelines for manual materials handling.
- Do not attempt to move a rack by yourself; a minimum of two people are needed to move a rack.
- Do not attempt to move a fully loaded rack. Remove equipment from the rack before moving it.
- Do not attempt to move a rack on an incline that is greater than 10 degrees from the horizontal.
- Make sure the rack is properly secured to the floor or ceiling.

• Make sure the stabilizing feet are attached to the rack if it is a single-rack installation.

• Make sure racks are coupled together if it is a multiple-rack installation.

• Make sure the rack is level and stable before installing an appliance in the rack.

• Make sure the leveling jacks are extended to the floor.

• Make sure the full weight of the rack rests on the leveling jacks.

• Always load the rack from the bottom up. Load the heaviest component in the rack first.

• Make sure the rack is level and stable before pulling a component out of the rack.

• Make sure only one component is extended at a time. A rack might become unstable if more than one component is extended.

To avoid damage to the equipment:

• The rack width and depth must allow for proper serviceability and cable management.

• Ensure that there is adequate airflow in the rack. Improper installation or restricted airflow can damage the equipment.

• The rack cannot have solid or restricted airflow doors. You must use a mesh door on the front and back of the rack or remove the doors to ensure adequate air flow to the system.

• If you install the Model in a rack, do not place equipment on top of the unit. It will cause restricted airflow and might cause damage to the equipment.

• Make sure the product is properly matted with the rails. Products that are improperly matted with the rails might be unstable.

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

Equipment Power Cords

- Use only the power cords and power supply units provided with your system. The system might have one or more power cords.
- Plug the power cord into a grounded (earthed) electrical outlet that is easily accessible at all times.
- In all European electrical environments, you must ground the Green/Yellow tab on the power cord. If you do not ground the Green/Yellow tab, it can cause an electrical shock due to high leakage currents.
- Do not place objects on AC power cords or cables. Arrange them so that no one might accidentally step on or trip over them.
- Do not pull on a cord or cable. When unplugging from the electrical outlet, grasp the cord by the plug.
- To reduce the risk of electrical shock, disconnect all power cords before servicing the appliance.
- When use 100V-127VAC input: The system does not support redundant PSU operation if the total system load exceeds 10A.

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 trained service technicians /personnel who are knowledgeable about the procedures, precautions, and hazards associated with equipment containing hazardous energy levels.

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

• 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.

Table of Contents

Chapter 1: Overview

1.1 About the TYAN GA80-B7081

Congratulations on your purchase of the TYAN® GA80-B7081, a highly optimized rack-mountable barebone system. The GA80-B7081 is designed to support Intel Xeon Processor E5-2600 v3/v4 (Haswell) with Up to 512GB RDIMM/1,024GB LRDIMM. Leveraging advanced technology from Intel®, GA80-B7081 server system is capable of offering scalable 32 and 64-bit computing, high bandwidth memory design, and lightning-fast PCI-E bus implementation.

The GA80-B7081 not only empowers your company in nowadays IT demand but also offers a smooth path for future application usage.

TYAN® is also proud to deliver the GA80-B7081 in a version that can support up to four 2.5" hot-swap hard drives. The GA80-B7081 uses TYAN®'s latest chassis featuring a robust structure and a solid mechanical enclosure. All of this provides GA80-B7081 the power and flexibility to meet the needs of nowadays server application.

1.2 Product SKU

The system board within the TYAN® Barebone contains different SKUs, which are defined by the following SKUs:

- **B7081G80V4HR-2T-N**
- **B7081G80V4HR-2T-X**
- **B7081G80V4HR-N**
- **B7081G80V4HR-X**

1.3 Features

TYAN GA80-B7081 (B7081G80V4HR-2T-N)

System	Form Factor	1U Rackmount
	Chassis Model	GA80
	Dimension (D x W x H)	31.50" x 17.32" x 1.73" (800 x 440 x 43.9mm)
	Motherboard	S7081GM3NR-2T-N
Front Panel	Buttons	(1) PWR / (1) RST / (1) ID
	LEDs	(1) HDD / (2) LAN / (1) ID / (1) IPMI/Warning
	I/O Ports	(2) USB ports
External Drive Bay	Type / Q'ty	2.5" Hot-Swap / (4)
	HDD backplane support	SATA 6Gb/s/ SAS 12Gb/s
System Cooling Configuration	FAN	(9) 4cm fans
Power Supply	Type	RPSU
	Efficiency	PFC / 80 plus Platinum
	Redundancy	1+1
	Input Range	200-240V AC/9.48A ; 100-127V/12A*
	Output Watts	1600 Watts Max. (only for 200-240V AC)
Processor	Supported CPU Series	Intel Xeon Processor E5-2600 v3/v4 series processors
	Socket Type / Q'ty	LGA2011 / (2)
	Thermal Design Power (TDP) wattage	Max up to 135W*Please refer to CPU support list
	System Bus	Up to 9.6/ 8.0/ 6.4 GT/s with Intel QuickPath Interconnect (QPI) support
Chipset	PCH	Intel C612
Memory	Supported DIMM Qty	(8)+(8) DIMM slots
	DIMM Type / Speed	RDIMM DDR4 2400/2133/1600 / LRDIMM DDR4 2400/1866 / LRDIMM 3DS DDR4 2400/1866 (*Up to 2400 speed support only w/E5-2600 v4)
	Capacity	Up to 512GB RDIMM/ 1,024GB LRDIMM Follow latest Intel DDR4 Memory POR
	Memory channel	4 Channels per CPU
	Memory voltage	1.2V
Expansion Slots	PCI-E	(1) PCI-E Gen3 x8 slot / (3) PCI-E Gen3 x16 slots
	Pre-install TYAN Riser Card	M7081-R8-1L, PCI-E Gen3 x8 1U riser card (right) / M7081-R16-1F, PCI-E Gen3 x16 1U riser

			card (right) / M7081-L16-1F-1, PCI-E Gen3 x16 1U riser card (left) / M7081-L16-1F-2, PCI-E Gen3 x16 1U riser card (left)
LAN	**Port Q'ty**		(2) 10GbE ports, (1) GbE port shared with IPMI
	Controller		Intel X540-AT2 / Intel I210
Storage	**SATA**	**Connector**	(1) Mini-SAS (4-port)
		Controller	Intel C612
		Speed	6.0 Gb/s
		RAID	RAID 0/1/10/5 (Intel RST)
Graphic	**Connector type**		D-Sub 15-pin
	Resolution		Up to 1920x1200
	Chipset		Aspeed AST2400
I/O Ports	**USB**		(2) USB3.0 ports (2 at rear)
	COM		(1) DB-9 COM port
	VGA		(1) D-Sub 15-pin port
	RJ-45		(2) 10GbE + (1) GbE shared with IPMI
	Button		ID Button
	Others		ID LED
System Monitoring	**Chipset**		Aspeed AST2400
	Voltage		Monitors voltage for CPU, memory, chipset & power supply
	Temperature		Monitors temperature for CPU & memory & system environment
	LED		Over temperature warning indicator / Fan & PSU fail LED indicator
Server Management	**Onboard Chipset**		Onboard Aspeed AST2400
	AST2400 IPMI Feature		IPMI 2.0 compliant baseboard management controller (BMC) / Supports storage over IP and remote platform-flash / USB 2.0 virtual hub
	AST2400 iKVM Feature		24-bit high quality video compression / 10/100 Mb/s MAC interface
BIOS	**Brand / ROM size**		AMI / 16MB
	Feature		User-configurable H/W monitoring / Auto-configurable of hard disk types / SMBIOS 2.7/PnP/Wake on LAN / PXE boot support / ACPI 3.0/ACPI sleeping states S4,S5
Operating System	**OS supported list**		Please refer to our Intel OS supported list.
Regulation	**FCC (DoC)**		Class A
	CE (DoC)		Yes
Operating Environment	**Operating Temp.**		10° C ~ 35° C (50° F~ 95° F)
	Non-operating Temp.		- 40° C ~ 70° C (-40° F ~ 158° F)

	In/Non-operating Humidity	90%, non-condensing at 35° C
RoHS	RoHS 6/6 Compliant	Yes
Package Contains	Barebone	(1) GA80-B7081 w/NV Tesla-aware FW Barebone
	Manual	(1) Web User's manual / (1) Quick Installation Guide
	Installation CD	(1) TYAN installation CD

TYAN GA80-B7081 (B7081G80V4HR-2T-X)

System	Form Factor	1U Rackmount
	Chassis Model	GA80
	Dimension (D x W x H)	31.50" x 17.32" x 1.73" (800 x 440 x 43.9mm)
	Motherboard	S7081GM3NR-2T-N
Front Panel	Buttons	(1) PWR / (1) RST / (1) ID
	LEDs	(1) HDD / (2) LAN / (1) ID / (1) IPMI/Warning
	I/O Ports	(2) USB ports
External Drive Bay	Type / Q'ty	2.5" Hot-Swap / (4)
	HDD backplane support	SATA 6Gb/s/ SAS 12Gb/s
System Cooling Configuration	FAN	(9) 4cm fans
Power Supply	Type	RPSU
	Efficiency	PFC / 80 plus Platinum
	Redundancy	1+1
	Input Range	200-240V AC/9.48A ; 100-127V/12A*
	Output Watts	1600 Watts Max. (only for 200-240V AC)
Processor	Supported CPU Series	Intel Xeon Processor E5-2600 v3/v4 series processors
	Socket Type / Q'ty	LGA2011 / (2)
	Thermal Design Power (TDP) wattage	Max up to 135W*Please refer to CPU support list
	System Bus	Up to 9.6/ 8.0/ 6.4 GT/s with Intel QuickPath Interconnect (QPI) support
Chipset	PCH	Intel C612
Memory	Supported DIMM Qty	(8)+(8) DIMM slots
	DIMM Type / Speed	RDIMM DDR4 2400/2133/1600 / LRDIMM DDR4 2400/1866 / LRDIMM 3DS DDR4 2400/1866 (*Up to 2400 speed support only w/E5-2600 v4)
	Capacity	Up to 512GB RDIMM/ 1.024GB LRDIMM/

			Follow latest Intel DDR4 Memory POR
	Memory channel		4 Channels per CPU
	Memory voltage		1.2V
Expansion Slots	**PCI-E**		(1) PCI-E Gen3 x8 slot / (3) PCI-E Gen3 x16 slots
	Pre-install TYAN Riser Card		M7081-R8-1L, PCI-E Gen3 x8 1U riser card (right) / M7081-R16-1F, PCI-E Gen3 x16 1U riser card (right) / M7081-L16-1F-1, PCI-E Gen3 x16 1U riser card (left) / M7081-L16-1F-2, PCI-E Gen3 x16 1U riser card (left)
LAN	**Port Q'ty**		(2) 10GbE ports, (1) GbE port shared with IPMI
	Controller		Intel X540-AT2 / Intel I210
Storage	**SATA**	**Connector**	(1) Mini-SAS (4-port)
		Controller	Intel C612
		Speed	6.0 Gb/s
		RAID	RAID 0/1/10/5 (Intel RST)
Graphic	**Connector type**		D-Sub 15-pin
	Resolution		Up to 1920x1200
	Chipset		Aspeed AST2400
I/O Ports	**USB**		(2) USB3.0 ports (2 at rear)
	COM		(1) DB-9 COM port
	VGA		(1) D-Sub 15-pin port
	RJ-45		(2) 10GbE + (1) GbE shared with IPMI
	Button		ID Button
	Others		ID LED
System Monitoring	**Chipset**		Aspeed AST2400
	Voltage		Monitors voltage for CPU, memory, chipset & power supply
	Temperature		Monitors temperature for CPU & memory & system environment
	LED		Over temperature warning indicator / Fan & PSU fail LED indicator
Server Management	**Onboard Chipset**		Onboard Aspeed AST2400
	AST2400 IPMI Feature		IPMI 2.0 compliant baseboard management controller (BMC) / Supports storage over IP and remote platform-flash / USB 2.0 virtual hub
	AST2400 iKVM Feature		24-bit high quality video compression / 10/100 Mb/s MAC interface
BIOS	**Brand / ROM size**		AMI / 16MB
	Feature		User-configurable H/W monitoring / Auto-configurable of hard disk types / SMBIOS 2.7/PnP/Wake on LAN / PXE boot support / ACPI 3.0/ACPI sleeping states S4,S5
Operating	**OS supported list**		Please refer to our Intel OS supported list.

System		
Regulation	FCC (DoC)	Class A
	CE (DoC)	Yes
Operating Environment	Operating Temp.	10° C ~ 35° C (50° F~ 95° F)
	Non-operating Temp.	- 40° C ~ 70° C (-40° F ~ 158° F)
	In/Non-operating Humidity	90%, non-condensing at 35° C
RoHS	RoHS 6/6 Compliant	Yes
Package Contains	Barebone	(1) GA80-B7081 w/Intel Xeon Phi-aware FW Barebone
	Manual	(1) Web User's manual / (1) Quick Installation Guide
	Installation CD	(1) TYAN installation CD

TYAN GA80-B7081 (B7081G80V4HR-N)

System	Form Factor	1U Rackmount
	Chassis Model	GA80
	Dimension (D x W x H)	31.50" x 17.32" x 1.73" (800 x 440 x 43.9mm)
	Motherboard	S7081GM3NR-N
Front Panel	Buttons	(1) PWR / (1) RST / (1) ID
	LEDs	(1) HDD / (2) LAN / (1) ID / (1) IPMI/Warning
	I/O Ports	(2) USB ports
External Drive Bay	Type / Q'ty	2.5" Hot-Swap / (4)
	HDD backplane support	SATA 6Gb/s/ SAS 12Gb/s
System Cooling Configuration	FAN	(9) 4cm fans
Power Supply	Type	RPSU
	Efficiency	PFC / 80 plus Platinum
	Redundancy	1+1
	Input Range	200-240V AC/9.48A ; 100-127V/12A*
	Output Watts	1600 Watts Max. (only for 200-240V AC)
Processor	Supported CPU Series	Intel Xeon Processor E5-2600 v3/v4 series processors
	Socket Type / Q'ty	LGA2011 / (2)
	Thermal Design Power (TDP) wattage	Max up to 135W*Please refer to CPU support list
	System Bus	Up to 9.6/ 8.0/ 6.4 GT/s with Intel QuickPath Interconnect (QPI) support

Chipset	**PCH**		Intel C612
Memory	**Supported DIMM Qty**		(8)+(8) DIMM slots
	DIMM Type / Speed		RDIMM DDR4 2400/2133/1600 / LRDIMM DDR4 2400/1866 / LRDIMM 3DS DDR4 2400/1866 (*Up to 2400 speed support only w/E5-2600 v4)
	Capacity		Up to 512GB RDIMM/ 1,024GB LRDIMM Follow latest Intel DDR4 Memory POR
	Memory channel		4 Channels per CPU
	Memory voltage		1.2V
Expansion Slots	**PCI-E**		(1) PCI-E Gen3 x8 slot / (3) PCI-E Gen3 x16 slots
	Pre-install TYAN Riser Card		M7081-R8-1L, PCI-E Gen3 x8 1U riser card (right) / M7081-R16-1F, PCI-E Gen3 x16 1U riser card (right) / M7081-L16-1F-1, PCI-E Gen3 x16 1U riser card (left) / M7081-L16-1F-2, PCI-E Gen3 x16 1U riser card (left)
LAN	**Port Q'ty**		Total (3) ports, (1) shared with IPMI
	Controller		Intel I350-BT2 / Intel I210
Storage	**SATA**	**Connector**	(1) Mini-SAS (4-port)
		Controller	Intel C612
		Speed	6.0 Gb/s
		RAID	RAID 0/1/10/5 (Intel RST)
Graphic	**Connector type**		D-Sub 15-pin
	Resolution		Up to 1920x1200
	Chipset		Aspeed AST2400
I/O Ports	**USB**		(2) USB3.0 ports (2 at rear)
	COM		(1) DB-9 COM port
	VGA		(1) D-Sub 15-pin port
	RJ-45		(3) GbE ports (1 port shared with IPMI)
	Button		ID Button
	Others		ID LED
System Monitoring	**Chipset**		Aspeed AST2400
	Voltage		Monitors voltage for CPU, memory, chipset & power supply
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	AST2400 iKVM		24-bit high quality video compression / 10/100

	Feature	Mb/s MAC interface
BIOS	**Brand / ROM size**	AMI / 16MB
	Feature	User-configurable H/W monitoring / Auto-configurable of hard disk types / SMBIOS 2.7/PnP/Wake on LAN / PXE boot support / ACPI 3.0/ACPI sleeping states S4,S5
Operating System	**OS supported list**	Please refer to our Intel OS supported list.
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	CE (DoC)	Yes
Operating Environment	**Operating Temp.**	10° C ~ 35° C (50° F~ 95° F)
	Non-operating Temp.	- 40° C ~ 70° C (-40° F ~ 158° F)
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RoHS	**RoHS 6/6 Compliant**	Yes
Package Contains	**Barebone**	(1) GA80-B7081 w/NV Tesla-aware FW Barebone
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	LEDs	(1) HDD / (2) LAN / (1) ID / (1) IPMI/Warning
	I/O Ports	(2) USB ports
External Drive Bay	**Type / Q'ty**	2.5" Hot-Swap / (4)
	HDD backplane support	SATA 6Gb/s/ SAS 12Gb/s
System Cooling Configuration	**FAN**	(9) 4cm fans
Power Supply	**Type**	RPSU
	Efficiency	PFC / 80 plus Platinum
	Redundancy	1+1
	Input Range	200-240V AC/9.48A ; 100-127V/12A*
	Output Watts	1600 Watts Max. (only for 200-240V AC)
Processor	**Supported CPU Series**	Intel Xeon Processor E5-2600 v3/v4 series processors

	Socket Type / Q'ty		LGA2011 / (2)
	Thermal Design Power (TDP) wattage		Max up to 135W*Please refer to CPU support list
	System Bus		Up to 9.6/ 8.0/ 6.4 GT/s with Intel QuickPath Interconnect (QPI) support
Chipset	**PCH**		Intel C612
Memory	**Supported DIMM Qty**		(8)+(8) DIMM slots
	DIMM Type / Speed		RDIMM DDR4 2400/2133/1600 / LRDIMM DDR4 2400/1866 / LRDIMM 3DS DDR4 2400/1866 (*Up to 2400 speed support only w/E5-2600 v4)
	Capacity		Up to 512GB RDIMM/ 1,024GB LRDIMM Follow latest Intel DDR4 Memory POR
	Memory channel		4 Channels per CPU
	Memory voltage		1.2V
Expansion Slots	**PCI-E**		(1) PCI-E Gen3 x8 slot / (3) PCI-E Gen3 x16 slots
	Pre-install TYAN Riser Card		M7081-R8-1L, PCI-E Gen3 x8 1U riser card (right) / M7081-R16-1F, PCI-E Gen3 x16 1U riser card (right) / M7081-L16-1F-1, PCI-E Gen3 x16 1U riser card (left) / M7081-L16-1F-2, PCI-E Gen3 x16 1U riser card (left)
LAN	**Port Q'ty**		Total (3) ports, (1) shared with IPMI
	Controller		Intel I350-BT2 / Intel I210
Storage	**SATA**	**Connector**	(1) Mini-SAS (4-port)
		Controller	Intel C612
		Speed	6.0 Gb/s
		RAID	RAID 0/1/10/5 (Intel RST)
Graphic	**Connector type**		D-Sub 15-pin
	Resolution		Up to 1920x1200
	Chipset		Aspeed AST2400
I/O Ports	**USB**		(2) USB3.0 ports (2 at rear)
	COM		(1) DB-9 COM port
	VGA		(1) D-Sub 15-pin port
	RJ-45		(3) GbE ports (1 port shared with IPMI)
	Button		ID Button
	Others		ID LED
System Monitoring	**Chipset**		Aspeed AST2400
	Voltage		Monitors voltage for CPU, memory, chipset & power supply
	Temperature		Monitors temperature for CPU & memory & system environment

	LED	Over temperature warning indicator / Fan & PSU fail LED indicator
Server Management	**Onboard Chipset**	Onboard Aspeed AST2400
	AST2400 IPMI Feature	IPMI 2.0 compliant baseboard management controller (BMC) / Supports storage over IP and remote platform-flash / USB 2.0 virtual hub
	AST2400 iKVM Feature	24-bit high quality video compression / 10/100 Mb/s MAC interface
BIOS	**Brand / ROM size**	AMI / 16MB
	Feature	User-configurable H/W monitoring / Auto-configurable of hard disk types / SMBIOS 2.7/PnP/Wake on LAN / PXE boot support / ACPI 3.0/ACPI sleeping states S4,S5
Operating System	**OS supported list**	Please refer to our Intel OS supported list.
Regulation	**FCC (DoC)**	Class A
	CE (DoC)	Yes
Operating Environment	**Operating Temp.**	10° C ~ 35° C (50° F~ 95° F)
	Non-operating Temp.	- 40° C ~ 70° C (-40° F ~ 158° F)
	In/Non-operating Humidity	90%, non-condensing at 35° C
RoHS	**RoHS 6/6 Compliant**	Yes
Package Contains	**Barebone**	(1) GA80-B7081 w/Intel Xeon Phi-aware FW Barebone
	Manual	(1) Web User's manual / (1) Quick Installation Guide
	Installation CD	(1) TYAN installation CD

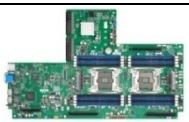
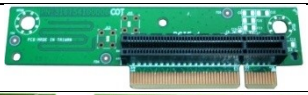
NOTE:

1. Some GPU / Xeon Phi are supported with temperature limitation
Intel Xeon Phi 3120P/5110P/7120P can be supported with limited thermal condition
2. When using 100V-127VAC input: The system does not support redundant PSU operation if the total system load exceeds 10A.

1.4 Standard Parts List

This section describes the GA80-B7081 package contents and accessories. Open the box carefully and ensure that all components are present and undamaged. The product should arrive packaged as illustrated below.

1.4.1 Box Contents

Component	Description
	1U chassis, (4) hot swap HDD bays
	TYAN® S7081 system board (pre-installed)
	(1) Delta 1600W 1+1 redundancy PSU (pre-installed)
	(9) 40x40x56mm System FANs (pre-installed)
	(1)M7081-R16-1FRiser card (pre-installed)
	(1)M7081-L16_1F-1Riser card (pre-installed)
	(1)M7081-L16_1F-2Riser card (pre-installed)
	(1)M7081-R8-1L riser card (pre-installed)
	(1)M7081G81A-BP6-4 Backplane (pre-installed)
	(1) M1706G62-FPB Front Panel Board (pre-installed)

1.4.2 Accessories

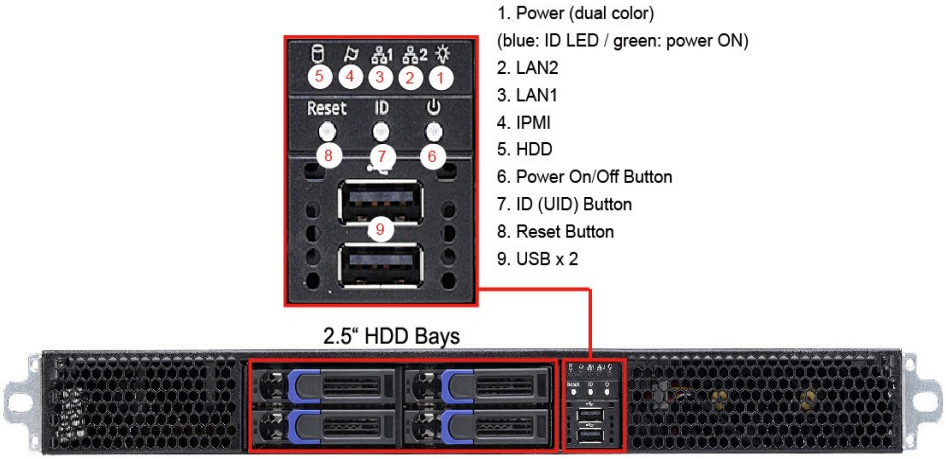
If any items are missing or appear damaged, contact your retailer or browse to TYAN®'s website for service: http://www.tyan.com
The web site also provides information of other TYAN® products, as well as FAQs, compatibility lists, BIOS settings, etc.

	
TYAN® Motherboard Drive CD	Quick Installation Guide x 1
	
AC Power Cord (EU) x 2	AC Power Cord (US) x 2
	
Addendum for China Use Only	Heatsink x 1
	
Screw Pack x 3	Air Duct x 1
	
Sliding Rail Kit x 1 & screw pack x 1	Mounting ear Kit x 1
	
GPU Power Cable x 3	GPU Bracket x 3

1.5 About the Product

The following views show you the product.

1.5.1 System Front View



1.5.2 LED control and HDD LED Definitions

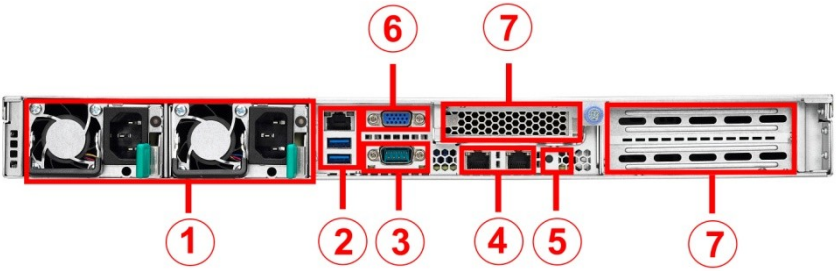
M1706G62 Front Panel Board

LED	State	LED Color	Behavior
Power 	Power On	Green	System Power On / Green Solid On System Power Off / Green Off
	Power Off	Off	
ID LED 	ID free	Blue	ID Located / Green off & Blue Solid On
Warning 	System normal	Off	System Normal / Amber Off System Warning / Amber Solid On
	System alert	Amber	
HDD 	HDD Ready	Green	HDD Access / Green Blinking HDD Ready / Green Off
	HDD Access	Off	
LAN1 	Access	Green	Access / Green Blinking Linking / Green Solid On Off Link / Green Off
	Link	Green	
	Off Link	Off	
LAN2 	Access	Green	Access / Green Blinking Linking / Green Solid On Off Link / Green Off
	Link	Green	
	Off Link	Off	

2.5” HDD LED Definition

Activity LED Color: Green	Status LED Color: Orange	Description
Solid On	Off	Drive present, no activity
Blinking	Off	Drive present, with activity
Do not care	Solid On	HDD Fail
Do not care	Blinking @1Hz	Drive Locate Identify
Do not care	Blinking @4Hz	Rebuilding

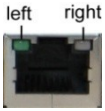
1.5.3 System Rear View



NO.	Description
1	Delta 1600W (1+1) redundancy Power Supply
2	LAN3 (shared with IPMI)+2 USB3.0 ports
3	Serial Port
4	LAN2 and LAN1 (from left to right)
5	ID LED Button & ID LED
6	VGA Port
7	Expansion Slots

1.5.4 LAN and ID LED Definitions

Rear I/O: Onboard LAN LED Color Definition

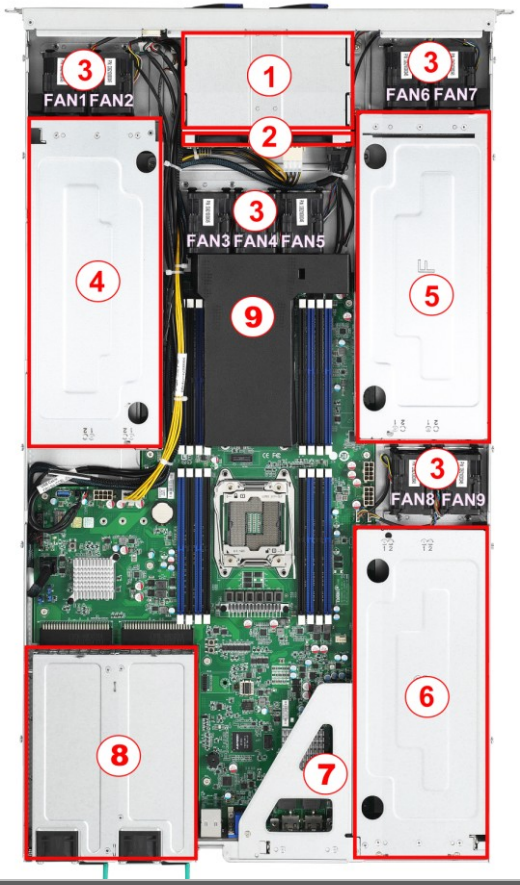
10/100/1000 Mbps LAN Link/Activity LED Scheme			
		**Left LED (Link/Activity)**	**Right LED (Speed)**
No Link		OFF	OFF
Linked at 10 Mbps	**Link**	Green	OFF
	Active	Blinking Green	OFF
Linked at 100 Mbps	**Link**	Green	Solid Green
	Active	Blinking Green	Solid Green
Linked at 1000 Mbps (1Gbps)	**Link**	Green	Solid Yellow
	Active	Blinking Green	Solid Yellow
10Gbps	**Link**	Yellow	Solid Yellow
	Active	Blinking Yellow	Solid Yellow

NOTE: "Left" and "Right" are viewed from the rear panel. With Intel I350-BT2 chipset LAN can achieve GbE or when with Intel X540-AT2 LAN can achieve 10GbE or when with Intel I210 chipset LAN can achieve Gbe

ID LED

LED	Status	LED Color	Behavior	Remark
ID LED	Normal	Blue	Off	
	Located		Solid on	Local and remote

1.5.5 System top view



N.	Description	N.	Description
1	HDD cage	6	GPU card assembly #3
2	HDD Backplane Board	7	Expansion card assembly
3	System Fans	8	Power Supply
4	GPU card assembly #1	9	Air Duct
5	GPU card assembly #2	**NOTE:**Fan3 share with Fan12, Fan4/Fan13,Fan5/F14, Fan2/Fan11, Fan1/Fan10,Fan8/Fan17,Fan9/Fan18	

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

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

Caution!

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

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 GA80-B7081 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.

NOTE: All connectors are keyed to only attach one way. All use the correct screw size as indicated in the procedures.

2.1 Installing Motherboard Components

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

2.1.1 Removing the Chassis Cover

Follow these instructions to remove the GA80-B7081 chassis cover.

1. Remove the top screw on the chassis cover and slide the chassis cover in the direction of arrow.

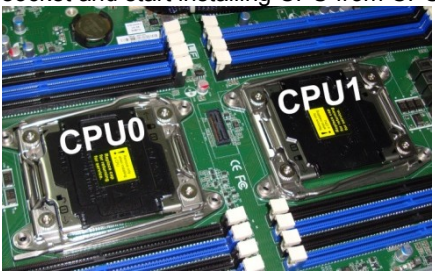
2. Slides the cover out in the direction of the arrows and Lift up the chassis cover so to remove the top cover.

2.1.2 Installing the CPU and Heatsink

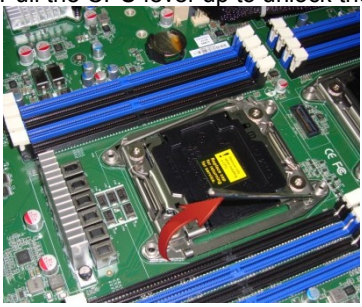
Follow the steps below to install the processor and heatsink.

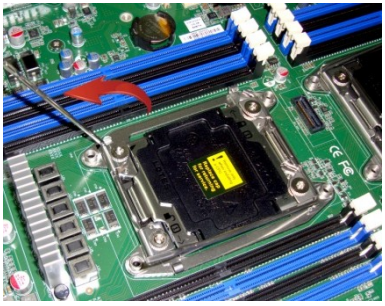
Install the CPU

1. Locate the CPU socket and start installing CPU from CPU0.

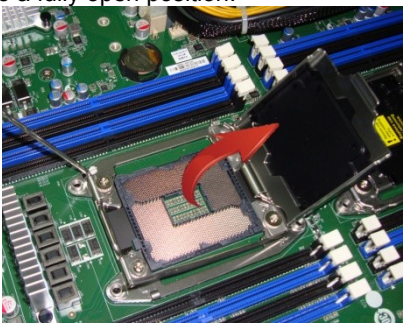


2. Pull the CPU lever up to unlock the CPU socket.

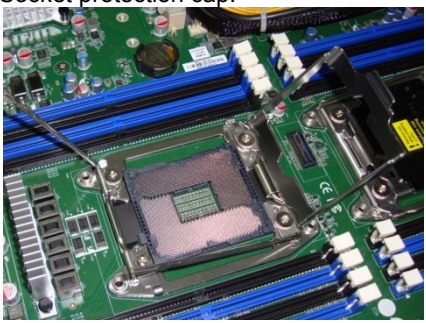




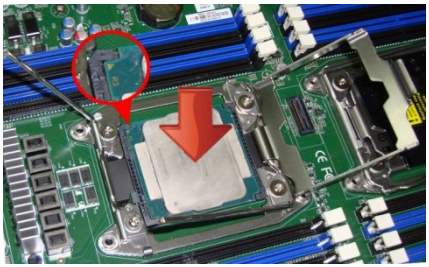
3. Open the socket to a fully open position.



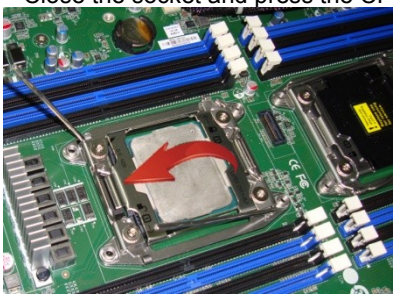
4. Take off the CPU Socket protection cap.



5. Place the CPU in the CPU socket. Make sure the gold arrow is located in the right direction.

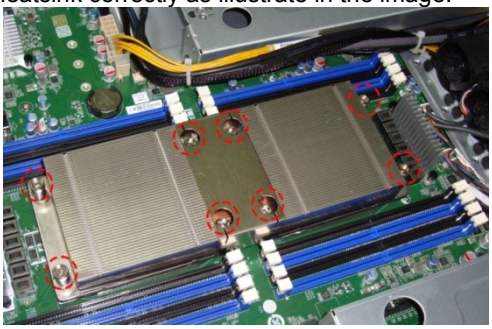


6. Close the socket and press the CPU socket lever down to secure the CPU.

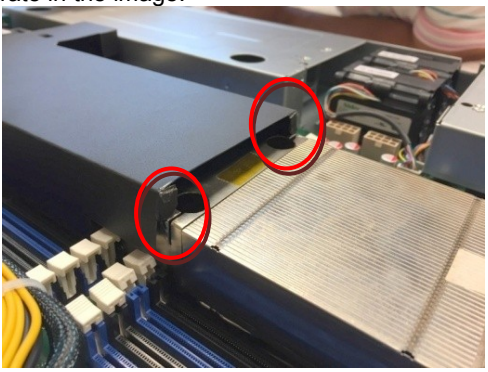


Install the Heatsink & Air Duct

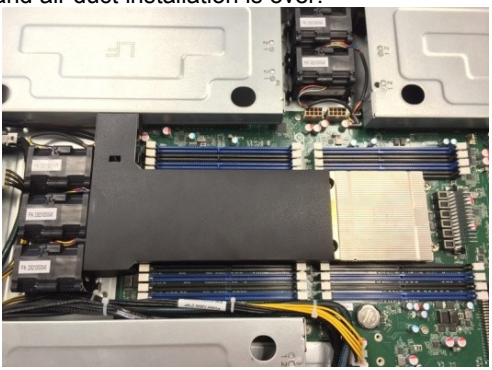
1. Place the heatsink on top of the CPU and secure it with 8 screws. please installed the heatsink correctly as illustrate in the image.



2. Place the air duct on top of the heatsink and make sure it is align with the gutter as illustrate in the image.



3. The heatsink and air duct installation is over.

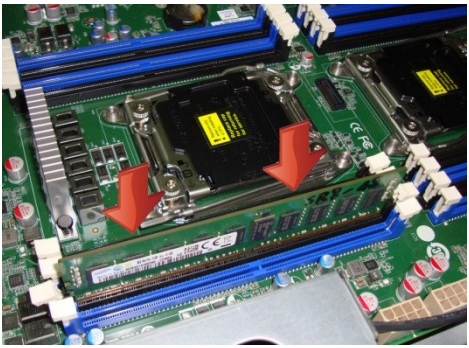


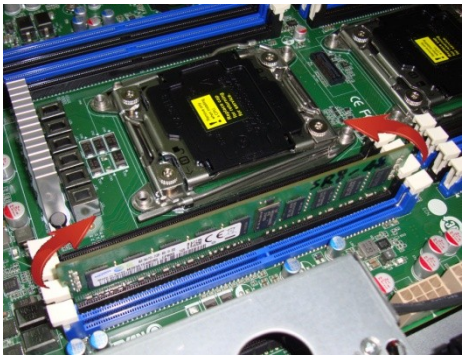
2.1.3 Installing the Memory

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. Always started from CPU0 A0.

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.





Recommended Memory Population Table (Single CPU)

	Single CPU Installed (CPU0 only)							
Quantity of memory installed	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
CPU0_DIMM_A0	√	√	√	√	√	√	√	√
CPU0_DIMM_A1					√	√	√	√
CPU0_DIMM_B0		√	√	√	√	√	√	√
CPU0_DIMM_B1						√	√	√
CPU0_DIMM_C0			√	√	√	√	√	√
CPU0_DIMM_C1							√	√
CPU0_DIMM_D0				√	√	√	√	√
CPU0_DIMM_D1								√

NOTE:

1. √ indicates a populated DIMM slot.
2. Install memory in sets of fours for maximum performance. This ensures that all four memory channels are properly utilized, providing maximum memory bandwidth.
3. Populate the same DIMM type in each channel, specifically
   - Use the same DIMM size
   - Use the same # of ranks per DIMM
4. Dual-rank DIMMs are recommended over single-rank DIMMs.

Recommended Memory Population Table (Dual CPU)

	Dual CPU installed (CPU0 and CPU1)										
Quantity of memory installed	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**10**	**12**	**14**	**16**
CPU0_DIMM_A0	√	√	√	√	√	√	√	√	√	√	√
CPU0_DIMM_A1								√	√	√	√
CPU0_DIMM_B0		√	√	√	√	√	√	√	√	√	√
CPU0_DIMM_B1									√	√	√
CPU0_DIMM_C0				√	√	√	√	√	√	√	√
CPU0_DIMM_C1									√	√	√
CPU0_DIMM_D0						√	√	√	√	√	√
CPU0_DIMM_D1											√
CPU1_DIMM_A0	√	√	√	√	√	√	√	√	√	√	√
CPU1_DIMM_A1								√	√	√	√
CPU1_DIMM_B0			√	√	√	√	√	√	√	√	√
CPU1_DIMM_B1										√	√
CPU1_DIMM_C0					√	√	√	√	√	√	√
CPU1_DIMM_C1										√	√
CPU1_DIMM_D0							√	√	√	√	√
CPU1_DIMM_D1											√

NOTE:

1. √ indicates a populated DIMM slot.
2. Install memory in sets of fours for maximum performance. This ensures that all four memory channels are properly utilized, providing maximum memory bandwidth.
3. Populate the same DIMM type in each channel, specifically
   - Use the same DIMM size
   - Use the same # of ranks per DIMM
4. Dual-rank DIMMs are recommended over single-rank DIMMs.

Intel® Xeon® processor E5-2600 v3 product family
Memory POR

Type	Ranks Per DIMM and Data Width	DIMM Capacity (GB)		Speed (MT/s); Voltage (V); Slot Per Channel (SPC) and DIMM Per Channel (DPC)					
				1 Slot Per Channel	2 Slots Per Channel		3 Slots Per Channel		
				1DPC	1DPC	2DPC	1DPC	2DPC	3DPC
		4Gb	8Gb	1.2V	1.2V	1.2V	1.2V	1.2V	1.2V
RDIMM	SRx4	8GB	16GB	2133	2133	1866	2133	1866	1600
RDIMM	SRx8	4GB	8GB	2133	2133	1866	2133	1866	1600
RDIMM	DRx8	8GB	16GB	2133	2133	1866	2133	1866	1600
RDIMM	DRx4	16GB	32GB	2133	2133	1866	2133	1866	1600
LRDIMM	QRx4	32GB	64GB	2133	2133	2133	2133	2133	1600
LRDIMM 3DS†	8Rx4	64GB	128GB	2133	2133	2133	2133	2133	1600

†Grantley intercept at platform refresh (Broadwell)

Intel® Xeon® processor E5-2600 v4 product family
Memory POR Targets

Type	Ranks Per DIMM and Data Width	DIMM Capacity (GB)		Speed (MT/s); Voltage (V); Slot Per Channel (SPC) and DIMM Per Channel (DPC)					
				1 Slot Per Channel	2 Slots Per Channel		3 Slots Per Channel		
				1DPC	1DPC	2DPC	1DPC	2DPC	3DPC
		4Gb	8Gb	1.2V	1.2V	1.2V	1.2V	1.2V	1.2V
RDIMM	SRx4	8GB	16GB	2400	2400	2133	2133	2133	1600
RDIMM	SRx8	4GB	8GB	2400	2400	2133	2133	2133	1600
RDIMM	DRx8	8GB	16GB	2400	2400	2133	2133	2133	1600
RDIMM	DRx4	16GB	32GB	2400	2400	2133	2133	2133	1600
LRDIMM	QRx4	32GB	64GB	2400	2400	2133	2133	2133	1600
LRDIMM 3DS	8Rx4	64GB	128GB	2400	2400	2133	2133	2133	1600

2.1.4 Installing Hard Drives

The GA80-B7081 barebone supports (4) 2.5” hard drives. Follow these instructions to install a hard drive.

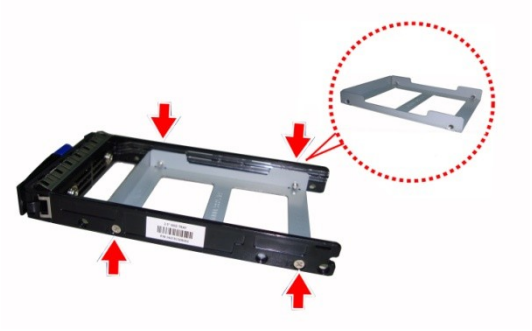
> **Warning!!!**
>
> Always install the hard disk drive to the chassis after the chassis is secured on the rack.

1. Press the locking lever latch in the direction of arrow.

2. Pull the locking lever open.

3. Slide the drive tray out.

4. Remove the 4 screws to detach HDD tray bracket.



5. Place a hard drive into the drive tray. Use four screws to secure the HDD.

6. Reinsert the HDD tray into the chassis.

7. Press the locking lever to secure the hard drive. Repeat the same procedures to install other HDD trays.

2.1.5 Installing the Add-On Card

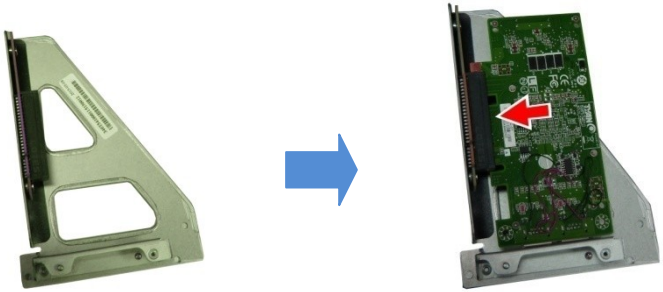
The GA80-B7081 has **one preinstalled M7081-R8-1L** riser card.

You can install an Add-On card into the expansion slot which is available with riser card. The following instructions are for Add-On card installation. You may refer to the procedures below for the installation.

1. Remove the two screws of PCI-E bracket and lift up the bracket.

2. Remove the screw to slide the PCIE bracket.

3. Insert the Add-On card to the M7081-R8-1L riser card.



4. Reinstall the PCIE bracket into the chassis and secure with 2 screws.

2.2 Rack Mounting

After installing the necessary components, the TYAN GA80-B7081 can be mounted in a rack using the supplied rack mounting kit.

Sliding Rail Kit

- Sliding Rails x 2
- Rail screw Pack x 1

A

M5 screw + Washer (8 pairs)

Mounting Ear Kit

- Mounting Ears x 2
- Mounting Ears screw Pack x 1

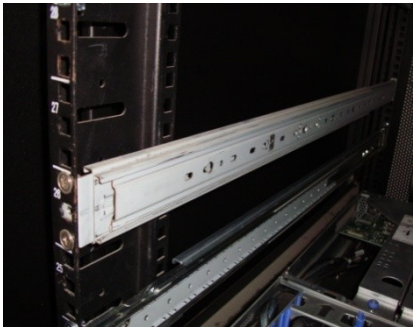
2.2.1 Installing the Server in a Rack

Follow these instructions to mount the TYAN GA80-B7081 into an industry standard 19" rack.

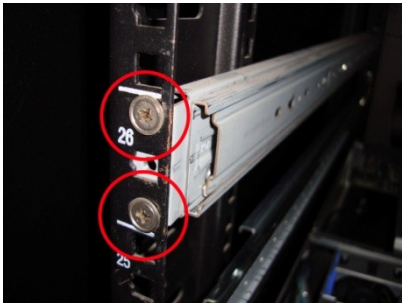
NOTE: Before mounting the TYAN GA80-B7081 in a rack, ensure that all internal components have been installed and that the unit has been fully tested. However, to make the installation easier, we suggest that you remove all HDD trays before you insert the chassis to the rack.

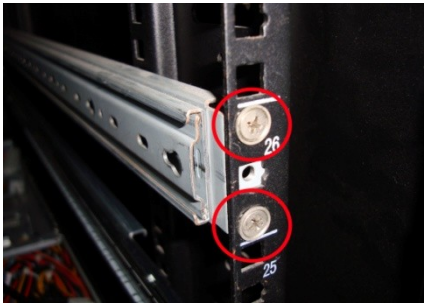
2.2.2 Installing the Outer Rails to the Rack

1. Install the rail to the rack. Repeat the same procedures for the other rail.



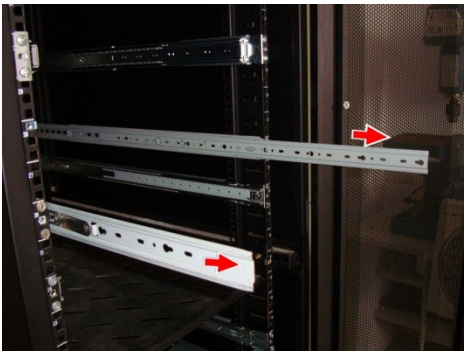
2. Secure the outer rail to the rack using 4 (A) M5 screws and washers (2 sets front / 2 sets rear) for each side. Secure the rails to the rack as shown.





2.2.3 Installing the inner Rails to the Chassis

1. Press the button to pull out the inner rail from the outer rail of the GA80-B7081 sliding rails.



2. Align the inner sliding rail (1) on the side of the server, and pull towards the arrow (2) to secure the six hooks.

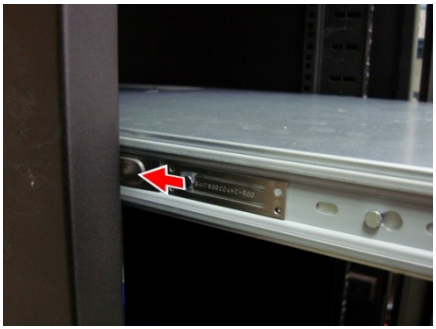
3. Screw the mounting ears to each side of TYAN GA80-B7081 as shown using 2 screws from the supplied screws kit.

4. To make the installation easier, we suggest that you remove all nodes before you insert the chassis to the rack.

2.2.4 Rack mounting the Server

To install the chassis to the rack

1. Then press the button to push the whole system into the rack.



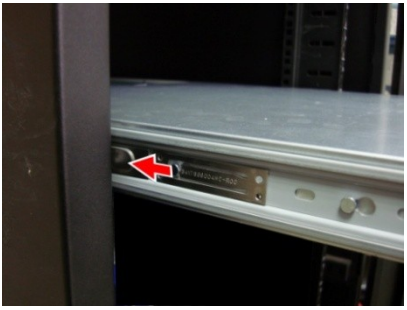
2. Push the chassis back into the rack.

To removing the chassis from a rack

Follow these instructions to remove the TYAN GA80-B7081 from an industry standard 19" rack.

1. Hold the mounting ears to pull out the chassis from the rack.

2. Press the button to unlock the chassis from the rails.



3. Pull out the chassis from the rails.

4. Follow the steps described earlier in reverse to remove the chassis from the rack.

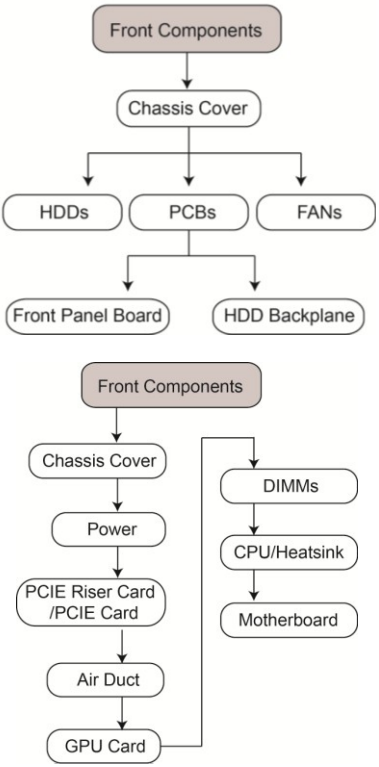
Chapter 3: Replacing Pre-Installed Components

3.0.1 Introduction

This chapter explains how to replace the pre-installed components, including the Motherboard, M1706G62 Front panel board, M7081G81A-BP6-4 SATA HDD backplane, M7081-R16-1F, M7081-L16_1F-1 and M7081-L16-1F-2 PCI-E Riser card, System fans, and Power supply unit etc.

3.0.2 Disassembly Flowchart

The following flowchart outlines the disassembly procedure.



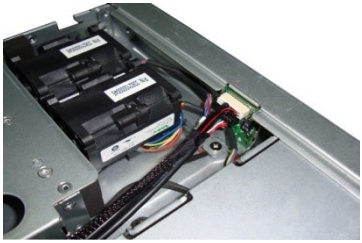
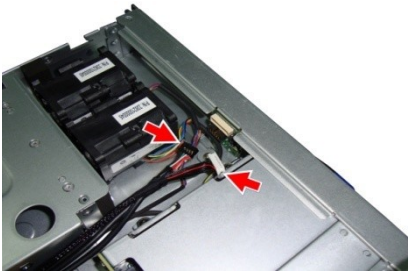
3.1 Removing the Cover

Before replacing any parts you must remove the chassis cover. Follow Section **2.1.1 Removing the Chassis Cover** (page 33) to remove the cover of the GA80-B7081.

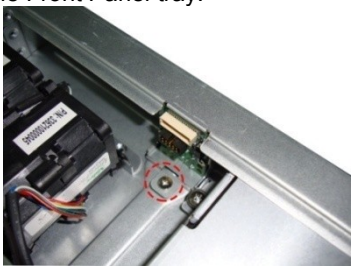
3.2 Replacing the Front Panel Board

Follow these instructions to replace the M1706G62-FPB Front Panel Board.

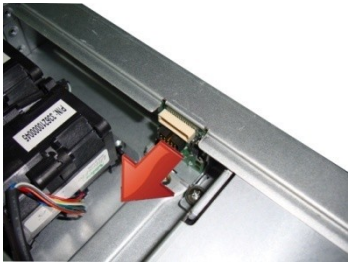
1 Disconnect the Front Panel Board cables.

2 Unscrew to release the Front Panel tray.

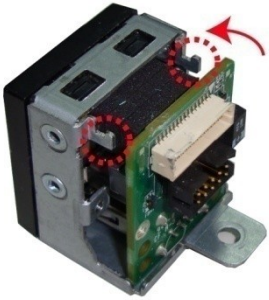


3 Free the Front Panel tray.

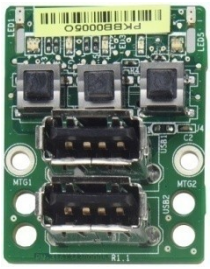


4 Unscrew to take out the front panel board.

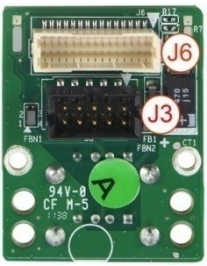
5 Replace a new front panel board and screw it to the front panel tray.



3.2.1 M1706G62 Front Panel Board Features



Front



Rear

NOTE: ***1.5.1 System Front View (Per Node)*** for details on Front Panel LEDs and buttons.

3.2.2 Front Panel Board Connector Pin Definition

J6: FPIO Connector

Signal	Pin	Pin	Signal
PW_ LED+	1	2	VCC-
NC	3	4	IDLED+
PW_LED-	5	6	IDLED-
HD_LED+	7	8	FAULT_LED1-
HD_LED-	9	10	FAULT_LED2-
PWR_SW#	11	12	LAN1_LED+
GND	13	14	LAN_LED-
RESET#	15	16	NC
GND	17	18	NC
ID_SW#	19	20	NC
TEMP_SENSOR	21	22	LAN2_LED+
HD_FAIL_LED-	23	24	LAN_LED-

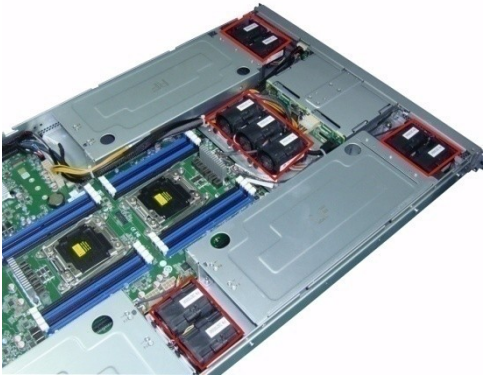
J3: USB Connector

Pin	Net Name	Function	Pin	Net Name	Function
1	VCC_USB0	Power connect to 5V (for USB)	6	USB_P1_P	USB_P1 +
2	VCC_USB1	Power connect to 5V (for USB)	7	GND	Ground
3	USB_P0_N	USB_P0 -	8	GND	Ground
4	USB_P1_N	USB_P1 -	9	NC	
5	USB_P0_P	USB_P0 +	10	NC	

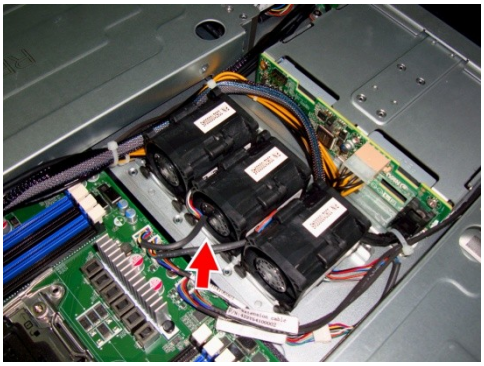
3.3 Replacing the System Fan

There are totally nine system fans in the GA80-B7081.Four at front, three in the middle, and two at back. Follow these instructions to replace the cooling fans in the system.

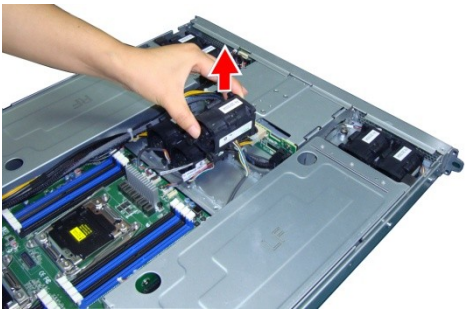
1. Locate the cooling fans in your system.



2. Disconnect the fan cables connected to the mother board.

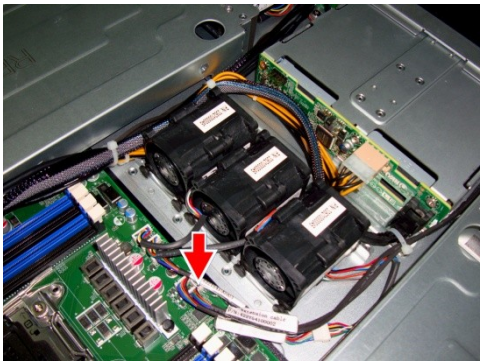


3. Lift the fan up from the chassis.



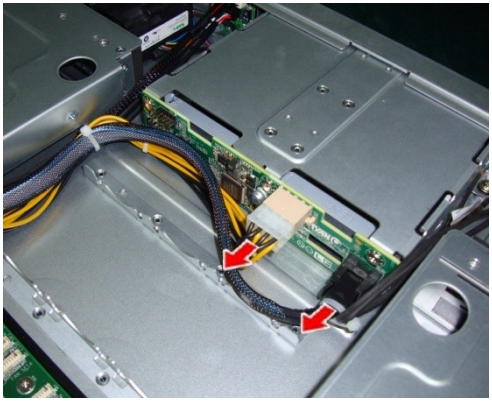
4. After replacing the new fans, reinstall the fans into the chassis.

5. Connect the fan cables to the motherboard fan connectors.

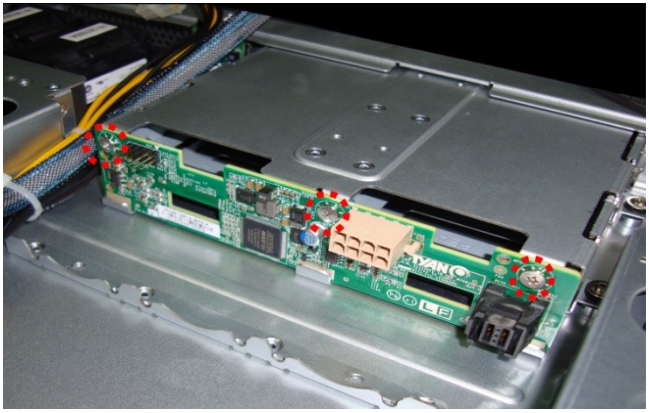


3.4 Replacing the HDD Backplane

1. Disconnect all the cables connected to the HDD Backplane.

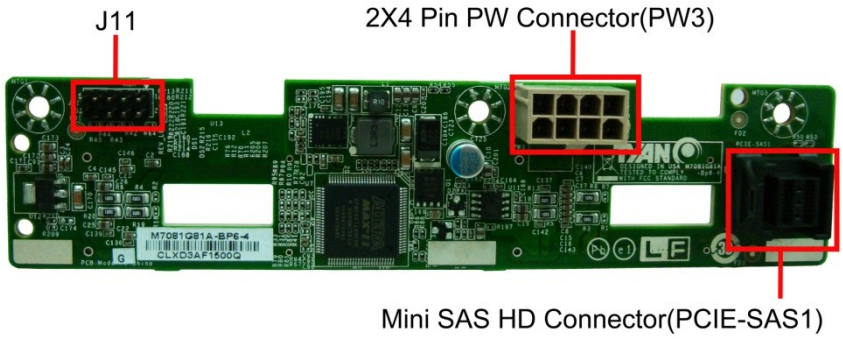


2. Remove the two screws securing the bracket to the chassis base.

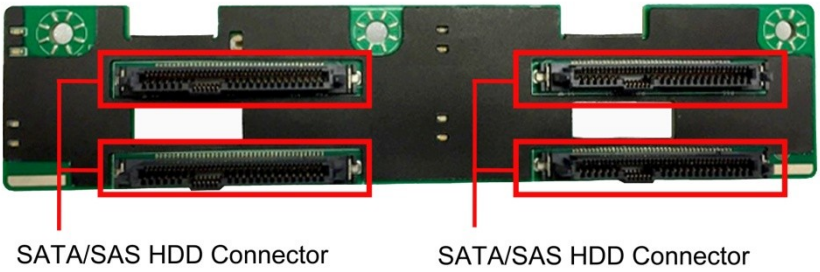


3.4.1 M7081G81A-BP6-4 HDD Backplane Features

Front View



Rear View



Integrated I/O	➢ (4) port 2.5” SAS/SATA 6Gb/s & hot-swap support ➢ (1) Mini-SAS HD connector ➢ (1) 2x4 Pin Power connector

3.4.2 M7081G81A-BP6-4 HDD Connector Pin Definitions

PW3: Power Connector

Signal	Pin	Pin	Signal
GND	1	2	GND
GND	3	4	P5V
P12V	5	6	P12V
P12V	7	8	P12V

J11: Header (5 X2 Pin) for CPLD

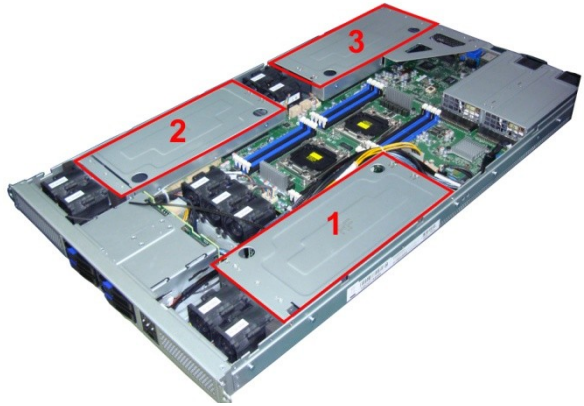
Signal	Pin	Pin	Signal
TCK_A	1	2	GND
TDO_A	3	4	VDD_3P3_RUN
TMS_A	5	6	NC
NC	7	8	KEY
TDI_A	9	10	GND

3.5 Replacing PCI-E Riser Cards

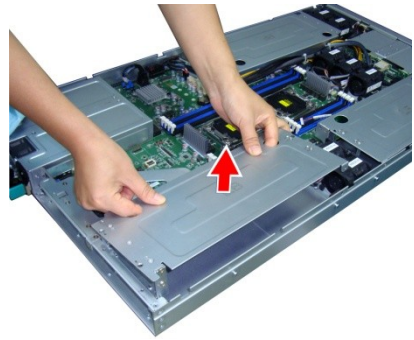
The GA80-B7081 has **Four** **pre-installed PCI-E** riser cards.
Follow the instructions below to disassemble the **M7081-R16-1F**, **M7081-L16_1F-1**, **M7081-L16-1F-2** and **M7081-R8-1L** PCI-E riser cards.

Uninstalling the M7081-L16-1F riser card

1 There are three PCI bracket in the GA80-B7081 chassis.



2 Remove the 4 screws secure the PCI bracket and lift the bracket up.



3 Turn over the bracket and unscrew the **M7081-L16-1F-2** riser card to replace a new one if necessary.

Uninstalling the M7081-R16-1F / M7081-L16-1F-1 riser card

1 Follow the same procedure to detach the other PCI bracket.

2 Unscrew the **M7081-R16-1F, M7081-L16_1F-1** riser card to replace a new one if necessary.

3 Follow the steps described earlier in reverse to reinstall the **M7081-R16-1F, M7081-L16_1F-1** riser card.

Uninstalling the M7081-R8-1L riser card

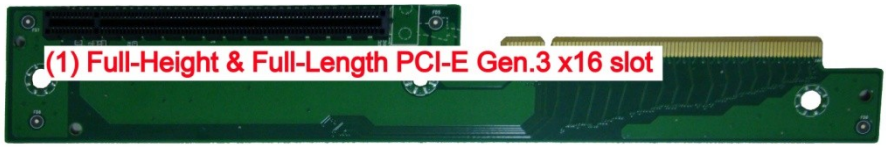
Follow the procedure in chapter 2.1.6 Installing the PCIE riser card to detach the riser card bracket.

1 Unscrew the **M7081-R8-1L** riser card to replace a new one if necessary.

3.5.1 PCIE Riser card Features

M7081-R16-1F riser card

M7081-L16-1F-1 riser card



M7081-L16-1F-2 riser card

M7081-R8-1L riser card

3.6 Replacing the Power Supply

The system has (1+1) pre-installed 1600W redundancy Power Supply Units. Follow these instructions to replace the power supply units.

1 Located at the power supply usage.

2 Press and hold the latch to pull the power supply out.

3 After replacing a new power supply, press and hold the latch to push the power supply back into the chassis.

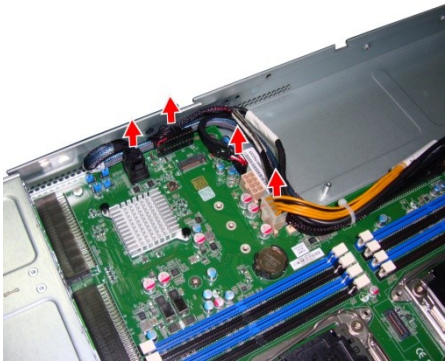
3.7 Removing Motherboard Procedures

Follow these instructions to replace the motherboard.

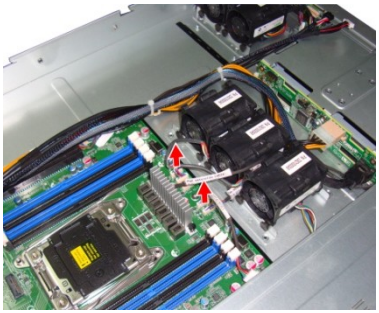
3.7.1 Disconnecting All Motherboard Cables

Before replacing the motherboard or certain components, disconnect cables connected to the motherboard then the motherboard can be easily take out. Follow these instructions to remove all motherboard cables.

1. Disconnect the 8-pin power cables, mini SAS cable and Front Panel cable.



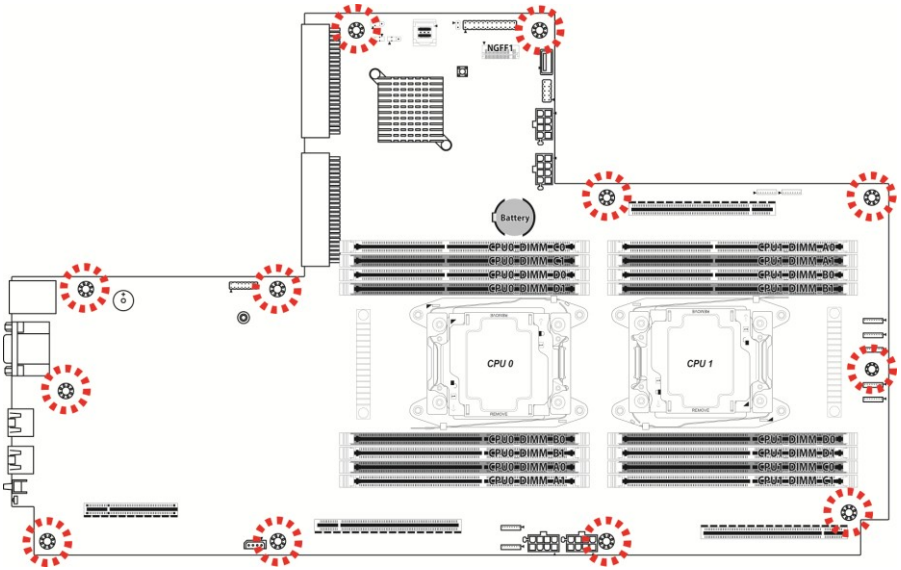
2. Disconnect the system fan cable.



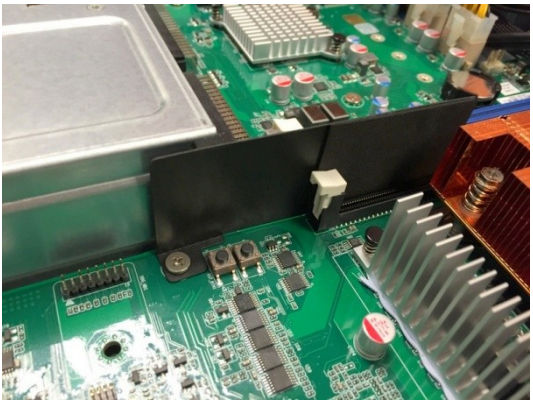
3.7.2 Removing the Motherboard

After removing all of the aforementioned cables, follow the instructions below to remove the motherboard from the chassis.

1. Remove the heatsink and processor if installed.
2. Remove the eleven screws securing the motherboard to the chassis.



3. Remove the mylar from the chassis.



4. Carefully lift the motherboard from the chassis.

Chapter 4: Installing GPU Cards

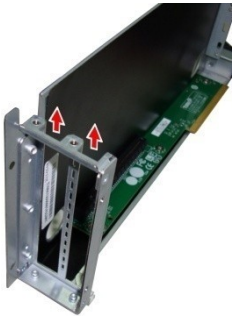
In this chapter we will introduce you how to install the **Intel® PHi** GPU card.

4.1 Installing the Intel® Phi GPU card

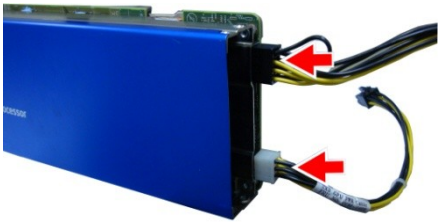
1. Take out the PCI bracket. Turn the bracket over and unscrew to remove the GPU card bracket as shown.

2. Remove the 2 screws secure the PCI Riser expansion slot.

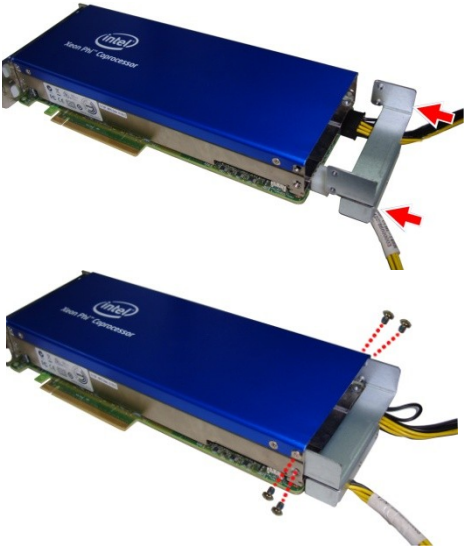
3. Remove the I/O dummy brackets. Insert the GPU card to the PCI bracket and secure it with two screws.



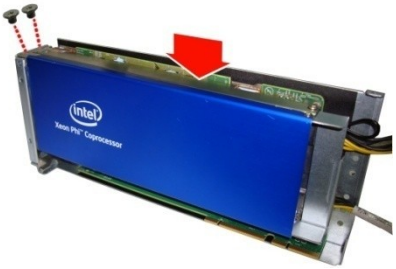
4. Connect the GPU cable to the Intel® Phi GPU card.



5. Install the Intel® GPU bracket to the Intel® Phi GPU card and secure with 4 M3 screws.



6. Insert the Intel® Phi GPU card onto the **M7081-L16-1F-2** riser card and secure with 2 screws on the expansion slot.



7. Reinstall the GPU bracket and secure with 2 M3 screws on one side.

8. Install the GPU bracket and secure with 2 screws at location 2.

9. Put the PCI bracket back to the chassis.

Chapter 5: Motherboard Information

You are now ready to install your motherboard.

How to install our products right… the first time

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

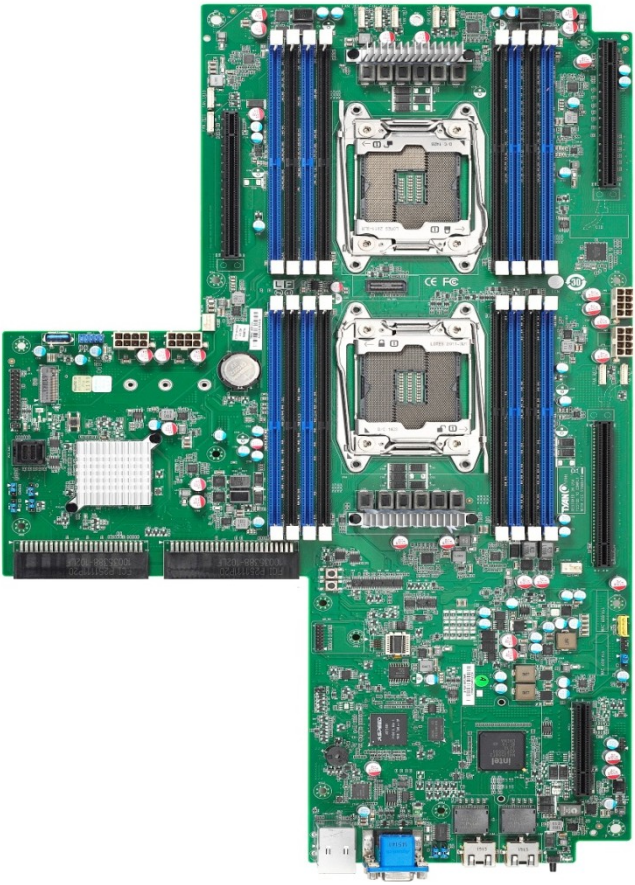
(1) Ground yourself properly before removing your motherboard from the antistatic bag. Unplug the power from your computer power supply and then touch a safely grounded object to release static charge (i.e. power supply case). For the safest conditions, MiTAC recommends wearing a static safety wrist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

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

Caution!

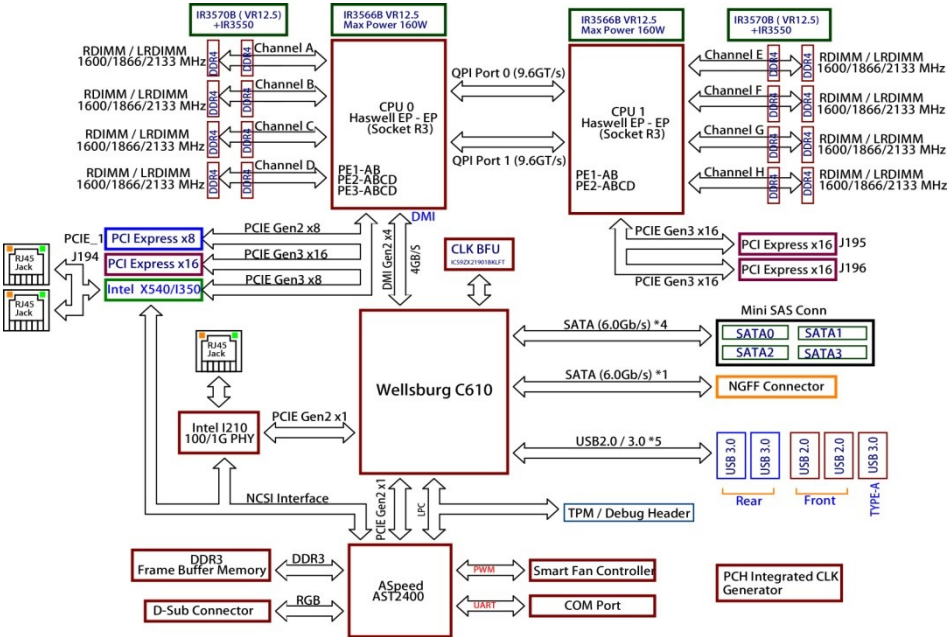
1. To avoid damaging the motherboard and associated components, do not use torque force greater than 7kgf/cm (6.09 lb/in) on each mounting screw for motherboard installation.
2. Do not apply power to the board if it has been damaged.

5.1 Board Image

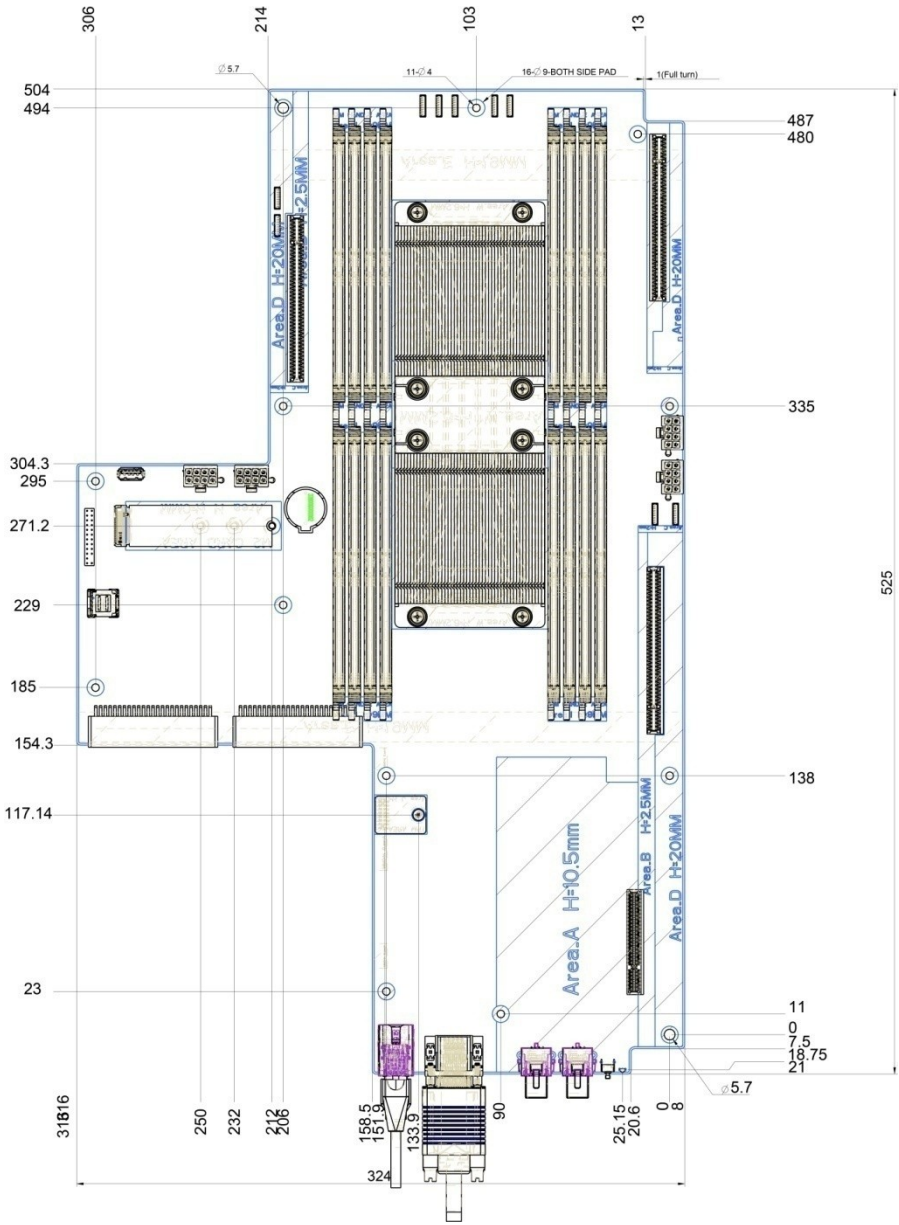


This picture is representative of the latest board revision available at the time of publishing. The board you receive may not look exactly like the above picture.

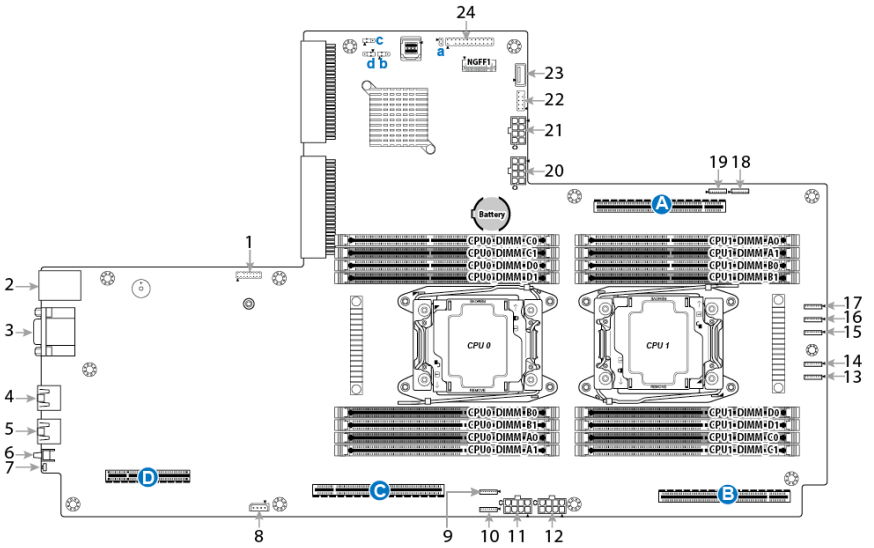
5.2 Block Diagram



5.3 Motherboard Mechanical Drawing



5.4 Board parts, jumpers and connectors



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

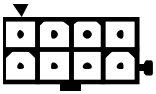
Jumpers & Connectors

Connectors	
1.TYAN Module Header(DBG_HD1)	13. 8-pin FAN Connector (SYS_FAN7/16,J192)
2.stacked 2 USB v3.0 and LAN port connector#3 shard with IPMI	14. 8-pin FAN Connector (SYS_FAN6/15,J189)
3.VGA & COM Port	15. 8-pin FAN Connector (SYS_FAN5/14,J187)
4.LAN Port Connector#2(J184)	16. 8-pin FAN Connector (SYS_FAN4/13,J186)
5.LAN Port Connector#1(J183)	17. 8-pin FAN Connector (SYS_FAN3/12,J185)
6.ID Button(ID_SW1)	18. 8-pin FAN Connector (SYS_FAN1/10,J200)
7.ID_LED	19. 8-pin FAN Connector (SYS_FAN2/11,J188)
8.IPMB Connector(IPMB1)	20. SSI 8-pin Power Connector (PW4)
9. 8-pin FAN Connector (SYS_FAN8/17,J190)	21. SSI 8-pin Power Connector (PW3)
10. 8-pin FAN Connector (SYS_FAN9/18,J191)	22. Front USB2.0 Header(USB2_1)
11. Power supply Connector (PW2)	23. Type-A USB Header(J193)
12. Power supply Connector (PW1)	24. Front Panel Connector (FPIO1)
Slots	
A. CPU0 PCIE x16 slot (J194)	C. CPU1 PCIE x16 slot (J195)
B. CPU1 PCIE x16 slot (J196)	D. CPU0 PCIE x8 Slot (PCIE_1)
Jumpers	
a. Intruder Header (2PHD_1)	c.BIOS Recover Mode Jumper (3PHD_5)
b. ME Recovery Mode Jumper (3PHD_4)	d. Security Override Jumper (3PHD_8)

Jumper Legend

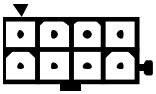
	**OPEN - Jumper OFF**	Without jumper cover
	**CLOSED - Jumper ON**	With jumper cover

PW1/2: SSI 8-pin System Power Connector



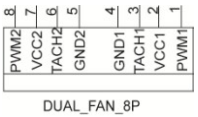
Signal	Pin	Pin	Signal
GND	1	5	VCC12
GND	2	6	VCC12
GND	3	7	VCC12
GND	4	8	VCC12

PW3/4: SSI 8-pin GPU Power Connector



Signal	Pin	Pin	Signal
GND	1	5	VCC12
GND	2	6	VCC12
GND	3	7	VCC12
GND	4	8	VCC12

J185/J186/J187/J188//J189/J190/J191/J192/J200: 8-Pin Fan Connector



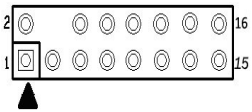
DUAL_FAN_8P

Pin	Signal
1	PWM1
2	VCC1
3	Tachometer1
4	GND1
5	GND2
6	Tachometer2
7	VCC2
8	PWM2

NOTE:
Do not mix 8-pin Fan headers with 4-pin Fan headers. Mixing these fan headers will cause problems to the system. These connectors are only for the barebone.

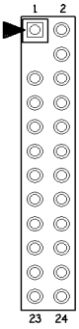
J185:FAN3&12 J186:FAN4&13 J187: FAN5&14
J188:FAN2&11 J189: FAN6&15 J190: FAN8&17
J191:FAN9&18 J192: FAN7&16 J200: FAN1&10

DBG_HD1: Port 80 TPM Header



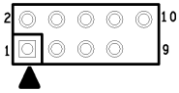
Signal	Pin	Pin	Signal
P3V3	1	2	FRAME_N
LAD0	3	4	KEY
LAD1	5	6	PLT_RST_N
LAD2	7	8	GND
LAD3	9	10	CLK
SIRQ	11	12	GND
PRSNT	13	14	VCC3_AUX
NC	15	16	NC

FPIO1: Front Panel Connector



Signal	Pin	Pin	Signal
PW_LED+	1	2	FP_PWER(3.3V)
KEY	3	4	IDLED+
PWRLED-	5	6	IDLED-
HD_LED+	7	8	HWM_FAULT_LED-
HD_LED-	9	10	SYS_FAULT_LED-
PWR_SW#	11	12	LAN1_ACTLE+
GND	13	14	LAN1LED-
RST_SW#	15	16	SDA
GND	17	18	SCL
SYS_ID_SW#	19	20	INTRUSION#
GND	21	22	LAN2LED+
NMI_SW#	23	24	LAN2LED-

USB1: USB Front Panel Header (blue)



Signal	Pin	Pin	Signal
VCC	1	2	VCC
USBD-	3	4	USBD-
USBD+	5	6	USBD+
GND	7	8	GND
KEY	9	10	NC

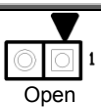
J193: Vertical (Type A) USB3.0 Connectors

Signal	Pin	Pin	Signal
+5V	1	2	USB2 P0_RX_N
USB2 P0_RX_P	3	4	GND
USB3P0_TX_N	5	6	USB3P0_TX_P
GND	7	8	USB3P0_N
USB3P0_P	9		

IPMB1: IPMB Connector

Signal	Pin	Pin	Signal
BMC_SMB_DATA	1	2	GND
BMC_SMB_CLK	3	4	NC

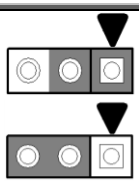
2PHD_1: Chassis Intrusion Header



Pin	1	2
Signal	INTRUDER#	GND

Open: Use this header to **trigger** the system chassis intrusion alarm.
Short: Use this header to **disable** the system chassis intrusion alarm.

3PHD_4: ME Recovery Mode Jumper



Pin	1	2	3
Signal	NC	FM_ME_RCVR_N	GND

Pin 1-2 Closed: Normal Mode (**Default**)
Pin 2-3 Closed: ME Recovery Mode

SW1: ID LED Button

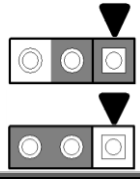
Pin	1	2
Signal	FP_IDLED_BTN_N	GND

ID_LED / IDLED_BTN: ID LED and Button

Pin	Signal	
+	P3V3_AUX	
-	ID_SW_L	
State	**Color**	**Description**
On	Blue	System identified
Off	Off	System not identified

NOTE: The ID LED can be activated remotely using IPMI.
Please visit the TYAN Web Site at **http://www.tyan.com** to download the latest IPMI Configuration Guide for more details.

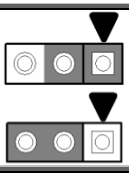
3PHD_5: BIOS Recovery Pin Header



Pin	1	2	3
Signal	NC	FM_BIOS_RCVR_BOOT_N	GND

Pin 1-2 Closed: Normal Mode (**Default**)
Pin 2-3 Closed: Recovery Mode

3PHD_8: Flash Security Override Jumper



Pin	1	2	3
Signal	NC	MFG_MODE_N	GND

Pin 1-2 Closed: Normal Mode (**Default**)
Pin 2-3 Closed: Security Override

6.1 About the BIOS

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

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

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

To start the BIOS setup utility:

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

6.1.1 Setup Basics

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

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

6.1.2 Getting Help

Pressing [**F1**] will display a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window, press [**ESC**] or the [**Enter**] key again.

6.1.3 In Case of Problems

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

6.1.4 Setup Variations

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

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

6.2 Main Menu

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

BIOS Information
It displays BIOS related information.

Memory Information
This displays the total memory size.

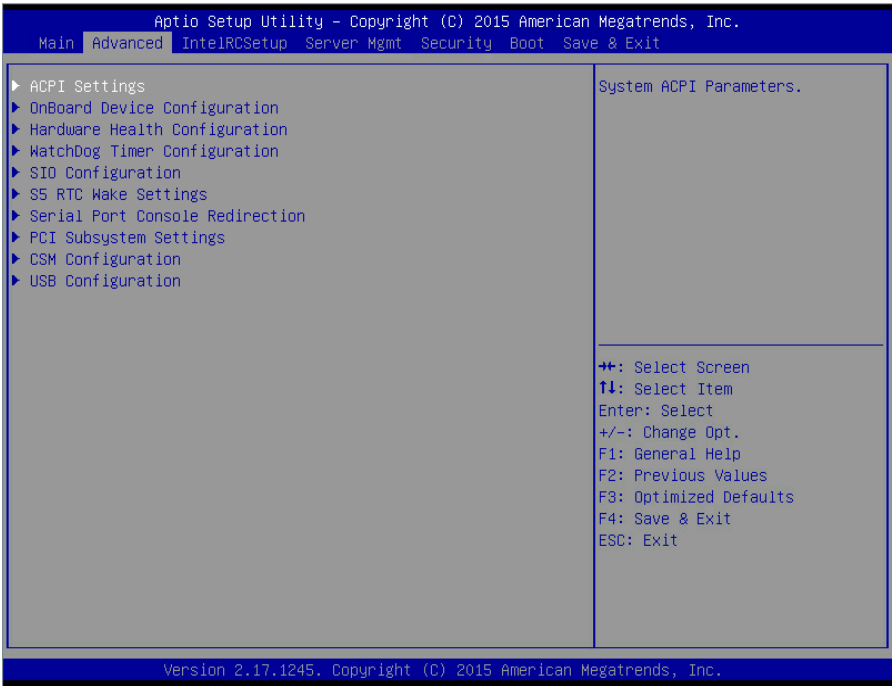
System Date
Adjust the system date.
MM (Months): DD (Days): YYYY (Years)

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

Access Level
Read only.

6.3 Advanced Menu

This section facilitates configuring advanced BIOS options for your system.



ACPI Settings
System ACPI Parameters.

Onboard Device Configuration
Onboard Device Configuration

Hardware Health Configuration
Hardware health Configuration Parameters.

Watchdog Timer Configuration
Watchdog Configuration

SIO Configuration
SIO Configuration

S5 RTC Wake Settings
S5 RTC Wake Configuration

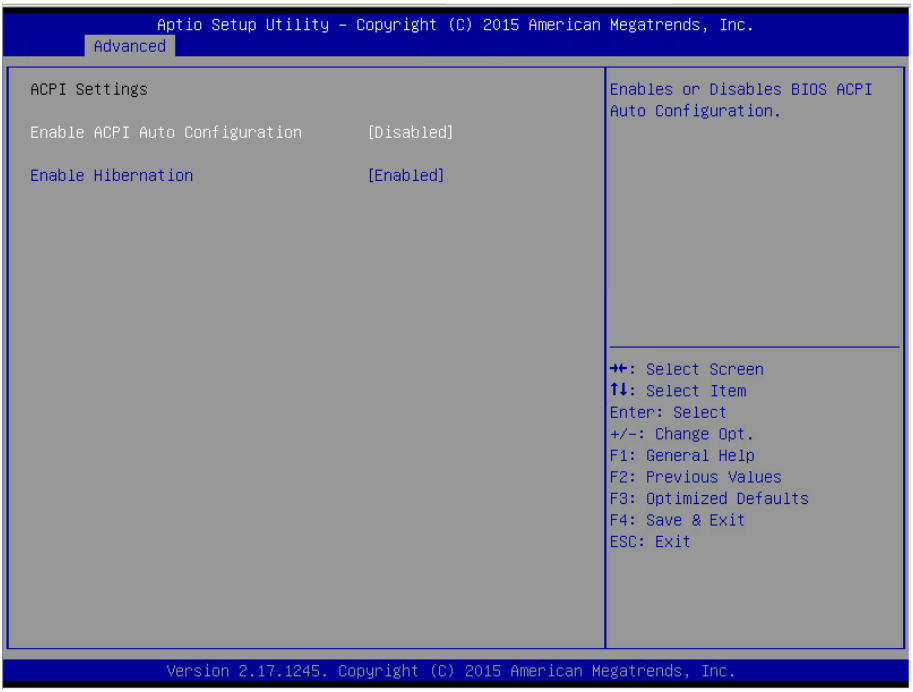
Serial Port Console Redirection
Serial Port Console Redirection.

PCI Subsystem Settings
PCI subsystem settings

CSM Configuration
CSM Configuration

USB Configuration
USB Configuration Parameters.

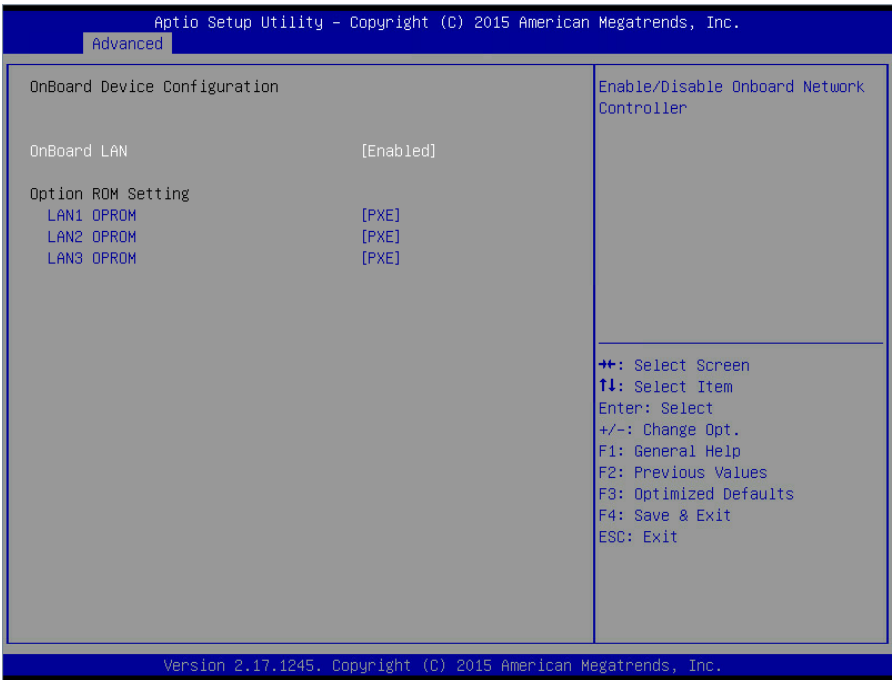
6.3.1 ACPI Settings



Enable ACPI Auto Configuration
Enables or disables BIOS ACPI Auto configuration
Disabled / **Enabled**

Enable Hibernation
Enables or disables System ability to Hibernate (OS/S4 Sleep State). This option may not be effective with some OS.
Disabled / **Enabled**
NOTE: Enable Hibernation Settings submenu appears when Enable ACPI Auto Configuration is set to [Disabled].

6.3.2 Onboard Device Configuration



OnBoard LAN
Enable/Disable Onboard Network Controller.
Enabled / Disabled

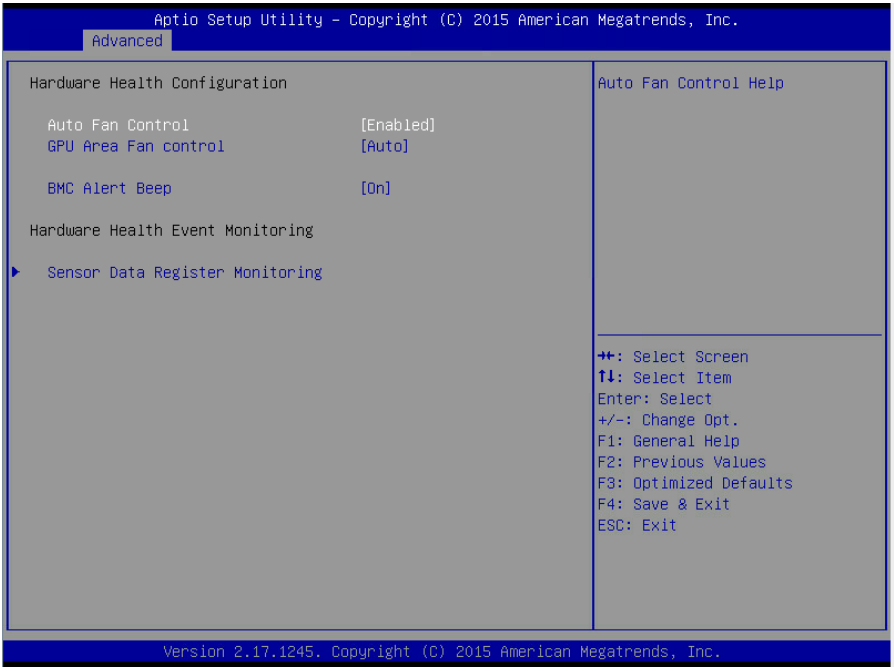
NOTE: LAN1/LAN2/LAN3 OPROM Settings submenu appears when OnBoard LAN Configuration is set to [Enabled].

LAN1 OPROM
Enable/Disable Load Option ROM for OnBoard Network Controller.
Disabled **/ PXE** / iSCSI

LAN2 OPROM
Enabled/Disabled the LAN Option ROM in the Chipset.
Disabled / **PXE**

LAN3 OPROM
Enable or Disable NMI function.
Disabled / **PXE**

6.3.3 Hardware Health Configuration



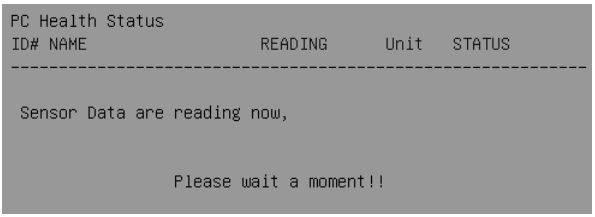
Auto Fan Control
When Select [Enabled] to allow the fan speed running FULL ON.
Disabled / Enabled

GPU Area Fan control
GPU area Fan control help
Auto / 30% Duty Cycle / 50% Duty Cycle / 70% Duty Cycle / 85% Duty Cycle / 100% Duty Cycle

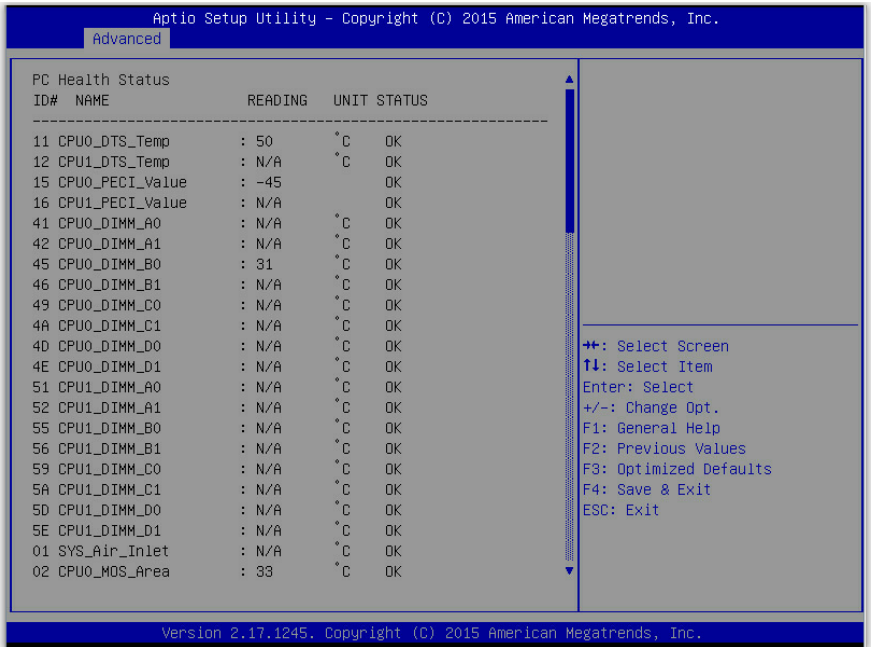
BMC Alert Beep
BMC Alert Beep On/Off.
On / Off

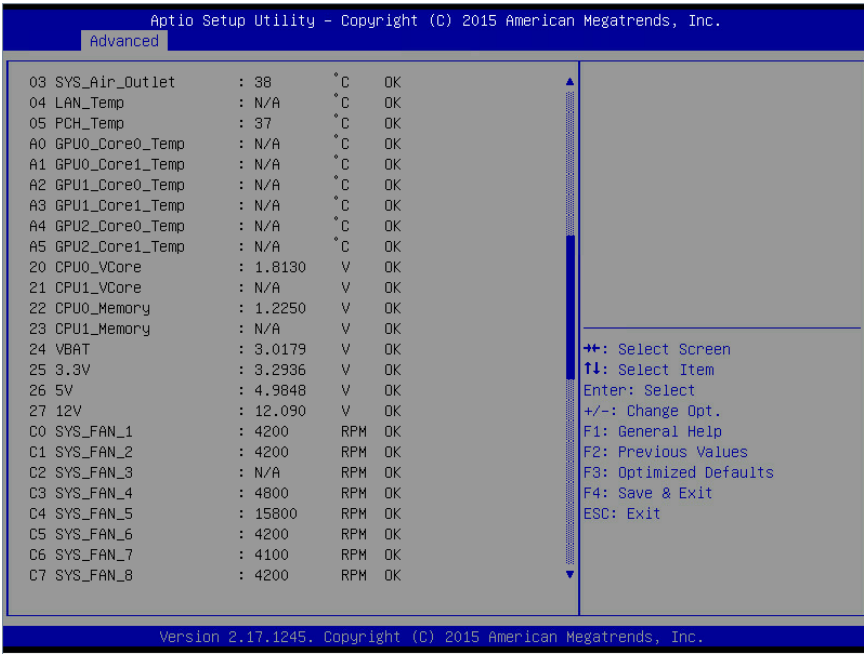
6.3.3.1 Sensor Data Register Monitoring

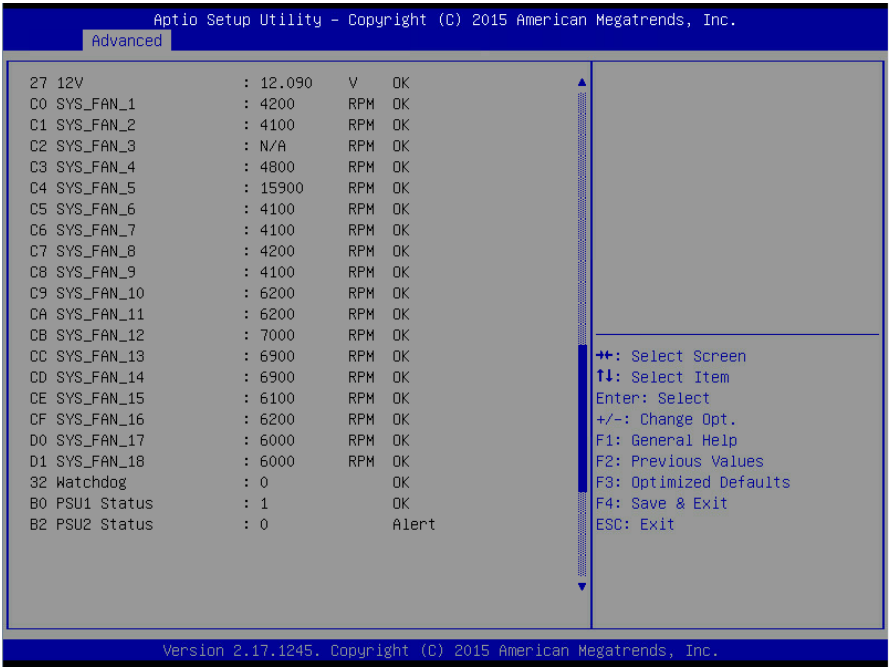
When you enter the **Sensor Data Register Monitoring** submenu, you will see the following dialog window pop out. Please wait 8~10 seconds.



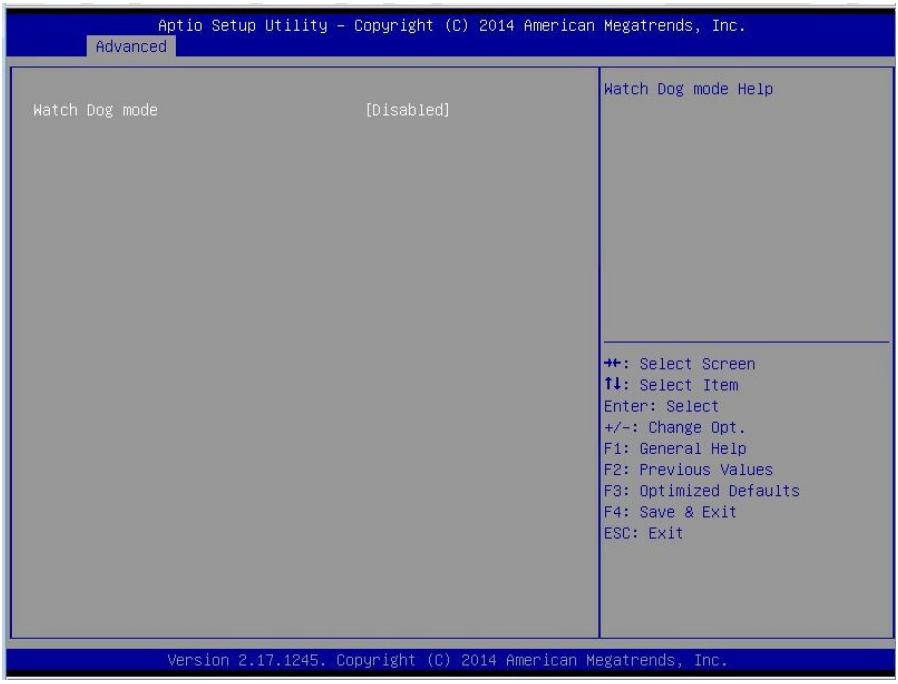
NOTE 1: SDR can not be modified. Read only.


Aptio Setup Utility – Copyright (C) 2015 American Megatrends, Inc.
Advanced
PC Health Status
ID# NAME READING UNIT STATUS
11 CPU0_DTS_Temp : 50 °C OK
12 CPU1_DTS_Temp : N/A °C OK
15 CPU0_PECI_Value : -45 OK
16 CPU1_PECI_Value : N/A OK
41 CPU0_DIMM_A0 : N/A °C OK
42 CPU0_DIMM_A1 : N/A °C OK
45 CPU0_DIMM_B0 : 31 °C OK
46 CPU0_DIMM_B1 : N/A °C OK
49 CPU0_DIMM_C0 : N/A °C OK
4A CPU0_DIMM_C1 : N/A °C OK
4D CPU0_DIMM_D0 : N/A °C OK
4E CPU0_DIMM_D1 : N/A °C OK
51 CPU1_DIMM_A0 : N/A °C OK
52 CPU1_DIMM_A1 : N/A °C OK
55 CPU1_DIMM_B0 : N/A °C OK
56 CPU1_DIMM_B1 : N/A °C OK
59 CPU1_DIMM_C0 : N/A °C OK
5A CPU1_DIMM_C1 : N/A °C OK
5D CPU1_DIMM_D0 : N/A °C OK
5E CPU1_DIMM_D1 : N/A °C OK
01 SYS_Air_Inlet : N/A °C OK
02 CPU0_MOS_Area : 33 °C OK
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.17.1245. Copyright (C) 2015 American Megatrends, Inc.


Aptio Setup Utility – Copyright (C) 2015 American Megatrends, Inc.
Advanced
03 SYS_Air_Outlet : 38 °C OK
04 LAN_Temp : N/A °C OK
05 PCH_Temp : 37 °C OK
A0 GPU0_Core0_Temp : N/A °C OK
A1 GPU0_Core1_Temp : N/A °C OK
A2 GPU1_Core0_Temp : N/A °C OK
A3 GPU1_Core1_Temp : N/A °C OK
A4 GPU2_Core0_Temp : N/A °C OK
A5 GPU2_Core1_Temp : N/A °C OK
20 CPU0_VCore : 1.8130 V OK
21 CPU1_VCore : N/A V OK
22 CPU0_Memory : 1.2250 V OK
23 CPU1_Memory : N/A V OK
24 VBAT : 3.0179 V OK
25 3.3V : 3.2936 V OK
26 5V : 4.9848 V OK
27 12V : 12.090 V OK
C0 SYS_FAN_1 : 4200 RPM OK
C1 SYS_FAN_2 : 4200 RPM OK
C2 SYS_FAN_3 : N/A RPM OK
C3 SYS_FAN_4 : 4800 RPM OK
C4 SYS_FAN_5 : 15800 RPM OK
C5 SYS_FAN_6 : 4200 RPM OK
C6 SYS_FAN_7 : 4100 RPM OK
C7 SYS_FAN_8 : 4200 RPM OK
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.17.1245. Copyright (C) 2015 American Megatrends, Inc.


Aptio Setup Utility – Copyright (C) 2015 American Megatrends, Inc.
Advanced
27 12V : 12.090 V OK
C0 SYS_FAN_1 : 4200 RPM OK
C1 SYS_FAN_2 : 4100 RPM OK
C2 SYS_FAN_3 : N/A RPM OK
C3 SYS_FAN_4 : 4800 RPM OK
C4 SYS_FAN_5 : 15900 RPM OK
C5 SYS_FAN_6 : 4100 RPM OK
C6 SYS_FAN_7 : 4100 RPM OK
C7 SYS_FAN_8 : 4200 RPM OK
C8 SYS_FAN_9 : 4100 RPM OK
C9 SYS_FAN_10 : 6200 RPM OK
CA SYS_FAN_11 : 6200 RPM OK
CB SYS_FAN_12 : 7000 RPM OK
CC SYS_FAN_13 : 6900 RPM OK
CD SYS_FAN_14 : 6900 RPM OK
CE SYS_FAN_15 : 6100 RPM OK
CF SYS_FAN_16 : 6200 RPM OK
D0 SYS_FAN_17 : 6000 RPM OK
D1 SYS_FAN_18 : 6000 RPM OK
32 Watchdog : 0 OK
B0 PSU1 Status : 1 OK
B2 PSU2 Status : 0 Alert
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.17.1245. Copyright (C) 2015 American Megatrends, Inc.

6.3.4 Watchdog Timer Configuration

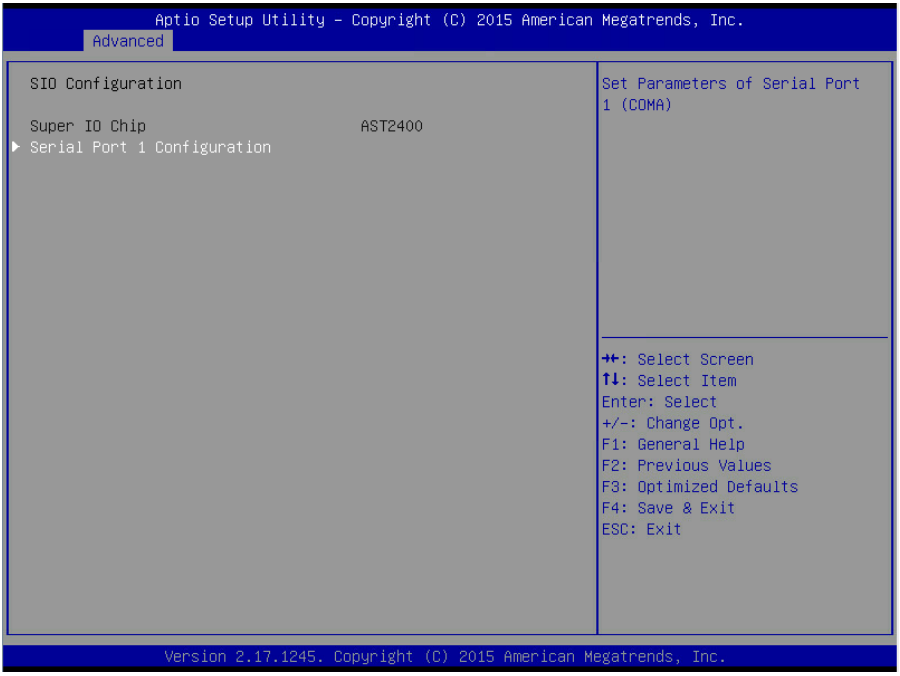


Watch Dog Mode
Watch Dog Mode Help.
Disabled / POST / OS / PowerOn

NOTE: Watch Dog Timer will not appear when **Watch Dog Mode** is set to [Disabled].

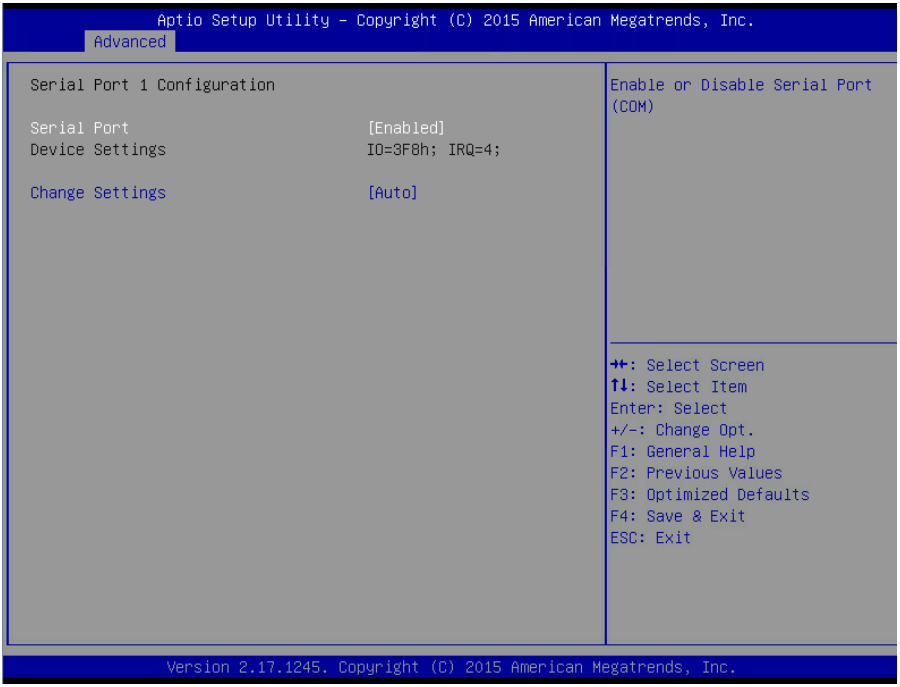
Watch Dog Timer
Watch Dog Timer Help.
2 MINS / 4 MINS / 6 MINS / 8 MINS / 10 MINS

6.3.5 Super IO Configuration



Super IO Chip
Read only.

6.3.5.1 Serial Port 1 Configuration



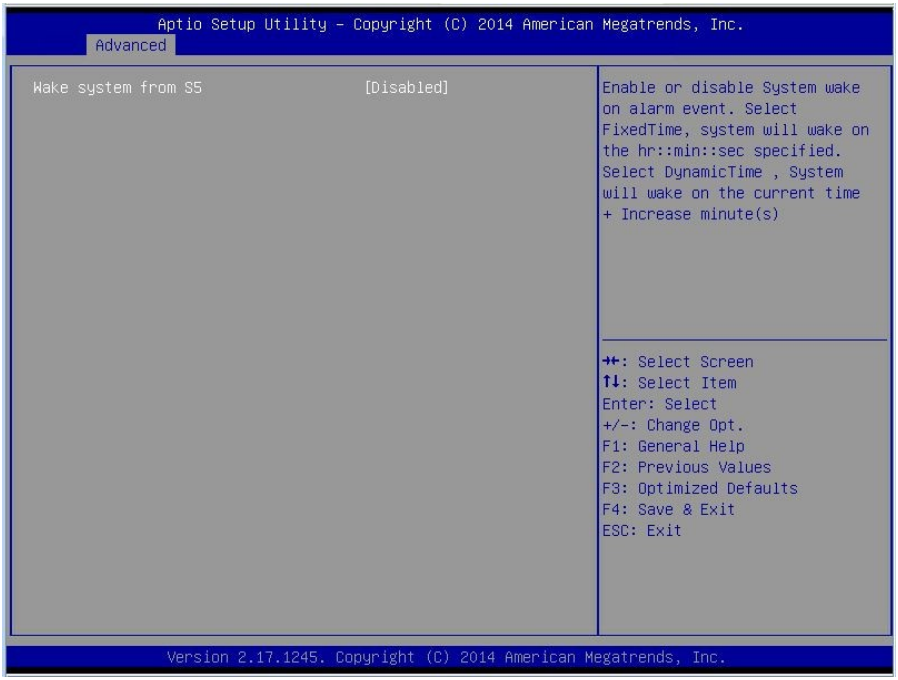
Serial Port
Enable or disable Serial Port (COM).
Enabled / Disabled

NOTE: Device Settings / Change Settings will appear when Serial Port is set to [Enabled].

Device Settings
Read only.

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

6.3.6 S5 RTC Wake Settings



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

Disabled / Fixed Time / Dynamic Time

NOTE: When **Wake system from S5** is set to [Fixed Time], the following three items will appear.

Wake up hour
Select 0~23. For example, enter 3 for 3am and 15 for 3 pm.

Wake up minute
Select 0~59.

Wake up second
Select 0~59.

NOTE: When **Wake system from S5** is set to [Dynamic Time], the following item will appear.
Wake up minute increase
1-5.

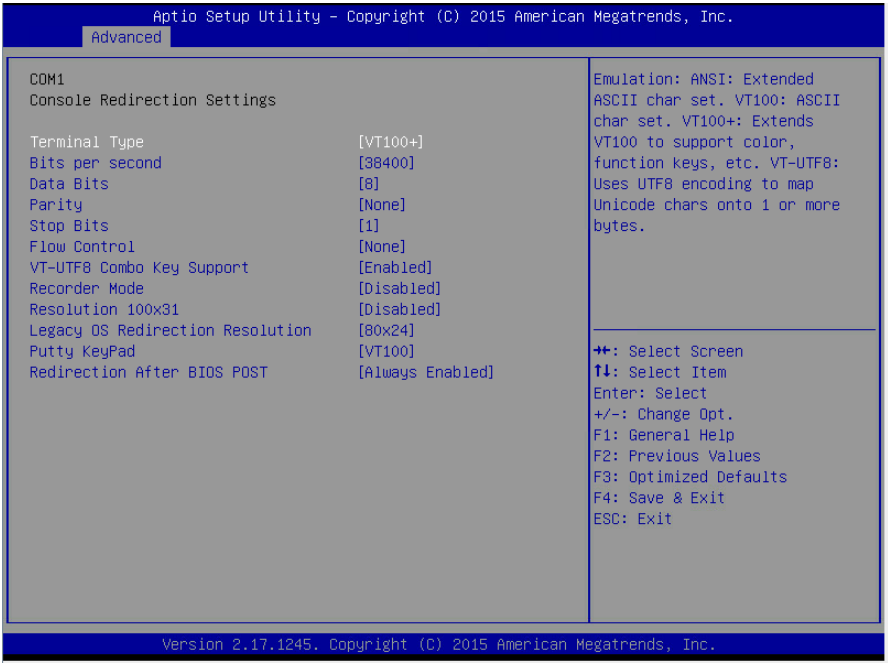
6.3.7 Serial Port Console Redirection

Console Redirection
Console redirection enable or disable.
Disabled / Enabled

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

Console Redirection Settings
The settings specify how the host computer (which the user is using) will exchange data. Both computers should have the same or compatible settings.
NOTE: Console Redirection Settings menu only appear when **Console Redirection** was set to **[Enabled].**

6.3.7.1 Console Redirection Settings



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

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

Data Bits
8 / 7

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

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

1 / 2

Flow Control
Flow Control can prevent data loss from buffer overflow. When sending data, if the receiving buffers are full, a 'stop' signal can be sent to stop the data flow. Once the buffers are empty, a 'start' signal can be sent to 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
With this mode enabled only text will be sent. This is to capture Terminal data.

Disabled / Enabled

Resolution 100x31
Enable or disable extended terminal resolution.

Disabled / Enabled

Legacy OS Redirection Resolution
On Legacy OS, the number of rows and columns supported redirection.

80x24 / 80x25

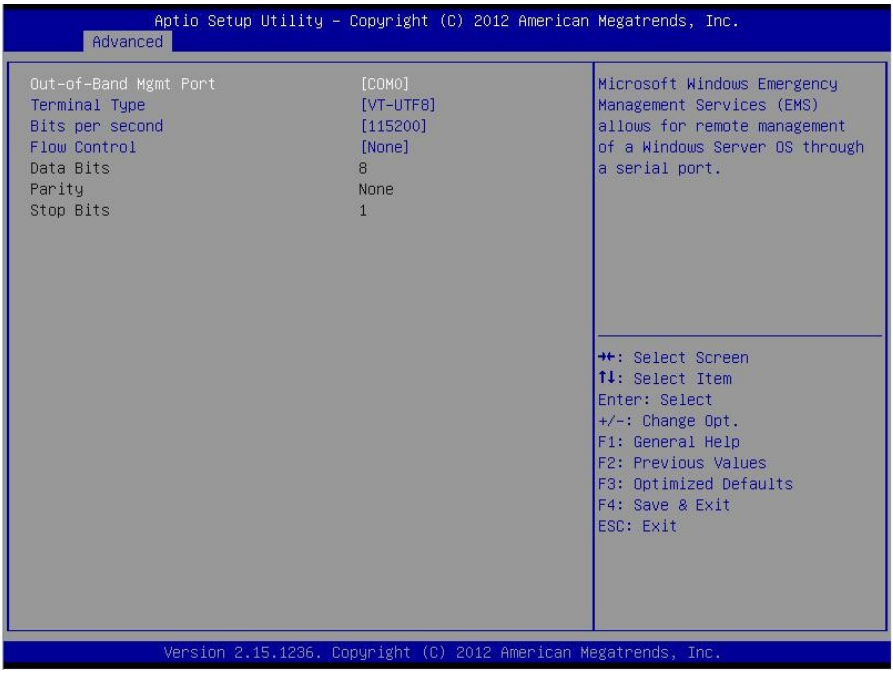
Putty KeyPad
Select FunctionKey and KeyPad on Putty.

VT100 / LINUX / XTERMR6 / SCO / ESCN / VT400

Redirection After BIOS POST
The settings specify if bootloader is selected than Legacy console redirection is disabled before booting to Legacy OS. Default value is always enable means Legacy.

Always Enable / Bootloader

6.3.7.2 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.

COM0 / 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 / 38400 / 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

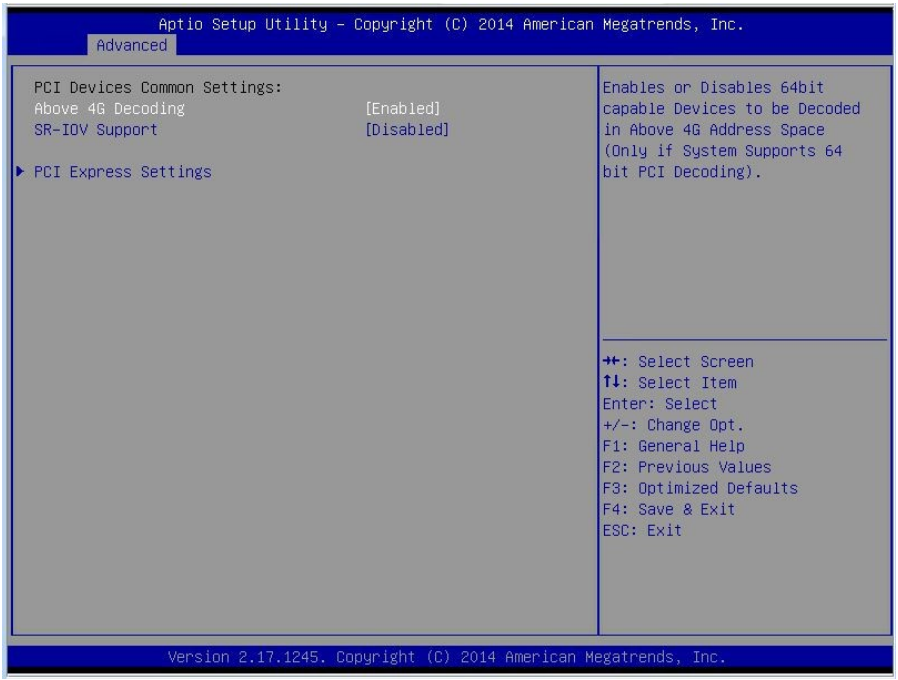
buffers are empty, a ‘start’ signal can be sent to restart the flow. Hardware flow control uses two wires to send start/stop signal.

None / Hardware RTS/CTS

Data Bits / Parity / Stop Bits

Read only.

6.3.8 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).

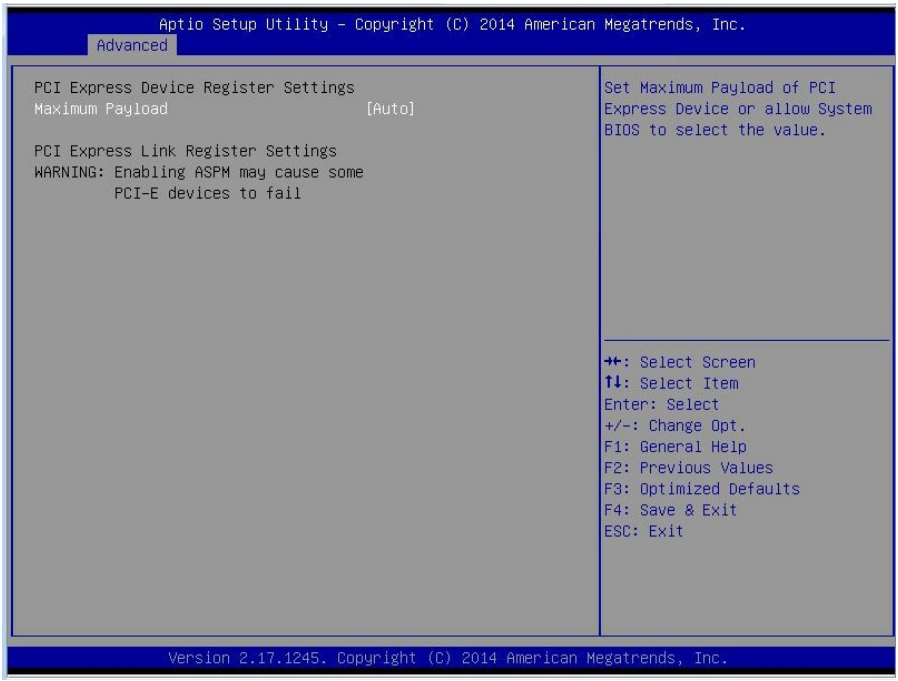
Enabled / Disabled

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

Disabled / Enabled

PCI Express Settings
Configure PCI express device settings.

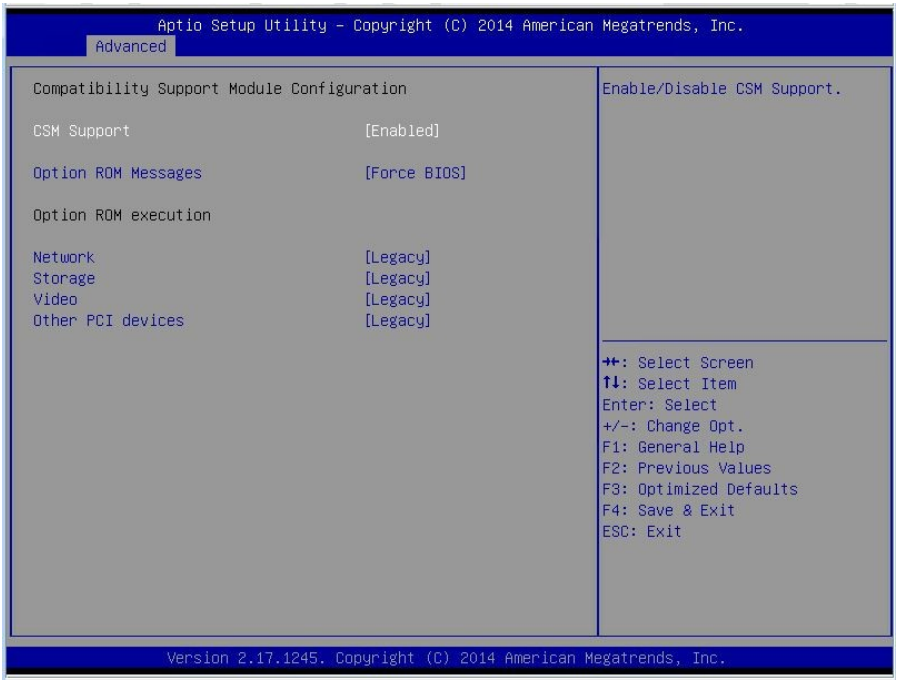
6.3.8.1 PCI Express Settings



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

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

6.3.9 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 IEFI and Legacy PXE OpROM.
Legacy / Do not launch / UEFI

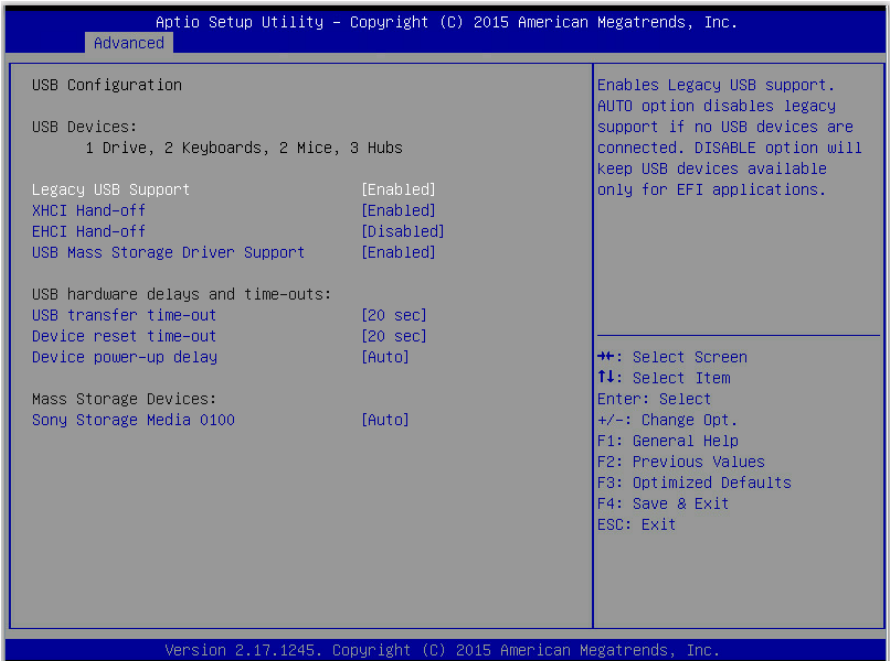
Storage
Controls the execution of UEFI and Legacy Storage OpROM.
Legacy / Do not launch / UEFI

Video
Controls the execution of UEFI and Legacy Video OpROM
Legacy / Do not launch / UEFI

Other PCI Devices
Determines OpROM execution policy for devices other than Network, Storage, or Video.

Legacy / Do not launch / UEFI

6.3.10 USB Configuration



USB Devices

Read only.

Legacy USB Support

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

Enabled / Disabled / Auto

XHCI Hand-off

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

Disabled / Enabled

EHCI Hand-off

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

Disabled / Enabled

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

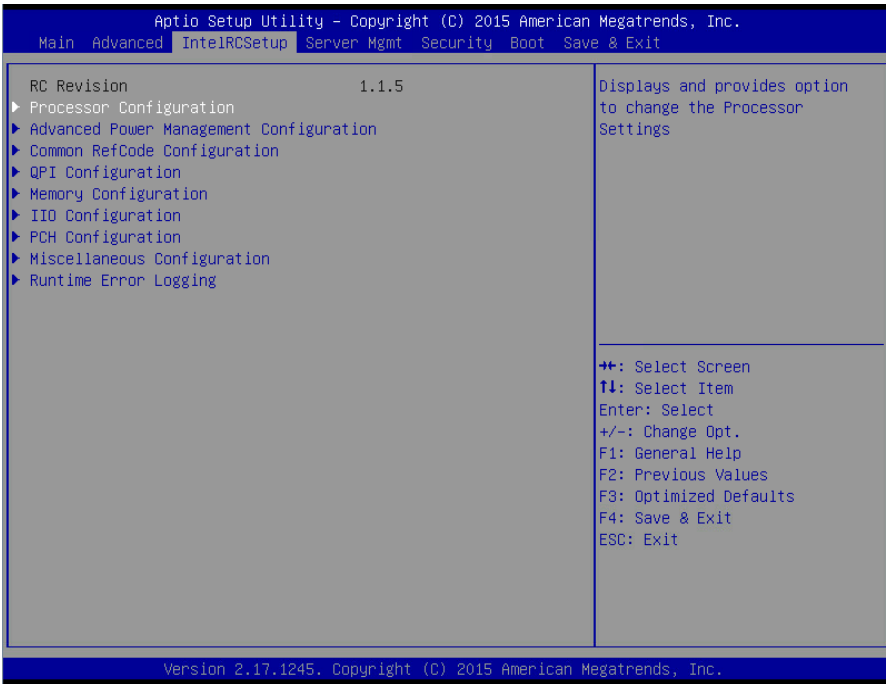
USB transfer time-out
The time-out value for Control, Bulk and Interrupt transfers.
20 sec / 1 sec / 5 sec / 10 sec

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

Sony Storage Media 0100
Mass storage device emulation type. AUTO' emumerates devices according to their media format. Optical drives are emulated as 'CDROM'. Drives with no media will be emulated according to a drive type.
Auto / Floppy / Forced FDO/ Hard Disk / CD-ROM

6.4 Intel RC Setup



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

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

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

QPI Configuration
Displays and provides option to change teh QPI Settings.

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

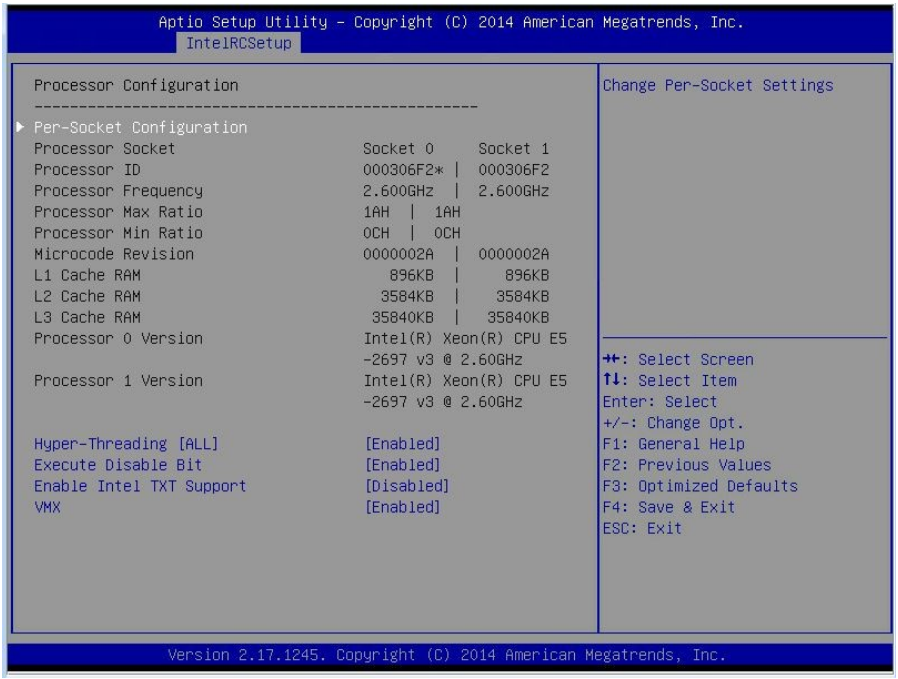
IIO configuration
Displays and provides option to change the IIO Settings.

PCH configuration
Displays and provides option to change the PCH Settings.

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

Runtime Error Logging
Press <Enter> to view or change the runtime error log configuration.

6.4.1 Processor Configuration



Processor Configuration
Processor related information. Read only.

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

Enabled / Disabled

Execute Disable Bit
When disabled, forces the XD feature flag to always return 0.

Enabled / Disabled

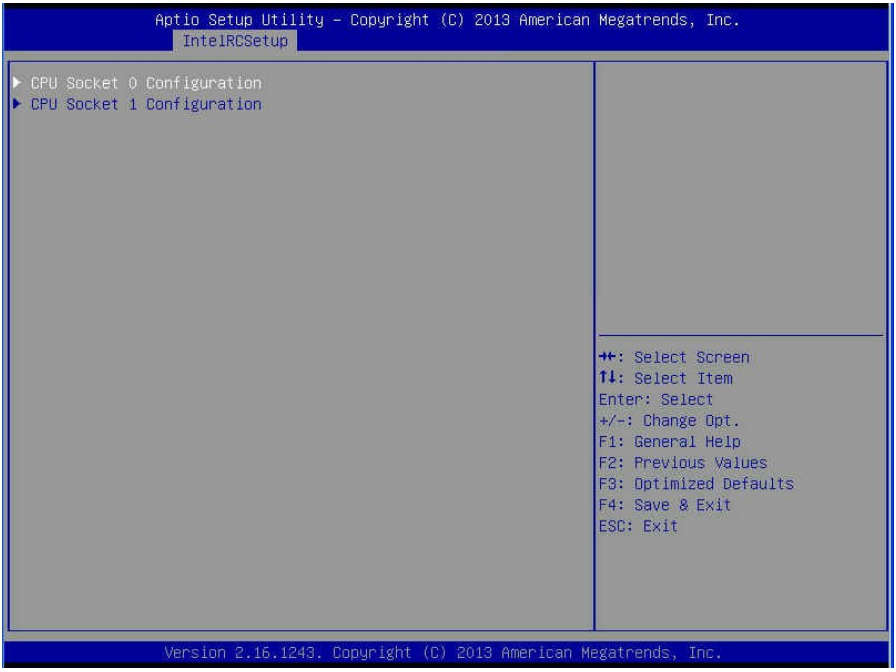
Enable Intel TXT Support
Enable Intel Trusted Execution Technology Configuration. Please disable “EV DFX Features” when TXT is enabled.

Disabled / Enabled

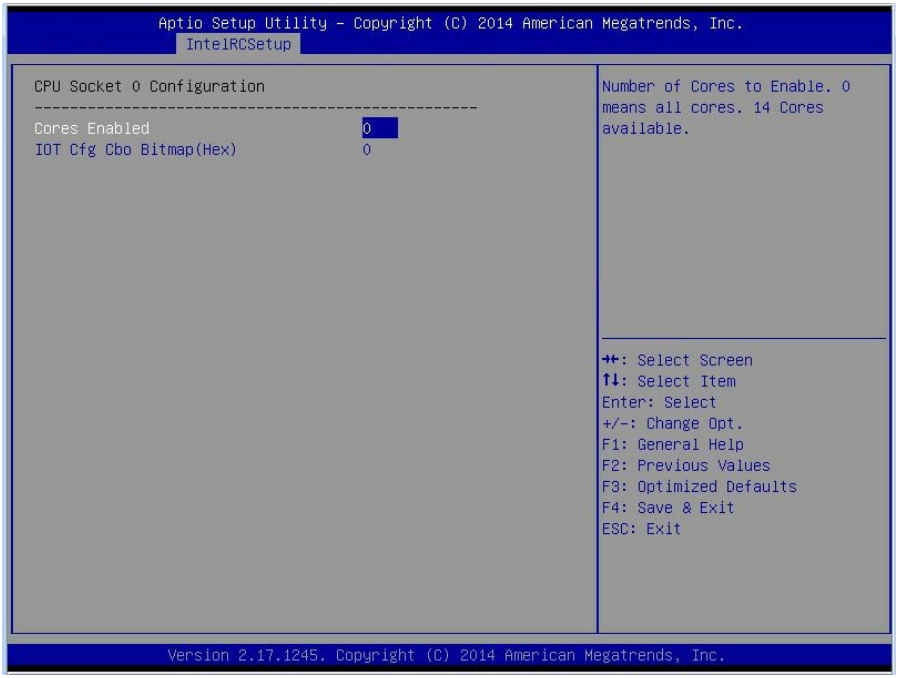
VMX
Enables the vanderpool Technology, takes effect after reboot.

Enabled / Disabled

6.4.1.1 Per-Socket Configuration



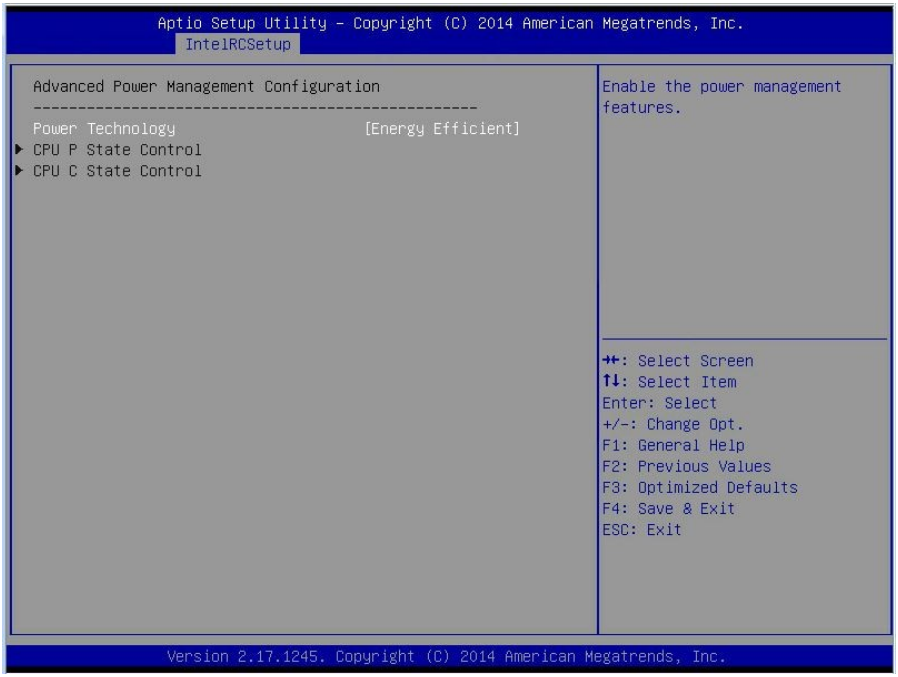
6.4.1.1.1 CPU Socket 0 / Socket 1 Configuration



Cores Enabled
Number of Cores to Enable. 0 means all cores. 14 Cores available.

IOT Cfg Cbo Bitmap (Hex)
Each bit enables IOT/OCLA for a CBo.

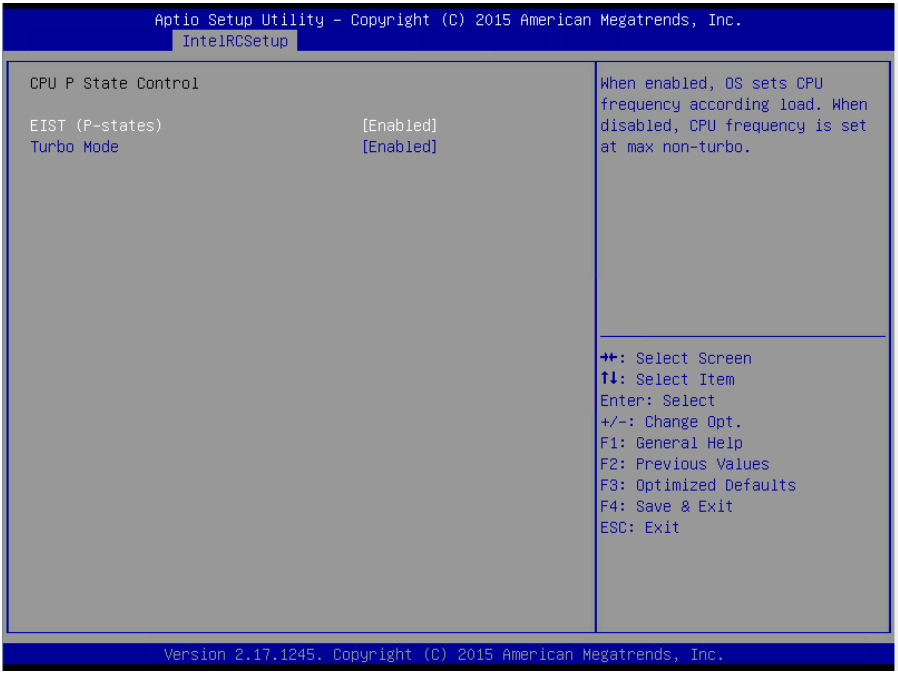
6.4.2 Advanced Power Management Configuration



Power Technology
Enable the power management features.
Energy Efficient / Disabled / Custom

NOTE: CPU P State Control and **CPU C State Control** submenu can be modified in user mode when **Power Technology** is set to [Custom].

6.4.2.1 CPU P State Control



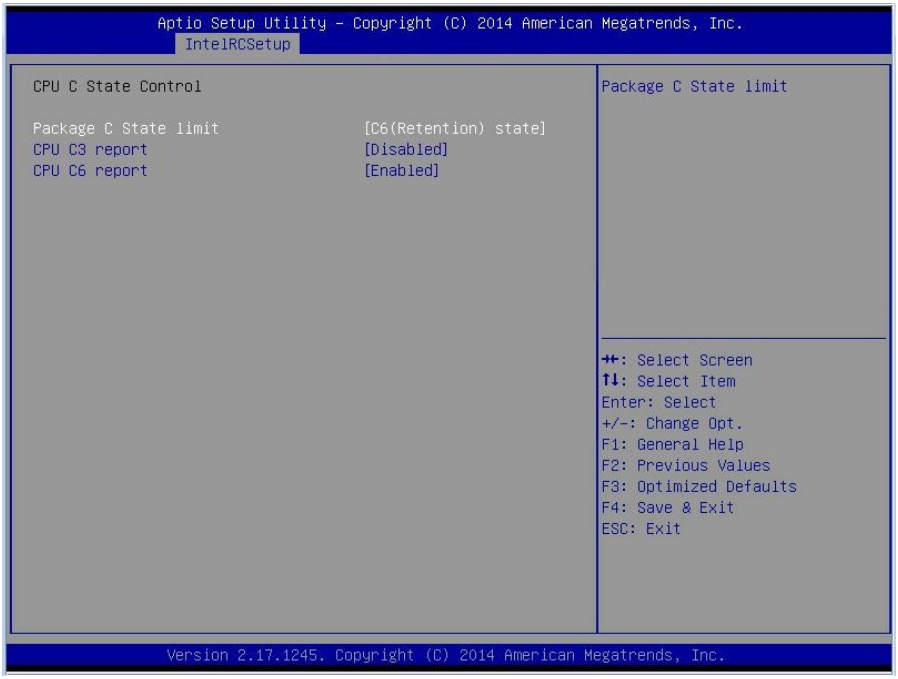
EIST (P-states)
When eneabled, OS sets CPU frequency according load. When disabled, CPU frequency is set at max non-turbo.

Enabled / Disabled

Turbo Mode
Turbo mode allows a CPU logical processor to execute a higher frequency when enough power is available not exceed CPU defined limits.

Enabled / Disabled

6.4.2.2 CPU C State Control

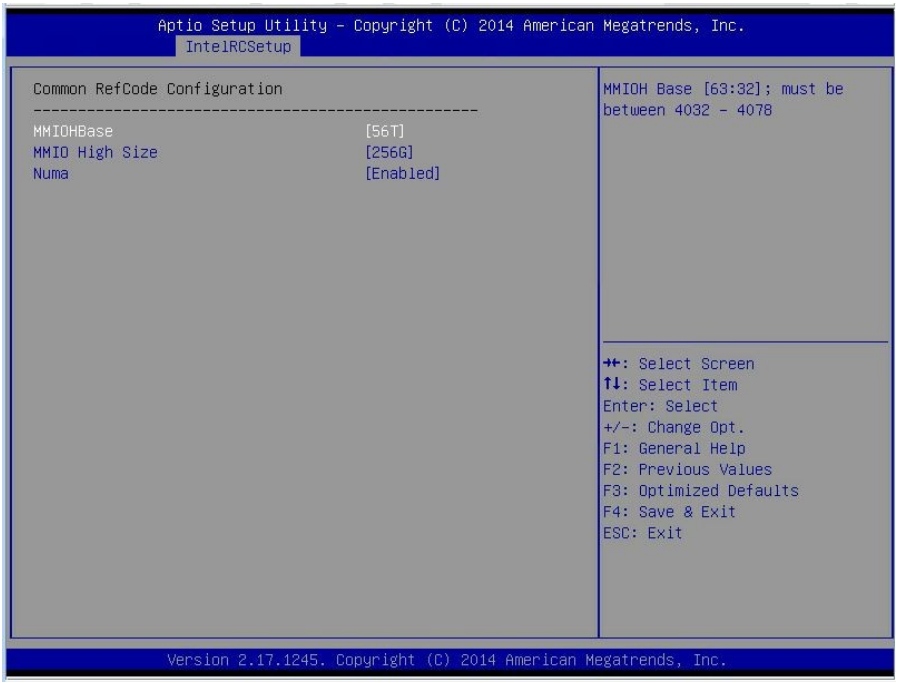


Package C State limit
Package C State limit.
C0/C1 state / C2 state / C6 (non Retention) state / **C6 (Retention) state**

CPU C3 report
Enable/Disable CPU C3 (ACPI C2) report to OS. Recommended to be disabled.
Disabled / Enabled

CPU C6 report
Enable/Disable CPU C6 (ACPI C2) report to OS. Recommended to be enabled.
Disabled / **Enabled**

6.4.3 Common RefCode Configuration

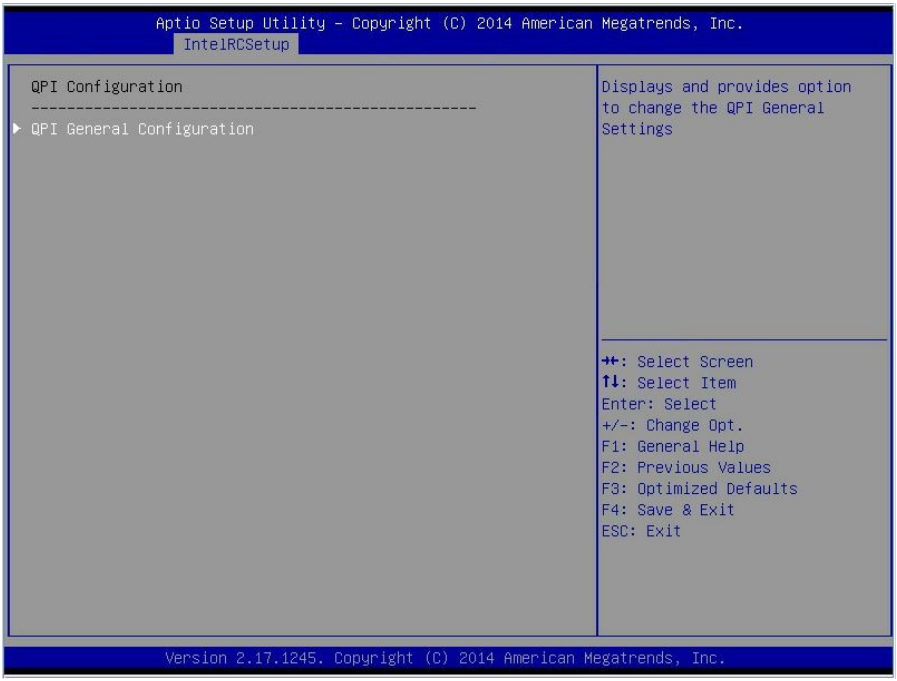


MMIOHBase
MMIOH Base [63:32] must be between 4032-4078.
56T / 40T / 24T / 16T / 4T

MMIO High Size
Select MMIO High Size.
256G / 128G / 512G / 1024G

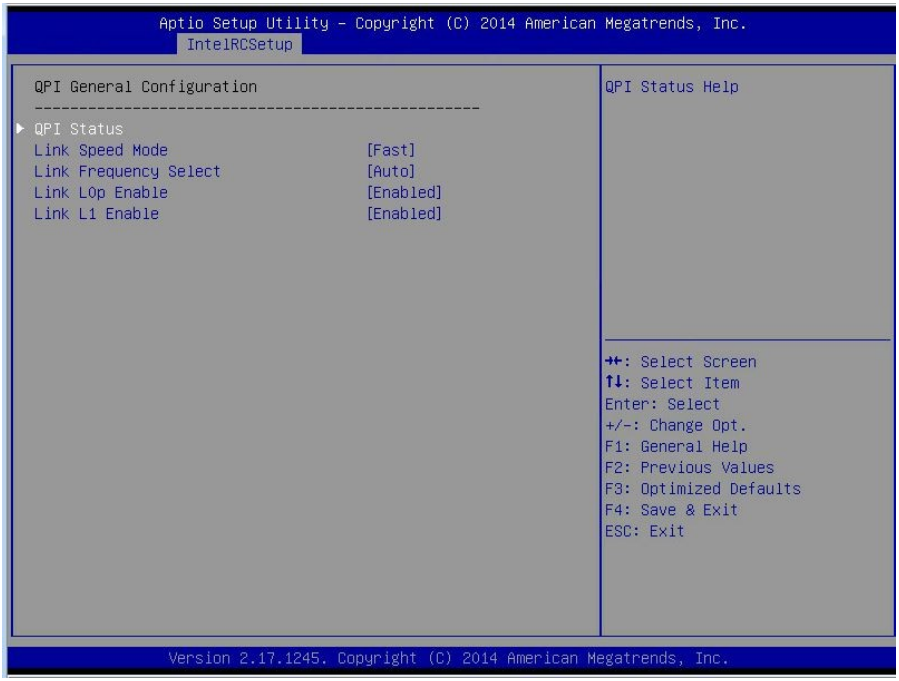
Numa
Enable or Disable Non uniform Memory Access (NUMA).
Enabled / Disable

6.4.4 QPI Configuration



QPI General Configuration
Displays and provides option to change the QPI General Settings.

6.4.4.1 QPI General Configuration



QPI Status
QPI Status Help.

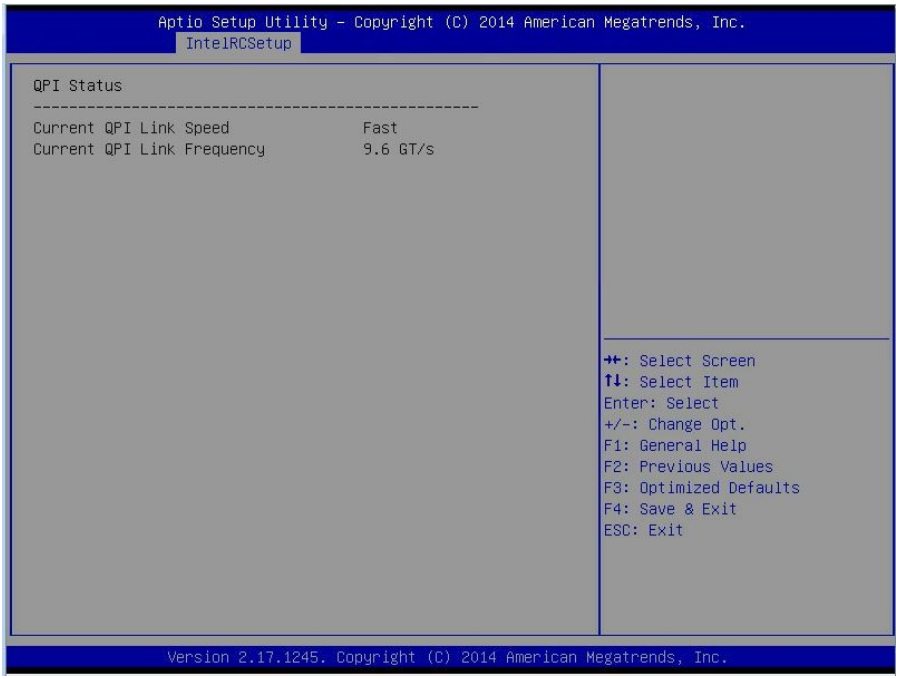
Link Speed Mode
Select the QPI link speed as either the POR speed (Fast) or default speed (Slow).
Fast / Slow

Link Frequency Select
Allows for selecting the QPI Link Frequency.
Auto / 6.4GB/s / 8.0GB/s / 9.6GB/s / Auto Limited

Link L0p Enable
Link L0p Enable: Disable, Enable (default)
Disabled / **Enabled**

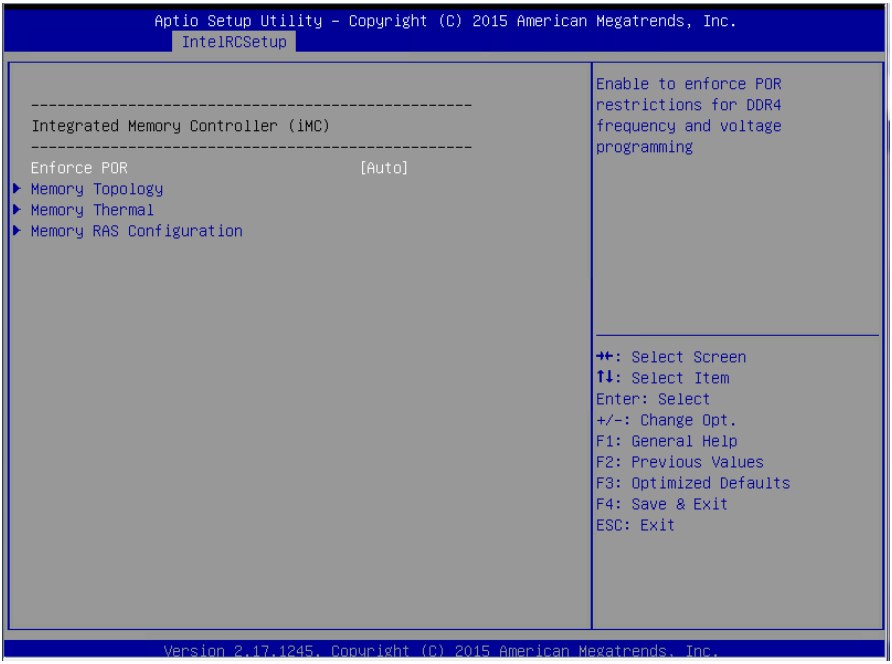
Link L1p Enable
Link L1p Enable: Disable, Enable (default)
Disabled / **Enabled**

6.4.4.1.1 QPI Status



QPI Status
Read only.

6.4.5 Memory Configuration



Enforce POR

Enable to enforce POR restrictions for DDR4 frequency and voltage programming.

Auto / Enforce POR / Disabled / Enforce Stretch Goals

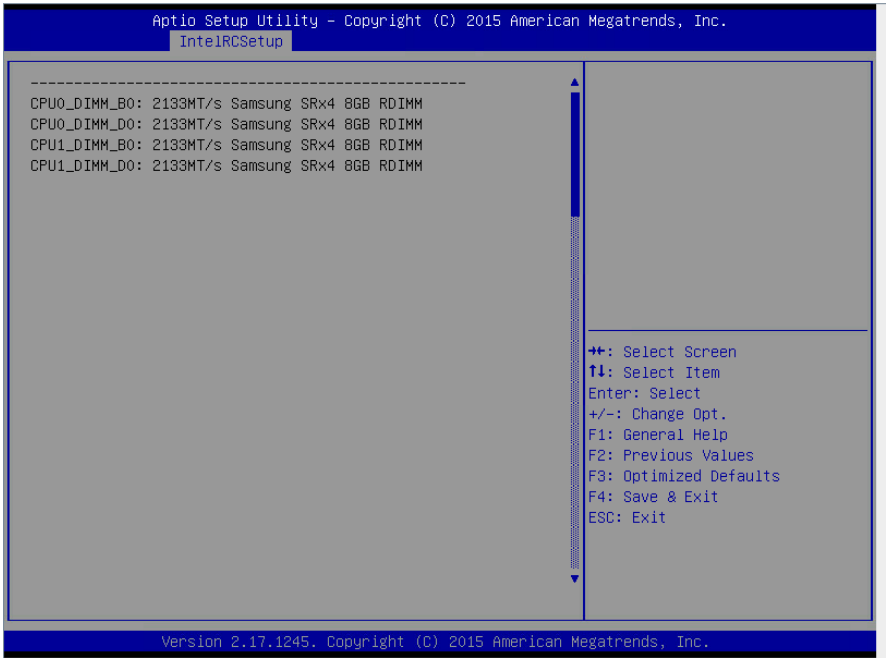
NOTE: When ***Enforce POR*** is set to [Disabled], ***Memory Frequency*** will appear.

Memory Frequency

Maximum Memory Frequency Selections in Mhz. Do not select Reserved.

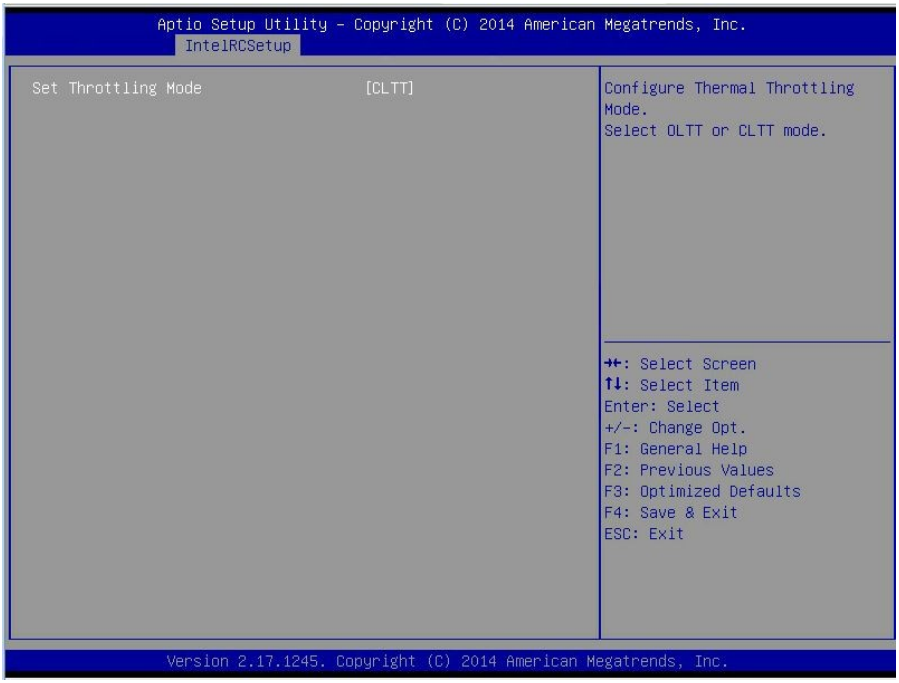
Auto / **1600** / 1867 / 2133

6.4.5.1 Memory Topology



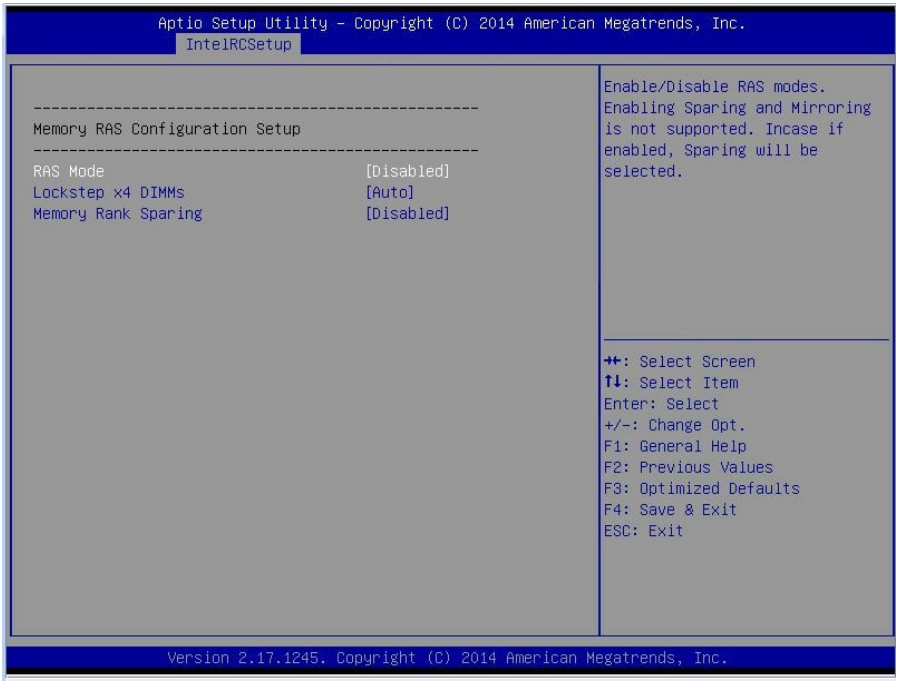
This submenu can't be modified in user mode. Read only.

6.4.5.2 Memory Thermal



Set Throttling Mode
Configure Thermal Throttling Mode. Select OLTT or CLTT mode.
Disabled / OLTT / **CLTT**

6.4.5.3 Memory RAS Configuration



RAS Mode
Enable/Disable RAS modes. Enabling Sparing and Mirroring is not supported. In case if enabled, Sparing will be selected.

Disabled / Mirror / Lockstep Mode

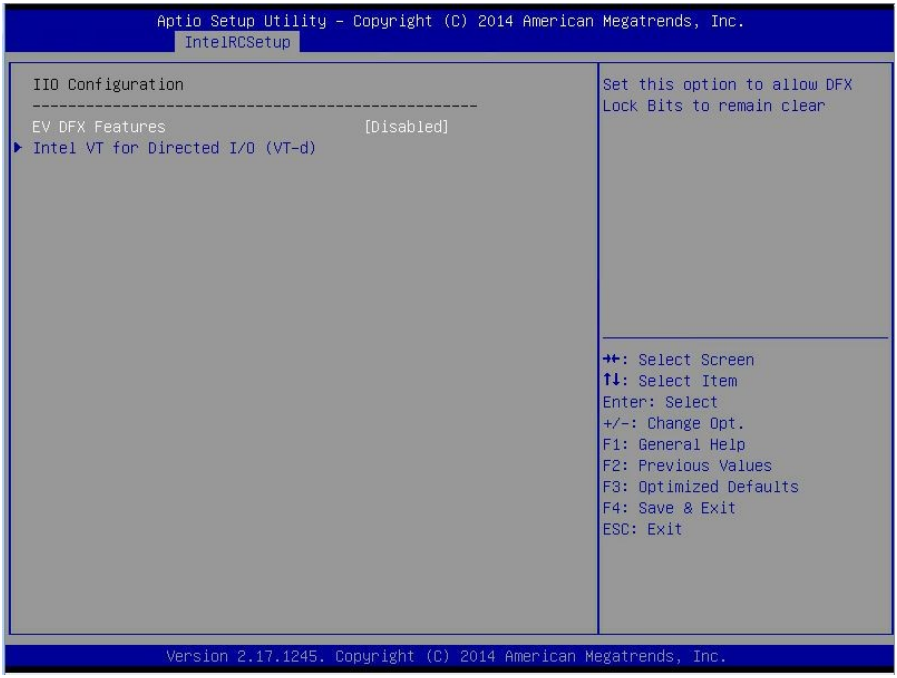
Lockstep x4 DIMMs
Enable/Disasle Lockstep for x4 DIMMs.

Auto / Disabled / Enabled

Memory Rank Sparing
Enable/Disable Memory Rank Sparing.

Disabled / Enabled

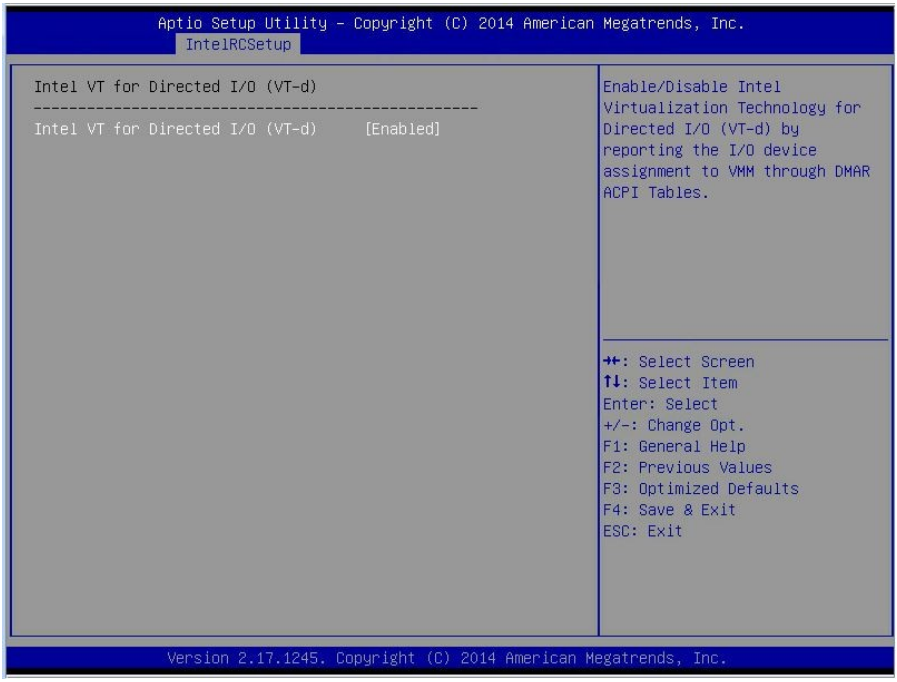
6.4.6 IIO Configuration



EV DFX Features
Set this option to allow DFX Lock Bits to remain clear.
Disabled / Enabled

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

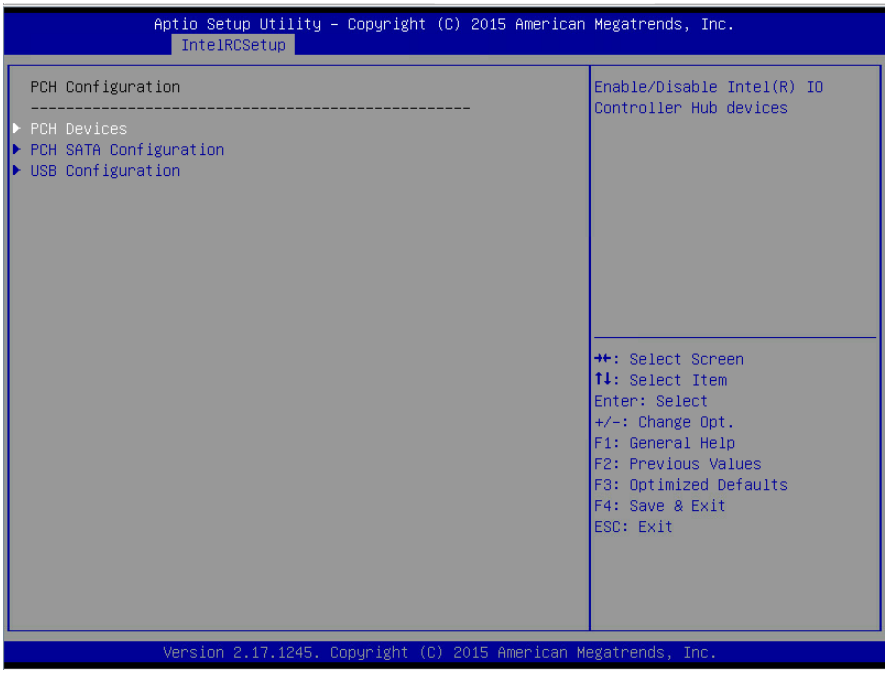
6.4.6.1 Intel VT for Directed I/O (VT-d)



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

Enabled / Disabled

6.4.7 PCH Configuration

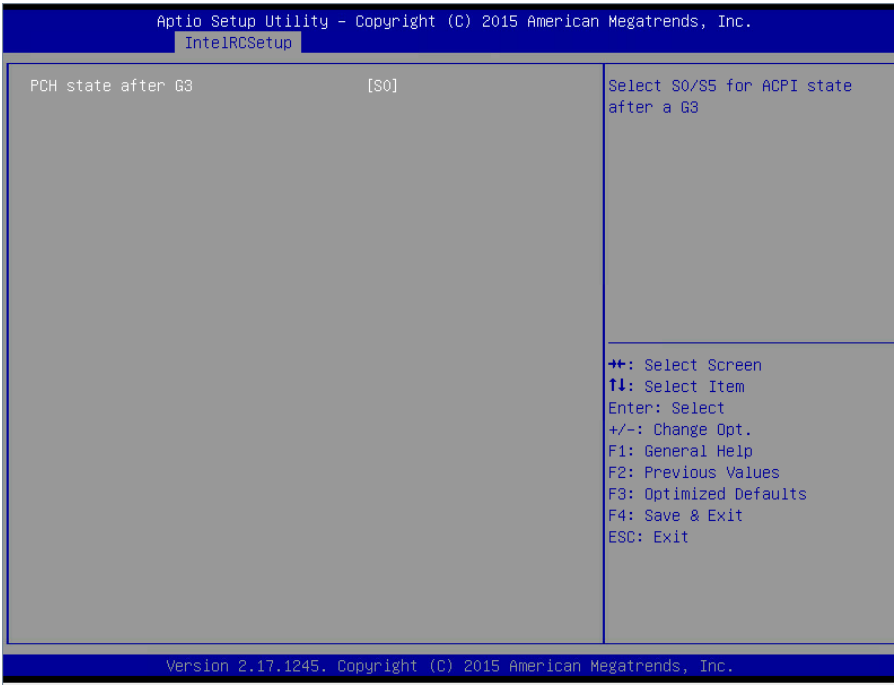


PCH Devices
Enable/Disable Intel® IO Controller Hub devices

PCH SATA Configuration
SATA devices and settings.

USB Configuration
USB Configuration Settings.

6.4.7.1 PCH Devices

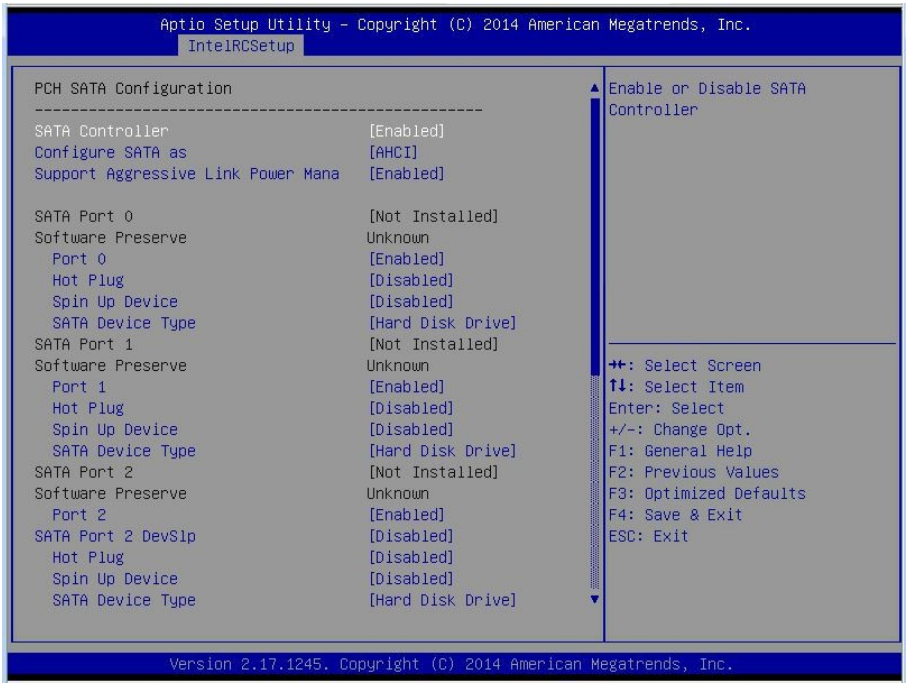


PCH State after G3

Select S0/S5 for ACPI state after a G3.

S0 / S5 / Last State

6.4.7.2 PCH SATA Configuration



SATA Controller
Enable or Disable SATA Controller.
Enabled / Disabled

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

Support Aggressive Link Power Management
Enable/Disable SALP.
Enabled / Disabled

SATA Port 0/1/2/3/4
Read only.

Software Preserve
Read only.

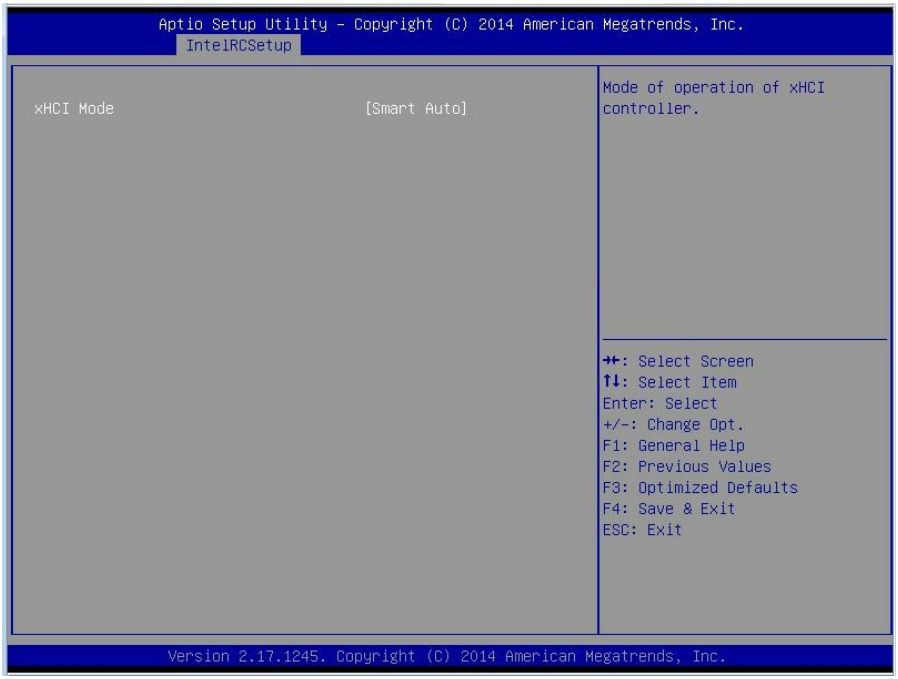
Port 0/1/2/3/4
Enable or Disable SATA Port
Enabled / Disabled

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

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

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

6.4.7.3 USB Configuration

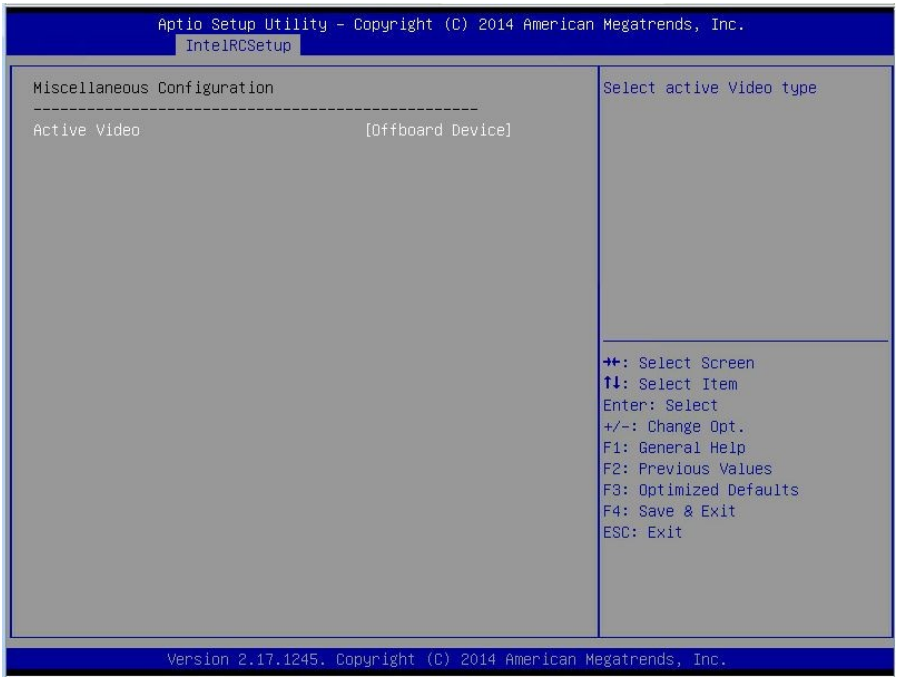


XHCI Mode
Mode of operationof XHCI controller.
Smart Auto / Auto / Disabled
NOTE: When ***XHCI Mode*** is sent to [Disabled], the following items will appear.

EHCI1
Control the USB EHCI (USB2.0) functions. One EHCI controller must always be enabled.
Enabled / Disabled

EHCH2
Control the USB EHCI (USB2.0) functions. One EHCI controller must always be enabled.
Enabled / Disabled

6.4.8 Miscellaneous Configuration



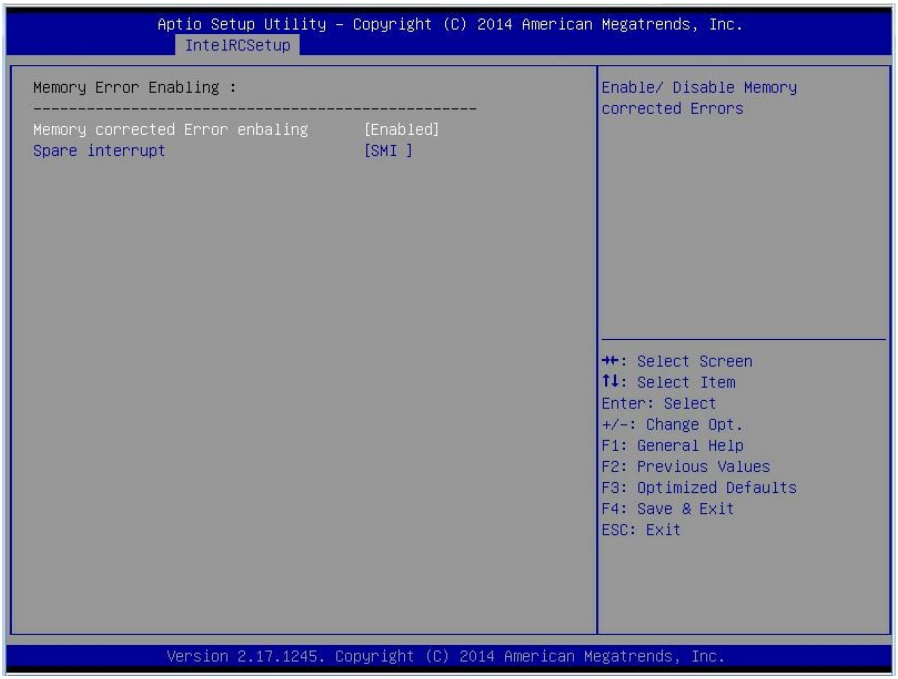
Active Video
Select active Video type.
Offboard Device / Onboard Device

6.4.9 Runtime Error Logging

System Errors
System Error enabling and logging setup option.
Enabled / Disabled

Memory Error Enabling
Press <Enter> to view or change the Memory errors enabling options.

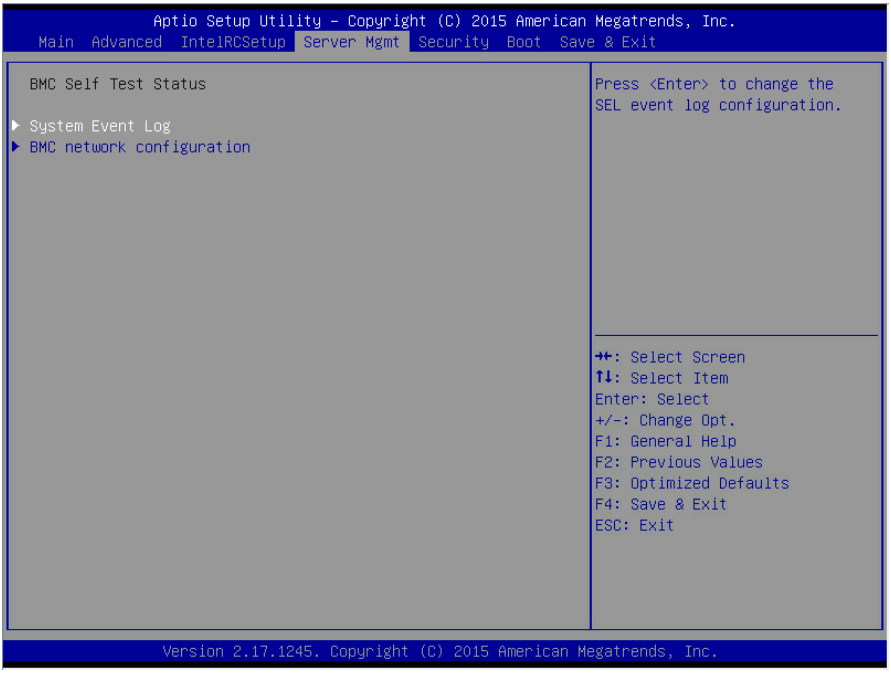
6.4.9.1 Memory Error Enabling



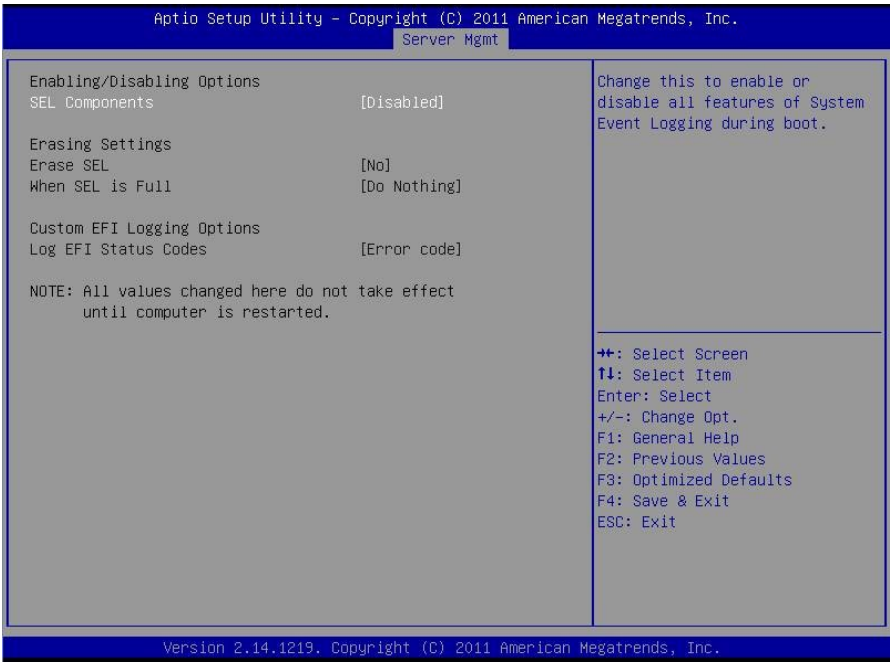
Memory corrected Error enabling
Enable / Disable Memory corrected Errors.
Enabled / Disabled

Spare Interrupt
Select SMI/CMCI/ErrPin for spare interrupt.
SMI / CMCI / Error Pin

6.5 Server Management



6.5.1 System Event Log



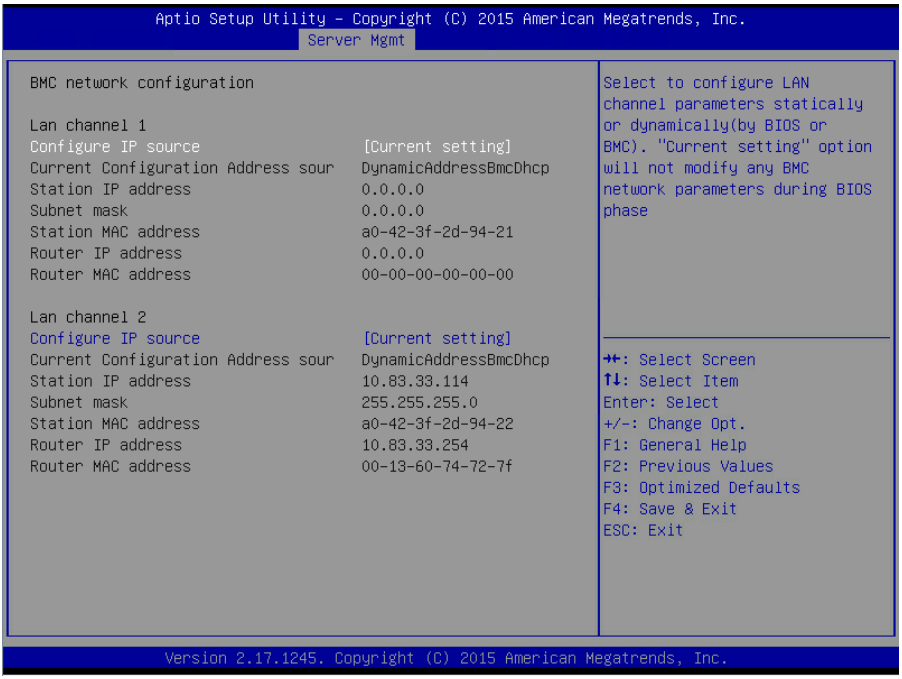
SEL Components
Change this to enable or disable all features of System Event Logging during boot.
Disabled / Enabled

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

When SEL is Full
Choose options for reactions to a full SEL.
Do Nothing / Erase Immediately

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

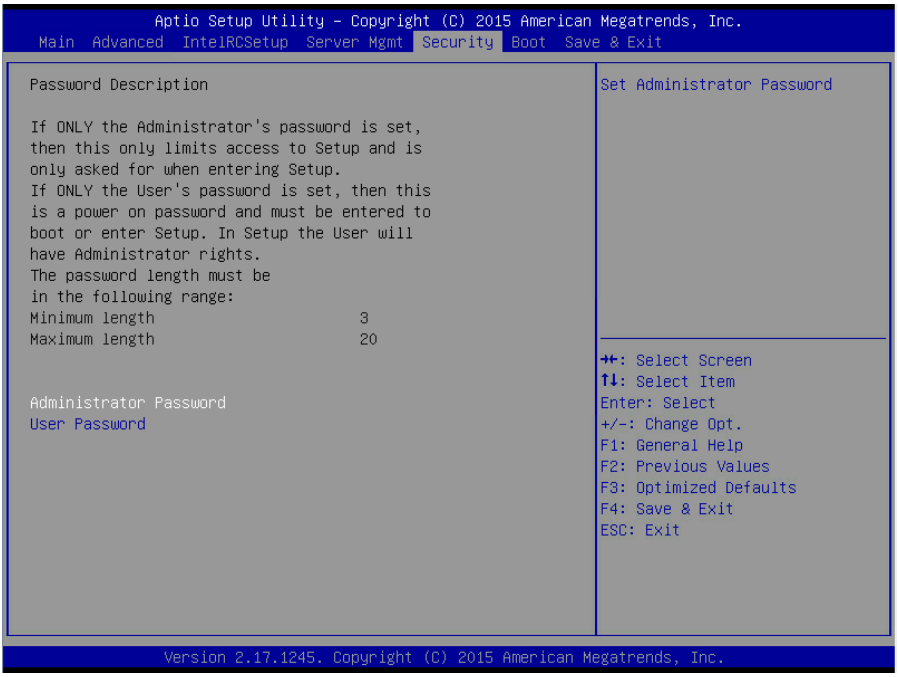
6.5.2 BMC Network Configuration



Lan channel 1/2
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 / Dynamic-Obtained by BMC

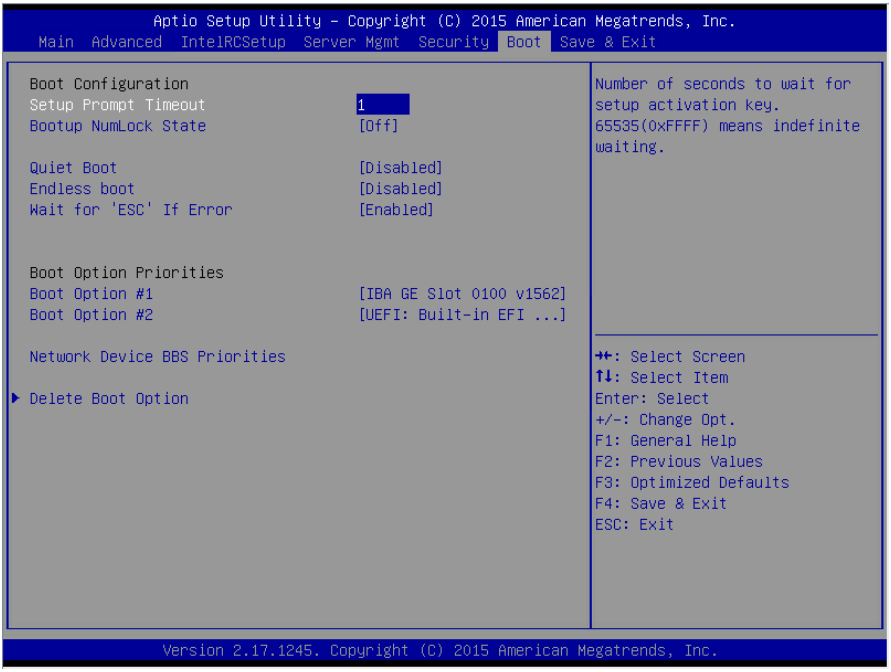
6.6 Security



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.

6.7 Boot



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

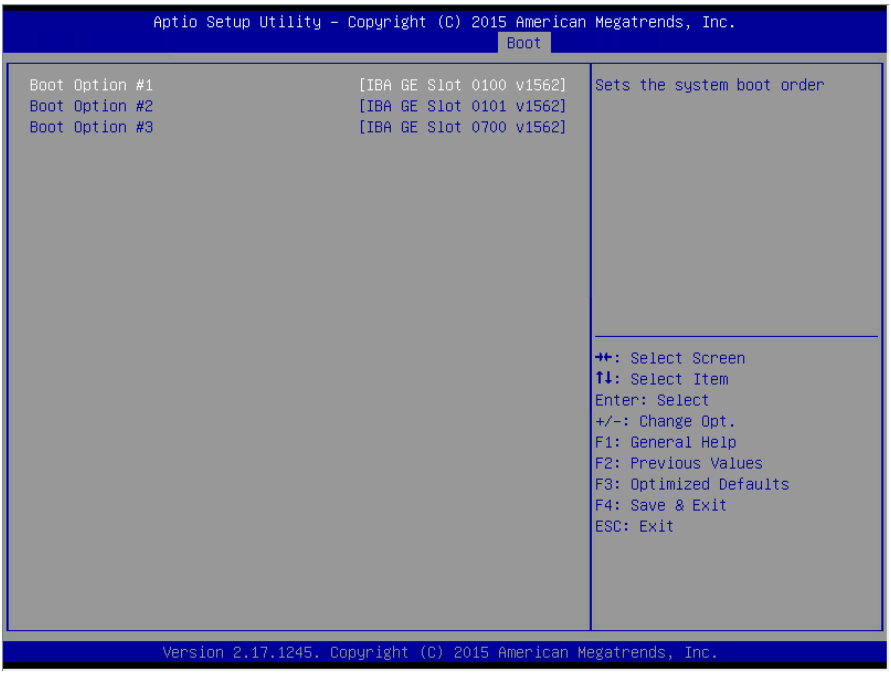
Quiet Boot
Enable or disable Quiet Boot option.
Disabled / Enabled

Endless Boot
Enable or disable Endless Boot.
Disabled / Enabled

Wait for "ESC" If Error
Enable or Disable Wait ESC key Function. When Chassis intrusion, CMOS Clear or BMC not Response.
Enabled / Disabled

Boot Option Priorities
Boot Option #1/#2
Sets the system boot order
Device Name / Disabled

6.7.1 Network Device BBS Priorities Configuration



Boot Option #1
Sets the system boot order
IBA GE Slot 0100 v1562 / IBA GE Slot 0101 v1562 / IBA GE Slot 0700 v1562

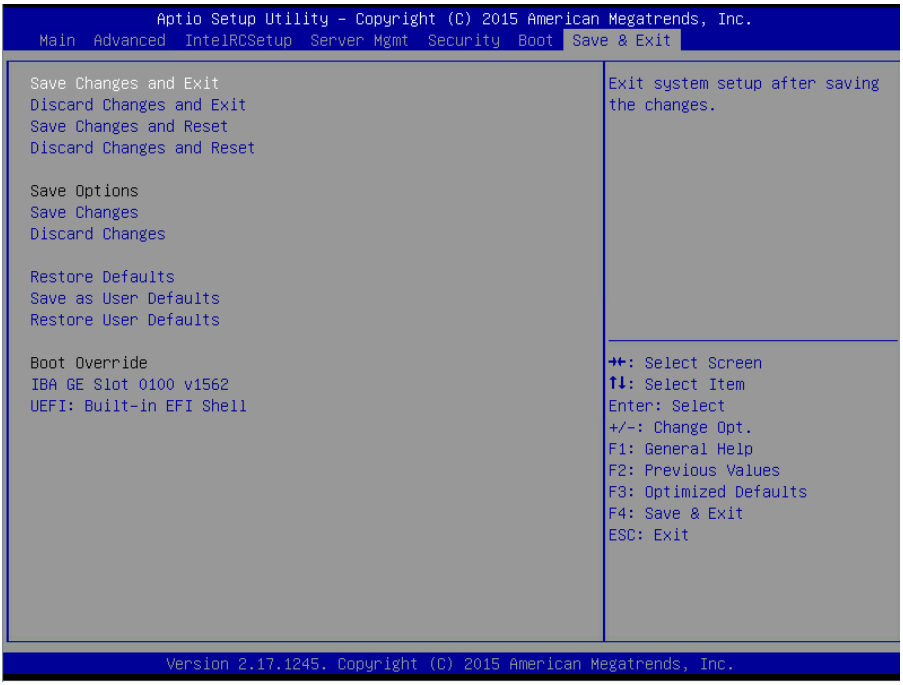
Boot Option #2
Sets the system boot order
IBA GE Slot 0100 v1562 / **IBA GE Slot 0101 v1562** / IBA GE Slot 0700 v1562

Boot Option #3
Sets the system boot order
IBA GE Slot 0100 v1562 / IBA GE Slot 0101 v1562 / **IBA GE Slot 0700 v1562**

6.7.2 Delete Boot Option Configuration

Delete Boot Option
Remove an EFI boot option from the boot order
Select One to Delete / Device Name

6.8 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 Options
Read only.

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.

Chapter 7: Diagnostics

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

Memory, Video, CPU

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

7.1 Flash Utility

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

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

7.2 AMIBIOS Post Code (Aptio)

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

Checkpoint Ranges

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

Standard Checkpoints

SEC Phase

Status Code	Description
0x00	Note used
Progress Codes	
0x01	Power on. Reset type detection (soft/hard).
0x02	AP initialization before microcode loading
0x03	North Bridge initialization before microcode loading
0x04	South Bridge initialization before microcode loading
0x05	OEM initialization before microcode loading
0x06	Microcode loading
0x07	AP initialization after microcode loading

Status Code	Description
0x08	North Bridge initialization after microcode loading
0x09	South Bridge initialization after microcode loading
0x0A	OEM initialization after microcode loading
0x0B	Cache initialization

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

SEC Phase
None

PEI Phase

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

Status Code	Description
0x35	CPU post-memory initialization. Boot Strap Processor (BSP) selection
0x36	CPU post-memory initialization. System Management Mode (SMM) initialization
0x37	Post-Memory North Bridge initialization is started.
0x38	Post-Memory North Bridge initialization (North Bridge module specific)
0x39	Post-Memory North Bridge initialization (North Bridge module specific)
0x3A	Post-Memory North Bridge initialization (North Bridge module specific)
0x3B	Post-Memory South Bridge initialization is started
0x3C	Post-Memory South Bridge initialization (South Bridge module specific)
0x3D	Post-Memory South Bridge initialization (South Bridge module specific)
0x3E	Post-Memory South Bridge initialization (South Bridge module specific)
0x3F – 0x4E	OEM post memory initialization codes
0x4F	DXE PIL is started
PCI Error Codes	
0x50	Memory initialization error. Invalid memory type or incompatible memory speed
0x51	Memory initialization error. SPD reading has failed.
0x52	Memory initialization error. Invalid memory size or memory modules do not match.
0x53	Memory initialization error. No usable memory detected
0x54	Unspecified memory initialization error
0x55	Memory not installed
0x56	Invalid CPU type or speed
0x57	CPU mismatch
0x58	CPU self test failed or possible CPU cache error
0x59	CPU microcode is not found or microcode update is failed.
0x5A	Internal CPU error

Status Code	Description
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

PEI Beep Codes

# of Beeps	Description
Progress Codes	

# of Beeps	Description
1	Memory not installed
1	Memory was installed twice (installPEIMemory routine in PEI Core called twice).
2	Recovery started
3	DXEIPL was not found.
3	DXE Core Firmware Volume was not found.
4	Recovery failed
4	S3 Resume failed
7	Reset PPI is not available.

DXE Phase

Status Code	Description
0x60	DXE Core is started.
0x61	NVRAM initialization
0x62	Installation of the South Bridge Runtime Services
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

Status Code	Description
0x73	South Bridge DXE initialization (South Bridge module specific)
0x74	South Bridge DXE initialization (South Bridge module specific)
0x75	South Bridge DXE initialization (South Bridge module specific)
0x76	South Bridge DXE initialization (South Bridge module specific)
0x77	South Bridge DXE initialization (South Bridge module specific)
0x78	ACPI module initialization
0x79	CSM initialization
0x7A – 0x7F	Reserved for future AMI DXE codes
0x80 – 0x8F	OEM DXE initialization codes
0x90	Boot Device Selection (BDS) phase is started
0x91	Driver connecting is started
0x92	PCI Bus initialization is started
0x93	PCI Bus Hot Plug Controller initialization
0x94	PCI Bus Enumeration
0x95	PCI BUS Request Resources
0x96	PCI Bus Assign Resources
0x97	Console output devices connect
0x98	Console Input devices connect
0x99	Super IO initialization
0x9A	USB initialization is started.
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

Status Code	Description
0xA6	SCSI Detect
0xA7	SCSI Enable
0xA8	Setup Verifying Password
0xA9	Start of Setup
0xAA	Reserved for ASL (see ASL Status Codes section below)
0xAB	Setup Input Wait
0xAC	Reserved for ASL (see ASL Status Codes section below)
0xAD	Ready To Boot event
0xAE	Legacy Boot event
0xAF	Exit Boot Services event
0xB0	Runtime Set Virtual Address MAP Begin
0xB1	Runtime Set Virtual Address MAP End
0xB2	Legacy Option ROM initialization
0xB3	System Reset
0xB4	USB hot plug
0xB5	PCI bus hot plug
0xB6	Clean-up of NVRAM
0xB7	Configuration Reset (reset of NVRAM settings)
0xB8 – 0xBF	Reserved for future AMI codes
0xC0 – 0xCF	OEM BDS initialization codes
DXE Error Codes	
0xD0	CPU initialization error
0xD1	North Bridge initialization error
0xD2	South Bridge initialization error
0xD3	Some of the Architectural Protocols are not available
0xD4	PCI resource allocation error. Out of Resources
0xD5	No Space for Legacy Option ROM
0xD6	No Console Output Devices are found.
0xD7	No Console Input Devices are found.
0xD8	Invalid password

Status Code	Description
0xD9	Error loading Boot Option (LoadImage returned error)
0xDA	Boot Option is failed (StartImage returned error).
0xDB	Flash update is failed.
0xDC	Reset protocol is not available.

DXE Beep Codes

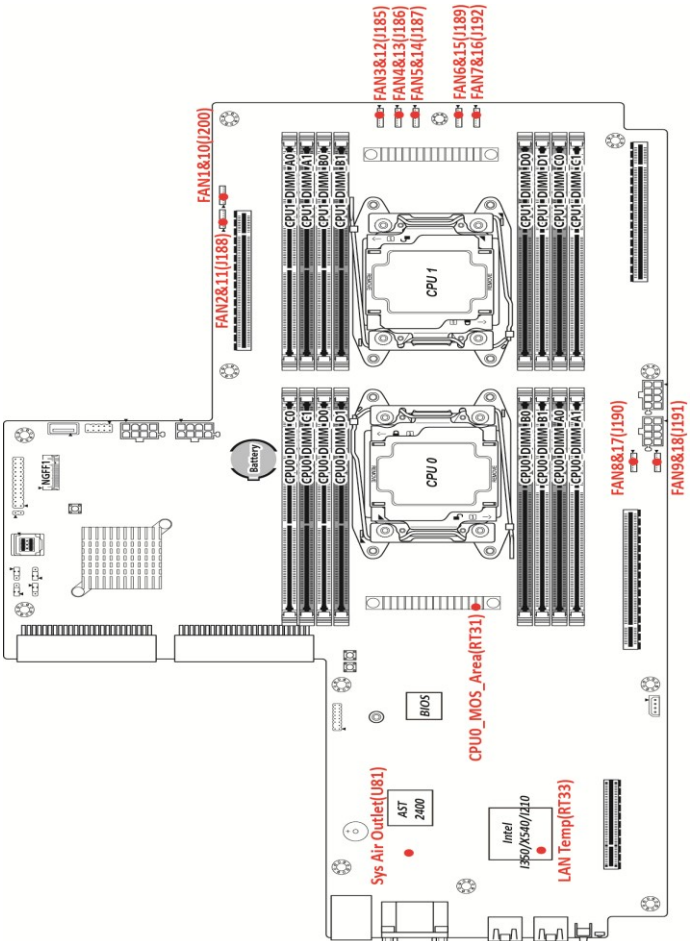
# of Beeps	Description
1	Invalid password
4	Some of the Architectural Protocols are not available.
5	No Console Output Devices are found.
5	No Console Input Devices are found.
6	Flash update is failed.
7	Reset protocol is not available.
8	Platform PCI resource requirements cannot be met.

ACPI/ASL Checkpoints

Status Code	Description
0x01	System is entering S1 sleep state.
0x02	System is entering S2 sleep state.
0x03	System is entering S3 sleep state.
0x04	System is entering S4 sleep state.
0x05	System is entering S5 sleep state.
0x10	System is waking up from the S1 sleep state.
0x20	System is waking up from the S2 sleep state.
0x30	System is waking up from the S3 sleep state.
0x40	System is waking up from the S4 sleep state.
0xAC	System has transitioned into ACPI mode. Interrupt controller is in APIC mode.
0xAA	System has transitioned into ACPI mode. Interrupt controller is in APIC mode.

Appendix I: Fan and Temp Sensors

This section aims to help readers identify the locations of some specific FAN and Temp Sensors on the motherboard. A table of BIOS Temp sensor name explanation is also included for readers' reference.

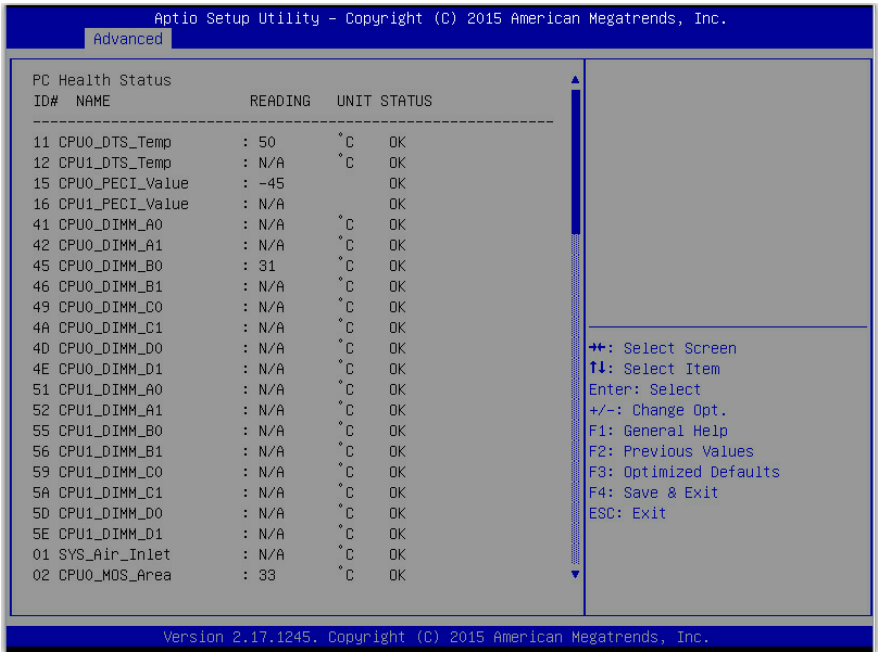


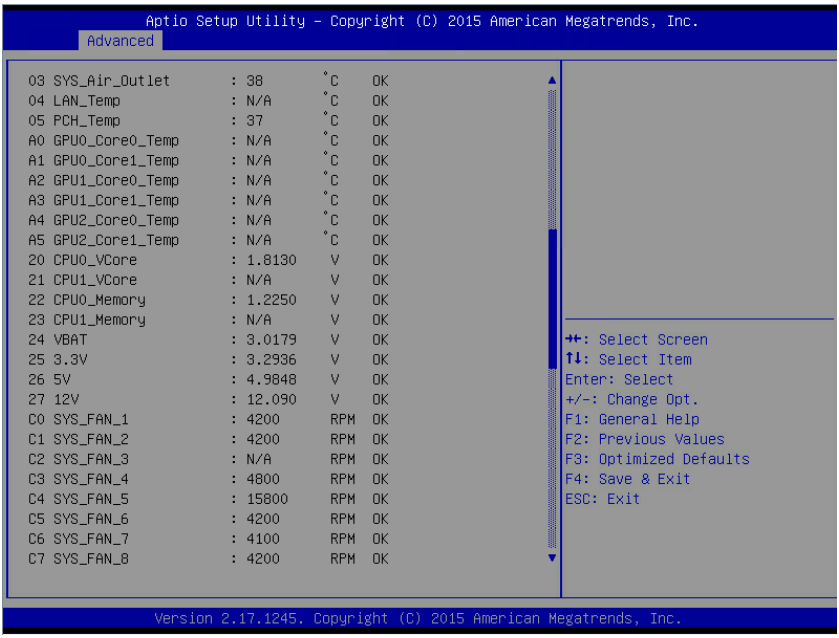
NOTE: The red dot indicates the location of the sensors.

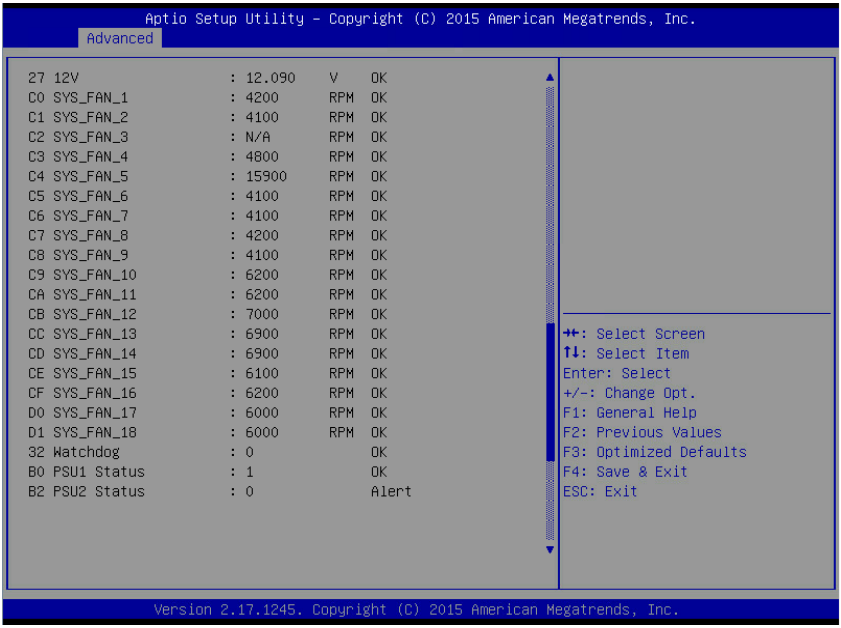
Fan and Temp Sensor Location:

1. Temp Sensor **SYS_Air_Inlet, CPU0_MOS_Area, SYS_Air_Outlet, LAN_Temp, PCH_Temp, etc**
   They detect the system temperature around.

NOTE: CPU0_PECI_Value and CPU1_PECI_Value are measured in a scale defined by Intel, not in Fahrenheit or Celsius.




Aptio Setup Utility – Copyright (C) 2015 American Megatrends, Inc.
Advanced
03 SYS_Air_Outlet : 38 °C OK
04 LAN_Temp : N/A °C OK
05 PCH_Temp : 37 °C OK
A0 GPU0_Core0_Temp : N/A °C OK
A1 GPU0_Core1_Temp : N/A °C OK
A2 GPU1_Core0_Temp : N/A °C OK
A3 GPU1_Core1_Temp : N/A °C OK
A4 GPU2_Core0_Temp : N/A °C OK
A5 GPU2_Core1_Temp : N/A °C OK
20 CPU0_VCore : 1.8130 V OK
21 CPU1_VCore : N/A V OK
22 CPU0_Memory : 1.2250 V OK
23 CPU1_Memory : N/A V OK
24 VBAT : 3.0179 V OK
25 3.3V : 3.2936 V OK
26 5V : 4.9848 V OK
27 12V : 12.090 V OK
C0 SYS_FAN_1 : 4200 RPM OK
C1 SYS_FAN_2 : 4200 RPM OK
C2 SYS_FAN_3 : N/A RPM OK
C3 SYS_FAN_4 : 4800 RPM OK
C4 SYS_FAN_5 : 15800 RPM OK
C5 SYS_FAN_6 : 4200 RPM OK
C6 SYS_FAN_7 : 4100 RPM OK
C7 SYS_FAN_8 : 4200 RPM OK
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.17.1245. Copyright (C) 2015 American Megatrends, Inc.


Aptio Setup Utility – Copyright (C) 2015 American Megatrends, Inc.
Advanced
27 12V : 12.090 V OK
C0 SYS_FAN_1 : 4200 RPM OK
C1 SYS_FAN_2 : 4100 RPM OK
C2 SYS_FAN_3 : N/A RPM OK
C3 SYS_FAN_4 : 4800 RPM OK
C4 SYS_FAN_5 : 15900 RPM OK
C5 SYS_FAN_6 : 4100 RPM OK
C6 SYS_FAN_7 : 4100 RPM OK
C7 SYS_FAN_8 : 4200 RPM OK
C8 SYS_FAN_9 : 4100 RPM OK
C9 SYS_FAN_10 : 6200 RPM OK
CA SYS_FAN_11 : 6200 RPM OK
CB SYS_FAN_12 : 7000 RPM OK
CC SYS_FAN_13 : 6900 RPM OK
CD SYS_FAN_14 : 6900 RPM OK
CE SYS_FAN_15 : 6100 RPM OK
CF SYS_FAN_16 : 6200 RPM OK
D0 SYS_FAN_17 : 6000 RPM OK
D1 SYS_FAN_18 : 6000 RPM OK
32 Watchdog : 0 OK
B0 PSU1 Status : 1 OK
B2 PSU2 Status : 0 Alert
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.17.1245. Copyright (C) 2015 American Megatrends, Inc.

BIOS Temp Sensor Name Explanation:

BIOS Temp Sensor	Name Explanation
CPU0_DTS_Temp	Temperature of the CPU0 Digital Temperature Sensor
CPU1_DTS_Temp	Temperature of the CPU1 Digital Temperature Sensor
CPU0_PECI_Value	Temperature of the CPU0 Platform Environment Control Interface
CPU1_PECI_Value	Temperature of the CPU1 Platform Environment Control Interface
CPU0_DIMM_A0	Temperature of CPU0 DIMM A0 Slot
CPU0_DIMM_A1	Temperature of CPU0 DIMM A1 Slot
CPU0_DIMM_B0	Temperature of CPU0 DIMM B0 Slot
CPU0_DIMM_B1	Temperature of CPU0 DIMM B1 Slot
CPU0_DIMM_C0	Temperature of CPU0 DIMM C0 Slot
CPU0_DIMM_C1	Temperature of CPU0 DIMM C1 Slot
CPU0_DIMM_D0	Temperature of CPU0 DIMM D0 Slot
CPU0_DIMM_D1	Temperature of CPU0 DIMM D1Slot
CPU1_DIMM_A0	Temperature of CPU1 DIMM A0 Slot
CPU1_DIMM_A1	Temperature of CPU1 DIMM A1 Slot
CPU1_DIMM_B0	Temperature of CPU1 DIMM B0 Slot
CPU1_DIMM_B1	Temperature of CPU1 DIMM B1 Slot
CPU1_DIMM_C0	Temperature of CPU1 DIMM C0 Slot
CPU1_DIMM_C1	Temperature of CPU1 DIMM C1 Slot
CPU1_DIMM_D0	Temperature of CPU1 DIMM D0 Slot
CPU1_DIMM_D1	Temperature of CPU1 DIMM D1Slot
SYS_Air_Inlet	Temperature of the SYS Air Inlet Area
CPU0_MOS_Area	Temperature of the CPU0_MOS_Area
SYS_Air_Outlet	Temperature of the SYS Air Outlet Area
LAN_Temp	Temperature of the LAN Area
PCH_Temp	Temperature of the PCH
BIOS Fan Sensor	**Name Explanation**
SYS_FAN_1	Fan speed of SYS_FAN_1
SYS_FAN_2	Fan speed of SYS_FAN_2
SYS_FAN_3	Fan speed of SYS_FAN_3
SYS_FAN_4	Fan speed of SYS_FAN_4
SYS_FAN_5	Fan speed of SYS_FAN_5
SYS_FAN_6	Fan speed of SYS_FAN_6
SYS_FAN_7	Fan speed of SYS_FAN_7
SYS_FAN_8	Fan speed of SYS_FAN_8
SYS_FAN_9	Fan speed of SYS_FAN_9

SYS_FAN_10	Fan speed of SYS_FAN_10
SYS_FAN_11	Fan speed of SYS_FAN_11
SYS_FAN_12	Fan speed of SYS_FAN_12
SYS_FAN_13	Fan speed of SYS_FAN_13
SYS_FAN_14	Fan speed of SYS_FAN_14
SYS_FAN_15	Fan speed of SYS_FAN_15
SYS_FAN_16	Fan speed of SYS_FAN_16
SYS_FAN_17	Fan speed of SYS_FAN_17
SYS_FAN_18	Fan speed of SYS_FAN_18

Appendix II: Cable Connection Tables

1. System Fan Connector

System Fan to S7081MB		
System Fan	**Connect to**	**S7081 MB**
Fan1	→	FAN_1/10
Fan2	→	FAN_2/11
Fan3	→	FAN_3/12
Fan4	→	FAN_4/13
Fan5	→	FAN_5/14
Fan6	→	FAN_6/15
Fan7	→	FAN_7/16
Fan8	→	FAN_8/17
Fan9	→	FAN_9/18

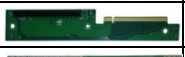
2. Mini-SAS HD Cable & 2X4P PWR Cable

SATA/SAS Backplane (BP) Board to S7081 MB			
	SATA/SAS BP Board	**Connect to**	**S7081MB**
Mini-SAS HD Cable	PCIE-SAS1	→	PCIE-SAS1
2X4P PWR Cable	PW3	→	PW4

3. FP Ctrl Cable & USB Cable

Front Panel Board (FPB) to S7081 MB			
	FPBD	**Connect to**	**S7081 MB**
Control Cable	J6	→	FPIO1
USB Cable	J3	→	USB2

Appendix III: FRU Parts Table

Item	Model Number	Part Number	Picture	Description
FAN	FRU-TS-0090	336210000045		TF-FAN;SBU,FAN,12V,R40W12BGD8-07 T09,2BALL,1.2 A,14.4 W,19000 RPM,32.5 CFM,2.8 inch-H2O,64.0dBA,97 g,40*40*56mm,8PIN (HEADER 1*8), WIRE=85 MM
Power Supply	FRU-PS-0130	471100000193		TF-POWER SUPPLY;SBU,1600 W,DELTA,DPS-1600EB B,(S0F),1U MODULE,REV.S0F
Heatsink & Cooler	FRU-TH-0170	343T54100001		TF-HEATSINK;SBU,AL/CU,+PIPE,SOLDERLING,2011-1U-NARROW-PASSIVE-HEATSINK, SF42G00001, 227.0 X 80.0 X 26.0 MM, SCREW,GA80-B7081
Rack Mounting Part	CRAL-0170	340786900010		TF-SLIDE RAIL MIC ASSY;SBU,YELLOW RIVER DP,B7018Y190X2
PCBA	FRU-RC-0210	5411T5410005		TF-PWA;SBU,GA80-B7081,M7081-L16-1F-1,R01,For BB,TYAN
	FRU-RC-0220	5411T5410004		TF-PWA;SBU,GA80-B7081,M7081-R16-1F,R01,TYAN,SMT-COMP
	FRU-RC-0230	5411T5410012		TF-PWA;SBU,GA80-B7081,M7081-L16-1F-2,R02,For BB,TYAN
	FRU-RC-0240	5411T5410002		TF-PWA;SBU,GA80-B7081,M7081-R8-1L,R01,TYAN,H/I-COMP
Cable	FRU-CS-0450	422T54100001		TF-AC/DC POWER CABLE;SBU,20 AWG,150MM,GPU PWR CABLE,2*4P(M),P4.2/GPU,2*3P(M),P4.2+GPU,2*4P(M),P4.2,GA80-B7081
	FRU-CS-0460	332810000515		TF-POWER CORD;SBU,EU,250 V,16 AWG(1.0mm²),1800mm,AC PWR CORD
	FRU-CS-0550	332810000517		TF-POWER CORD;SBU,US,250 V,16 AWG(1.31mm²),1800mm,AC PWR CORD

Appendix IV: 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 International 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.

TYAN's tech support is some of the most impressive we've seen, with great response time and exceptional organization in general." — Anandtech.com

Please feel free to contact us directly for this service at tech-support@tyan.com

Help Resources:

1. See the TYAN's website for FAQ's, bulletins, driver updates, and other information: http://www.tyan.com
2. Contact your dealer for help before calling TYAN.
3. Check the TYAN user group: alt.comp.periphs.mainboard.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® GA80-B7081 Service Engineer's Manual V1.0b

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