



S7050

Version 1.0c

Copyright

Copyright © MiTAC Computer Corporation, 2011. All rights reserved. No part of this manual may be reproduced or translated without prior written consent from MiTAC Computer Corp.

Trademark

All registered and unregistered trademarks and company names contained in this manual are property of their respective owners including, but not limited to the following.

TYAN[®] is a trademark of MiTAC Computer Corporation

Intel[®] is a trademark of Intel[®] Corporation.

AMI[®], AMIBIOS[®] and combinations thereof are trademarks of AMI Technologies.

Microsoft[®], Windows[®] are trademarks of Microsoft Corporation.

Aspeed[®] is a trademark of Aspeed Technology Inc.

Notice

Information contained in this document is furnished by MiTAC Computer Corporation and has been reviewed for accuracy and reliability prior to printing. MiTAC assumes no liability whatsoever, and disclaims any express or implied warranty, relating to sale and/or use of TYAN[®] products including liability or warranties relating to fitness for a particular purpose or merchantability. MiTAC retains the right to make changes to product descriptions and/or specifications at any time, without notice. In no event will MiTAC be held liable for any direct or indirect, incidental or consequential damage, loss of use, loss of data or other malady resulting from errors or inaccuracies of information contained in this document.

About this guide

This user guide contains the information you need when installing and configuring the motherboard.

How this guide is organized

This guide contains the following parts:

Chapter1: Instruction

This chapter describes the features of the motherboard and the new technology it supports.

Chapter2: Board Installation

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.

Chapter3: BIOS Setup

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

Chapter4: Diagnostics

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







Contents

Before you begin...	4
1.1 - Congratulations	5
1.2 - Hardware Specifications	5
1.3 - Software Specifications	16
1.4 - AST2300 User Guide	16
Chapter 2: Board Installation	17
2.1 - Board Image	18
2.2 - Block Diagram	19
2.3 - Board Parts, Jumpers and Connectors	20
2.4 - Installing the Processor	38
2.5 - Installing the Heatsink	41
2.6 - Thermal Interface Material	42
2.7 - Tips on Installing Motherboard in Chassis	43
2.8 - Installing the Memory	45
2.9 - Attaching Drive Cables	50
2.10 - Installing Add-In Cards	51
2.11 - Connecting External Devices	52
2.12 - Installing the Power Supply	54
2.13 - Finishing Up	55
Chapter 3: BIOS Setup	56
3.1 - About the BIOS	56
3.2 - Setup Basics	56
3.3 - Getting Help	57
3.4 - In Case of Problems	57
3.5 - BIOS Main Menu	58
3.6 - BIOS Advanced Menu	60
3.7 - Chipset Menu	81
3.8 - Boot Configuration	95
3.9 - Security Menu	96
3.10 - Server Mgmt Menu	97
3.11 - Save & Exit Menu	100
Chapter 4: Diagnostics	102
4.1 - Flash Utility	102
4.2 - AMIBIOS Post Code (Aptio)	103
Glossary	116
Technical Support	122

Before you begin...

Check the box contents!

The retail motherboard package should contain the following:

Item	Name	P/N Number	Description
	1x S7050 Motherboard	/	N/A
	6x Serial ATA Cable	422736300010	TF-CABLE ASSY;SBU,SATA-500MM,S2865
	1x I/O shielding	340T44200001	TF-I/O SHIELDING ASSY;SBU,S7050
	1x S7050 User's manual	5615T4420001	TF-MANUAL;SBU,V1.0,USER MANUAL, D2149-100,S7050
	1x S7050 Quick reference guide	5618T4420001	TF-SINGLE PAGE;SBU,V1.00,QUICK REFERENCE, D2150-100,S7050
	1x TYAN® Driver CD	5651T4390001	TF-SOFTWARE;SBU,TYAN Driver CD for Intel C600 series Platform V1.1,S7056

If any of these items are missing, please contact your vendor/dealer for replacement before continuing with the installation process.

Chapter 1: Instruction

1.1 - Congratulations

You have purchased the powerful TYAN® S7050 motherboard, based on the Intel® Patsburg-A (PCH), ASPEED AST2300, NUVOTON Super I/O NCT5577D chipsets. The S7050 is designed to support dual Intel® [Xeon E5-2600 Series](#) (LGA2011) Series Processors and up to 128GB of 800, 1066, 1333 and 1600MHz DDR3 memory modules. Leveraging advanced technology from Intel®, the S7050 is capable of offering scalable 32 and 64-bit computing, high-bandwidth memory design, and lightning-fast PCI-E bus implementation.

The S7050 not only empowers you in today's demanding IT environment but also offers a smooth path for future application upgradeability. All of these rich feature sets provides the S7050 with the power and flexibility to meet demanding requirements for today's IT environments.

The TYAN S7050 series is designed around several different configurations which are detailed in the following 1.2 Hardware Specification section:

1.2 - Hardware Specifications

TYAN S7050 (S7050A2NRF)

Processor	Supported CPU Series	Intel Xeon Processor E5-2600 Series
	Socket Type / Q'ty	LGA2011 / (2)
	Thermal Design Power (TDP) wattage	150W
	System Bus	Up to 8.0/ 7.2/ 6.4 GT/s with Intel QuickPath Interconnect (QPI) support
Chipset	PCH	Intel C602
	Super I/O	Nuvoton 5577D
	PCI-E Switch	Pericom PI3PCIE3412
Memory	Supported DIMM Qty	(8)+(8) DIMM slots
	DIMM Type / Speed	DDR3/DDR3L 800 / 1066 / 1333 / 1600 RDIMM, UDIMM / LRDIMM
	Capacity	up to 128GB UDIMM
	Memory channel	4 Channels per CPU
	Memory voltage	1.5V or 1.35V
Expansion Slots	PCI-E	(1) PCI-E x4 slot (x4 link) / (1) PCI-E x16 slot (x16 link or x8 link) / (1) PCI-E x8 slot (x8 link or x0 link) / (1) PCI-E x16 slot (x16 link or x8 link) / (1) PCI-E x8 slot (x8 link or x0 link)
	PCI	(1) PCI 32-bit slot

LAN	Port Q'ty	(2) GbE ports
	Controller	Intel 82574L
Storage	SATA Connector	(6) SATA
	SATA Controller	Intel C602
	SATA Speed	(2) 6.0 Gb/s (blue color), (4) 3.0 Gb/s (black color)
	SATA RAID	RAID 0/1/10/5 (Intel Matrix RAID)
	SATA From (SCU) Connector	(4) SATA connector
	SATA From (SCU) Controller	Intel C602
Audio	Chipset	Realtek ALC262
	Feature	High Definition Audio
Input /Output	USB	(7) USB2.0 ports (4 at rear, 2 at front, 1 type A onboard) / (2) USB3.0 ports (at rear)
	COM	(1) DB-9 COM Connector (at rear, COM1) + (1) Header (COM2)
	Audio	LINE_IN, LINE_OUT, MIC_IN connectors
	RJ-45	(2) GbE ports
	Firewire	(2) 2x5-pin headers
	Power	SSI 24-pin + 8-pin + 8-pin power connectors / (1) 4 PIN power connector for PCI-E
	Front Panel	(1) 2x12-pin SSI front panel header
	PSMI	(1) 1x5-pin header
	IPMB	(1) 1x4-pin header
	Brand / ROM size	AMI / 8MB
System Monitoring	Chipset	Winbond W83795G
	Voltage	Monitors voltage for CPU, memory, chipset & power supply
	Fan	Total (7) 4-pin headers
	Temperature	Monitors temperature for CPU & system environment
BIOS	Feature	Plug and Play (PnP) /PCi2.3 /WfM2.0 /SMBIOS2.3 /PXE boot / ACPI 2.0 power management /Power on mode after power recovery / User-configurable H/W monitoring / Auto-configurable of hard disk types
Physical Dimension	Form Factor	SSI EEB
	Board Dimension	12"x13" (305x330mm)
Operating System	OS supported list	Please refer to our OS supported list.
Regulation	FCC (DoC)	Class B
	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	Motherboard	(1) S7050 Motherboard
	Manual	(1) User's manual / (1) Quick Ref. Guide
	Installation CD	(1) TYAN installation CD
	I/O Shield	(1) I/O Shield
	Cable SATA	(6) SATA signal cables

TYAN S7050 (S7050GM4NR) Server SKU

Processor	Supported CPU Series	Intel Xeon Processor E5-2600 Series
	Socket Type / Q'ty	LGA2011 / (2)
	Thermal Design Power (TDP) wattage	130W
	System Bus	Up to 8.0/ 7.2/ 6.4 GT/s with Intel QuickPath Interconnect (QPI) support
Chipset	PCH	Intel C602
	PCI-E Switch	Pericom PI3PCIE3412
Memory	Supported DIMM Qty	(8)+(8) DIMM slots
	DIMM Type / Speed	DDR3/DDR3L 800 / 1066 / 1333 / 1600 RDIMM, UDIMM / LRDIMM
	Capacity	up to 128GB UDIMM
	Memory channel	4 Channels per CPU
	Memory voltage	1.5V or 1.35V
Expansion Slots	PCI-E	(1) PCI-E x4 slot (x4 link,) / (1) PCI-E x16 slot (x16 link or x8 link,) / (1) PCI-E x8 slot (x8 link or x0 link,) / (1) PCI-E x16 slot (x16 link or x8 link,) / (1) PCI-E x8 slot (x8 link or x0 link,)
	PCI	(1) PCI 32-bit slot
Recommended Barebone / Chassis	Mechanical Compliant	KFT48 / KGN70M1 / KGTN70M1
LAN	Port Q'ty	(4) GbE ports
	Controller	Intel 82574L / Intel I350AM2

Storage	SATA	Connector	(6) SATA
		Controller	Intel C602
		Speed	(2) 6.0 Gb/s (blue color), (4) 3.0 Gb/s (black color)
		RAID	RAID 0/1/10/5 (Intel Matrix RAID)
	SATA From (SCU)	Connector	(4) SATA connector
		Controller	Intel C602
		Speed	3.0 Gb/s
		RAID	RAID 0/1/10 (Intel Matrix RAID)
Input /Output	USB	(7) USB2.0 ports (4 at rear, 2 at front, 1 type A onboard)	
	COM	(1) DB-9 COM Connector (at rear, COM1) + (1) Header (COM2)	
	VGA	(1) D-Sub 15-pin VGA port	
	RJ-45	(4) GbE ports	
	Power	SSI 24-pin + 8-pin + 8-pin power connectors / (1) 4 PIN power connector for PCI-E	
	Front Panel	(1) 2x12-pin SSI front panel header	
	PSMI	(1) 1x5-pin header	
	IPMB	(1) 1x4-pin header	
	SATA	(4) SATA-II and (2) SATA-III connectors	
System Monitoring	Chipset	Winbond W83795G	
	Voltage	Monitors voltage for CPU, memory, chipset & power supply	
	Fan	Total (7) 4-pin headers	
	Temperature	Monitors temperature for CPU & system environment	
Server Management	Onboard Chipset	Onboard Aspeed AST2300	
	AST2300 IPMI Feature	IPMI 2.0 compliant baseboard management controller (BMC) / Supports storage over IP and remote platform-flash / USB 2.0 virtual hub / BIOS update	
	AST2300 iKVM Feature	24-bit high quality video compression / Dual 10/100 Mb/s MAC interfaces / 10/100 Mb/s MAC interface	
BIOS	Brand / ROM size	AMI / 8MB	
	Feature	Plug and Play (PnP) /PCI2.3 /WfM2.0 /SMBIOS2.3 /PXE boot / ACPI 2.0 power management /Power on mode after power recovery / User-configurable H/W monitoring / Auto-configurable of hard disk types	
Physical Dimension	Form Factor	SSI EEB	
	Board Dimension	12"x13" (305x330mm)	
Operating System	OS supported list	Please refer to our OS supported list.	
Regulation	FCC (DoC)	Class B	
	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	Motherboard	(1) S7050 Motherboard
	Manual	(1) User's manual / (1) Quick Ref. Guide
	Installation CD	(1) TYAN installation CD
	I/O Shield	(1) I/O Shield
	Cable SATA	(6) SATA signal cables

TYAN S7050 (S7050WGM4NR) Server SKU

Processor	Supported CPU Series	Intel Xeon Processor E5-2600 Series
	Socket Type / Q'ty	LGA2011 / (2)
	Thermal Design Power (TDP) wattage	130W
	System Bus	Up to 8.0/ 7.2/ 6.4 GT/s with Intel QuickPath Interconnect (QPI) support
Chipset	PCH	Intel C602 with upgrade ROM module
	PCI-E Switch	Pericom PI3PCIE3412
Memory	Supported DIMM Qty	(8)+(8) DIMM slots
	DIMM Type / Speed	DDR3/DDR3L 800 / 1066 / 1333 / 1600 RDIMM, UDIMM / LRDIMM
	Capacity	up to 128GB UDIMM
	Memory channel	4 Channels per CPU
	Memory voltage	1.5V or 1.35V
Expansion Slots	PCI-E	(1) PCI-E x4 slot (x4 link,) / (1) PCI-E x16 slot (x16 link or x8 link,) / (1) PCI-E x8 slot (x8 link or x0 link,) / (1) PCI-E x16 slot (x16 link or x8 link,) / (1) PCI-E x8 slot (x8 link or x0 link,)
	PCI	(1) PCI 32-bit slot
Recommended Barebone / Chassis	Mechanical Compliant	KFT48 / KGN70M1 / KG TN70M1
LAN	Port Q'ty	(4) GbE ports
	Controller	Intel 82574L / Intel I350AM2
Storage	Connector	(8) SAS connector
	SAS Controller	Intel C602 with TRK-5 upgrade ROM module
	Speed	3.0 Gb/s

	RAID	RAID 0/1/10
	Connector	(6) SATA
	SATA Controller	Intel C602
	Speed	(2) 6.0 Gb/s (blue color), (4) 3.0 Gb/s (black color)
	RAID	RAID 0/1/10/5 (Intel Matrix RAID)
Graphic	Connector type	D-Sub 15-pin
Input /Output	USB	(7) USB2.0 ports (4 at rear, 2 at front, 1 type A onboard)
	COM	(1) DB-9 COM Connector (at rear, COM1) + (1) Header (COM2)
	SAS	(8) SAS connectors
	VGA	(1) D-Sub 15-pin VGA port
	RJ-45	(4) GbE ports
	Power	SSI 24-pin + 8-pin + 8-pin power connectors / (1) 4 PIN power connector for PCI-E
	Front Panel	(1) 2x12-pin SSI front panel header
	PSMI	(1) 1x5-pin header
	IPMB	(1) 1x4-pin header
	SATA	(4) SATA-II and (2) SATA-III connectors
System Monitoring	Chipset	Winbond W83795G
	Voltage	Monitors voltage for CPU, memory, chipset & power supply
	Fan	Total (7) 4-pin headers
	Temperature	Monitors temperature for CPU & system environment
Server Management	Onboard Chipset	Onboard Aspeed AST2300
	AST2300 IPMI Feature	IPMI 2.0 compliant baseboard management controller (BMC) / Supports storage over IP and remote platform-flash / USB 2.0 virtual hub / BIOS update
	AST2300 iKVM Feature	24-bit high quality video compression / Dual 10/100 Mb/s MAC interfaces / 10/100 Mb/s MAC interface
	Brand / ROM size	AMI / 8MB
BIOS	Feature	Plug and Play (PnP) / PCI2.3 / WfM2.0 / SMBIOS2.3 / PXE boot / ACPI 2.0 power management / Power on mode after power recovery / User-configurable H/W monitoring / Auto-configurable of hard disk types
Physical Dimension	Form Factor	SSI EEB
	Board Dimension	12"x13" (305x330mm)
Operating System	OS supported list	Please refer to our OS supported list.
Regulation	FCC (DoC)	Class B
	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	Motherboard	(1) S7050 Motherboard
	Manual	(1) User's manual / (1) Quick Ref. Guide
	Installation CD	(1) TYAN installation CD
	I/O Shield	(1) I/O Shield
	Cable SATA	(6) SATA signal cables

TYAN S7050 (S7050GM2NR[BTO])

Processor	Supported CPU Series	Intel Xeon Processor E5-2600 Series	
	Socket Type / Q'ty	LGA2011 / (2)	
	Thermal Design Power (TDP) wattage	130W	
	System Bus	Up to 8.0/ 7.2/ 6.4 GT/s with Intel QuickPath Interconnect (QPI) support	
Chipset	PCH	Intel C602	
	PCI-E Switch	Pericom PI3PCIE3412	
Memory	Supported DIMM Qty	(8)+(8) DIMM slots	
	DIMM Type / Speed	DDR3/DDR3L 800 / 1066 / 1333 / 1600 RDIMM, UDIMM / LRDIMM	
	Capacity	up to 128GB UDIMM	
	Memory channel	4 Channels per CPU	
	Memory voltage	1.5V or 1.35V	
Expansion Slots	PCI-E	(1) PCI-E x4 slot (x4 link,) / (1) PCI-E x16 slot (x16 link or x8 link,) / (1) PCI-E x8 slot (x8 link or x0 link,) / (1) PCI-E x16 slot (x16 link or x8 link,) / (1) PCI-E x8 slot (x8 link or x0 link,)	
	PCI	(1) PCI 32-bit slot	
Recommended Barebone / Chassis	Mechanical Compliant	KFT48 / KGN70M1 / KG TN70M1	
LAN	Port Q'ty	(2) GbE ports	
	Controller	Intel 82574L	
Storage	SATA	Connector	(6) SATA
		Controller	Intel C602
		Speed	(2) 6.0 Gb/s (blue color), (4) 3.0 Gb/s (black color)
		RAID	RAID 0/1/10/5 (Intel Matrix RAID)

	SATA From (SCU)	Connector	(4) SATA connector
		Controller	Intel C602
		Speed	3.0 Gb/s
		RAID	RAID 0/1/10 (Intel Matrix RAID)
Input /Output	USB	(7) USB2.0 ports (4 at rear, 2 at front, 1 type A onboard)	
	COM	(1) DB-9 COM Connector (at rear, COM1) + (1) Header (COM2)	
	VGA	(1) D-Sub 15-pin VGA port	
	RJ-45	(2) GbE ports	
	Power	SSI 24-pin + 8-pin + 8-pin power connectors / (1) 4 PIN power connector for PCI-E	
	Front Panel	(1) 2x12-pin SSI front panel header	
	PSMI	(1) 1x5-pin header	
	IPMB	(1) 1x4-pin header	
	SATA	(4) SATA-II and (2) SATA-III connectors	
	Chipset	Winbond W83795G	
System Monitoring	Voltage	Monitors voltage for CPU, memory, chipset & power supply	
	Fan	Total (7) 4-pin headers	
	Temperature	Monitors temperature for CPU & system environment	
	Onboard Chipset	Onboard Aspeed AST2300	
Server Management	AST2300 IPMI Feature	IPMI 2.0 compliant baseboard management controller (BMC) / Supports storage over IP and remote platform-flash / USB 2.0 virtual hub / BIOS update	
	AST2300 iKVM Feature	24-bit high quality video compression / One 10/100 Mb/s MAC interfaces / 10/100 Mb/s MAC interface	
	Brand / ROM size	AMI / 8MB	
BIOS	Feature	Plug and Play (PnP) /PCI2.3 /WfM2.0 /SMBIOS2.3 /PXE boot / ACPI 2.0 power management /Power on mode after power recovery / User-configurable H/W monitoring / Auto-configurable of hard disk types	
	Form Factor	SSI EEB	
Physical Dimension	Board Dimension	12"x13" (305x330mm)	
Operating System	OS supported list	Please refer to our OS supported list.	
Regulation	FCC (DoC)	Class B	
	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	90%. non-condensing at 35° C	

	Humidity	
RoHS	RoHS 6/6 Compliant	Yes
Package Contains	Motherboard	(1) S7050 Motherboard
	Manual	(1) User's manual / (1) Quick Ref. Guide
	Installation CD	(1) TYAN installation CD
	I/O Shield	(1) I/O Shield
	Cable SATA	(6) SATA signal cables

TYAN S7050 (S7050WGM2NR[BTO])

Processor	Supported CPU Series	Intel Xeon Processor E5-2600 Series	
	Socket Type / Q'ty	LGA2011 / (2)	
	Thermal Design Power (TDP) wattage	150W	
	System Bus	Up to 8.0/ 7.2/ 6.4 GT/s with Intel QuickPath Interconnect (QPI) support	
Chipset	PCH	Intel C602 with upgrade ROM module	
	PCI-E Switch	Pericom PI3PCIE3412	
Memory	Supported DIMM Qty	(8)+(8) DIMM slots	
	DIMM Type / Speed	DDR3/DDR3L 800 / 1066 / 1333 / 1600 RDIMM, 800 / 1066 / 1333 UDIMM / LRDIMM / Support DDR3 Unbuffered and Register ECC	
	Capacity	up to 128GB UDIMM	
	Memory channel	4 Channels per CPU	
	Memory voltage	1.5V or 1.35V	
Expansion Slots	PCI-E	(1) PCI-E x4 slot (x4 link,) / (1) PCI-E x16 slot (x16 link or x8 link,) / (1) PCI-E x8 slot (x8 link or x0 link,) / (1) PCI-E x16 slot (x16 link or x8 link,) / (1) PCI-E x8 slot (x8 link or x0 link,)	
	PCI	(1) PCI 32-bit slot	
Recommended Barebone / Chassis	Mechanical Compliant	KFT48 / KGN70M1 / KG7N70M1	
LAN	Port Q'ty	(2) GbE ports	
	Controller	Intel 82574L	
Storage	SAS	Connector	(8) SAS connector
		Controller	Intel C602 with TRK-5 upgrade ROM module
		Speed	3.0 Gb/s
		RAID	RAID 0/1/10

	SATA	Connector	(6) SATA
		Controller	Intel C602
		Speed	(2) 6.0 Gb/s (blue color), (4) 3.0 Gb/s (black color)
		RAID	RAID 0/1/10/5 (Intel Matrix RAID)
Graphic	Connector type	D-Sub 15-pin	
Input /Output	USB	(7) USB2.0 ports (4 at rear, 2 at front, 1 type A onboard)	
	COM	(1) DB-9 COM Connector (at rear, COM1) + (1) Header (COM2)	
	SAS	(8) SAS connectors	
	VGA	(1) D-Sub 15-pin VGA port	
	RJ-45	(2) GbE ports	
	Power	SSI 24-pin + 8-pin + 8-pin power connectors / (1) 4 PIN power connector for PCI-E	
	Front Panel	(1) 2x12-pin SSI front panel header	
	PSMI	(1) 1x5-pin header	
	IPMB	(1) 1x4-pin header	
	SATA	(4) SATA-II and (2) SATA-III connectors	
System Monitoring	Chipset	Winbond W83795G	
	Voltage	Monitors voltage for CPU, memory, chipset & power supply	
	Fan	Total (7) 4-pin headers	
	Temperature	Monitors temperature for CPU & system environment	
Server Management	Onboard Chipset	Onboard Aspeed AST2300	
	AST2300 IPMI Feature	IPMI 2.0 compliant baseboard management controller (BMC) / Supports storage over IP and remote platform-flash / USB 2.0 virtual hub / BIOS update	
	AST2300 iKVM Feature	24-bit high quality video compression / Dual 10/100 Mb/s MAC interfaces / 10/100 Mb/s MAC interface	
BIOS	Brand / ROM size	AMI / 8MB	
	Feature	Plug and Play (PnP) /PCI2.3 /WfM2.0 /SMBIOS2.3 /PXE boot / ACPI 2.0 power management /Power on mode after power recovery / User-configurable H/W monitoring / Auto-configurable of hard disk types	
Physical Dimension	Form Factor	SSI EEB	
	Board Dimension	12"x13" (305x330mm)	
Operating System	OS supported list	Please refer to our OS supported list.	
Regulation	FCC (DoC)	Class B	
	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	Motherboard	(1) S7050 Motherboard
	Manual	(1) User's manual / (1) Quick Ref. Guide
	Installation CD	(1) TYAN installation CD
	I/O Shield	(1) I/O Shield
	Cable SATA	(6) SATA signal cables

S7050 SKU Comparison Table

Model	PCH	1G LAN	IPMI	Front USB HEADER	USB Type A	1 x 4 fan connector	ID switch
S7050A2NRF	Patsburg-A	2	NO	1	1	7	NO
S7050GM4NR	Patsburg-A	4	AST2300	1	1	7	YES
S7050WGM4NR	Patsburg+ ROM-5	4	AST2300	1	1	7	YES
Model	BMC	X16/x8/x4/ PCI	SAS Raid	SATA 3Gb/s	1394	USB 3.0	Audio
S7050A2NRF	NO	2/2/1/1	NO	4	Yes	2	Yes
S7050GM4NR	Yes	2/2/1/1	NO	4	NO	0	NO
S7050WGM4NR	Yes	2/2/1/1	0/1/10	4	NO	0	NO

Remember to visit TYAN®'s Website at <http://www.TYAN.com>. There you can find information on all of TYAN®'s products with FAQs, online manuals and BIOS upgrades and more.

1.3 - Software Specifications

For OS (operation system) support, please check the TYAN® website for the latest information.

1.4 - AST2300 User Guide

Remember to visit TYAN®'s Website at <http://www.TYAN.com> for AST2300 user guide.

Chapter 2: Board Installation

You are now ready to install your motherboard.

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

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

- (1) Ground yourself properly before removing your motherboard from the antistatic bag. Unplug the power from your computer power supply and then touch a safely grounded object to release static charge (i.e. power supply case). For the safest conditions, TYAN® 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.

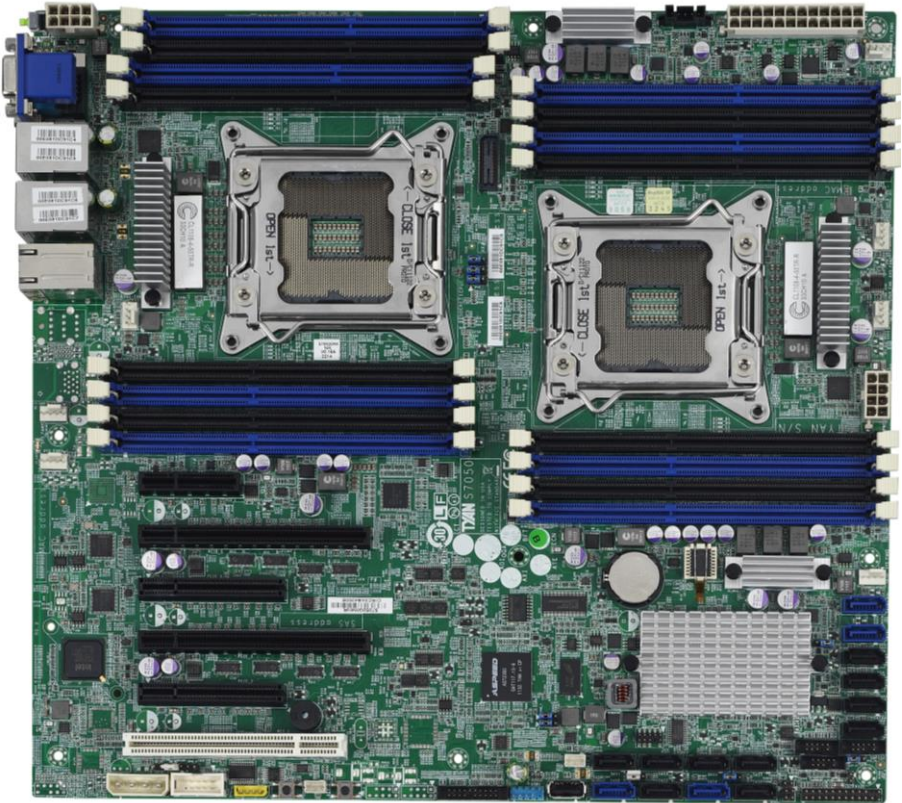
The following pages include details on how to install your motherboard into your chassis, as well as installing the processor, memory, disk drives and cables.



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.

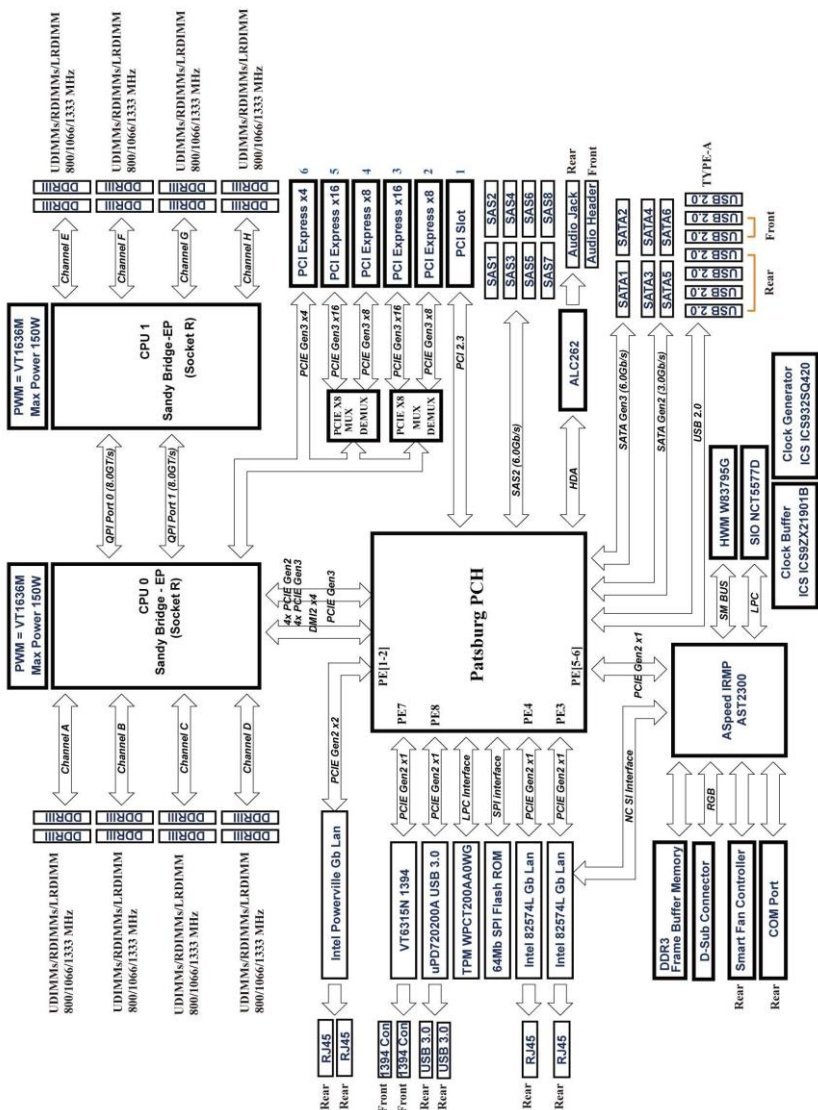
2.1 - Board Image



S7050

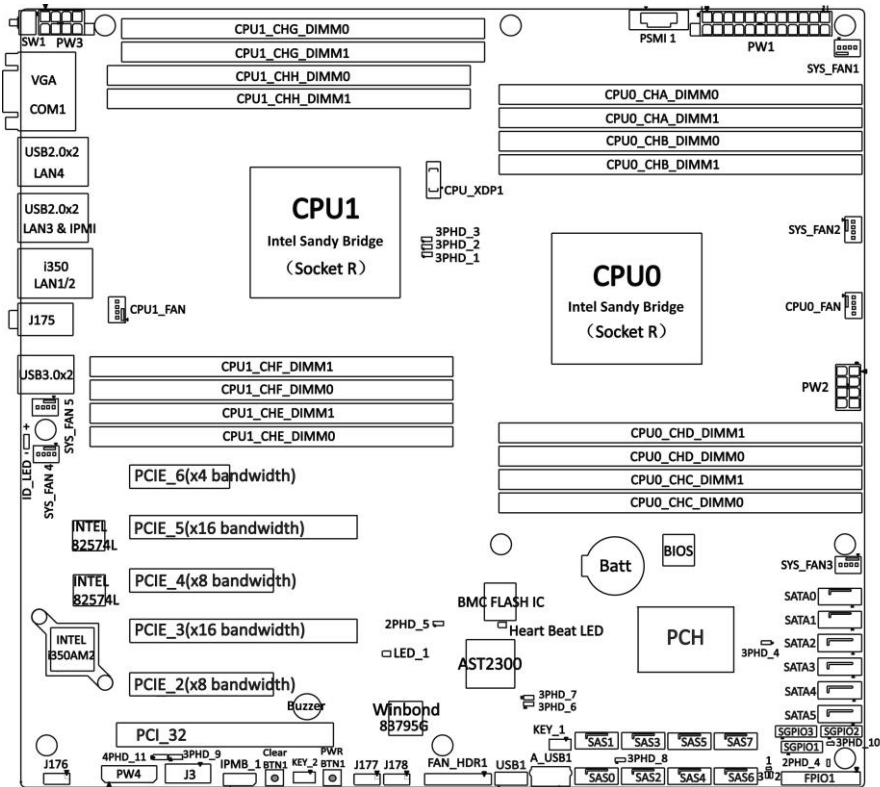
This diagram is representative of the latest motherboard revision available at the time of publishing. The board you receive may not look exactly like the above diagram.

2.2 - Block Diagram



S7050

2.3 - Board Parts, Jumpers and Connectors



Important Notes to the User

- "▲" indicates the location of "Pin 1".
- The diagram is representative of the latest board revision available at the time of publishing. The board you received may not look exactly like this diagram.

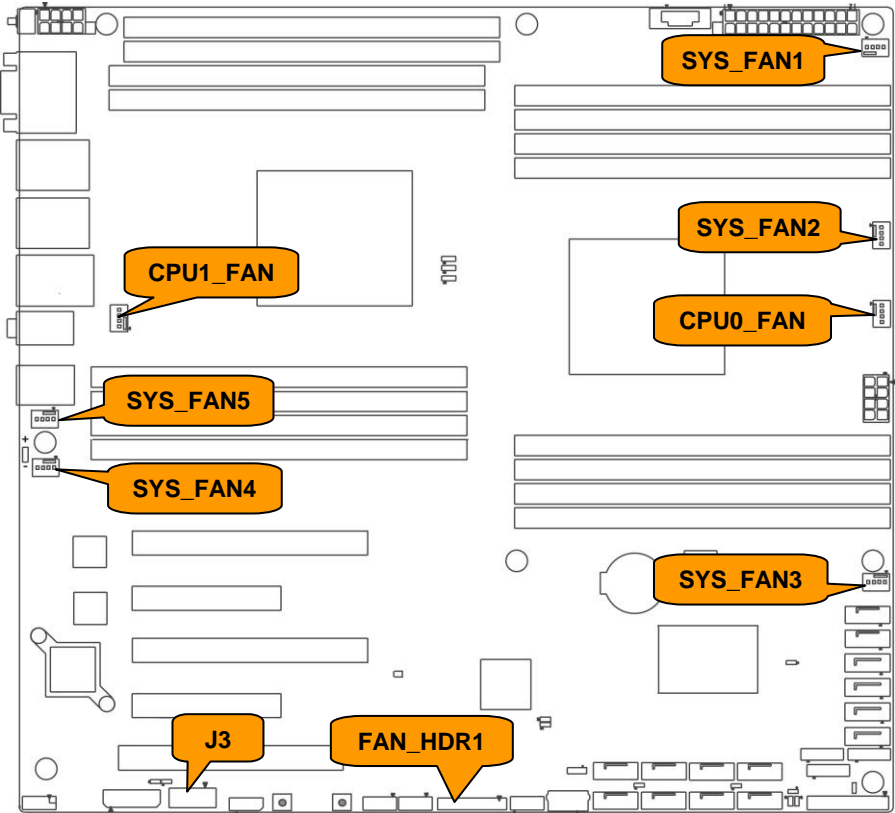
Jumpers & Connectors

Jumper/Connector	Function
SYS FAN1~5/CPU0~1FAN	4-pin Fan connector
FAN_HDR1	FAN Connector for Barebone
J3	COM2 Header
J175	Line-In Line-Out MIC
J176	Front Panel Audio
J177/ J178	1394 PIN HEADER
SW1	ID_LED Button 1
IPMB_1	IPMB Pin Header
PSMI 1	PSMI Connector
Clear BTN1	RTC reset button
FPIO_1	Front Panel Header
A_USB1	TYPE-A USB From PCH
USB1	Front USB Header
KEY1	Patsburg Upgrade ROM Header
2PHD_1	INTRUDER header
2PHD_2	I350_LAN0 LED Front Panel Pin
2PHD_3	I350_LAN1 LED Front Panel Pin
2PHD_4	ID LED Pin Header
2PHD_5	BMC RST header
3PHD_1 / 3PHD_2/3PHD_3	CPU XDP bypass Jump
3PHD_4	ME RECOVERY MODE Jump
3PHD_5	BIOS RECOVERY Jumper
3PHD_6 / 3PHD_7	COM Select
3PHD_8	BIOS Overwrite Jumper
3PHD_9	PCH Host SM_BUS header for ME Debug
3PHD_10	DIMM 1.5V/1.35V Jumper
4PHD_11	MB BEEP Disable header

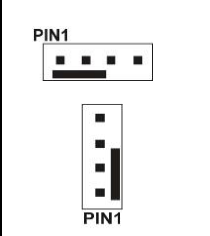
Jumper Legend

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

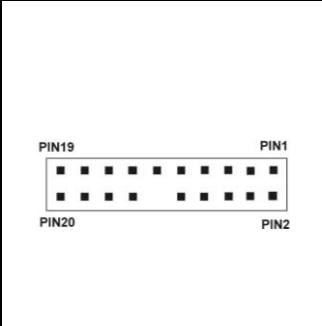
Jumper Placement



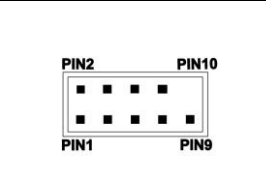
SYS FAN1~5/CPU0~1FAN : 4-Pin FAN Connector

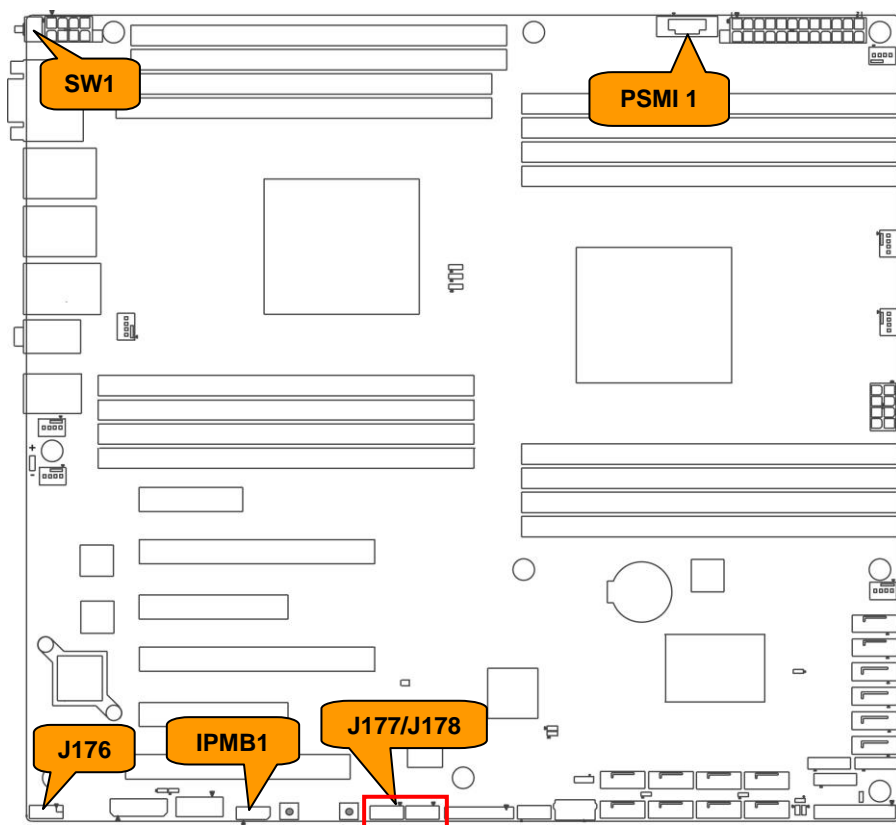
	Pin	1	2	3	4
	Signal	GND	P12V	FAN_TACH	FAN_PWM
	NOTE: Use this header to connect the cooling fan to your motherboard to keep the system stable and reliable.				

FAN_HDR1: FAN Connector for Barebone

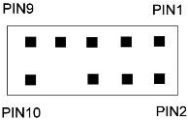
	Signal	Pin	Pin	Signal
	TACH1	1	2	TACH6
	TACH2	3	4	TACH7
	TACH3	5	6	TACH8
	TACH4	7	8	TACH9
	TACH5	9	10	TACH10
	GND	11	12	KEY
	PWM2	13	14	PWM1
	TACH11	15	16	SDA
	TACH12	17	18	SCL
	NC	19	20	PWM3

J3: COM2 Header

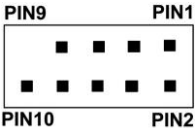
	Signal	Pin	Pin	Signal
	DCD	1	2	DSR
	RXD	3	4	RTS
	TXD	5	6	CTS
	DTR	7	8	RI
	GND	9	10	KEY



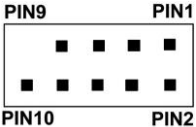
J176: Front Panel Audio

	Signal	Pin	Pin	Signal
	MIC2-L	1	2	GND
	MIC2-R	3	4	FP_Present
	LINE2-R	5	6	MIC2-JD
	FPIO Sense	7	8	Key
	LINE2-R	9	10	LINE2-JD

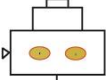
J177: 1394 PIN HEADER

	Signal	Pin	Pin	Signal
	XTP_A_P_0	1	2	XTP_A_N_0
	GND	3	4	GND
	XTP_B_P_0	5	6	XTP_B_N_0
	VCC	7	8	VCC
	KEY	9	10	GND


J178: 1394 PIN HEADER

	Signal	Pin	Pin	Signal
	XTP_A_P_1	1	2	XTP_A_N_1
	GND	3	4	GND
	XTP_B_P_1	5	6	XTP_B_N_1
	VCC	7	8	VCC
	KEY	9	10	GND


SW1: ID LED Switch Button

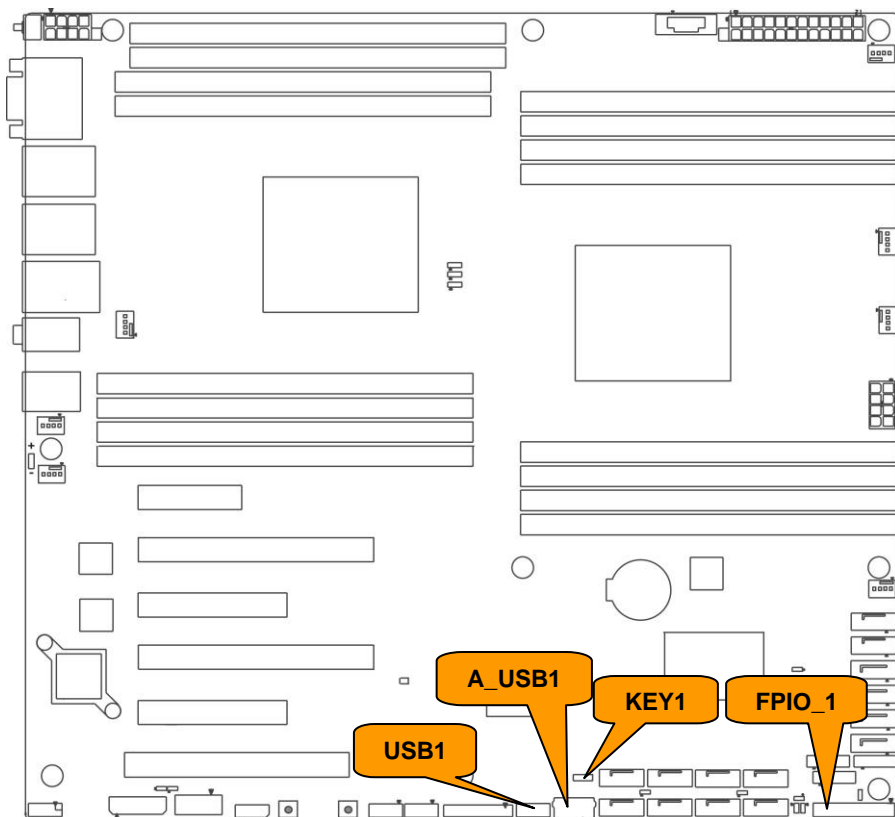
	Pin	1	2
	Signal	ID LED BTN	ID LED GND

IPMB_1: IPMB Pin Header

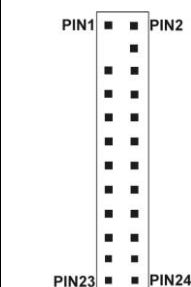
	Pin	1	2	3	4
	Signal	IPMB DATA	GND	IPMB CLK	NC

PSMI1: PSMI Connector


	Pin	1	2	3	4	5
	Signal	SMB_CLK	SMB_DAT	PSU Alert#	GND	3.3V Standby



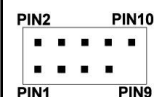
FPIO_1: Front Panel Header

		Signal	Pin	Pin	Signal
		PWRLED+	1	2	FP Power (3.3V)
		KEY	3	4	ID_LED+
		PWRLED-(GND)	5	6	ID_LED-(GND)
		HD_LED+	7	8	Fault LED1-
		HD_LED-	9	10	Fault LED2-
		Power Switch+	11	12	LAN1_ACTIVE_LED+
		GND	13	14	LAN1_ACTIVE_LED-
		Reset Switch+	15	16	SMB_DATA
		GND	17	18	SMB_CLK
		ID Switch+	19	20	INTRUSION#
		key	21	22	LAN2_ACTIVE_LED+
		NMI Switch#	23	24	LAN2_ACTIVE_LED-

A_USB1: Vertical TYPE-A USB From PCH

	Pin	1	2	3	4
	Signal	+5V	USB DATA2-	USB DATA2+	GND

USB1: Front USB Header

		Signal	Pin	Pin	Signal
		USB 5V Power	1	2	USB 5V Power
		USB DATA1-	3	4	USB DATA2-
		USB DATA1+	5	6	USB DATA2+
		GND	7	8	GND
		KEY	9	10	NC

KEY1: PCH DYNAMIC SKUING KEY For Upgrade ROM Module

<div><div>PIN 1</div><div><div></div><div></div><div></div></div></div>	Pin	1	2	3
	Signal	GND	FM_SAS_SW_RAID_KEY	GND

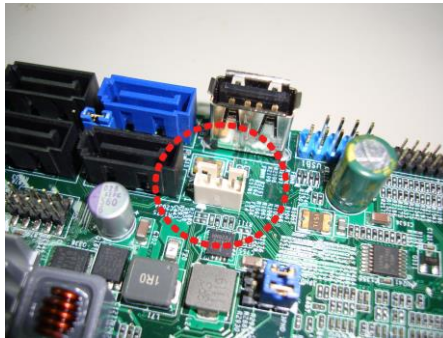
Patsburg Upgrade ROM Key Installation

Follow the steps described later to install the Patsburg Upgrade ROM Key.

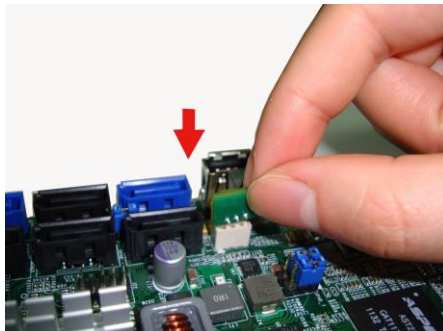
1. Take out the Patsburg Upgrade ROM Key.



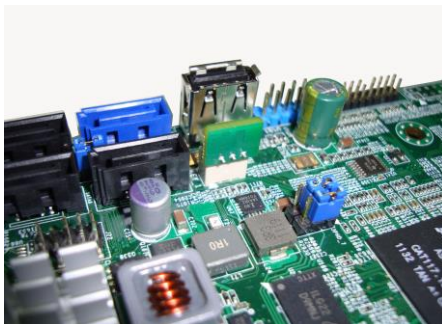
2. Locate the Patsburg Upgrade ROM Header.

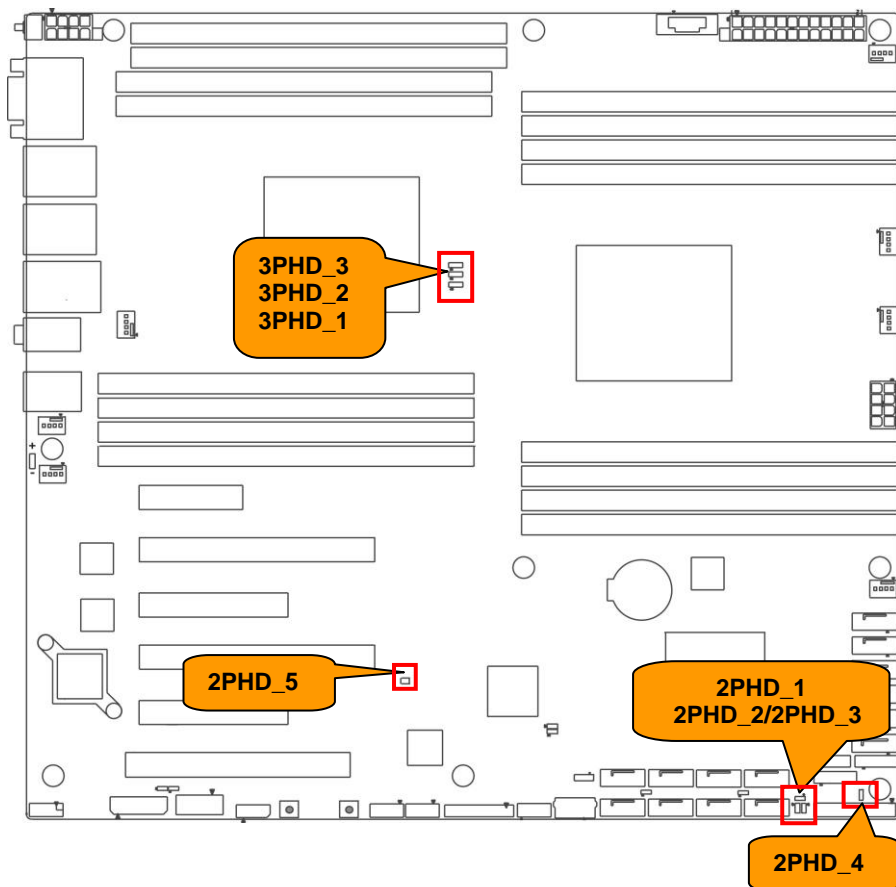


3. Insert the Upgrade ROM Key in the direction as the arrow shows.




4. You have completed the Patsburg Upgrade ROM Key installation.







2PHD_1: INTRUDER Header

	Pin	Signal
	1	PCH_INTRUDER_N
	2	GND


2PHD_2: Powerville LED Pin Header

	Pin	Signal
	1	HD_LAN0_ACT_N
	2	PV_LAN0_LINKUP_N


2PHD_3: Powerville LED Pin Header

	Pin	Signal
	1	HD_LAN1_ACT_N
	2	PV_LAN1_LINKUP_N

2PHD_4: ID LED Pin Header

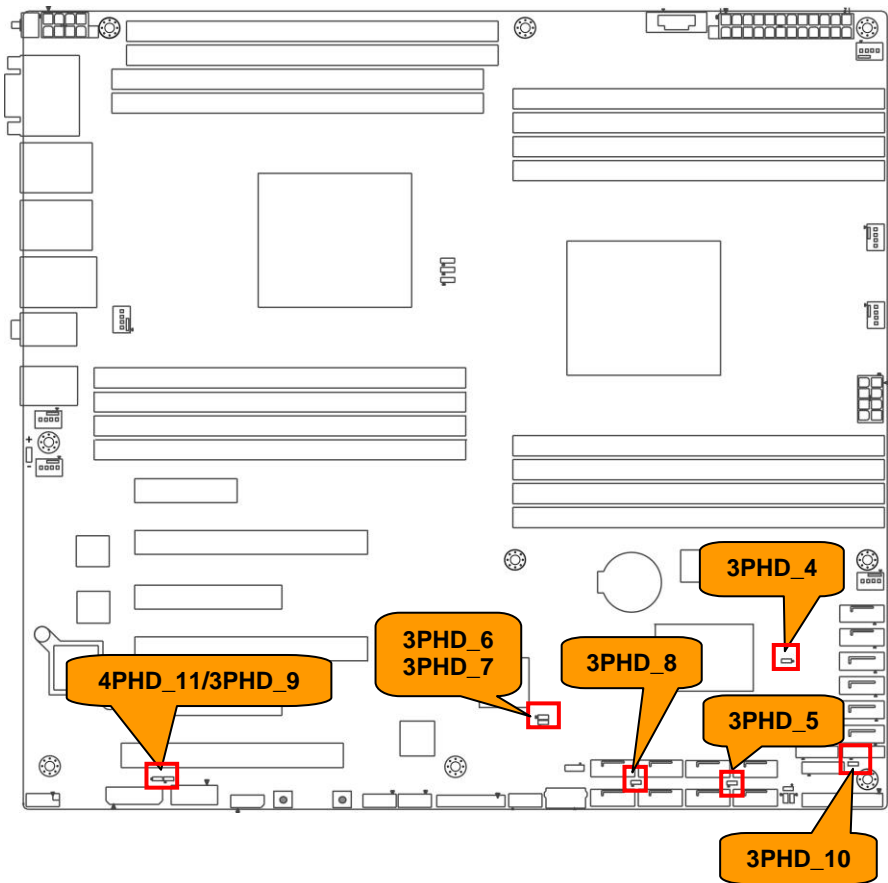
	Pin	Signal
	1	FP_IDLELED_BTN_N
	2	GND

2PHD_5: BMC RST Header



	Pin	Signal
	1	BMC_RST#
	2	GND
NOTE: Open (Default) Use this header to RESET BMC		

3PHD_1 / 3PHD_2 / 3PHD_3: CPU XDP bypass Jump



PIN 1	Pin	1	2	3																
	Signal	CPU0_TDO O	XDP_TDO	CPU1_TDO																
<table><tr><td>Default: Only CPU0</td><td>3PHD_1</td><td>3PHD_2</td><td>3PHD_3</td></tr><tr><td>Only CPU0 Installed</td><td>1-2</td><td>1-2</td><td>1-2</td></tr><tr><td>Only CPU1 Installed</td><td>2-3</td><td>2-3</td><td>1-2</td></tr><tr><td>Both CPU Installed</td><td>1-2</td><td>2-3</td><td>2-3</td></tr></table>					Default: Only CPU0	3PHD_1	3PHD_2	3PHD_3	Only CPU0 Installed	1-2	1-2	1-2	Only CPU1 Installed	2-3	2-3	1-2	Both CPU Installed	1-2	2-3	2-3
Default: Only CPU0	3PHD_1	3PHD_2	3PHD_3																	
Only CPU0 Installed	1-2	1-2	1-2																	
Only CPU1 Installed	2-3	2-3	1-2																	
Both CPU Installed	1-2	2-3	2-3																	




3PHD_4: ME RECOVERY MODE Jump

Pin	1	2	3
Signal	NC	FM_ME_RCVR_N	GND
 Normal (Default)	1-2: Normal Mode (Default)		
 ME Recovery	2-3: ME Inforce Update Mode		


3PHD_5: BIOS RECOVERY Jumper

Pin	1	2	3
Signal	NC	BIOS_RCVR_BOOT_N	GND
 Normal (Default)	1-2: Normal Mode (Default)		
 ME Recovery	2-3: BIOS Recovery mode		


3PHD_6: COM Select

PIN 1	Pin	1	2	3
	Signal	BMC_COM2_RXD	RXD_2	BMC_COM5_RXD
NOTE: 1-2: BMC UART2 to COM2 (default) 2-3: BMC UART5 to COM2				


3PHD_7: COM Select

PIN 1	Pin	1	2	3
	Signal	BMC_COM2_TXD	COM_RX	RXD5
NOTE: 1-2: BMC UART2 to COM2 (Default) 2-3: BMC UART5 to COM2				


3PHD_8: BIOS Overwrite Jumper

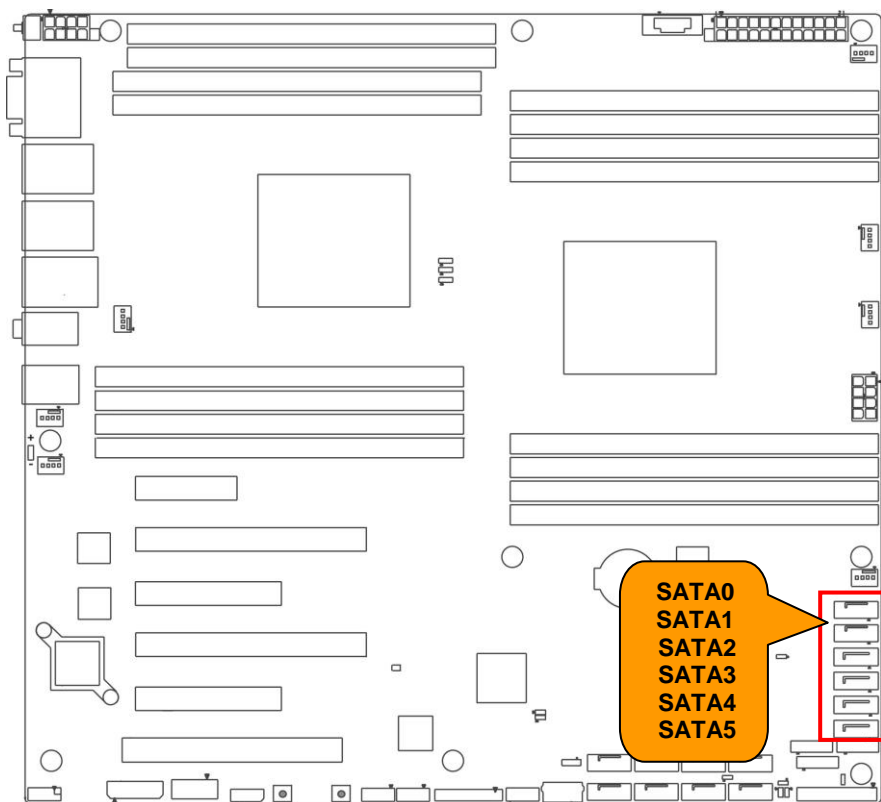
PIN 1 	Pin	1	2	3
	Signal	NC	MFG_MODE_N	GND
NOTE: 1-2: Normal (Default) 2-3: ME Block can be flash)				

3PHD_10: DIMM 1.5V/1.35V Jumper

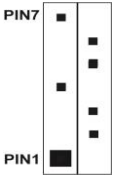
PIN 1 	Pin	1	2	3
	Signal	NC	PCH_MEM_P1_35V_EN_N	GND
NOTE: 1-2: 1.5V (Default) 2-3: 1.35V				

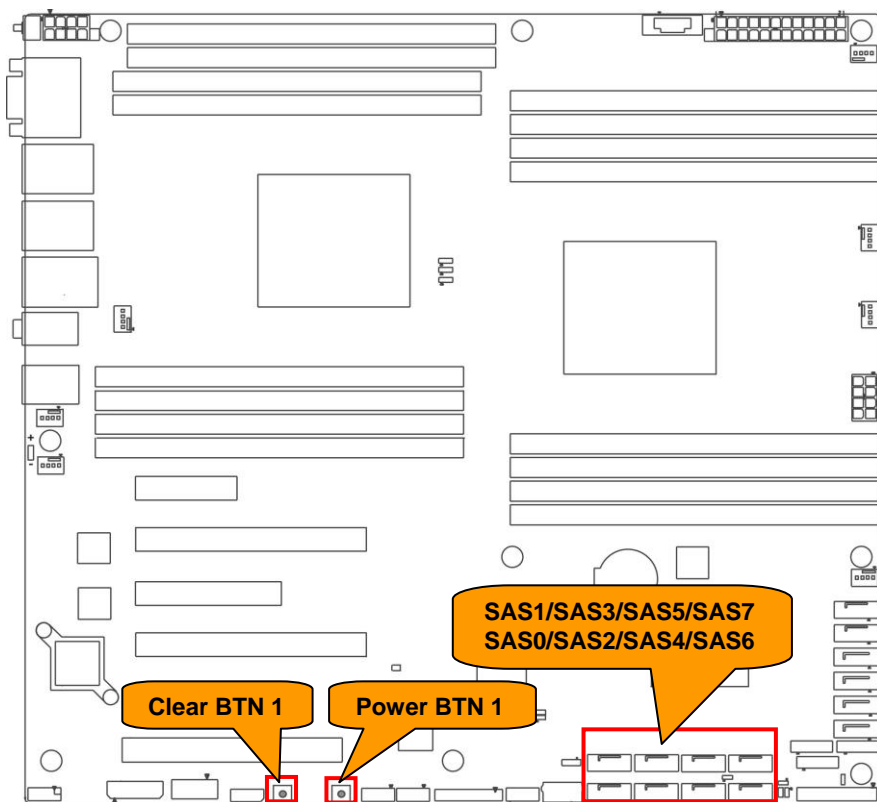
4PHD_11: MB Buzzer Disable Jumper

 PIN1	Pin	1	2	3	4
	Signal	VCC5	NC	BUZ_1	BUZ_2
NOTE: 1-4: Use the external speaker 2-3: Disable PC Beep 3-4: Normal Mode (Default)					

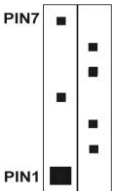



SATA0~SATA5: SATA Connector



 <p>PIN7</p> <p>PIN1</p>	7	GND	<p>Connects to the Serial ATA ready drives via the Serial ATA cable.</p> <p>SATA1/SATA2:Support SATAII SATA3/SATA4/SATA5/SATA6:SATAIII</p>
	6	SATA RX DP	
	5	SATA RX DN	
	4	GND	
	3	SATA TX DN	
	2	SATA TX DP	
	1	GND	





SAS0~SAS7: SAS Connector

 <p>PIN7</p> <p>PIN1</p>  <p>PIN7</p> <p>PIN1</p>	7	GND	Connects to the SATA ready drives via the SATA cable.
	6	SATA RX DP	
	5	SATA RX DN	
	4	GND	
	3	SATA TX DN	
	2	SATA TX DP	
	1	GND	


Power BTN1: Power Button

 Normal (Default)	You can Power the system by press the button.
 Power On	

Clear BTN1: Clear CMOS

 Normal (Default)	You can reset the CMOS settings by press this button once. This can be useful if you have forgotten your system/setup password, or need to clear the system BIOS setting. <ol style="list-style-type: none">1. Power off system and disconnect power connectors from the motherboard.2. Press the button to clear CMOS.3. Reconnect power connectors to the motherboard and power on system.
 Clear CMOS	

Onboard ID LED

	Pin	Signal	
	+	V3AUX	
	-	GND	
	State	Color	Description
	On	Blue	System identified
	Off	Off	System not identified
NOTE: You can identify the specific system using this LED. Users from remote site could also activate ID LED by input a few commands in IPMI, detailed software support please visit http://www.tyan.com for latest AST2300 user guide.			

2.4 - Installing the Processor

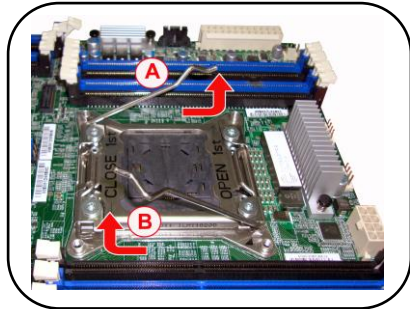
Your brand new S7050, Only Intel® “Sandy Bridge series” processors are certified and supported with this motherboard. Check our website for latest processor support. <http://www.tyan.com>

NOTE: TYAN® is not liable for damage as a result of operating an unsupported configuration.

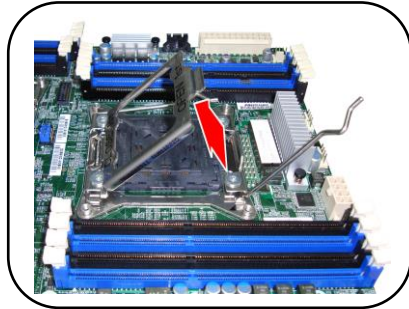
Locate the CPU socket (LGA 2011) on the motherboard:

To install a CPU:

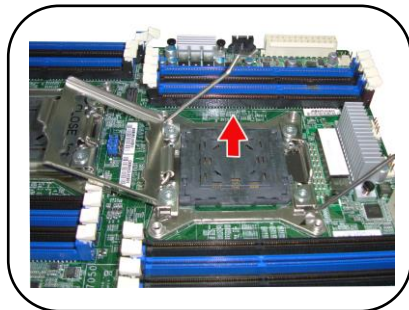
1. Press the load lever (A) hard with your thumb first, move it to the right. Then press the load lever(B) and move it to the left until the load plate is released from the retention tab.



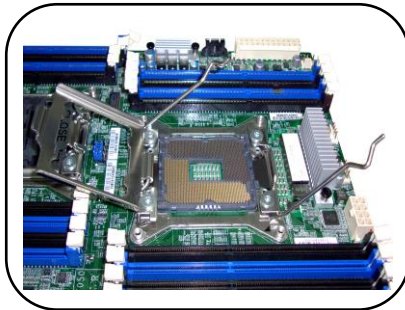
2. Lift the load plate in the direction of the arrow until it is fully opened.



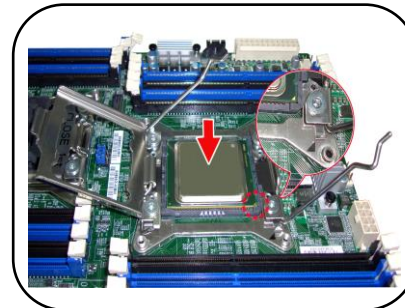
3. Remove the PnP cap from the CPU socket.



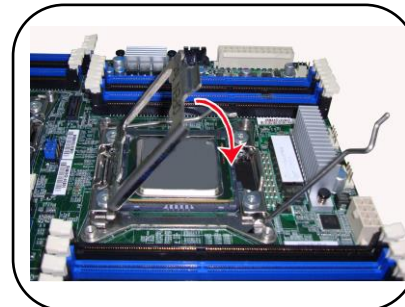
4. Please refer to the image.



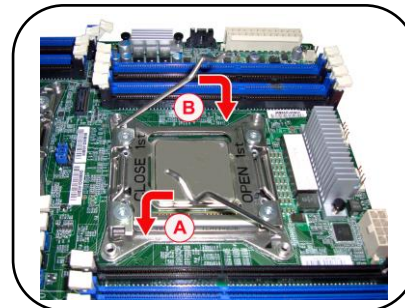
5. Position the CPU over the socket, ensuring that the gold triangle is on the bottom-left corner of the socket, and then fit the socket alignment keys into the CPU notches.

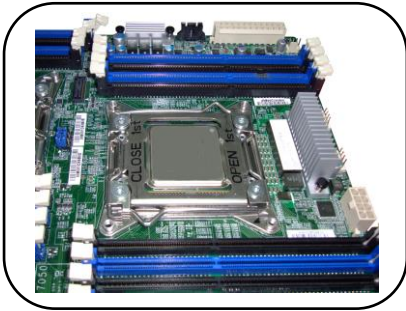


6. Close the load plate, ensuring that the front edge of the load plate slides under the retention lever.



7. Insert the load lever under the retention tab.





Cautions: The CPU fits in only one correct orientation. Do not force the CPU into the socket to prevent bending the connectors on the socket and damaging the CPU.

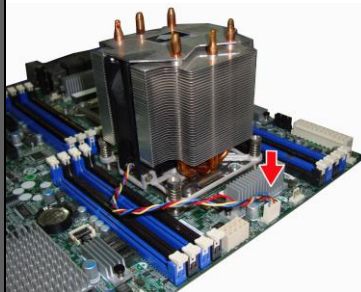
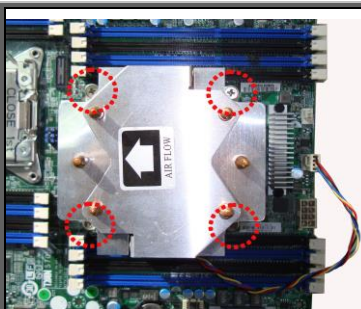
2.5 - Installing the Heatsink

Heatsink Installation

After installing the processor, you should proceed to install the heat sink. The CPU heat sink will ensure that the processor do not overheat and continue to operate at maximum performance for as long as you own them. The overheated processor is dangerous to the motherboard.

For the safest method of installation and information on choosing the appropriate heat sink, using heat sinks validated by Intel®. Please refer to Intel®'s website at www.intel.com.

The following diagram illustrates how to install heat sink onto the CPU of S7050.

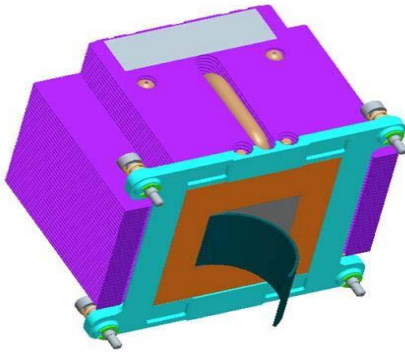


4U Reference Heatsink Assembly

1. If a protective film covers the thermal interface material (TIM) on the underside of the heatsink, remove the protective film.
2. Align heatsink fins to the front and back of the chassis for correct airflow. Airflow goes from front-to-back of chassis.
3. Each heatsink has four captive fasteners and should be tightened as shown
4. Using a #2 Phillips* screwdriver, finger-tighten each fastener diagonally, according to the white-circled numbers.
5. Securely re-tighten each fastener again in the same order as performed in Step 4.
6. Attach fan power cable to server board as shown.
7. Reinstall and reconnect any parts you removed or disconnected to reach the processor sockets.
8. Replace the server's cover and reconnect the AC power cord. Refer to the documentation that came with your server chassis for instructions on installing the server's cover.

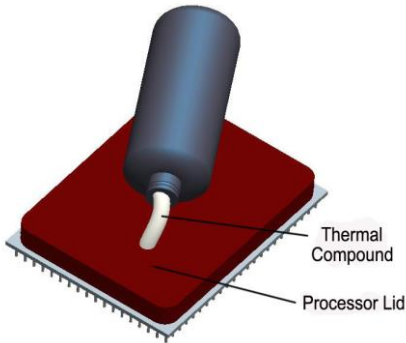
Caution: CPU heat sink will ensure that the processor will not overheat and continue to operate at maximum performance for as long as you own them. The overheated processor is dangerous to the motherboard.

2.6 - Thermal Interface Material



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

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



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

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

2.7 - Tips on Installing Motherboard in Chassis

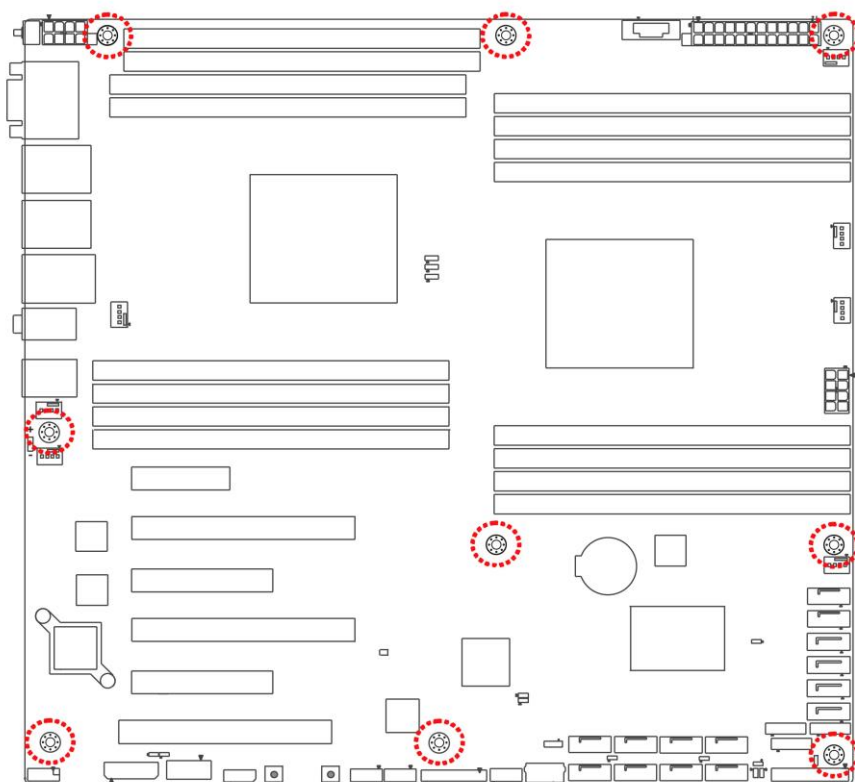
Before installing your motherboard, make sure your chassis has the necessary motherboard support studs installed. These studs are usually metal and are gold in color. Usually, the chassis manufacturer will pre-install the support studs.

Screw holes

If you are unsure of stud placement, simply lay the motherboard inside the chassis and align the screw holes of the motherboard to the studs inside the case.

Place 9 screws into the holes indicated by circles to secure the mother board to the chassis.

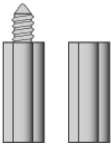

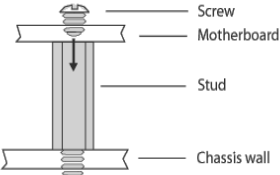
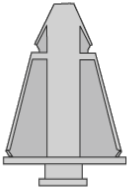
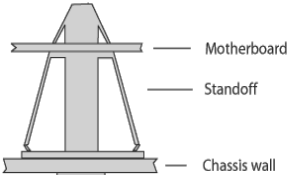
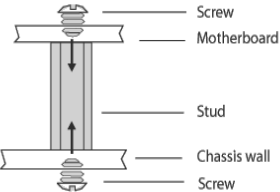
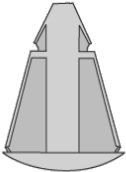
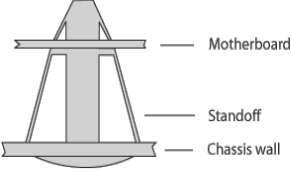
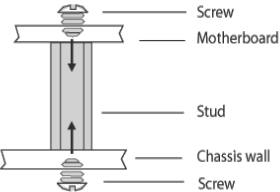
CAUTION : DO NOT overtighten the screws! Doing so can damage the motherboard.



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

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

Mounting the Motherboard

Type	Solutions for installing	
		
		
		

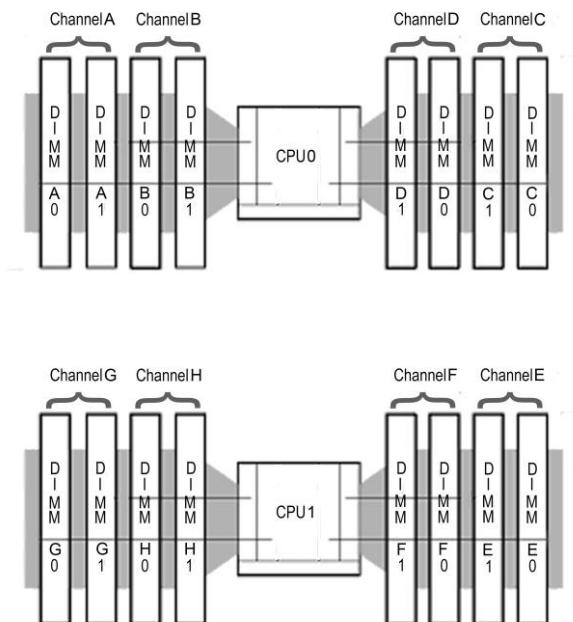
2.8 - Installing the Memory

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

Overview

The motherboard comes with four Double Data Rate 3 (DDR3) Dual Inline Memory Modules (DIMM) sockets.

The figure illustrate the location of the DDR3 DIMM socket.



- Sandy Bridge-EP/EX processor supports 4 DDR3 channels
- Unbuffered DDR3 and registered DDR3 DIMMs
- LR DIMM (Load Reduced DIMM) for buffered memory solutions demanding higher capacity memory subsystems
- Memory DDR3 data transfer rates of 800, 1066, 1333, and 1600 MT/s
- All installed memory will automatically be detected and no jumpers or settings need changing.
- All memory must be of the same type and density.
- Always populate the memory starting from DIMMA0 first.

Recommended Memory Population Table

To achieve the best performance, TYAN® strongly recommended memory installation configuration as listed below:

	Single CPU Installed (CPU0 only)						Dual CPU installed (CPU0 and CPU1)										
Quantity of memory installed	1	2	3	4	6	8	2	3	4	5	6	7	8	10	12	14	16
CPU0_DIMMD0				√	√	√						√	√	√	√	√	√
CPU0_DIMMD1						√									√	√	√
CPU0_DIMMC0			√	√	√	√				√	√	√	√	√	√	√	√
CPU0_DIMMC1						√									√	√	√
CPU0_DIMMB0		√	√	√	√	√		√	√	√	√	√	√	√	√	√	√
CPU0_DIMMB1					√	√								√	√	√	√
CPU0_DIMMA0	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
CPU0_DIMMA1					√	√								√	√	√	√
CPU1_DIMMH0													√	√	√	√	√
CPU1_DIMMH1																	√
CPU1_DIMMG0											√	√	√	√	√	√	√
CPU1_DIMMG1																	√
CPU1_DIMMF0									√	√	√	√	√	√	√	√	√
CPU1_DIMMF1																√	√
CPU1_DIMME0							√	√	√	√	√	√	√	√	√	√	√
CPU1_DIMME1																√	√

1. √ indicates a populated DIMM slot.

2. Paired memory installation for Max performance.

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

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

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

5. Un-buffered DIMM can offer slightly better performance than registered DIMM if populating only a single DIMM per channel

6. We don't suggest other memory installation

Intel® Xeon® processor E5-2600/4600 product families UDIMM Support

Ranks Per DIMM & Data Width	Memory Capacity per DIMM			1.35V		1.50V	
				1DPC	2DPC	1DPC	2DPC
SRx8 Non-ECC	1 GB	2GB	4GB	N/A	N/A	1066, 1333	1066, 1333
DRx8 Non-ECC	2GB	4GB	8GB	N/A	N/A	1066, 1333	1066, 1333
SRx16 Non-ECC	512 MB	1GB	2GB	N/A	N/A	1066, 1333	1066, 1333
SRx8 ECC	1GB	2GB	4GB	1066	1066	1066, 1333	1066, 1333
DRx8 ECC	2GB	4GB	8GB	1066	1066	1066, 1333	1066, 1333

NOTE 1: The blue blocks indicate that the DRAM Densities are supported but not validated.

NOTE 2: The grey blocks indicate that the DRAM Densities are supported and validated.

NOTE 3: 1DPC => One dimm per channel

NOTE 4: 2DPC => Two dimm per channel

- Supported DRAM Densities are 1Gb, 2Gb and 4Gb. Only 2Gb and 4Gb are validated by Intel.
- Command Address Timing is 1N for 1DPC and 2N for 2DPC.
- Romley-EP/EX platform does not support 3DPC when using UDIMMs.

Intel® Xeon® processor E5-2600/4600 product families LRDIMM Support


Ranks Per DIMM & Data Width	Memory Capacity per DIMM		1.35V		1.50V	
			1DPC	2DPC	1DPC	2DPC
QRx4 (DDP)	16GB	32GB	1066	1066	1066, 1333	1066, 1333
QRx8 (P)	8GB	16GB	1066	1066	1066, 1333	1066, 1333


NOTE:  The blue blocks indicate that the DRAM Densities are supported and not validated.


- Physical Rank is used to calculate DIMM Capacity.
- Supported and validated DRAM Densities are 2Gb and 4Gb.
- Command Address Timing is 1N.
- The speeds are estimated targets and will be verified through simulation.
- For 3SPC/3DPC -Rank Multiplication (RM) >= 2.
- DDP -Dual Die Package DRAM stacking. P –Planer monolithic DRAM Die.
- Romley-EP/EX platform does not support 3DPC when using E5-2400 LRDIMMs.

Intel® Xeon® processor E5-2600/4600 product families RDIMM Support

Ranks Per DIMM & Data Width	Memory Capacity per DIMM			1.35V		1.50V	
				1DPC	2DPC	1DPC	2DPC
SRx8	1GB	2GB	4GB	1066, 1333	1066, 1333	1066, 1333, 1600	1066, 1333, 1600
DRx8	2GB	4GB	8GB	1066, 1333	1066, 1333	1066, 1333, 1600	1066, 1333, 1600
SRx4	2GB	4GB	8GB	1066, 1333	1066, 1333	1066, 1333, 1600	1066, 1333, 1600
DRx4	4GB	8GB	16GB	1066, 1333	1066, 1333	1066, 1333, 1600	1066, 1333, 1600
QRx4	8GB	16GB	32GB	800	800	1066	800
QRx8	4GB	8GB	16GB	800	800	1066	800

NOTE 1:  The blue blocks indicate that the DRAM Densities are supported but not validated.

NOTE 2:  The grey blocks indicate that the DRAM Densities are supported and validated.

NOTE 3:  The yellow blocks indicate that the DRAM Densities are supported with limited validated.

- Supported DRAM Densities are 1Gb, 2Gb and 4Gb. Only 2Gb and 4Gb are validated by Intel.
- Command Address Timing is 1N.
- QR RDIMM are supported but not validated by Intel/PMO in a homogenous environment. The coverage will have limited system level testing, no signal integrity testing, and no interoperability testing. The passing QR RDIMMs will be web posted.

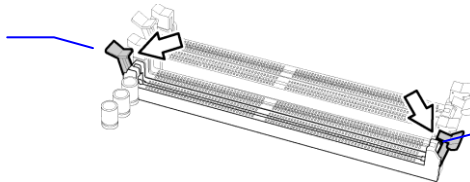
Memory Installation Procedure

Caution: Ensure to unplug the power supply before adding or removing DIMMs, or other system components, Failure to do so may cause severe damage to both the motherboard and the components.

Follow these instructions to install memory modules into the S7050.

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

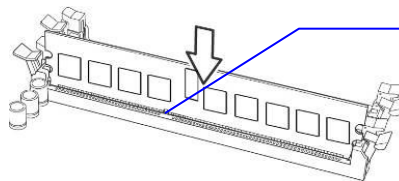
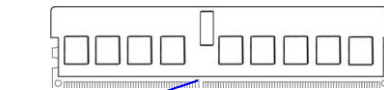
Unlocked
retaining
clip



Unlocked
retaining
clip

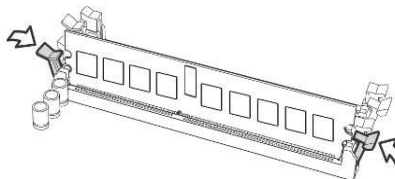
2. Align the memory module with the socket, such that the DIMM NOTCH match the KEY SLOT on the socket.

DIMM NOTCH



KEY SLOT

3. Hold the DIMM by both of its ends. Insert the module vertically into the socket. Apply force to both ends of the DIMM simultaneously until the retaining clip pop up into place. And the DIMM cannot be pushed in any further to ensure proper sitting of the DIMM.



2.9 - Attaching Drive Cables

Attaching Serial ATA Cables

S7050 is equipped with 6 Serial ATA (SATA) channels. Connections for the drives are very simple. There is no need to set Master/Slave jumpers on SATA drives. If you are in need of SATA/SAS cables or power adapters please contact your place of purchase.

The following pictures illustrate how to connect an SATA drive



2.10 - Installing Add-In Cards

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

PCI-E x 16 slot (w/ x16 link from CPU0 or w/ X8 link from CPU0)



PCI-E x 8 slot (w/ x8 link from CPU0 or No function)



PCI-E x 4 slot (w/ x4 link from CPU0)



PCI slots



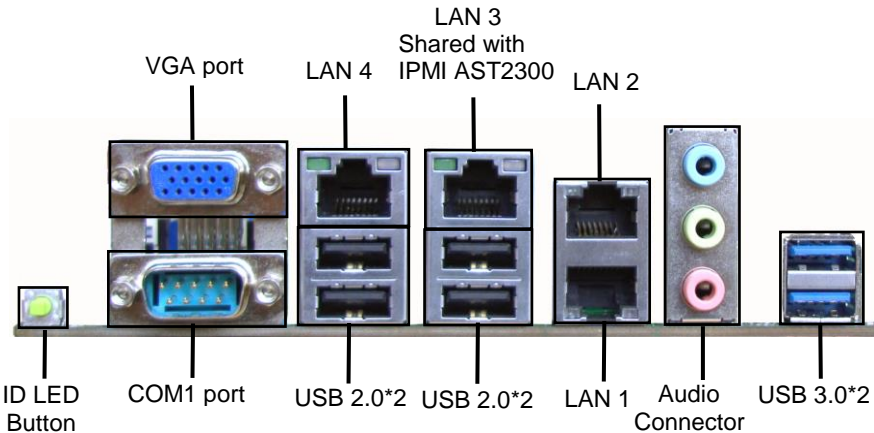
Simply find the appropriate slot for your add-in card and insert the card firmly. Do not force any add-in cards into any slots if they do not seat in place. It is better to try another slot or return the faulty card rather than damaging both the motherboard and the add-in card.

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

NOTE: YOU MUST ALWAYS unplug the power connector to the motherboard before performing system hardware changes to avoid damaging the board or expansion device.

2.11 - Connecting External Devices

Your motherboard supports a number of different interfaces through connecting peripherals. See the following diagrams for the details.




S7050WAGM4NRF

	PXE BOOT Sequence	BIOS definition
LAN1	#4	Intel I350 PORT0
LAN2	#1	Intel I350 PORT1
LAN3	#2	Intel 82574L LAN0
LAN4	#3	Intel 82574L LAN1

NOTE: Peripheral devices can be plugged straight into any of these ports but software may be required to complete the installation.

Onboard LAN LED Color Definition


The three onboard Ethernet ports have green and amber LEDs to indicate LAN status. The chart below illustrates the different LED states.

10/100/1000 Mbps LAN Link/Activity LED Scheme			
<div><div>LEFT</div><div>RIGHT</div></div>		Left LED	Right LED
10 Mbps	Link	Green	Off
	Active	Blinking Green	Off
100 Mbps	Link	Green	Solid Green
	Active	Blinking Green	Solid Green
1000 Mbps	Link	Green	Solid Amber
	Active	Blinking Green	Solid Amber
No Link		Off	Off


2.12- Installing the Power Supply

There are **four** power connectors on your S7050. It is required that you have an **EPS12V** power supply has one 24-pin and two 8-pin connectors.


PW1: 24-Pin 12V main PWR Connector (Input)

	Signal	Pin	Pin	Signal
	+3.3V	1	2	+3.3V
	GND	3	4	+5V
	GND	5	6	+5V
	GND	7	8	PWR OK
	5VSB	9	10	+12V
	+12V	11	12	+3.3V
	+3.3V	13	14	-12V
	GND	15	16	PS_ON#
	GND	17	18	GND
	GND	19	20	Reserve
	+5V	21	22	+5V
	+5V	23	24	GND

PW2/PW3: 8-Pin PWR Connector

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

PW4: 4-Pin PWR Connector

	Signal	Pin	Pin	Signal
	+12V	1	2	GND
	GND	3	4	+5V

NOTE: The PW4 is reserved for PCIE slot 12V supplement if the PCIE card and the MB FAN's 12V power consumption exceed the maximum 12V out of PSU's PW1.

Apply power to the motherboard:

1. Connect to the EPS12V 24 pin Power Connector
2. Connect to the EPS12V 8 pin Power Connector
3. Connect power cable to Power Supply and power outlet.

Look to the www.TYAN.com website for further information.

NOTE: YOU MUST unplug the power supply before plugging the power cables to motherboard connectors.

2.13 - Finishing Up

Congratulations on making it this far! You're finished setting up the hardware aspects of your computer. Before closing up your chassis, make sure that all cables and wires are connected properly, especially power cables and most importantly jumpers. You may have difficulty powering on your system if the motherboard jumpers are not set correctly. In the rare circumstance that you have experienced difficulty, you can find help by asking your vendor for assistance. If they are not available for assistance, please find setup information and documentation online at our website or by calling your vendor's support line.

Chapter 3: BIOS Setup

3.1 - 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 during POST (<Tab> on remote console) to start the BIOS setup utility.**

3.2 - Setup Basics

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

Key	Function
<F1>	General help window
<ESC>	Exit current menu
← → arrow keys	Select a different menu
↑ or ↓ arrow keys	Move cursor up/down
<Tab> / <Shift-Tab>	Cycle cursor up/down
<Home> / <End>	Move cursor to top/bottom of the window
<PgUp> / <PgDn>	Move cursor to next/previous page
<->	Select the previous value/setting of the field
<+>	Select the next value/setting of the field
<F8>	Load Fail Safe default configuration values of the menu
<F3>	Load the Optimal default configuration values of the menu
<F4>	Save and exit
<Enter>	Execute command or select submenu

3.3 - Getting Help

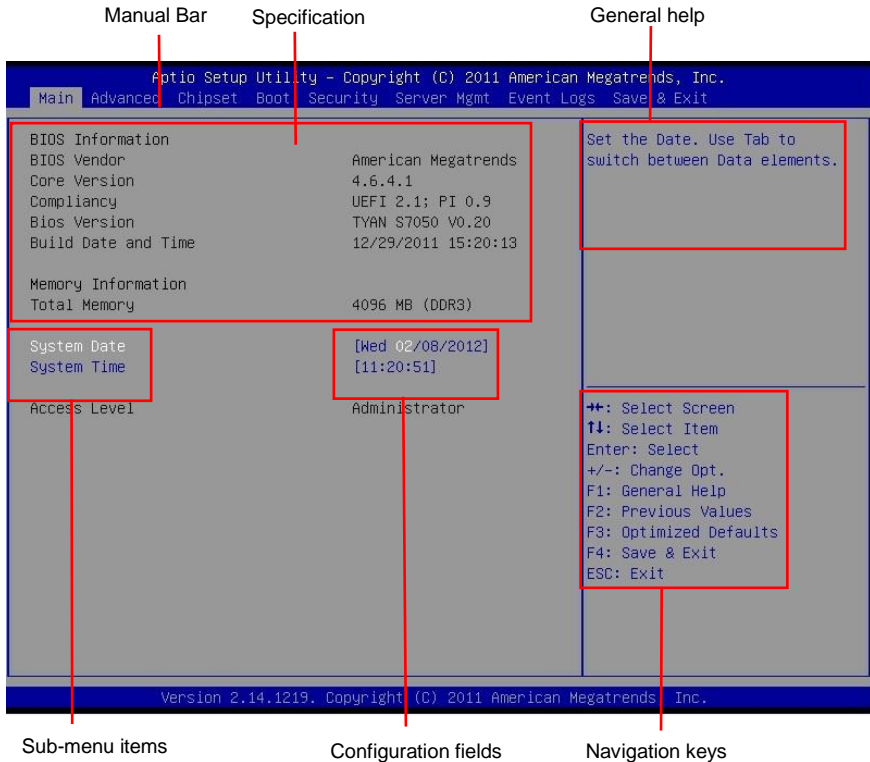
Pressing [F1] will display a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window, press [ESC].

3.4 - 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 TYAN® 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.

NOTE: The following pages provide the details of BIOS menu. Please be noticed that the BIOS menu are continually changing due to the BIOS updating. The BIOS menu provided are the most updated when this manual is written. Please visit TYAN®'s website at <http://www.TYAN.com> for the information of BIOS updating.

3.5 - BIOS Main Menu



BIOS Information

Displays BIOS related information.

Memory Information

Displays total memory size.

System Date (Day mm/dd/yyyy)

System Time (hh:mm:ss)

Allow user to set system time and date.

The Time is displayed in 24 hours format.

The Date can be set from January 1st, 2005 to December 31, 2099

The values set in these two fields take effect immediately.

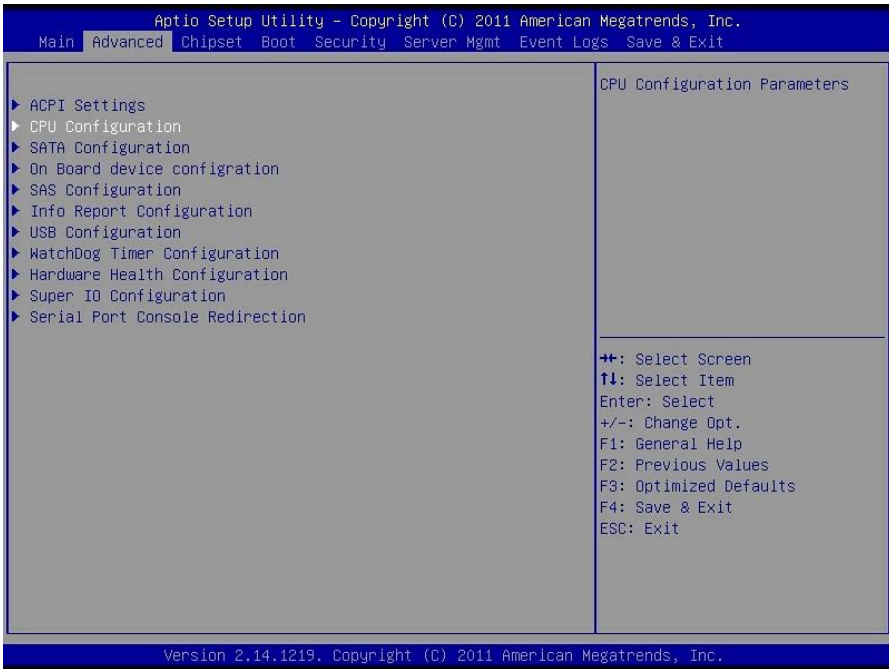
3.5.1 Manual Bars

Main	For changing the basic system configuration
Advanced	For changing the advanced system settings
Chipset	For customize the Intel chipset function
Boot	For changing the system boot configuration
Security	For setting the Supervisor and User passwords
Server Mgmt	For changing the server management
Event Logs	For record the system Event Logs
Save & Exit	For selecting the exit options and loading default settings

NOTE: The Main BIOS Menu is the first screen that you can navigate which has two main frames. The left frame displays all the options that can be configured. "Grayed-out" options cannot be configured, options in blue can be changed. The right frame displays the key legend. Above the key legend is an area reserved for a text message. When an option is selected in the left frame, it is highlighted in white. Often, a text message will accompany it.

3.6 - BIOS Advanced Menu

This section facilitates configuring advanced BIOS options for your system.



ACPI Settings

Selection for Advanced ACPI Configuration.

CPU Configuration

CPU Configuration Parameters.

SATA Configuration

This menu helps you to set up or change the SATA Configuration.

Onboard Device Configuration

Configure Onboard Devices

SAS Configuration

SAS Devices Configuration.

Info Report Configuration

Info report configure

USB Configuration

Configure the USB support

Watchdog Timer Configuration

Configure watchdog Timer

Hardware Health Configuration

IPMI configuration including server monitoring and event log

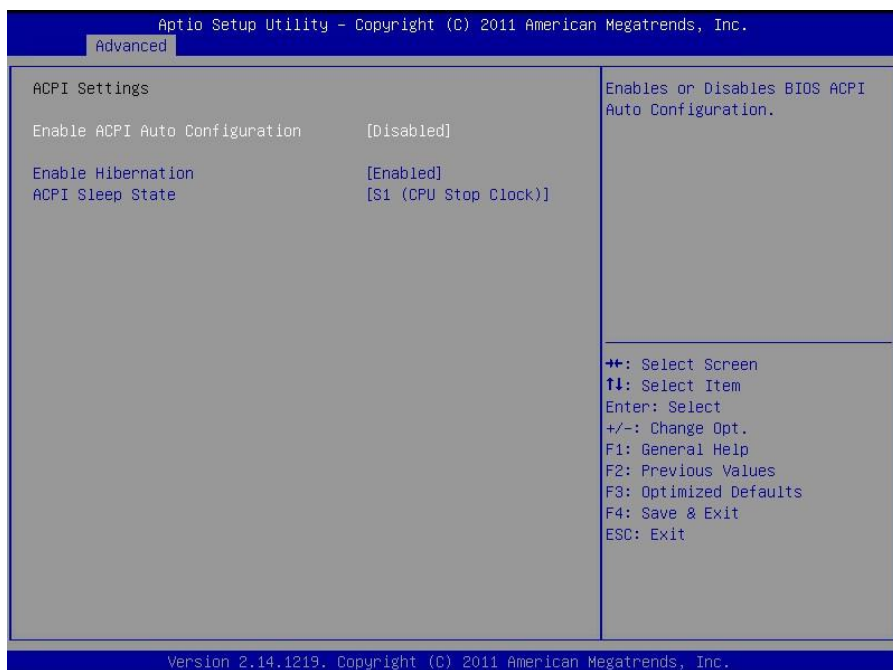
Super IO Configuration

Configures Super IO

Serial Port Console Redirection

Redirect Serial Port Console

3.6.1 - ACPI Setting



Enable ACPI Auto Configuration

Enables or Disables BIOS ACPI Auto Configuration

[Disabled]/[Enabled]

Default is [Disabled]

Enable Hibernation

[Disabled]/[Enabled]

Default is [Enabled]

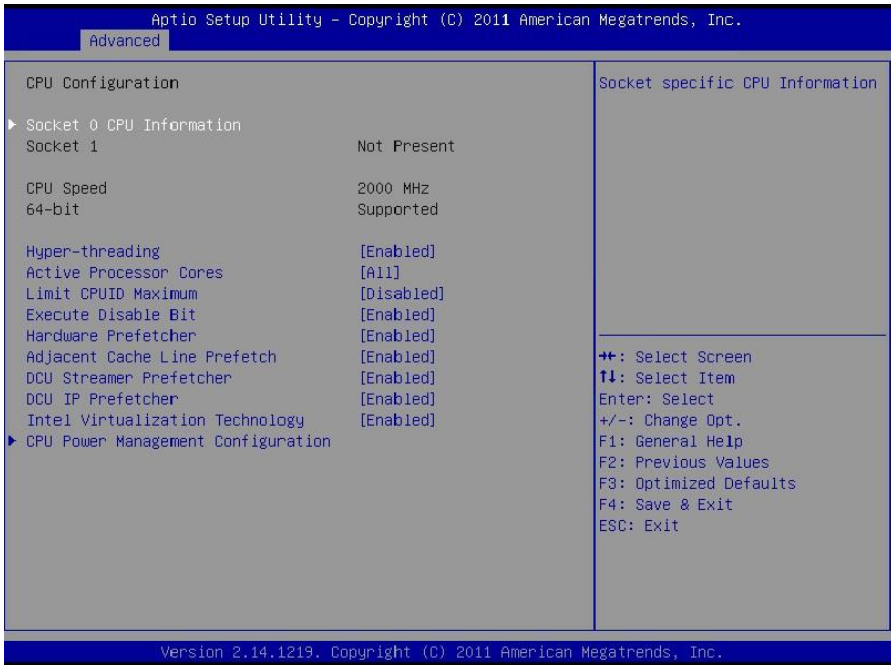
ACPI Sleep State

[Suspend Disabled]/[S1 (CPU Stop Clock)]

Default is [S1 (CPU Stop Clock)]

3.6.2 - CPU Configuration

This section allows you to fine-tune the processor options.



Hyper- threading

This option enable for Windows XP and Linux (OS optimized for Hyper- threading Technology).

And Disabled for other (OS not optimized for Hyper-threading Technology).

[Disabled]/[Enabled]

Default is [Enabled]

Active Processor Cores

[All]/[1]/[2]/[3]/[4]/[5]/[6]/[7]

Default is [All]

Limit CPUID Maximum

[Disabled]/[Enabled]

Default is [Disabled]

Execute Disable Bit

[Disabled]/[Enabled]

Default is [Enabled]

Hardware prefetcher

[Disabled]/[Enabled]

Default is [Enabled]

Adjacent Cache Line Prefetch

[Disabled]/[Enabled]

Default is [Enabled]

DCU Streamer Prefetcher

Enable prefetch of next L1 Data line based upon multiple loads in same cache line.

[Disabled]/[Enabled]

Default is [Enabled]

DCU IP Prefetcher

Enable prefetch of next L1 line based upon sequential load history.

[Disabled]/[Enabled]

Default is [Enabled]

Intel Virtualization Technology

When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.

NOTE: Once the lock bit is set, the contents of this register can not be modified until S5 reset occurs.

[Disabled]/[Enabled]

Default is [Enabled]

3.6.2.1 - CPU Power Management Configuration

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.		
Advanced		
CPU Power Management Configuration		Enable the power management features.
Power Technology	[Custom]	
EIST	[Enabled]	
Turbo Mode	[Enabled]	
P-STATE Coordination	[HW_ALL]	
CPU C3 Report	[Disabled]	
CPU C6 report	[Enabled]	
CPU C7 report	[Disabled]	
Package C State limit	[No Limit]	
Energy Performance	[Balanced Performance]	
Factory long duration power limit	95 Watts	
Long duration power limit	0	
Factory long duration maintained	10 s	
Long duration maintained	0	
Recommended short duration power 1	1.2 * Long Duration	
Short duration power limit	0	
		++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.		

Power Technology

[Disable]/[Energy Efficient]/[Custom]

Default is [Custom]

EIST

Enable/Disable Intel StepSpeed.

[Disabled]/[Enabled]

Default is [Enabled]

Turbo Mode

Enable/Disable Turbo Mode.

[Disabled]/[Enabled]

Default is [Enabled]

P-STATE Coordination

Change P-State coordination type.

[SW_ALL]/[HW_ALL]/[SW_ANY]

Default is [HW_ALL]

CPU C3 Report

Enable/Disable CPU C3 (ACPI C2) report to OS.
[Disabled] / [Enabled]
Default is [Disabled]

CPU C6 Report

Enable/Disable CPU C6 (ACPI C3) report to OS.
[Disabled]/[Enabled]
Default is [Enabled]

CPU C7 Report

Enable/Disable CPU C7 report to OS.
[Disabled]/[Enabled]
Default is [Disabled]

Package C State Limit

Select Package C State Limit.
[No Limit]/[C0]/[C2]/[C6]/[C7]
Default is [No Limit]

Energy Performance

Optimize between performance and power savings. Windows 2008 and later OSes override this value according to its power plan.
[Performance] / [Balanced performance] / [Balanced Energy] / [Energy Efficient]
Default is [Balanced performance]

Factory Long Duration Power Limit

Read only.

Long Duration Power Limit

Long duration power limit in Watts.

Factory Long Duration Maintained

Read only.

Long Duration Maintained

Time window which the long duration power is maintained.

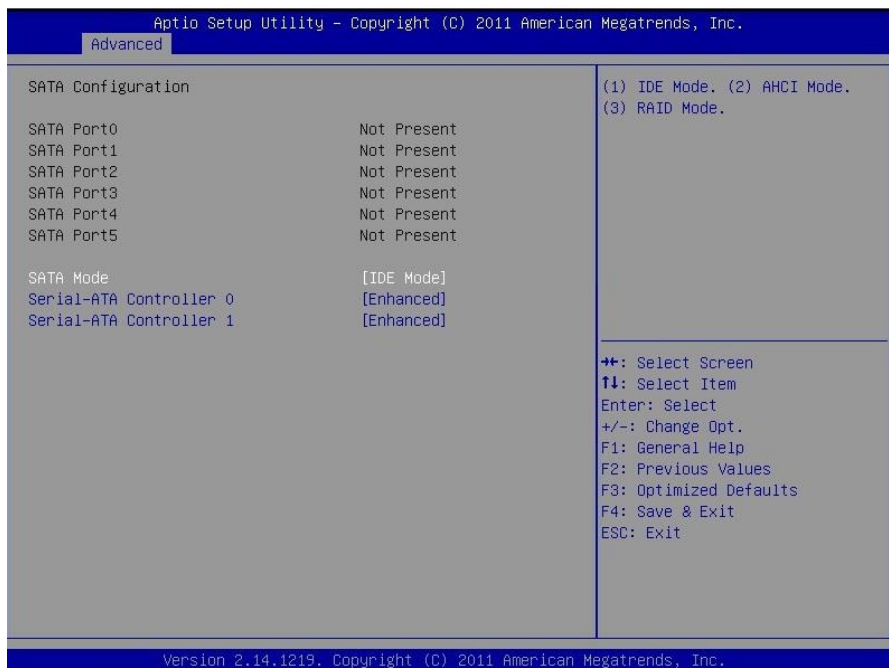
Recommended short duration power limit

Read only.

Short duration power limit

Short duration power limit in Watts.

3.6.3 - SATA Configuration



SATA Mode

[Disabled]/[IDE Mode]/[AHCI Mode]/[RAID Mode]

Default is [IDE Mode]

Serial-ATA Controller 0

[Disable]/[Enhanced]/[Compatible]

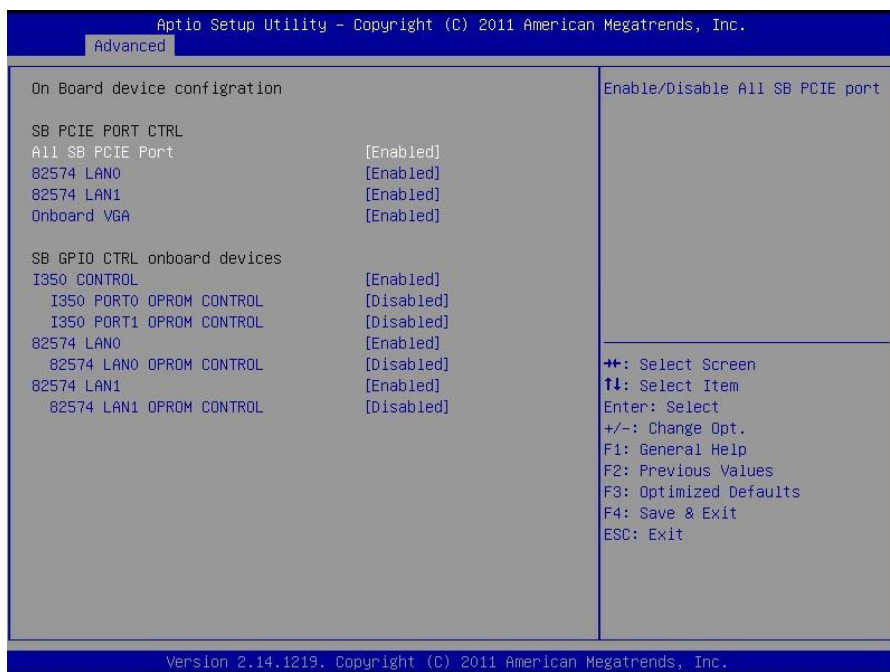
Default is [Enhanced]

Serial-ATA Controller 1

[Disable]/[Enhanced]

Default is [Enhanced]

3.6.4 Onboard Device Configuration



All SB PCIE Port

Enable/Disable All SB PCIE port

[Disabled]/[Enabled]

Default is [Enabled]

82574 LAN0

Enable/Disable 82574 LAN0 PCIE port

[Disabled]/[Enabled]

Default is [Enabled]

82574 LAN1

Enable/Disable 82574 LAN1 PCIE port

[Disabled]/[Enabled]

Default is [Enabled]

Onboard VGA

Enabled/Disabled the VGA in the Chipset.

[Enabled]/[Disabled]

Default is [Enabled]

I350 Control

Disable/Enable I350 control

[Enabled]/[Disabled]

Default is [Enabled]

I350 Port0 OPROM Control

Choose OPROM for I350 LAN0

[Disabled]/[Enabled with iSCSI] / [Enabled with PXE]

Default is [Disabled]

I350 Port1 OPROM Control

Choose OPROM for I350 LAN1

[Disabled] / [Enabled with iSCSI] / [Enabled with PXE]

Default is [Disabled]

82574 LAN0 OPROM CONTROL

Choose OPROM for 82574 LAN0

[Disabled]/[Enabled with iSCSI] / [Enabled with PXE]

Default is [Disabled]

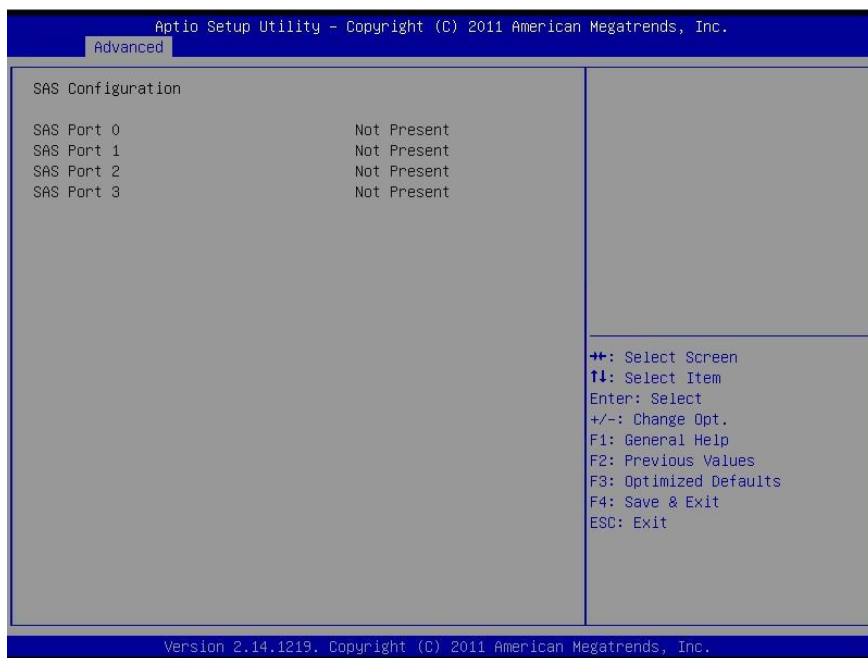
82574 LAN1 OPROM CONTROL

Choose OPROM for 82574 LAN1

[Disabled]/[Enabled with iSCSI]/[Enabled with PXE]

Default is [Disabled]

3.6.5 SAS Configuration



Read only.

3.6.6 Info Report Configuration

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.	
Advanced	
Info Report Configuration	
Post Report	
Post Report	[Enabled]
Delay Time	[1]
Summary Screen	
Summary Screen	[Disabled]
Post Report Wait Time: 0 ~ 10 Seconds	
++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.	

Post Report

Post report support Enabled/Disabled

[Disabled] / [Enabled]

Default is [Enabled]

Delay Time

Post report wait time: 0~10 seconds

[0]/[1]/[2]/[3]/[4]/[5]/[6]/[7]/[8]/[9]/[10]/[Until press ESC]

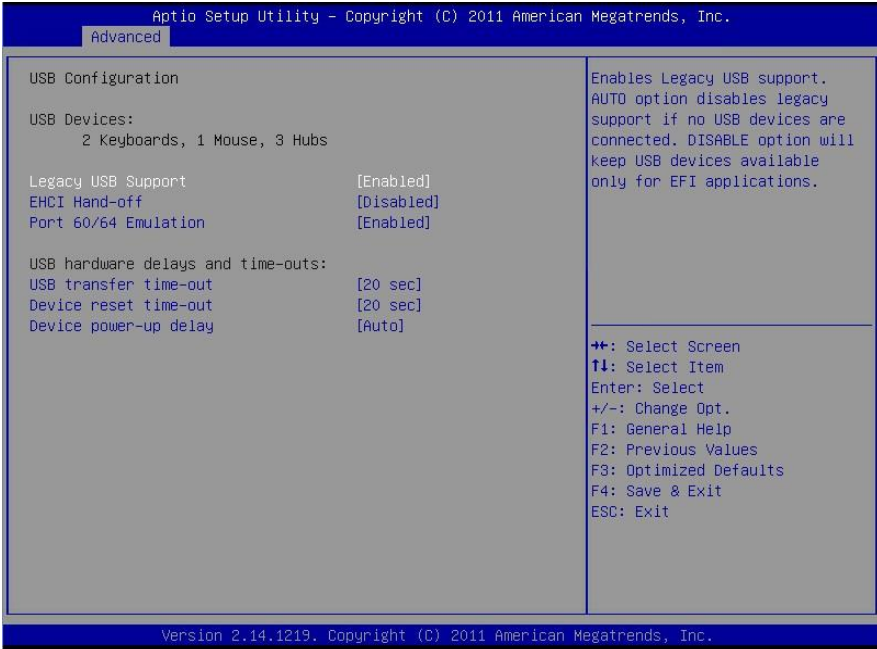
Default is [1]

Summary Screen

[Disabled] / [Enabled]

Default is [Disabled]

3.6.7 USB Configuration



Legacy USB Support

Enables legacy USB support, Auto option disables legacy support if no USB devices are connected. Disable option will keep USB devices available only for EFI application.

[Disabled]/[Enabled]/[Auto]

Default is [Enabled]

EHCI Hand-off

[Disabled]/[Enabled]

Default is [Disabled]

Port 60/ 64 Emulation

Enables IO port 60h/64h emulation support This should be enabled for the Complete USB keyboard legacy support for non-USB aware OSes.

[Disabled]/[Enabled]

Default is [Enabled]

USB transfer time-out

[1 sec]/[5 sec]/[10 sec]/[20 sec]

Default is [20 sec]

Device reset time-out

[10 sec]/[20 sec]/[30 sec]/[40 sec]

Default is [20 sec]

Device Power-up delay

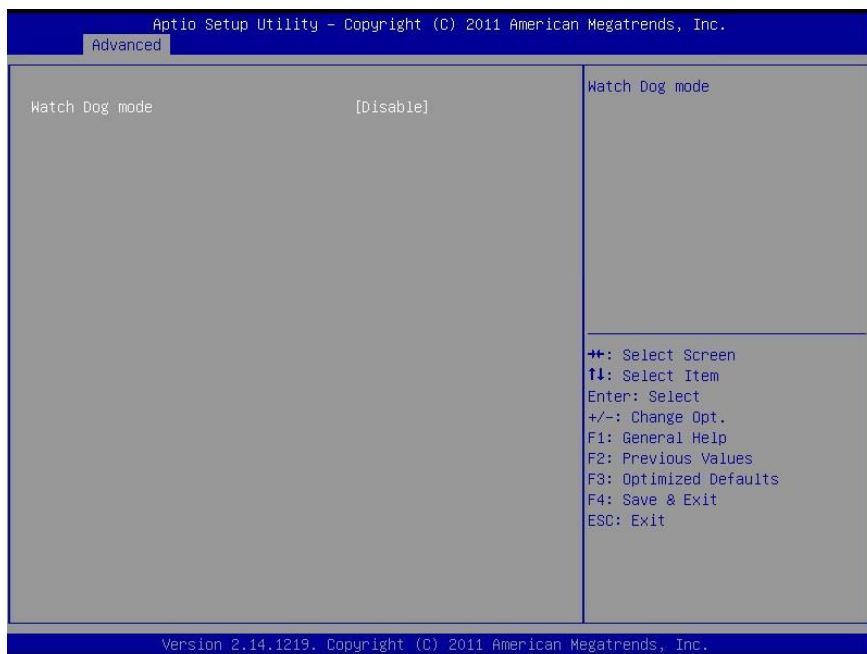
Maximum time the device will take before it properly reports itself to the host controller.

'Auto' uses default value; for a root port it is 100ms, for a Hub port the delay is taken from Hub description.

[Auto]/[Manual]

Default is [Auto]

3.6.8 – Watchdog Timer Configuration



Watch Dog Mode

Watch Dog Mode Help.

[Disabled]/[POST]/[OS]/[PowerON]

Default is [Disable]

NOTE: Watch Dog Timer will appear when **Watch Dog Mode** is set to [Enabled].

Watch Dog Timer

Watch Dog Timer Help.

[2 MINS]/[4 MINS]/[6 MINS]/[8 MINS]/[10 MINS]

Default is [2 MINS]

3.6.9 – Hardware Health Configuration



Auto Fan Support

[Disabled]/[Enabled]

Default is [Disabled]

The disable meaning is FAN Speed running FULL ON

PWM Minimal Duty Cycle

[30% Duty Cycle] / [45% Duty Cycle] / [60% Duty Cycle]

Default is [30% Duty Cycle]

*This item need set Auto Fan support. to enabled

BMC Alert Beep

[On]/[Off]

Default is [On]

3.6.9.1 – Sensor Data Register Monitoring

IF you logo in the SDR Page fist, you will see message “Sensor Data are reading Now, Please wait a moment !!” ,this time BIOS gets some SDR form BMC ,please wait about 8~10 second.

PC Health Status			
ID#	NAME	READING	Unit STATUS

Sensor Data are reading now,			
Please wait a moment!!			

SDR can read FAN, temperature of PCH, CPU, DIMM, Ambient and CPU CMOS Area, Voltage and PSU status. Please see below picture.

Advanced

PC Health Status

ID#	NAME	READING	UNIT	STATUS
01	CPU0_DTS	: 59	°C	OK
02	CPU1_DTS	: N/A	°C	OK
03	CPU0_PECI	: -32	°C	OK
04	CPU1_PECI	: N/A	°C	OK
05	PCH_Area_Temp	: 27	°C	OK
06	PCIE_Air_Inlet	: 26	°C	OK
41	CPU0_DIMM_A0	: N/A	°C	OK
42	CPU0_DIMM_A1	: N/A	°C	OK
44	CPU0_DIMM_B0	: 35	°C	OK
45	CPU0_DIMM_B1	: N/A	°C	OK
47	CPU0_DIMM_C0	: N/A	°C	OK
48	CPU0_DIMM_C1	: N/A	°C	OK
4A	CPU0_DIMM_D0	: N/A	°C	OK
4B	CPU0_DIMM_D1	: N/A	°C	OK
4D	CPU1_DIMM_A0	: N/A	°C	OK
4E	CPU1_DIMM_A1	: N/A	°C	OK
50	CPU1_DIMM_B0	: N/A	°C	OK
51	CPU1_DIMM_B1	: N/A	°C	OK
53	CPU1_DIMM_C0	: N/A	°C	OK
54	CPU1_DIMM_C1	: N/A	°C	OK
56	CPU1_DIMM_D0	: N/A	°C	OK
57	CPU1_DIMM_D1	: N/A	°C	OK

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

Advanced

51	CPU1_DIMM_B1	: N/A	°C	OK
53	CPU1_DIMM_C0	: N/A	°C	OK
54	CPU1_DIMM_C1	: N/A	°C	OK
56	CPU1_DIMM_D0	: N/A	°C	OK
57	CPU1_DIMM_D1	: N/A	°C	OK
10	VCCP_P0	: 0.9408	V	OK
11	VTT_P0	: 1.0584	V	OK
12	VDDQ_P0	: 1.5288	V	OK
13	VCCP_P1	: N/A	V	OK
14	VTT_P1	: N/A	V	OK
15	VDDQ_P1	: N/A	V	OK
16	VCC12	: 11.997	V	OK
17	VCC5	: 5.103	V	OK
18	VCC3	: 3.348	V	OK
19	VCC3_AUX	: 3.330	V	OK
1A	P1V1_SSB	: 1.0976	V	OK
30	CPU0_FAN	: 3240	RPM	OK
31	CPU1_FAN	: N/A	RPM	OK
32	SYS_FAN_1	: N/A	RPM	OK
33	SYS_FAN_2	: N/A	RPM	OK
34	SYS_FAN_3	: 3960	RPM	OK
35	SYS_FAN_4	: N/A	RPM	OK
36	SYS_FAN_5	: N/A	RPM	OK

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

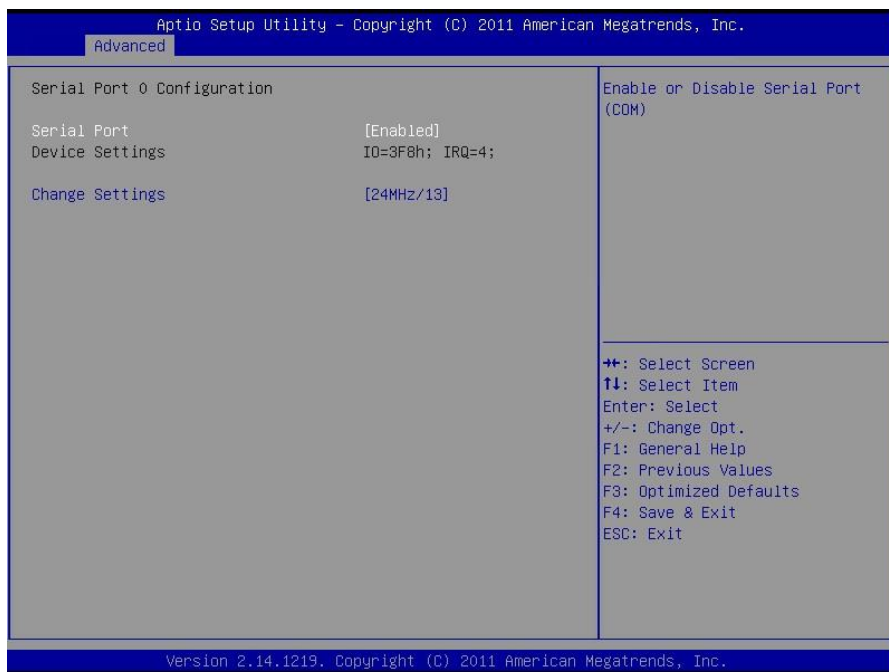
3.6.10 Super I/O Configuration



Super IO Chip

Read only.

3.6.10.1 Serial Port0/1 Configuration



Serial Port 0 Configuration

Serial Port

Enable or Disable Serial Port (COM)

[Enabled]/[Disabled]

Default is [Enabled]

Device Settings

Read only. It can not be modified in user mode.

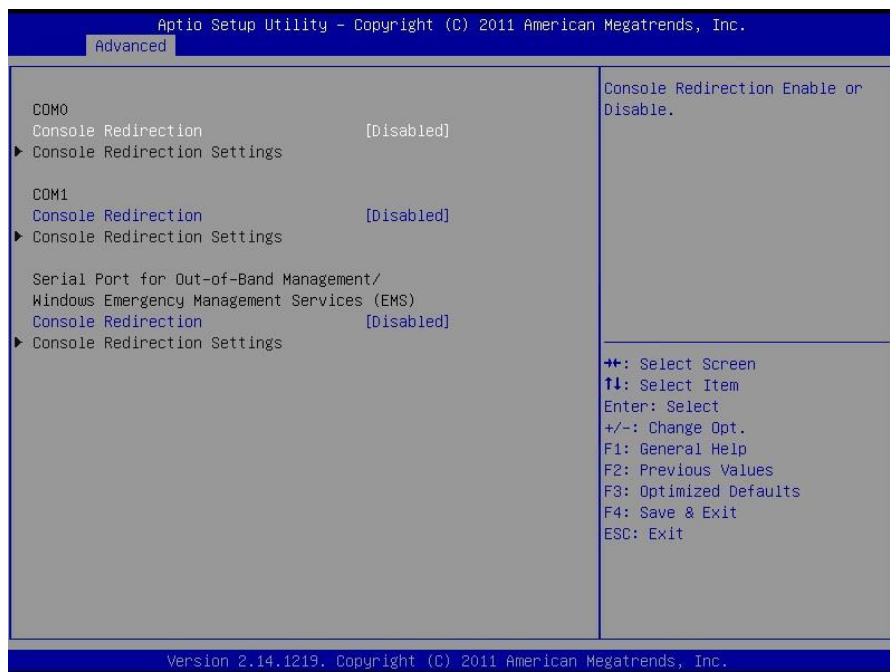
Change/Settings

SUART clock source.

[24MHZ/13]/[24MHz]

Default is [24MHZ/13]

3.6.11 Serial Port Console Redirection



Console Redirection

Console redirection enable or disable.

[Disabled]/Enabled

Default is [Disabled]

Serial Port for Out-Of-Band Management/Windows Emergency Services (EMS)

Console Redirection

Console redirection enable or disable.

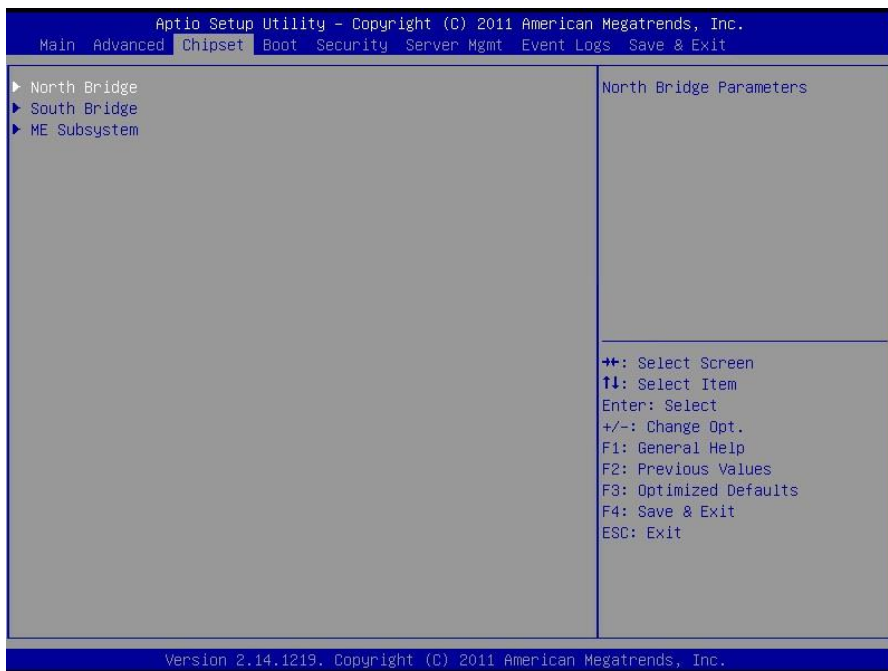
[Disabled]/Enabled

Default is [Disabled]

Console Redirection Settings

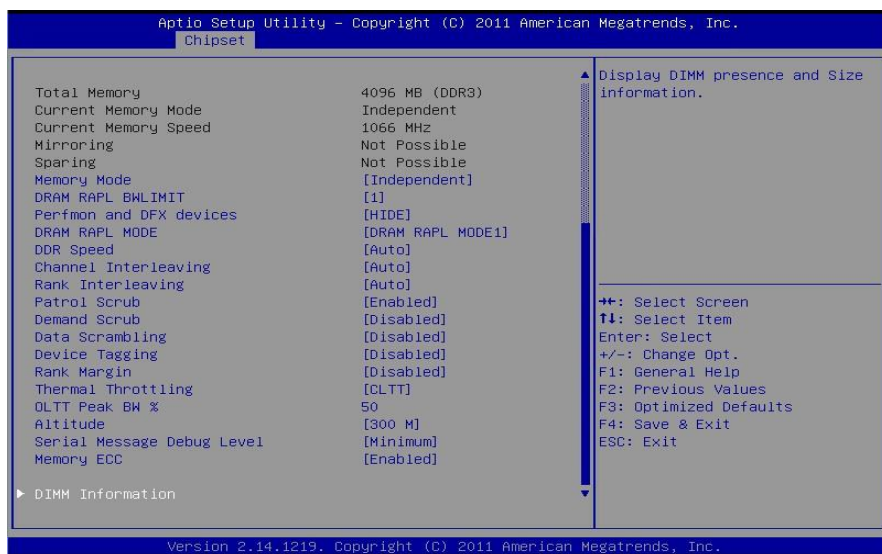
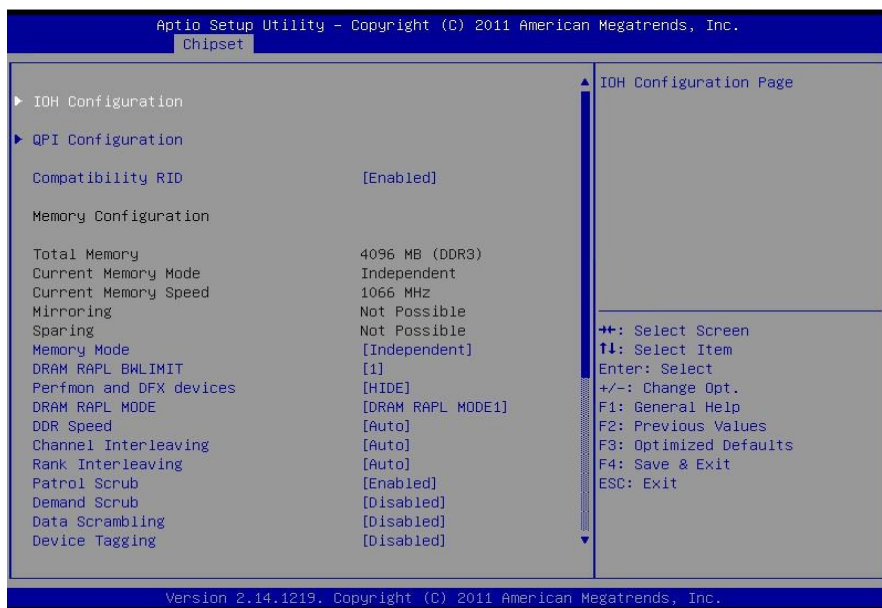
The settings specify how the host computer (which the user is using) will exchange data. Both computers should have the same or compatible settings.

3.7 - Chipset Menu



Allows you to change North Bridge, South Bridge, and WatchDog Timer Configuration

3.7.1 – North Bridge Chipset Configuration Sub- Menu



Compatibility RID

Support for Compatibility Revision ID (CRID) Functionality mentioned in Sandy Bridge BIOS spec.

[Enabled]/[Disabled]

Default is [Enabled]

Total Memory / Current Memory Mode / Current Memory Speed / Mirroring / Sparing

Read only.

Memory Mode

Select the mode for memory initialization.

[Independent]/[Mirroring]/[Lock Step]/[Sparing]

Default is [Independent]

Perfmon and DFX devices

Perfmon and DFX devices can be hidden or unhidden

[HIDE]/[UNHIDE]

Default is [HIDE]

DRAM RAPL MODE

DRAM RAPL MODES: Disabled/MODE0/MODE1

[Disabled] / [DRAM RAPL MODE0] / [DRAM RAPL MODE1]

Default is [DRAM RAPL MODE1]

DDR Speed

Force DDR Speed.

[Auto]/[Force DDR3 800]/[Force DDR3 1066]/[Force DDR3 1333]/[Force DDR3 1600]/[Force DDR3 1866]

Default is [Auto]

Channel Interleaving

Select different Channel Interleaving setting.

[Auto]/[1 Way]/[2 Way]/[3 Way]/[4 Way]

Default is [Auto]

Rank Interleaving

Select different Bank Interleaving setting.

[Auto]/[1 Way]/[2 Way]/[4 Way]/[8 Way]

Default is [Auto]

Patrol Scrub

Enable/Disable Patrol Scrub.

[Enabled]/[Disabled]

Default is [Enabled]

Demand Scrub

Enable/Disable Demand Scrubbing feature.

[Enabled]/[Disabled]

Default is [Enabled]

Data Scrambling

Enable/Disable Data Scrambling.

[Enabled]/[Disabled]

Default is [Enabled]

Device Tagging

Enable/Disable Device Tagging.

[Disabled]/[Enabled]

Default is [Disabled]

Rank Margin

Enable/Disable Rank Margin.

[Disabled]/[Enabled]

Default is [Disabled]

Thermal Throttling

CLTT --- Closed Loop Terminal Throttling. OLTT --- Open Loop Terminal Throttling.

[CLTT]/[Disabled]/[OLTT]

Default is [CLTT]

OLTT Peak BW %

Valid Offset 25 - 100. This is a percentage of the peak bandwidth allowed for OLTT.

[50]

Default is [50]

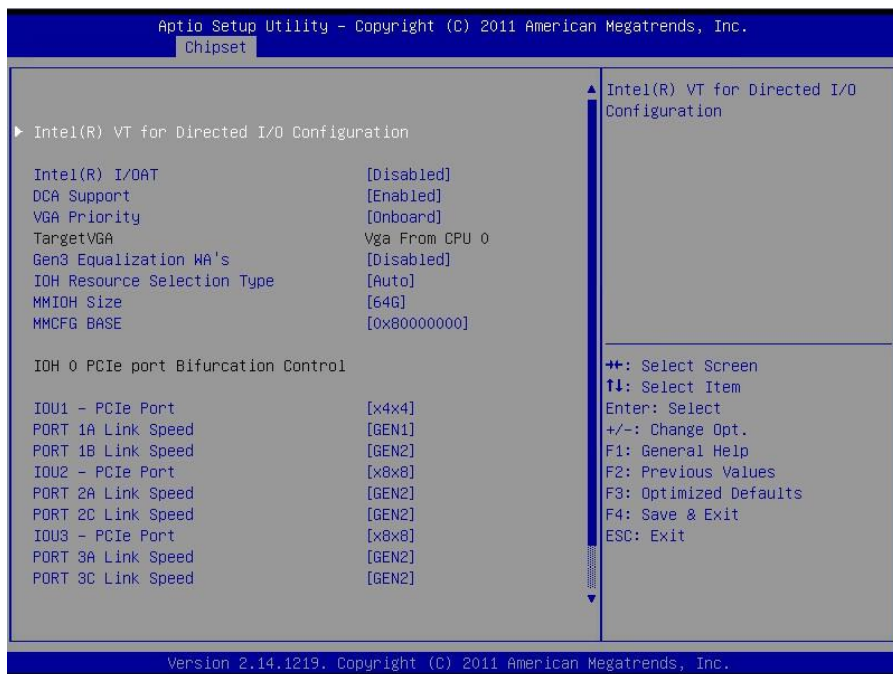
Altitude

The system altitude above the sea level in meters.

[300 M]/[Auto]/[900 M]/[1500 M]/[3000 M]

Default is [300M]

3.7.1.1 IOH Configuration Submenu



Intel® I/OAT

Enable/Disable Intel® I/O Acceleration Technology (I/OAT).

[Disabled]/[Enabled]

Default is [Disabled]

DCA Support

Enable/Disable Direct Cache Access Support.

[Enabled]/[Disabled]

Default is [Enabled]

VGA Priority

Decide the priority between onboard and its offboard video device found.

[Offboard]/[Onboard]

Default is [Onboard]

Target VGA

Read only.

IOH Resource Selection Type

Allow to select Auto/Manual. When Auto option is selected PCI resource allocation across multiple IOHs is optimized automatically based on the PCI devices present. With Manual option user can force the PCI resource allocation across multiple IOHs based on the ratios selected.

[Auto]/[Manual]

Default is [Auto]

MMIOH Size

Select number of 1GB contiguous regions to be assigned MMIOH space per CPU.

[64G]/[1G]/[2G]/[4G]/[8G]/[16G]/[32G]/[64G]/[128G]

Default is [64G]

IOU1- PCIE Port

Functions visible based on this setting: x4x4 1GB contiguous regions to be assigned MMIOH space per CPU.

[x4x4]/[x8]

Default is [x4x4]

PORT 1A Link Speed

Select target link speed Gen1, Gen2, Gen3.

[Gen1]/[Gen2]/[Gen3]

Default is [Gen1]

PORT 1B Link Speed

Select target link speed Gen1, Gen2, Gen3.

[Gen1]/[Gen2]/[Gen3]

Default is [Gen2]

IOU2-PCIe Port

Functions visible based on this setting:

x4x4x4x4 (Fun 0/1/2/3 visible)

x4x4x8 (Fun 0/2/3 visible)

x8x4x4 (Fun 0/1/2 visible)

x8x8 (Fun 0/2 visible)

x16 (Fun 0 visible)

[x4x4x4x4]/[x4x4x8]/[x8x4x4]/[x8x8]/[x16]

Default is [x8x4x4]

PORT 2A Link Speed

Select target link speed Gen1, Gen2, Gen3.

[Gen1]/[Gen2]/[Gen3]

Default is [Gen2]

PORT 2B Link Speed

Select target link speed Gen1, Gen2, Gen3.

[Gen1]/[Gen2]/[Gen3]

Default is [Gen2]

PORT 2C Link Speed

Select target link speed Gen1, Gen2, Gen3.

[Gen1]/[Gen2]/[Gen3]

Default is [Gen2]

IOU3-PCle Port

Functions visible based on this setting:

x4x4x4x4 (Fun 0/1/2/3 visible)

x4x4x8 (Fun 0/2/3 visible)

x8x4x4 (Fun 0/1/2 visible)

x8x8 (Fun 0/2 visible)

x16 (Fun 0 visible)

[x4x4x4x4]/[x4x4x8]/[x8x4x4]/[x8x8]/[x16]

Default is [x8x8]

PORT 3A Link Speed

Select target link speed Gen1, Gen2, Gen3.

[Gen1]/[Gen2]/[Gen3]

Default is [Gen2]

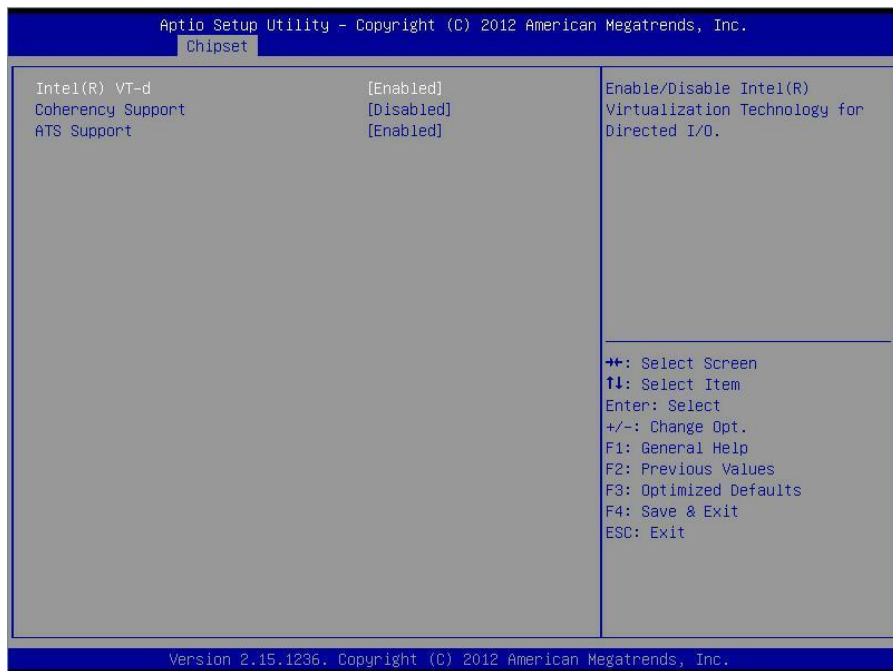
PORT 3B Link Speed

Select target link speed Gen1, Gen2, Gen3.

[Gen1]/[Gen2]/[Gen3]

Default is [Gen2]

3.7.1.1.1 Intel® VT for Directed I/O Configuration Submenu



Intel® VT-d

Enable/Disable Intel® Virtualization Technology Directed I/O.

[Disabled]/[Enabled]

Default is [Enabled]

NOTE: The following items will appear when **Intel® VT-d** is set to [Enabled].

Coherency Support

Enable/Disable VT-d Engine Coherency Support.

[Disabled]/[Enabled]

Default is [Disabled]

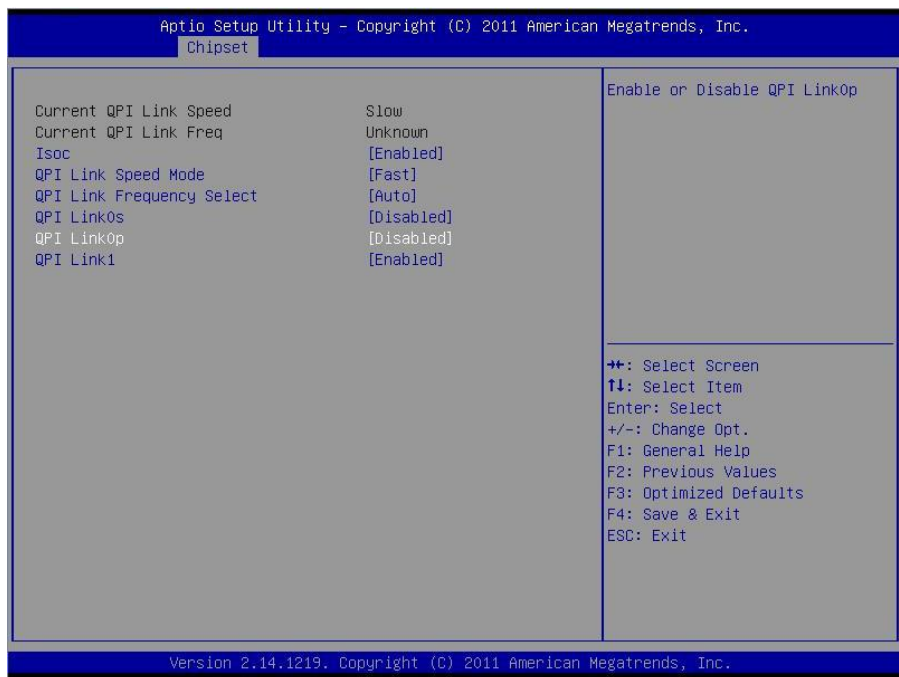
ATS Support

Enable/Disable VT-d Engine Address Translation Services support.

[Disabled]/[Enabled]

Default is [Enabled]

3.7.1.2 QPI Configuration Submenu



Isoc

Enable/Disable Isoc.

[Enabled]/[Disabled]

Default is [Enabled]

QPI Link Speed Mode

Select the QPI link speed as either the Fast Mode or the Slow Mode.

[Fast]/[Slow]

Default is [Fast]

QPI Link Frequency Select

Select the QPI Link Frequency.

[Auto]/[6.4GT/s]/[7.2GT/s]/[8.0GT/s]

Default is [Auto]

QPI LinkOs

Enable/Disable QPI LinkOs.

[Enabled]/[Disabled]

Default is [Disabled]

QPI LinkOp

Enable/Disable QPI LinkOp.

[Enabled]/[Disabled]

Default is [Disabled]

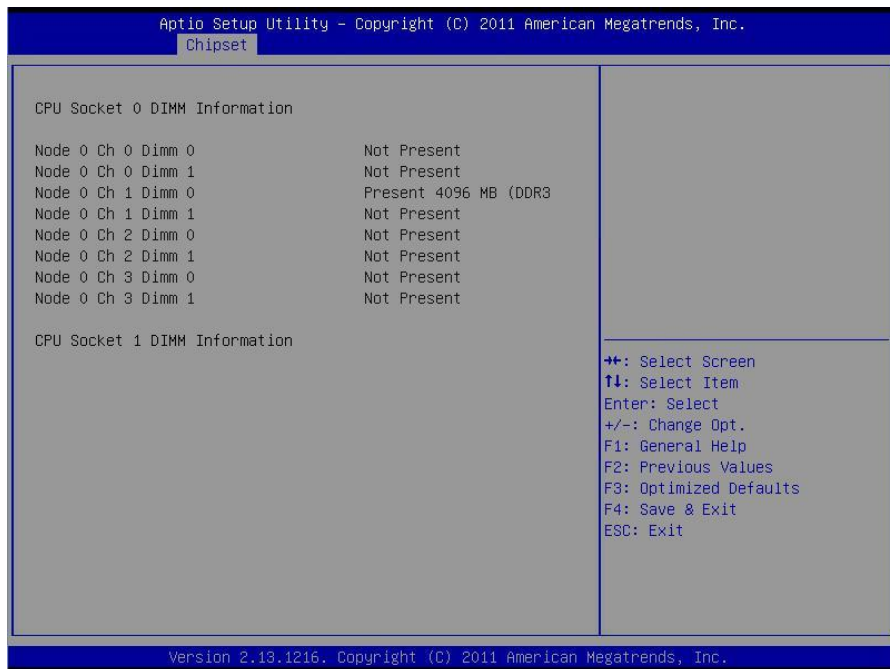
QPI Link1

Enable/Disable QPI Link1.

[Enabled] / [Disabled]

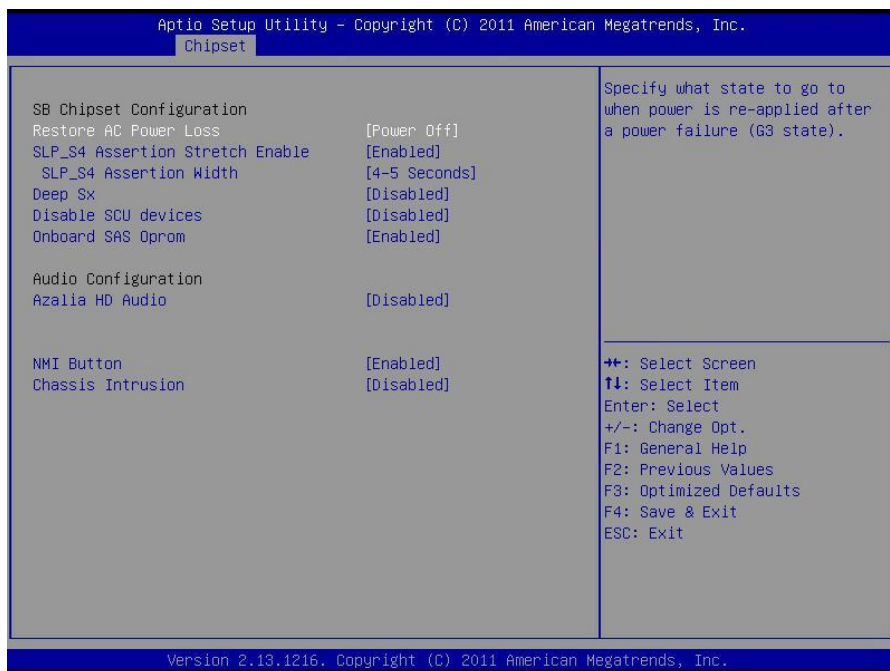
Default is [Enabled]

3.7.1.3 DIMM Information Submenu



Read only.

3.7.2 – South Bridge Configuration Sub-Menu



Restore AC Power Loss

[Power Off]/[Power On]/[Last State]

Default is [Power Off]

SLP_S4 Assertion Stretch Enable

[Disabled]/[Enabled]

Default is [Enabled]

SLP_S4 Assertion Width

[1-2 Seconds]/[2-3 Seconds]/[3-4 Seconds]/[4-5 Seconds]

Default is [4-5 Seconds]

Deep Sx

Deep Sx configuration

[Disabled]/[Enabled in S5(Battery)]/[Enabled in S5]/[Enabled in S4 and S5(Battery)]/

[Enabled in S4 and S5]

Default is [Disabled]

Disable SCU devices**Enable/Disable SCU devices**

[Enabled]/[Disabled]

Default is [Disabled]

Onboard SAS OPROM

Enable/Disable onboard SAS RAID option rom if Launch Storage OpROM is enabled.

[Enabled]/[Disabled]

Default is [Enabled]

Azalia HD Audio

[Enabled]/[Disabled]

Default is [Disabled]

NMI Button

[Enabled]/[Disabled]

Default is [Enabled]

Chassis Intrusion

Enabled: When a chassis open event is detected, the BIOS will display the event.

[Enabled]/[Disabled]

Default is [Disabled]

3.7.3 – ME Sub- Menu

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.		
Chipset		
Intel ME Subsystem Configuration		ME Subsystem Help
ME Subsystem	[Enabled]	
ME BIOS Interface Version	1.2	
ME Version	2.1.5.62	
ME FW Status Value :	0xf0345	
ME FW State :	SPS ME FW Active	
ME FW Operation State :	M0 without UMA	
ME FW Error Code :	No Error	++: Select Screen
ME Ext FW Status Value :	0x3900a101	↑↓: Select Item
BIOS Booting Mode :	Performance Optimized	Enter: Select
Cores Disabled :	0	+/-: Change Opt.
ME FW SKU Information :	SiEn	F1: General Help
		F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Exit
		ESC: Exit

Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.

ME Subsystem

Me subsystem Help

Enabled / Disabled

Default is [Enabled]

3.8 - Boot Configuration

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.		
Main Advanced Chipset Boot Security Server Mgmt Event Logs Save & Exit		
Boot Configuration		UPON REQUEST - GA20 can be disabled using BIOS services. ALWAYS - do not allow disabling GA20; this option is useful when any RT code is executed above 1MB.
Setup Prompt Timeout	3	
Bootup NumLock State	[Off]	
Quiet Boot	[Disabled]	
CSM16 Module Version	07.68	
GateA20 Active	[Upon Request]	
Option ROM Messages	[Force BIOS]	
Interrupt 19 Capture	[Enabled]	
CSM Support	[Enabled]	
Boot Option Priorities		↑↓: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Boot Option #1	[UEFI: Built-in EFI...]	
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.		

Bootup Numlock State

[On]/[Off]

Default is [On]

Quiet Boot

[Disabled]/[Enabled]

Default is [Disabled]

Fast Boot

[Disabled]/[Enabled]

Default is [Disabled]

Option ROM Messages

[Force BIOS]/[Keep Current]

Default is [Force BIOS]

Interrupt 19 Capture

[Disabled]/[Enabled]

Default is [Enabled]

Endless Boot

Enable or disable Endless Boot.

[Disabled]/[Enabled]

Default is [Disabled]

Boot Option #1

Select the first boot device.

[Device Name]/[Disabled]

Default is [Device Name]

3.9 - Security Menu

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.					
Main Advanced Chipset Boot Security Server Mgmt Event Logs Save & Exit					
<p>Password Description</p> <p>If ONLY the Administrator's password is set, then this only limits access to Setup and is only asked for when entering Setup.</p> <p>If ONLY the User's password is set, then this is a power on password and must be entered to boot or enter Setup. In Setup the User will have Administrator rights.</p> <p>The password length must be in the following range:</p> <table><tr><td>Minimum length</td><td>3</td></tr><tr><td>Maximum length</td><td>20</td></tr></table> <p>Administrator Password</p> <p>User Password</p>	Minimum length	3	Maximum length	20	<p>Set Administrator Password</p> <hr/> <p>←+: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</p>
Minimum length	3				
Maximum length	20				

Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.

Password Description

Read only.

Administrator Password

Install or change the password.

User Password

Install or change the password.

3.10 - Server Mgmt Menu



3.10.1 BMC Network Configuration

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.	
Server Mgmt	
BMC network configuration	
Lan channel 1	
Configuration Address source	[Unspecified]
Station IP address	192.168.0.150
Subnet mask	255.255.255.0
Station MAC address	00-e0-81-de-17-60
Router IP address	0.0.0.0
Router MAC address	00-00-00-00-00-00
Select to configure LAN channel parameters statically or dynamically (by BIOS or BMC). Unspecified option will not modify any BMC network parameters during BIOS phase	
++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.	

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]

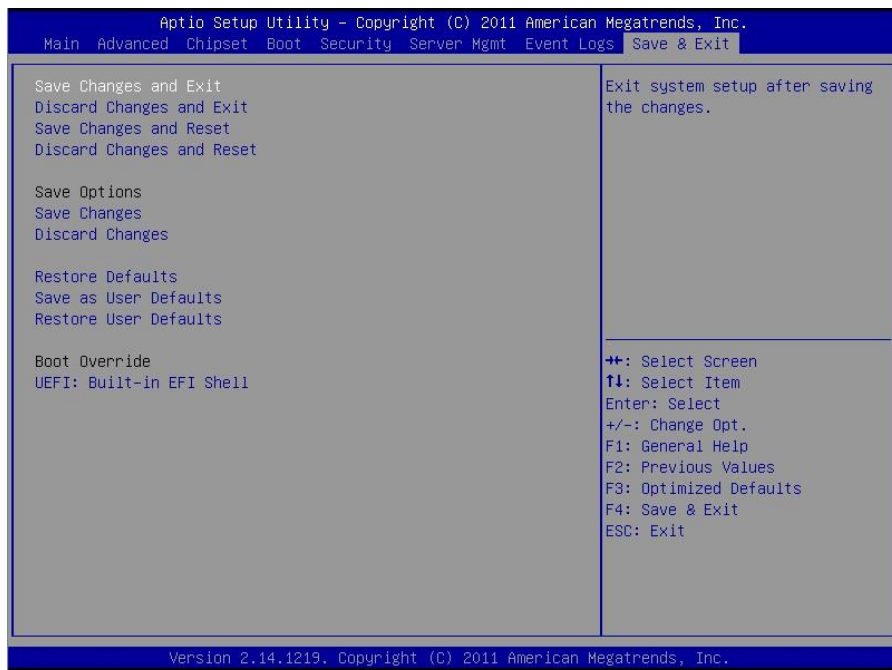
Default is [Unspecified]

3.10.2 - System Event Log Sub-Menu



The item view system event log

3.11 - Save & Exit Menu



Save Changes and Exit

Use this option to exit setup utility and re-boot.

All new selections you have made are stored into CMOS.

System will use the new settings to boot up.

Discard Changes and Exit

Use this option to exit setup utility and re-boot.

All new selections you have made are not stored into CMOS.

System will use the old settings to boot up.

Save Changes and Reset

Use this option to save all new setup values that you have made and reset.

Discard Changes and Reset

Use this option to discard all new setup values that you have made and reset.

Save Changes

Use this option to save all new setup values that you have made

Discard Changes

Use this option to load all default failsafe setup values.

Restore Defaults

Use this option to restore defaults

Save as user Defaults

Use this option to save the user defaults

Restore user Defaults

Use this option to restore the user defaults.

Chapter 4: Diagnostics

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>.

4.1 - 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:

<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.

4.2 AMIBIOS Post Code (Aptio)

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

Checkpoint Ranges

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

Standard Checkpoints

SEC Phase

Status Code	Description
0x00	Note used
Progress Codes	
0x01	Power on. Reset type detection (soft/hard).
0x02	AP initialization before microcode loading
0x03	North Bridge initialization before microcode loading
0x04	South Bridge initialization before microcode loading
0x05	OEM initialization before microcode loading
0x06	Microcode loading
0x07	AP initialization after microcode loading
0x08	North Bridge initialization after microcode loading
0x09	South Bridge initialization after microcode loading
0x0A	OEM initialization after microcode loading
0x0B	Cache initialization

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

SEC Phase

None

PEI Phase

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

Status Code	Description
	initialization
0x35	CPU post-memory initialization. Boot Strap Processor (BSP) selection
0x36	CPU post-memory initialization. System Management Mode (SMM) initialization
0x37	Post-Memory North Bridge initialization is started.
0x38	Post-Memory North Bridge initialization (North Bridge module specific)
0x39	Post-Memory North Bridge initialization (North Bridge module specific)
0x3A	Post-Memory North Bridge initialization (North Bridge module specific)
0x3B	Post-Memory South Bridge initialization is started
0x3C	Post-Memory South Bridge initialization (South Bridge module specific)
0x3D	Post-Memory South Bridge initialization (South Bridge module specific)
0x3E	Post-Memory South Bridge initialization (South Bridge module specific)
0x3F – 0x4E	OEM post memory initialization codes
0x4F	DXE PIL is started
PCI Error Codes	
0x50	Memory initialization error. Invalid memory type or incompatible memory speed
0x51	Memory initialization error. SPD reading has failed.
0x52	Memory initialization error. Invalid memory size or memory modules do not match.
0x53	Memory initialization error. No usable memory detected
0x54	Unspecified memory initialization error
0x55	Memory not installed
0x56	Invalid CPU type or speed
0x57	CPU mismatch
0x58	CPU self test failed or possible CPU cache error
0x59	CPU microcode is not found or microcode update is failed.
0x5A	Internal CPU error
0x5B	Reset PPI is not available.
0x5C – 0x5F	Reserved for future AML 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

Status Code	Description
0xE3	OS S3 wake vector call
0xE4 – 0xE7	Reserved for future AML 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 AML 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 AML 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 AML error codes

PEI Beep Codes

# of Beeps	Description
Progress Codes	
1	Memory not installed
1	Memory was installed twice (installPEIMemory routine in PEI Core called twice).
2	Recovery started
3	DXE IPL 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
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

Status Code	Description
0x97	Console output devices connect
0x98	Console Input devices connect
0x99	Super IO initialization
0x9A	USB initialization is started.
0x9B	USB Reset
0x9C	USB Detect
0x9D	USB Enable
0x9E -0x9F	Reserved for future AMI codes
0xA0	IDE initialization is started
0xA1	IDE Reset
0xA2	IDE Detect
0xA3	IDE Enable
0xA4	SCSI initialization is started.
0xA5	SCSI Reset
0xA6	SCSI Detect
0xA7	SCSI Enable
0xA8	Setup Verifying Password
0xA9	Start of Setup
0xAA	Reserved for ASL (see ASL Status Codes section below)
0xAB	Setup Input Wait
0xAC	Reserved for ASL (see ASL Status Codes section below)
0xAD	Ready To Boot event
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	

Status Code	Description
0xD0	CPU initialization error
0xD1	North Bridge initialization error
0xD2	South Bridge initialization error
0xD3	Some of the Architectural Protocols are not available
0xD4	PCI resource allocation error. Out of Resources
0xD5	No Space for Legacy Option ROM
0xD6	No Console Output Devices are found.
0xD7	No Console Input Devices are found.
0xD8	Invalid password
0xD9	Error loading Boot Option (LoadImage returned error)
0xDA	Boot Option is failed (StartImage returned error).
0xDB	Flash update is failed.
0xDC	Reset protocol is not available.

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

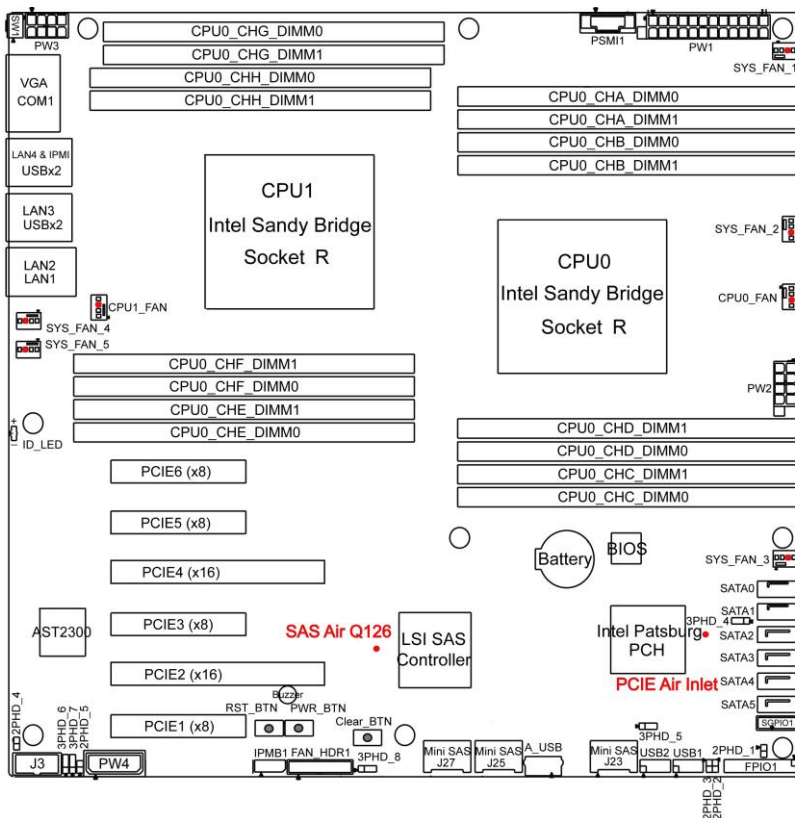
Status Code	Description
0x01	System is entering S1 sleep state.
0x02	System is entering S2 sleep state.
0x03	System is entering S3 sleep state.
0x04	System is entering S4 sleep state.
0x05	System is entering S5 sleep state.
0x10	System is waking up from the S1 sleep state.
0x20	System is waking up from the S2 sleep state.
0x30	System is waking up from the S3 sleep state.
0x40	System is waking up from the S4 sleep state.

Status Code	Description
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.

NOTE

Appendix: 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.



BIOS Temp Sensor Name Explanation:

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.				
Advanced				
PC Health Status				
ID#	NAME	READING	UNIT	STATUS
01	CPU0_DTS	: 59	°C	OK
02	CPU1_DTS	: N/A	°C	OK
03	CPU0_PECI	: -32	°C	OK
04	CPU1_PECI	: N/A	°C	OK
05	PCH_Area_Temp	: 27	°C	OK
06	PCIE_Air_Inlet	: 26	°C	OK
41	CPU0_DIMM_A0	: N/A	°C	OK
42	CPU0_DIMM_A1	: N/A	°C	OK
44	CPU0_DIMM_B0	: 35	°C	OK
45	CPU0_DIMM_B1	: N/A	°C	OK
47	CPU0_DIMM_C0	: N/A	°C	OK
48	CPU0_DIMM_C1	: N/A	°C	OK
4A	CPU0_DIMM_D0	: N/A	°C	OK
4B	CPU0_DIMM_D1	: N/A	°C	OK
4D	CPU1_DIMM_A0	: N/A	°C	OK
4E	CPU1_DIMM_A1	: N/A	°C	OK
50	CPU1_DIMM_B0	: N/A	°C	OK
51	CPU1_DIMM_B1	: N/A	°C	OK
53	CPU1_DIMM_C0	: N/A	°C	OK
54	CPU1_DIMM_C1	: N/A	°C	OK
56	CPU1_DIMM_D0	: N/A	°C	OK
57	CPU1_DIMM_D1	: N/A	°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 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.				
Advanced				
51	CPU1_DIMM_B1	: N/A	°C	OK
53	CPU1_DIMM_C0	: N/A	°C	OK
54	CPU1_DIMM_C1	: N/A	°C	OK
56	CPU1_DIMM_D0	: N/A	°C	OK
57	CPU1_DIMM_D1	: N/A	°C	OK
10	VCCP_P0	: 0.9408	V	OK
11	VTT_P0	: 1.0584	V	OK
12	VDDQ_P0	: 1.5288	V	OK
13	VCCP_P1	: N/A	V	OK
14	VTT_P1	: N/A	V	OK
15	VDDQ_P1	: N/A	V	OK
16	VCC12	: 11.997	V	OK
17	VCC5	: 5.103	V	OK
18	VCC3	: 3.348	V	OK
19	VCC3_AUX	: 3.330	V	OK
1A	P1V1_SSB	: 1.0976	V	OK
30	CPU0_FAN	: 3240	RPM	OK
31	CPU1_FAN	: N/A	RPM	OK
32	SYS_FAN_1	: N/A	RPM	OK
33	SYS_FAN_2	: N/A	RPM	OK
34	SYS_FAN_3	: 3960	RPM	OK
35	SYS_FAN_4	: N/A	RPM	OK
36	SYS_FAN_5	: N/A	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 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.

BIOS Temp Sensor	Name Explanation
PCH_Area	Temperature of the PCH Area
PCI-E_Air_Inlet	Temperature of the PCI-E Air Inlet Area
CPU1_MOS_Area	Temperature of the CPU1 MOS Area
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 D1 Slot
CPU1_DIMM_E0	Temperature of CPU1 DIMM E0 Slot
CPU1_DIMM_E1	Temperature of CPU1 DIMM E1 Slot
CPU1_DIMM_F0	Temperature of CPU1 DIMM F0 Slot
CPU1_DIMM_F1	Temperature of CPU1 DIMM F1 Slot
CPU1_DIMM_G0	Temperature of CPU1 DIMM G0 Slot
CPU1_DIMM_G1	Temperature of CPU1 DIMM G1 Slot
CPU1_DIMM_H0	Temperature of CPU1 DIMM H0 Slot
CPU1_DIMM_H1	Temperature of CPU1 DIMM H1 Slot

NOTE

Glossary

ACPI (Advanced Configuration and Power Interface): a power management specification that allows the operating system to control the amount of power distributed to the computer's devices. Devices not in use can be turned off, reducing unnecessary power expenditure.

AGP (Accelerated Graphics Port): a PCI-based interface which was designed specifically for demands of 3D graphics applications. The 32-bit AGP channel directly links the graphics controller to the main memory. While the channel runs only at 66 MHz, it supports data transmission during both the rising and falling ends of the clock cycle, yielding an effective speed of 133 MHz.

ATAPI (AT Attachment Packet Interface): also known as IDE or ATA; a drive implementation that includes the disk controller on the device itself. It allows CD-ROMs and tape drives to be configured as master or slave devices, just like HDDs.

ATX: the form factor designed to replace the AT form factor. It improves on the AT design by rotating the board 90 degrees, so that the IDE connectors are closer to the drive bays, and the CPU is closer to the power supply and cooling fan. The keyboard, mouse, USB, serial, and parallel ports are built-in.

Bandwidth: refers to carrying capacity. The greater the bandwidth, the more data the bus, phone line, or other electrical path can carry. Greater bandwidth results in greater speed.

BBS (BIOS Boot Specification): a feature within the BIOS that creates, prioritizes, and maintains a list of all Initial Program Load (IPL) devices, and then stores that list in NVRAM. IPL devices have the ability to load and execute an OS, as well as provide the ability to return to the BIOS if the OS load process fails. At that point, the next IPL device is called upon to attempt loading of the OS.

BIOS (Basic Input/Output System): the program that resides in the ROM chip, which provides the basic instructions for controlling your computer's hardware. Both the operating system and application software use BIOS routines to ensure compatibility.

Buffer: a portion of RAM which is used to temporarily store data; usually from an application though it is also used when printing and in most keyboard drivers. The CPU can manipulate data in a buffer before copying it to a disk drive. While this improves system performance (reading to or writing from a disk drive a single time is much faster than doing so repeatedly) there is the possibility of

losing your data should the system crash. Information in a buffer is temporarily stored, not permanently saved.

Bus: a data pathway. The term is used especially to refer to the connection between the processor and system memory, and between the processor and PCI or ISA local buses.

Bus mastering: allows peripheral devices and IDEs to access the system memory without going through the CPU (similar to DMA channels).

Cache: a temporary storage area for data that will be needed often by an application. Using a cache lowers data access times since the information is stored in SRAM instead of slower DRAM. Note that the cache is also much smaller than your regular memory: a typical cache size is 512KB, while you may have as much as 4GB of regular memory.

Closed and open jumpers: jumpers and jumper pins are active when they are “on” or “closed”, and inactive when they are “off” or “open”.

CMOS (Complementary Metal-Oxide Semiconductors): chips that hold the basic startup information for the BIOS.

COM port: another name for the serial port, which is called as such because it transmits the eight bits of a byte of data along one wire, and receives data on another single wire (that is, the data is transmitted in serial form, one bit after another). Parallel ports transmit the bits of a byte on eight different wires at the same time (that is, in parallel form, eight bits at the same time).

DDR (Double Data Rate): a technology designed to double the clock speed of the memory. It activates output on both the rising and falling edge of the system clock rather than on just the rising edge, potentially doubling output.

DIMM (Dual In-line Memory Module): faster and more capacious form of RAM than SIMMs, and do not need to be installed in pairs.

DIMM bank: sometimes called DIMM socket because the physical slot and the logical unit are the same. That is, one DIMM module fits into one DIMM socket, which is capable of acting as a memory bank.

DMA (Direct Memory Access): channels that are similar to IRQs. DMA channels allow hardware devices (like soundcards or keyboards) to access the main memory without involving the CPU. This frees up CPU resources for other tasks. As with IRQs, it is vital that you do not double up devices on a single line. Plug-n-Play devices will take care of this for you.

DRAM (Dynamic RAM): widely available, very affordable form of RAM which loses data if it is not recharged regularly (every few milliseconds). This refresh requirement makes DRAM three to ten times slower than non-recharged RAM such as SRAM.

ECC (Error Correction Code or Error Checking and Correcting): allows data to be checked for errors during run-time. Errors can subsequently be corrected at the same time that they're found.

EEPROM (Electrically Erasable Programmable ROM): also called Flash BIOS, it is a ROM chip which can, unlike normal ROM, be updated. This allows you to keep up with changes in the BIOS programs without having to buy a new chip. TYAN®'s BIOS updates can be found at <http://www.TYAN.com>

ESCD (Extended System Configuration Data): a format for storing information about Plug-n-Play devices in the system BIOS. This information helps properly configure the system each time it boots.

Firmware: low-level software that controls the system hardware.

Form factor: an industry term for the size, shape, power supply type, and external connector type of the Personal Computer Board (PCB) or motherboard. The standard form factors are the AT and ATX.

Global timer: onboard hardware timer, such as the Real-Time Clock (RTC).

HDD: stands for Hard Disk Drive, a type of fixed drive.

H-SYNC: controls the horizontal synchronization/properties of the monitor.

HyperTransport™: a high speed, low latency, scalable point-to-point link for interconnecting ICs on boards. It can be significantly faster than a PCI bus for an equivalent number of pins. It provides the bandwidth and flexibility critical for today's networking and computing platforms while retaining the fundamental programming model of PCI.

IC (Integrated Circuit): the formal name for the computer chip.

IDE (Integrated Device/Drive Electronics): a simple, self-contained HDD interface. It can handle drives up to 8.4 GB in size. Almost all IDEs sold now are in fact Enhanced IDEs (EIDEs), with maximum capacity determined by the hardware controller.

IDE INT (IDE Interrupt): a hardware interrupt signal that goes to the IDE.

I/O (Input/Output): the connection between your computer and another piece of hardware (mouse, keyboard, etc.)

IRQ (Interrupt Request): an electronic request that runs from a hardware device to the CPU. The interrupt controller assigns priorities to incoming requests and delivers them to the CPU. It is important that there is only one device hooked up to each IRQ line; doubling up devices on IRQ lines can lock up your system. Plug-n-Play operating systems can take care of these details for you.

Latency: the amount of time that one part of a system spends waiting for another part to catch up. This occurs most commonly when the system sends data out to a peripheral device and has to wait for the peripheral to spread (peripherals tend to be slower than onboard system components).

NVRAM: ROM and EEPROM are both examples of Non-Volatile RAM, memory that holds its data without power. DRAM, in contrast, is volatile.

Parallel port: transmits the bits of a byte on eight different wires at the same time.

PCI (Peripheral Component Interconnect): a 32 or 64-bit local bus (data pathway) which is faster than the ISA bus. Local buses are those which operate within a single system (as opposed to a network bus, which connects multiple systems).

PCI PIO (PCI Programmable Input/Output) modes: the data transfer modes used by IDE drives. These modes use the CPU for data transfer (in contrast, DMA channels do not). PCI refers to the type of bus used by these modes to communicate with the CPU.

PCI-to-PCI Bridge: allows you to connect multiple PCI devices onto one PCI slot.

Pipeline burst SRAM: a fast secondary cache. It is used as a secondary cache because SRAM is slower than SDRAM, but usually larger. Data is cached first to the faster primary cache, and then, when the primary cache is full, to the slower secondary cache.

PnP (Plug-n-Play): a design standard that has become ascendant in the industry. Plug-n-Play devices require little set-up to use. Devices and operating systems that are not Plug-n-Play require you to reconfigure your system each time you add or change any part of your hardware.

PXE (Preboot Execution Environment): one of four components that together make up the Wired for Management 2.0 baseline specification. PXE was

designed to define a standard set of preboot protocol services within a client with the goal of allowing networked-based booting to boot using industry standard protocols.

RAID (Redundant Array of Independent Disks): a way for the same data to be stored in different places on many hard drives. By using this method, the data is stored redundantly and multiple hard drives will appear as a single drive to the operating system. RAID level 0 is known as striping, where data is striped (or overlapped) across multiple hard drives, but offers no fault-tolerance. RAID level 1 is known as mirroring, which stores the data within at least two hard drives, but does not stripe. RAID level 1 also allows for faster access time and fault-tolerance, since either hard drive can be read at the same time. RAID level 0+1 is both striping and mirroring, providing fault-tolerance, striping, and faster access all at the same time.

RAIDIOS: RAID I/O Steering (Intel)

RAM (Random Access Memory): technically refers to a type of memory where any byte can be accessed without touching the adjacent data and is often referred to the system's main memory. This memory is available to any program running on the computer.

ROM (Read-Only Memory): a storage chip which contains the BIOS; the basic instructions required to boot the computer and start up the operating system.

SDRAM (Synchronous Dynamic RAM): called as such because it can keep two sets of memory addresses open simultaneously. By transferring data alternately from one set of addresses and then the other, SDRAM cuts down on the delays associated with non-synchronous RAM, which must close one address bank before opening the next.

Serial port: called as such because it transmits the eight bits of a byte of data along one wire, and receives data on another single wire (that is, the data is transmitted in serial form, one bit after another).

SCSI Interrupt Steering Logic (SISL): Architecture that allows a RAID controller, such as AcceleRAID 150, 200 or 250, to implement RAID on a system board-embedded SCSI bus or a set of SCSI busses. SISL: SCSI Interrupt Steering Logic (LSI) (only on LSI SCSI boards)

Sleep/Suspend mode: in this mode, all devices except the CPU shut down.

SDRAM (Static RAM): unlike DRAM, this type of RAM does not need to be refreshed in order to prevent data loss. Thus, it is faster and more expensive.

SLI (Scalable Link Interface): NVIDIA SLI technology links two graphics cards together to provide scalability and increased performance. NVIDIA SLI takes

advantage of the increased bandwidth of the PCI Express bus architecture, and features hardware and software innovations within NVIDIA GPUs (graphics processing units) and NVIDIA MCPs (media and communications processors). Depending on the application, NVIDIA SLI can deliver as much as two times the performance of a single GPU configuration.

Standby mode: in this mode, the video and hard drives shut down; all other devices continue to operate normally.

UltraDMA-33/66/100: a fast version of the old DMA channel. UltraDMA is also called UltraATA. Without a proper UltraDMA controller, your system cannot take advantage of higher data transfer rates of the new UltraDMA/UltraATA hard drives.

USB (Universal Serial Bus): a versatile port. This one port type can function as a serial, parallel, mouse, keyboard or joystick port. It is fast enough to support video transfer, and is capable of supporting up to 127 daisy-chained peripheral devices.

VGA (Video Graphics Array): the PC video display standard

V-SYNC: controls the vertical scanning properties of the monitor.

ZCR (Zero Channel RAID): PCI card that allows a RAID card to use the onboard SCSI chip, thus lowering cost of RAID solution

ZIF Socket (Zero Insertion Force socket): these sockets make it possible to insert CPUs without damaging the sensitive CPU pins. The CPU is lightly placed in an open ZIF socket, and a lever is pulled down. This shifts the processor over and down, guiding it into the board and locking it into place.

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 consequences).

If these options are not available for you then TYAN® Computer Corporation can help. Besides designing innovative and quality products for over a decade, TYAN® has continuously offered customers service beyond their expectations. TYAN®'s website (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 the latest software and operating system components to keep their systems running as powerful and productive as possible. TYAN® also ranks high for its commitment to fast and friendly customer support through email. By offering plenty of options for users, TYAN® 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

Help Resources:

1. See the beep codes section of this manual.
2. See the TYAN® website for FAQ's, bulletins, driver updates, and other information: <http://www.tyan.com>
3. Contact your dealer for help BEFORE calling TYAN®.
4. 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.



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

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.

Document #: D2149-100