GA-7TESM

Dual Xeon Processor Motherboard

USER'S Manual

Xeon® Processor Motherboard

Rev. 1001

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Item Checklist

- ☑ The GA-7TESM motherboard
- ☑ Serial ATA cable x 6
- ☑ I/O Shield Kit
- ☑ CD for motherboard driver & utility
- ☑ GA-7TESM quick reference guide

* The items listed above are for reference only, and are subject to change without notice.

Chapter 1 Introduction

1.1. Considerations Prior to Installation

Preparing Your Computer

The motherboard contains numerous delicate electronic circuits and components which can become damaged as a result of electrostatic discharge (ESD). Thus, prior to installation, please follow the instructions below:

1. Please turn off the computer and unplug its power cord.
2. When handling the motherboard, avoid touching any metal leads or connectors.
3. It is best to wear an electrostatic discharge (ESD) cuff when handling electronic components (CPU, RAM).
4. Prior to installing the electronic components, please have these items on top of an antistatic pad or within a electrostatic shielding container.
5. Please verify that the power supply is switched off before unplugging the power supply connector from the motherboard.

Installation Notices

1. Prior to installation, please do not remove the stickers on the motherboard. These stickers are required for warranty validation.
2. Prior to the installation of the motherboard or any hardware, please first carefully read the information in the provided manual.
3. Before using the product, please verify that all cables and power connectors are connected.
4. To prevent damage to the motherboard, please do not allow screws to come in contact with the motherboard circuit or its components.
5. Please make sure there are no leftover screws or metal components placed on the motherboard or within the computer casing.
6. Please do not place the computer system on an uneven surface.
7. Turning on the computer power during the installation process can lead to damage to system components as well as physical harm to the user.
8. If you are uncertain about any installation steps or have a problem related to the use of the product, please consult a certified computer technician.

Instances of Non-Warranty

1. Damage due to natural disaster, accident or human cause.
2. Damage as a result of violating the conditions recommended in the user manual.
3. Damage due to improper installation.
4. Damage due to use of uncertified components.
5. Damage due to use exceeding the permitted parameters.
6. Product determined to be an unofficial Gigabyte product.

1.2.   Features Summary

Form Factor	• 12" x 13" EATX size form factor, 8 layers PCB
CPU	• Supports Dual Intel® Xeon® Nehalem-EP 2S / Westmere processors
	• Xeon® Quad Core in LGA 1366 socket
	• Supports QuickPath Interconnect up to 6.4GT/s
	• Enhanced Intel SpeedStep Technology (EIST) & Demand Based Switch (DBS)
	• Support Intel Virtualization Technology (VT)
Chipset	• Intel® 5520 (Tylersburg-36D) Chipset
	• Intel® 82801JR (ICH10R)
Memory	• 18 x 1.5V DDR3 DIMM sockets supporting up to 288 GB of system memory
	• 12 x 1.35V DDR3L DIMM sockets supporting up to 192 GB of system memory
	• 3 channel memory architecture
	• Support 800/1066/1333 memory
	• Support ECC RDIMM/ UDIMM
I/O Control	• ITE IT8720F Super I/O
Expansion Slots	• 1 PCI slots 32-Bit/33MHz (5V)
	• 1 PCI-E x16 slot (Gen2 x16 signal)
	• 1 PCI-Express x8 slots (Gen2 at x8 signal)
	• 1 PCI-Express x8 slots (Gen2 at x4 signal)
SATA RAID Controller	• Intel® ICH10R SATA Controller
	• Supports 6 independant SATA 3.0 Gb/s with Software RAID 0,1, 5,10
On-Board VGA	• ServerEngines Pilot II with 32MB DDR2 memory
SAS Controller (optional)	• LSI SAS 2008 SAS controller
On-Board LAN	• Intel® 82576EB GbE controllersupports dual Gigabit LAN ports
	• Dual Intel® 82574L GbE controllers (Optional)
	• Supports QuickData DMA engine/TCP acceleration/IA-optimized TCP stack/DCA(Direct Cache Access)/LLI, MSI-X,RSS
Internal Connector	• 2 x 8-pin ATX power connector
	• 1 x 24-pin ATX power connector
	• 6 x SATA 3.0Gb/s connectors
	• 1 x Serial connector (COM)
	• 1 x USB 2.0 connectors for additional 2 ports by cable

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	• 2 x mini SAS connector (optional)
	• 1 x front panel connecctor
	• 1 x PSMI connecctor
	• 4 x System fan cable connector
	• 2 x CPU fan cable connectors
Rear Panel I/O	• P/S 2 Keyboard and Mouse Connectors
	• 1 x Serial port
	• 4 x USB 2.0 dual-port connector
	• 1 x VGA connector
	• 1 x iKVM LAN port
	• 4 x RJ45 LAN ports
Hardware Monitor	• Windbond 83792G controller
	• Enhanced features with CPU Vcore, 1.5V reference, VCC3 (3.3V) , VBAT3V, +5VSB, and System Temperature values viewing
	• CPU/Power/System Fan Revolution Detect
	• CPU shutdown when overheat
	• System Voltage Detect
	• Support basic ASF remote transaction through CSA Bus with hardware circuit
BIOS	• Phoenix BIOS on 16Mb flash RAM
Additional Features	• Supports S4, S5 under Windows Operating System
	• Wake on LAN (WOL)
	• Wake on Ring (WOR)
	• AC Recovery
	• Supports Console Redirection
	• Supports 4-pin Fan controller

1.3. GA-7TESM Motherboard Component

No	Code	Description
1.	CPU0	Primary CPU
2.	CPU1	Secondary CPU
3.	U24	Intel Tylersburg-36D IOH
4.	U39	Intel ICH10R
5.	U148	ITE IT8720F Super I/O controller
6.	U29	LSI SAS2008 SAS controller (**Optional)
7.	U63	ServerEngines PilotII
8.	U27	Intel 82576EB GbE controller
9.	U150/U152	Intel 82574L GbE controllers (Optional)
10.	U69	BMC Flash ROM
11.	U80	SMSC 8700 management 10/100 PHY
12.	KB_MS1	PS/2 Keyboard/Mouse ports
13.	COMA_VGA1	Serial/VGA ports
14.	USBX4_1	USB ports
15.	GBE1_1	Gigabit LAN ports
16.	MNGT_NIC1	10/100 LAN port (for KVM server management)
17.	GBE1_2	Gigabit LAN ports (Optional)
18.	DDR_P0C0D2	Channel A slot 2 (for promary CPU)
	DDR_P0C0D1	Channel A slot 1 (for promary CPU)
	DDR_P0C0D0	Channel A slot 0 (for promary CPU)
19.	DDR_P0C1D2	Channel B slot 2 (for promary CPU)
	DDR_P0C1D1	Channel B slot 1 (for promary CPU)
	DDR_P0C1D0	Channel B slot 0 (for promary CPU)
20.	DDR_P0C2D2	Channel C slot 2 (for secondary CPU)
	DDR_P0C2D1	Channel C slot 1 (for secondary CPU)
	DDR_P0C2D0	Channel C slot 0 (for secondary CPU)
21.	DDR_P1C0D2	Channel A slot 2 (for secondary CPU)
	DDR_P1C0D1	Channel A slot 1 1(for secondary CPU)
	DDR_P1C0D0	Channel A slot 0 (for secondary CPU)
22.	DDR_P1C1D2	Channel B slot 2 (for secondary CPU)
	DDR_P1C1D1	Channel B slot 1 (for secondary CPU)
	DDR_P1C1D0	Channel B slot 0 (for secondary CPU)
23.	DDR_P1C2D2	Channel C slot 2 (for secondary CPU)
	DDR_P1C2D1	Channel C slot 1 (for secondary CPU)
	DDR_P1C2D0	Channel C slot 0 (for secondary CPU)
24.	MINISAS_1	Mini SAS connector #1 (**Optional)
25.	MINISAS_2	Mini SAS connector #2 (**Optional)
26.	SATA0	SATA0 data cable connector
27.	SATA1	SATA1 data cable connector
28.	SATA2	SATA2 data cable connector

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No	Code	Description
29.	SATA3	SATA3 data cable connector
30.	SATA4	SATA4 data cable connector
31.	SATA5	SATA5 data cable connector
32.	F_PANEL1	Front panel connector
33.	USB1	USB cable connector
34.	COMB1	COM cable connector
35.	PCI1	PCI 32bit/33MHz slot
36.	PCI-E3	PCI-E x8 slot (Gen2 at x4 bandwidth)
37.	PCI-E2	PCI-E x8 slot (Gen2 at x8 signal)
38.	PCI-E1	PCI-E x16 slot (Gen2 at x16 signal)
39.	BAT1	CMOS battery
40.	ATX1	24-pin Power connector
41.	12V_AUX1	CPU0 8-pin Power connector
42.	12V_AUX0	CPU1 8-pin Power connector
43.	FAN_CPU0	CPU0 fan cable connector
44.	FAN_CPU1	CPU1 fan cable connector
45.	FAN_SYS1	System fan 1 cable connector
46.	FAN_SYS2	System fan 2 cable connector
47.	FAN_SYS3	System fan 3 cable connector
48.	FAN_SYS4	System fan 4 cable connector
49.	PSMI1	PSMI connector
50.	SGPIO_JP2	SGPIO JP2 jumper
51.	SGPIO_JP1	SGPIO JP1 jumper
52.	IPMB1	IPMB connector
53.	BIOS_RVCR1	BIOS Recovery jumper
54.	PASS_DIS1	Password Disable jumper
55.	CLR_CMOS1	Clear CMOS jumper
56.	CLR_NVRAM1	Clear NVRAM jumper

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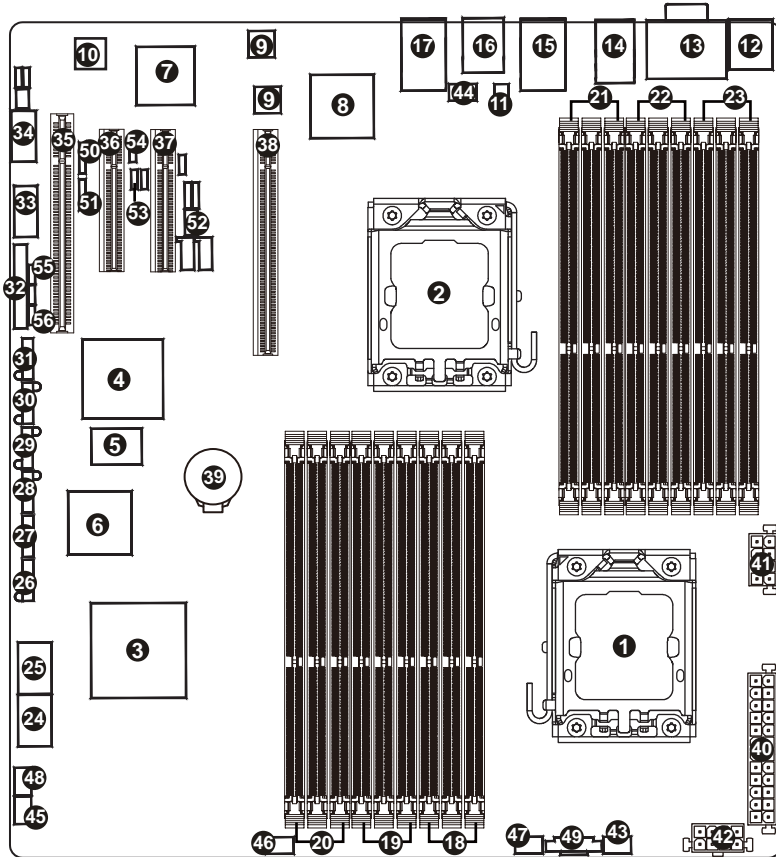
Chapter 2 Hardware Installation Process

2.1. Installing Processor and CPU Haet Sink

Before installing the processor and cooling fan, adhere to the following cautions:

1. The processor will overheat without the heatsink and/or fan, resulting in permanent irreparable damage.
2. Never force the processor into the socket.
3. Apply thermal grease on the processor before placing cooling fan.
4. Please make sure the CPU type is supported by the motherboard.
5. If you do not match the CPU socket Pin 1 and CPU cut edge well, it will cause improper installation. Please change the insert orientation.

2.1.1. Installing CPU

Step 1   Raise the metal locking lever on the socket.

Step 2   Remove the plastic covering on the CPU socket.

Step 3   Insert the CPU with the correct orientation. The CPU only fits in one orientation.

Step 4   Once the CPU is properly placed, please replace the metal cover and push the metal lever back into locked position.
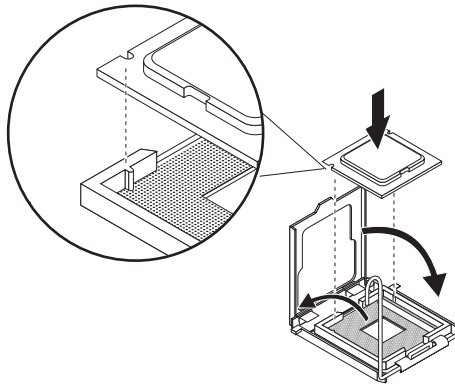
2.1.2. Installing Heat Sink

Step 1   Attach the heat sink clip to the processor socket.

Step 2   Secure the cooing fan with screws.

Step 3   Connect processor fan can cable to the processor fan connector
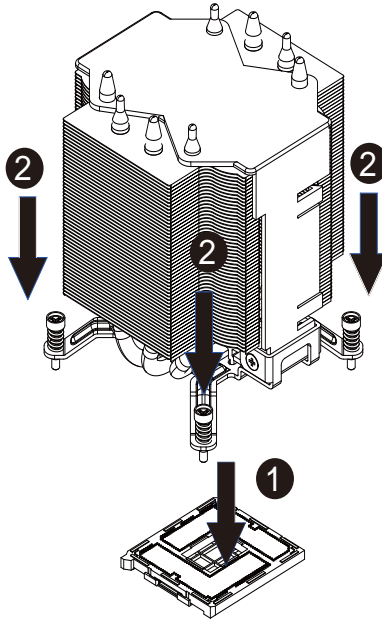
2.2. Installing memory modules

⚠️ **CAUTION**

Before installing the memory modules, please comply with the following conditions:

1. Please make sure that the memory is supported by the motherboard. It is recommended to use the memory with similar capacity, specifications and brand.
2. Before installing or removing memory modules, please make sure that the computer power is switched off to prevent hardware damage.
3. Memory modules have a foolproof insertion design. A memory module can be installed in only one direction. If you are unable to insert the module, please switch the direction.

The motherboard supports DDR3 memory modules, whereby BIOS will automatically detect memory capacity and specifications. Memory modules are designed so that they can be inserted only in one direction. The memory capacity used can differ with each slot.

Memory sockets for Processor 1

Memory sockets for Processor 0
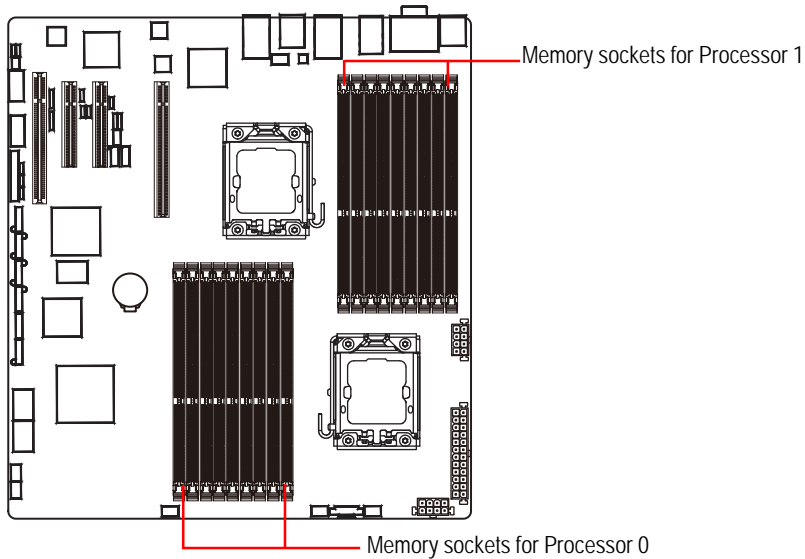
Installation Steps:

Step 1.   Insert the DIMM memory   module vertically into the DIMM slot, and push it down.

Step 2.   Close the plastic clip at both edges of the DIMM slots to lock the DIMM module.

NOTE! DIMM must be populated in order starting from DIMMA1/D1 socket. For dual-channel operation, DIMMs must be installed in matched pairs.

Step 3.   Reverse the installation steps when you wish to remove the DIMM module.
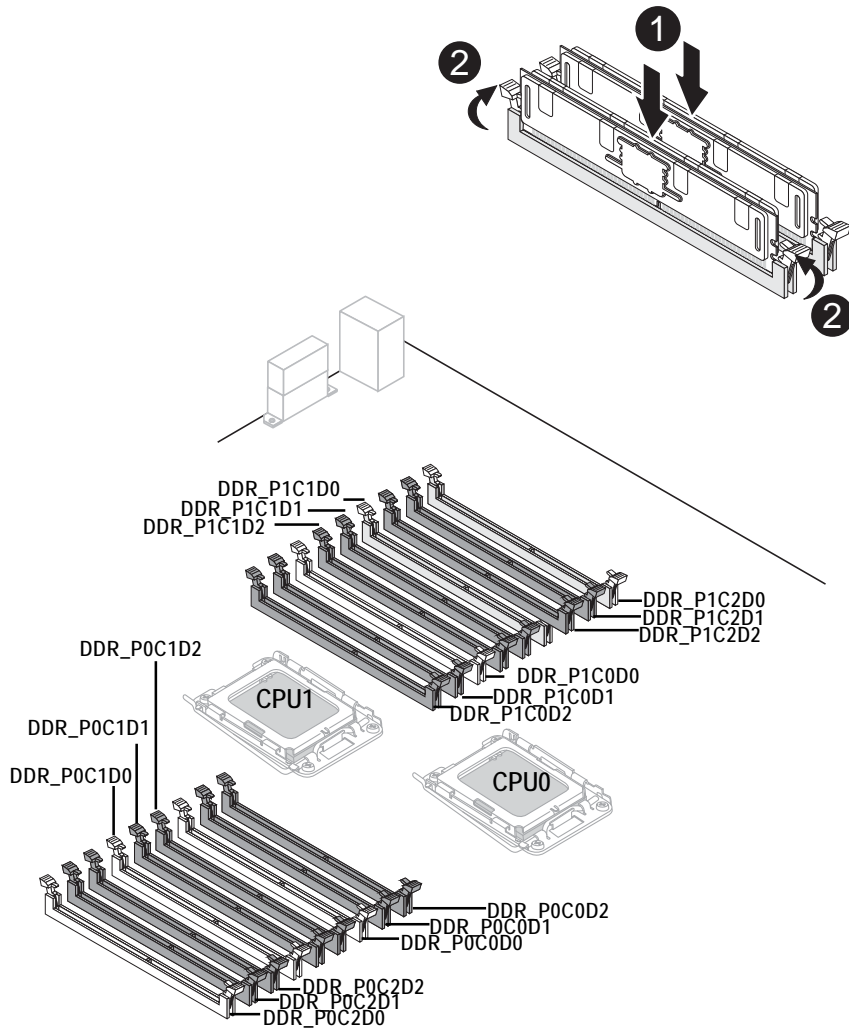
U-DIMM Population Table

	Channel A			Channel B			Channel C		
	P0C0D0 P1C0D0	P0C0D1 P1C0D1	P0C0D2 P1C0D2	P0C1D0 P1C1D0	P0C1D1 P1C1D1	P0C1D2 P1C1D2	P0C2D0 P1C2D0	P0C2D1 P1C2D1	P0C2D2 P1C2D2
U-DIMM	Single-Rank	x	x	Single-Rank	x	x	Single-Rank	x	x
	Dual-Rank	x	x	Dual-Rank	x	x	Dual-Rank	x	x
	Single-Rank	Single-Rank	x	Single-Rank	Single-Rank	x	Single-Rank	Single-Rank	x
	Dual-Rank	Single-Rank	x	Dual-Rank	Single-Rank	x	Dual-Rank	Single-Rank	x
	Single-Rank	Dual-Rank	x	Single-Rank	Dual-Rank	x	Single-Rank	Dual-Rank	x
	Dual-Rank	Dual-Rank	x	Dual-Rank	Dual-Rank	x	Dual-Rank	Dual-Rank	x

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R-DIMM Population Table

		Channel A			Channel B			Channel C		
		P0C0D0 P1C0D0	P0C0D1 P1C0D1	P0C0D2 P1C0D2	P0C1D0 P1C1D0	P0C1D1 P1C1D1	P0C1D2 P1C1D2	P0C2D0 P1C2D0	P0C2D1 P1C2D1	P0C2D2 P1C2D2
R-DIMM		Single-Rank	x	x	Single-Rank	x	x	Single-Rank	x	x
		Dual-Rank	x	x	Dual-Rank	x	x	Dual-Rank	x	x
		Quad-Rank	x	x	Quad-Rank	x	x	Quad-Rank	x	x
		Single-Rank	Single-Rank	x	Single-Rank	Single-Rank	x	Single-Rank	Single-Rank	x
		Dual-Rank	Single-Rank	x	Dual-Rank	Single-Rank	x	Dual-Rank	Single-Rank	x
		Single-Rank	Dual-Rank	x	Single-Rank	Dual-Rank	x	Single-Rank	Dual-Rank	x
		Dual-Rank	Dual-Rank	x	Dual-Rank	Dual-Rank	x	Dual-Rank	Dual-Rank	x
		Quad-Rank	Single-Rank	x	Quad-Rank	Single-Rank	x	Quad-Rank	Single-Rank	x
		Quad-Rank	Dual-Rank	x	Quad-Rank	Dual-Rank	x	Quad-Rank	Dual-Rank	x
		Quad-Rank	Quad-Rank	x	Quad-Rank	Quad-Rank	x	Quad-Rank	Quad-Rank	x
		Single-Rank	Single-Rank	Single-Rank	Single-Rank	Single-Rank	Single-Rank	Single-Rank	Single-Rank	Single-Rank
		Dual-Rank	Single-Rank	Single-Rank	Dual-Rank	Single-Rank	Single-Rank	Dual-Rank	Single-Rank	Single-Rank
		Single-Rank	Dual-Rank	Single-Rank	Single-Rank	Dual-Rank	Single-Rank	Single-Rank	Dual-Rank	Single-Rank
		Single-Rank	Single-Rank	Dual-Rank	Single-Rank	Single-Rank	Dual-Rank	Single-Rank	Single-Rank	Dual-Rank
		Dual-Rank	Dual-Rank	Single-Rank	Dual-Rank	Dual-Rank	Single-Rank	Dual-Rank	Dual-Rank	Single-Rank
		Dual-Rank	Single-Rank	Dual-Rank	Dual-Rank	Single-Rank	Dual-Rank	Dual-Rank	Single-Rank	Dual-Rank
		Single-Rank	Dual-Rank	Dual-Rank	Single-Rank	Dual-Rank	Dual-Rank	Single-Rank	Dual-Rank	Dual-Rank
		Dual-Rank	Dual-Rank	Dual-Rank	Dual-Rank	Dual-Rank	Dual-Rank	Dual-Rank	Dual-Rank	Dual-Rank

2.3. Connect ribbon cables, cabinet wires, and power supply

2.3.1. I/O Back Panel Introduction
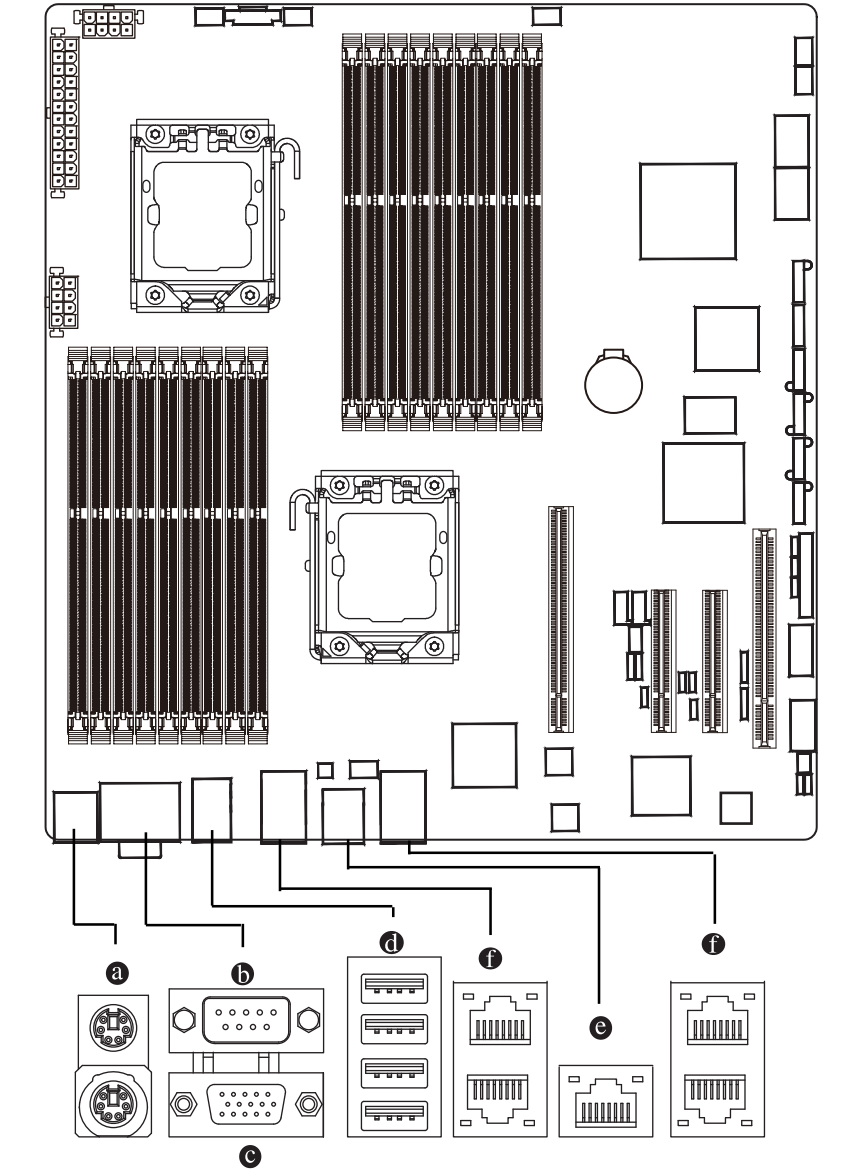
ⓐ PS/2 Keyboard and PS/2 Mouse Connector

To install a PS/2 port keyboard and mouse, plug the mouse to the upper port (green) and the keyboard to the lower port (purple).

ⓑ Serial Port

Connects to serial-based mouse or data processing devices.

ⓒ Video Port

The video in port allows connect to video in, which can also apply to video loop thru function.

ⓓ USB Port

Before you connect your device(s) into USB connector(s), please make sure your device(s) such as USB keyboard, mouse, scanner, zip, speaker...etc. have a standard USB interface. Also make sure your OS supports USB controller. If your OS does not support USB controller, please contact OS vendor for possible patch or driver updated. For more information please contact your OS or device(s) vendors.

ⓔ KVM Server Management 10/100 LAN Port

The LAN port provides Internet connection with data transfer speeds of 10/100Mbps.

ⓕ Gigabit LAN Ports

The LAN port provides Internet connection of Gigabit Ethernet with data transfer speeds of 10/100/1000Mbps.

LAN LED Description

LED2 (Green/Yellow) ⟶ ⟵ LED1 (Green)
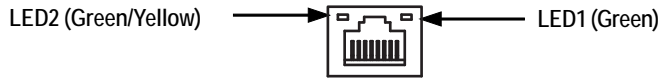
Name	Color	Condition	Description
LED1	Green	ON	LAN Link / no Access
	Green	BLINK	LAN Access
	-	OFF	Idle
LED2	-	OFF	10Mbps connection
	Green	BLINK	Port identification with 10 Mbps connection
	Green	ON	100Mbps connection
	Green	BLINK	Port identification with 100Mbps connection
	Yellow	ON	1Gbps connection
	Yellow	BLINK	Port identification with 1Gbps connection

2.4. Connectors Introduction

1. ATX1
2. 12V_AUX1
3. 12V_AUX0
4. COMB1
5. USB1 (Front USB cable connector)
6. F_PANEL1
7. SATA0-5 (SATA data cable connector)
8. PSMI1
9. SYS_FAN4 (System fan connector)
10. SYS_FAN1 (System fan connector)
11. SYS_FAN2 (System fan connector)
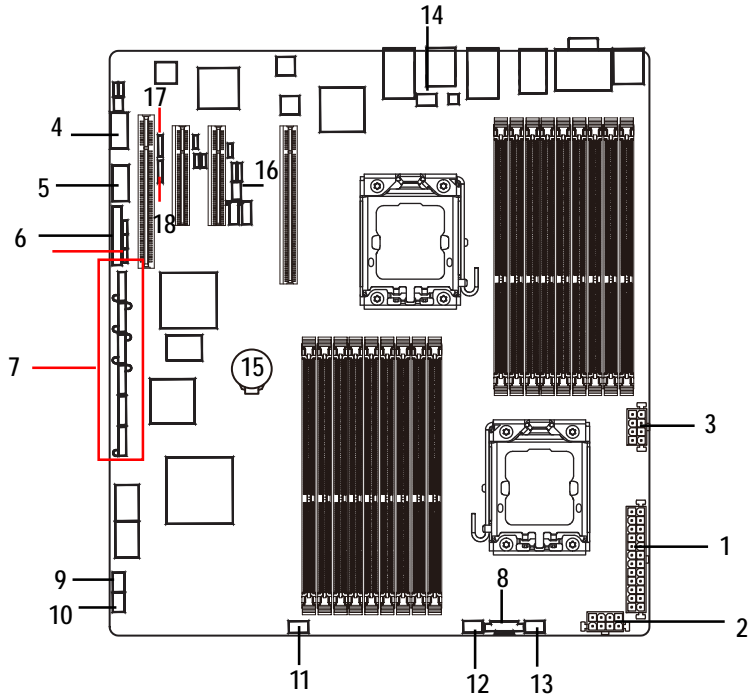
12. SYS_FAN3 (System fan connector)
13. FAN_CPU0 (CPU0 fan cable connector)
14. FAN_CPU1 (CPU1 fan cable connector)
15. BAT1
16. IPMB1
17. SGPIO_JP2
18. SGPIO_JP1

1/2/3) ATX1/12V_AUX0/12V_AUX1 (24-pin/8-pin ATX power connectors)

With the use of the power connector, the power supply can supply enough stable power to all the components on the motherboard. Before connecting the power connector, please make sure that all components and devices are properly installed. Align the power connector with its proper location on the motherboard and connect tightly.

The ATX_12V power connector mainly supplies power to the CPU. If the ATX_12V power connector is not connected, the system will not start.

Caution! Please use a power supply that is able to support the system voltage requirements. It is recommended that a power supply that can withstand high power consumption be used (350W or greater). If a power supply is used that does not provide the required power, the result can lead to an unstable system or a system that is unable to start. If you use a power supply that provides a 24-pin ATX power connector, please remove the small cover on the power connector on the motherboard before plugging in the power cord; otherwise, please do not remove it.
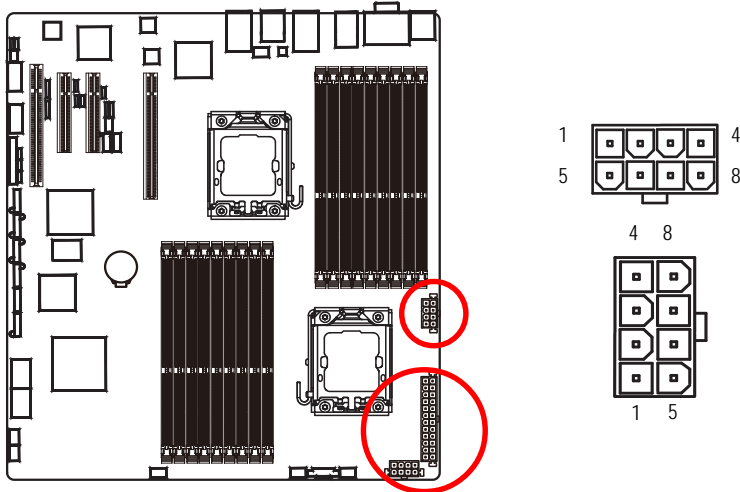
CPU0/DDR3 socket for CPU0

Pin No.	Definition
1	GND
2	GND
3	GND
4	GND
5	P12V_CPU0
6	P12V_CPU0
7	P12V_DDR3_CPU0
8	P12V_DDR3_CPU0

CPU1/DDR3 socket for CPU1

Pin No.	Definition
1	GND
2	GND
3	GND
4	GND
5	P12V_CPU1
6	P12V_CPU1
7	P12V_DDR3_CPU1
8	P12V_DDR3_CPU1
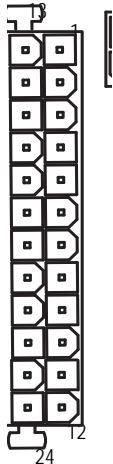
Pin No.	Definition	Pin No.	Definition
1	3.3V	13	3.3V
2	3.3V	14	-12V
3	GND	15	GND
4	+5V	16	PS_ON(soft On/Off)
5	GND	17	GND
6	+5V	18	GND
7	GND	19	GND
8	Power Good	20	-5V
9	5V SB(stand by +5V)	21	+5V
10	+12V	22	+5V
11	+12V(Only for 24-pin ATX)	23	+5V (Only for 24-pin ATX)
12	3.3V(Only for 24-pin ATX)	24	GND(Only for 24-pin ATX)

4) COMB1
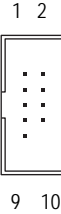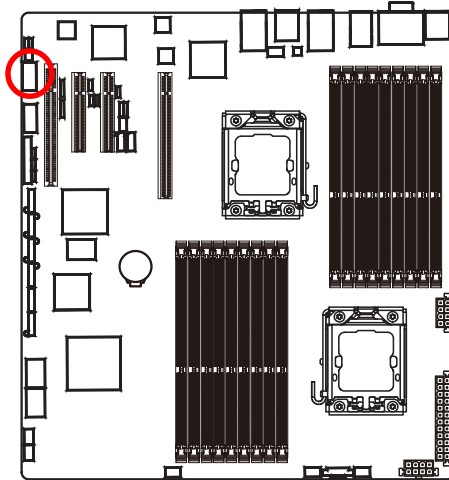
Pin No.	Definition
1	DCD-
2	SIN2
3	SOUT2
4	DTR2-
5	GND
6	DSR2-
7	RTS2-
8	CTS2-
9	RI2-
10	NC

1 2

9 10

5) USB1 (USB cable connector)

Be careful with the polarity of the front USB connector. Check the pin assignment carefully while you connect the front USB cable, incorrect connection between the cable and connector will make the device unable to work or even damage it. For optional front USB cable, please contact your local dealer.
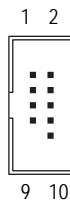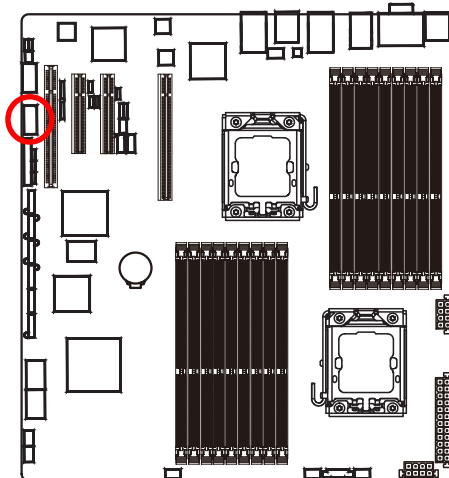
Pin No.	Definition
1	5V power
2	5V power
3	-FUSB2
4	-FUSB3
5	+FUSB2
6	+FUSB3
7	GND
8	GND
9	NC
10	NC

1 2

9 10

6) F_PANEL (2X12 Pins Front Panel connector)

Please connect the power LED, PC speaker, reset switch and power switch of your chassis front panel to the F_PANEL connector according to the pin assignment above.
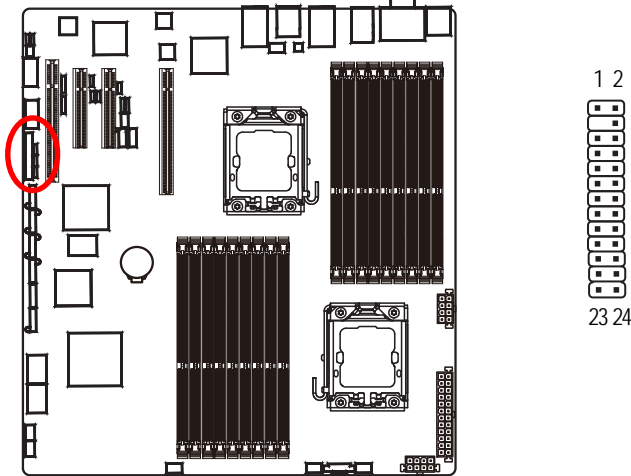
Pin No.	Signal Name	Description
1.	Power LED +	Power LED Signal anode (+)
2.	5V standby	P5V Stand By Power
3.	Pin reomoved	Pin removed
4.	KVM_LAN active LED-	KVM LAN active LED Signal cathode(-)
5.	Power LED -	Power LED Signal cathode(-)
6.	KVM_LAN active LED-	KVM LAN active LED Signal anode (+)
7.	HD status LED+	Hard Disk LED Signal anode (+)
8.	System ready LED+	System Fan Fail LED Signal anode (+)
9.	HD status LED-	Hard Disk LED Signal cathode(-)
10.	System ready LED-	System Fan Fail LED Signal cathode(-)
11.	Power on switch	Power button
12.	LAN1 active LED (-)	LAN1 active LED Signal cathode(-)
13.	GND	Ground
14.	LAN1 active LED (+)	LAN1 active LED Signal anode (+)
15.	Reset switch	Reset button Signal
16.	SMBUS data	SMBusData
17.	GND	Ground
18.	SMBUS clock	SMBusClock
19.	N C	No connect
20.	CASEOPEN	Chassis intrusion Signal
21.	GND	Ground
22.	LAN2 active LED (-)	LAN2 active LED Signal cathode(-)
23.	NMI switch	NMI switch Signal
24.	LAN2 active LED (+)	LAN2 active LED Signal anode (+)

7) SATA 0~5 (Serial ATA cable connectors)

SATA 3Gb/s can provide up to 300MB/s stransfer rate. Please refer to the BIOS setting for the SATA 3Gb/s and install the proper driver in order to work properly.

7

1

Pin No.	Definition
1	GND
2	TXP
3	TXN
4	GND
5	RXN
6	RXP
7	GND
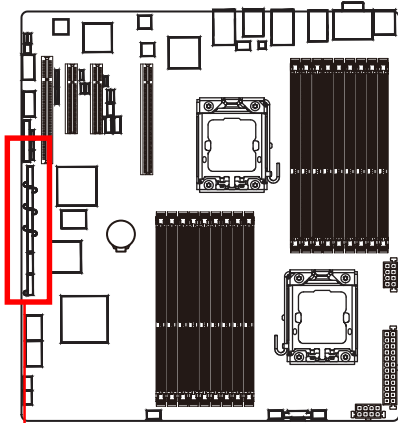
SATA5
SATA4
SATA3
SATA2
SATA1
SATA0

8) PSMI1 (SMBUS connector for power supply)

1 ••••• 5
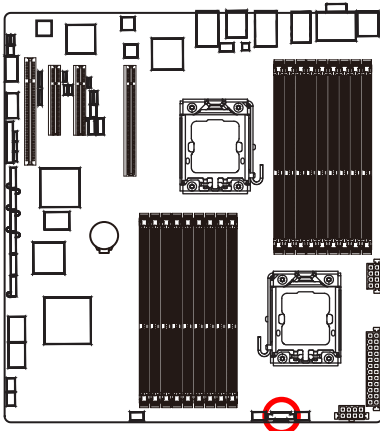
Pin No.	Definition
1	SMBus Clock
2	SMBUS Data
3	SMBUS Alert
4	GND
5	3.3V

9~14) FAN_CPU0/1 / FAN_SYS1/2/3/4 (CPU fan / System fan cable connectors)

The cooler fan power connector supplies a +12V power voltage via a 3-pin/4-pin(CPU_FAN) power connector and possesses a foolproof connection design.

Most coolers are designed with color-coded power connector wires. A red power connector wire indicates a positive connection and requires a +12V power voltage. The black connector wire is the ground wire (GND).

Remember to connect the CPU/system fan cable to the FAN_CPU/FAN_SYS connector to prevent CPU damage or system hanging caused by overheating.

Pin No.	Definition
1	GND
2	12V
3	Sense
4	Control
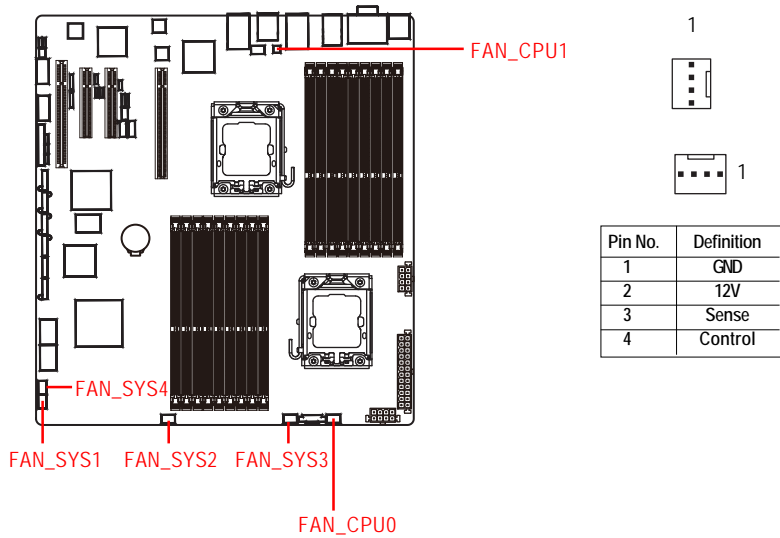
15) BAT (Battery)

If you want to erase CMOS...
1.Turn OFF the computer and unplug the power cord.
2.Remove the battery, wait for 30 second.
3.Re-install the battery.
4.Plug the power cord and turn ON the computer.
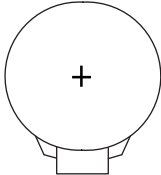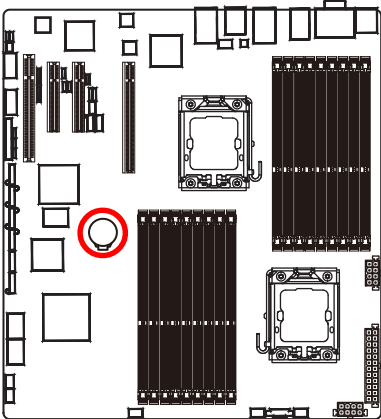
CAUTION

❖ Danger of explosion if battery is incorrectly replaced.

❖ Replace only with the same or equivalent type recommended by the manufacturer.

❖ Dispose of used batteries according to the manufacturer's instructions.

16) IPMB1 (IPMB Type A connector)

1
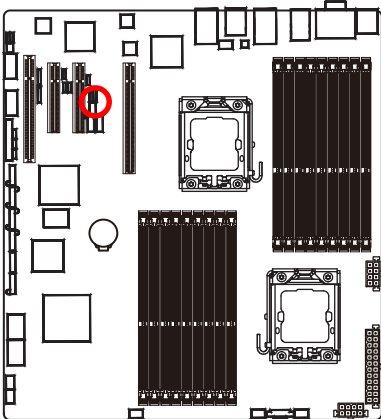
Pin No.	Definition
1	IPMB_SMBCLK
2	GND
3	IPMB_SMBDAT

17/18) SGPIO_JP2/SGPIO_JP1 (ICH10 SGPIO connectors)

SGPIO is stands for Serial General Purpose Input/Output which is a 4-signal (or 4-wire) bus used between a Host Bus Adapter (HBA) and a backplane. Out of the 4 signals, 3 are driven by the HBA and 1 is driven by the backplane. Typically, the HBA is a storage controller located inside a server, desktop, rack or workstation computer that interfaces with Hard disk drives (HDDs) to store and retrieve data.
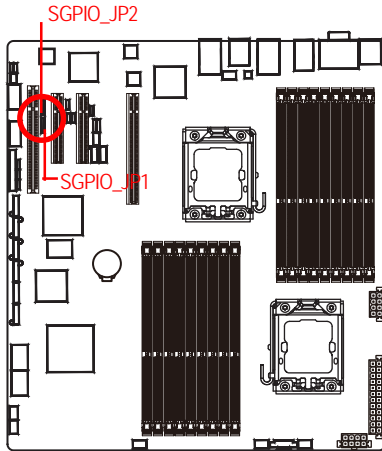
SGPIO_JP1

Pin No.	Definition
1	GND
2	NC
3	ICH_SATA_SDATA0
4	ICH_SATA_SLOAD
5	ICH_SATA_SCLOCK

SGPIO_JP2

Pin No.	Definition
1	GND
2	NC
3	ICH_SATA_SDATA1
4	ICH_SATA_SLOAD
5	ICH_SATA_SCLOCK

2.5. Jumper Setting
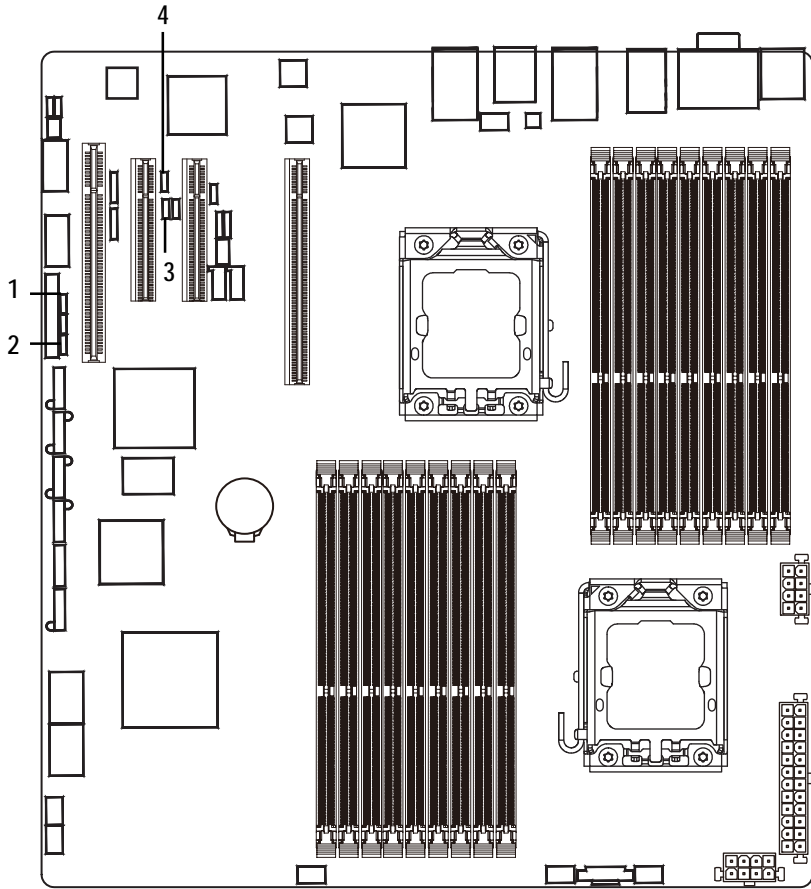
1) CLR_CMOS1 (Clear CMOS jumper)

You may clear the CMOS data to its default values by this jumper.

1 ▢ 1-2 close: Normal operation (Default setting)

1 ▢ 2-3 close: Clear CMOS

2) CLR_RTC1 (Clear RTC jumper)

1 ▢ 1-2 close: Normal operation (Default setting)

1 ▢ 2-3 close: Clear RTC status

3) BIOS_RVCR1 (BIOS Revocery jumper)

1 ▢ 1-2 close: Normal operation. (Default setting)

1 ▢ 2-3 close: Enable BIOS Recovery function.

4) PASS_DIS1 (Skip Supervisor password jumper)

1 ▢ 1-2 Close: Normal operation. (Default setting)

1 ▢ 2-3 Close: Clear Supervisor Password in BIOS setup menu.

BIOS Setup

BIOS (Basic Input and Output System) includes a CMOS SETUP utility which allows user to configure required settings or to activate certain system features.
The CMOS SETUP saves the configuration in the CMOS SRAM of the motherboard.
When the power is turned off, the battery on the motherboard supplies the necessary power to the CMOS SRAM.

ENTERINGSETUP

When the power is turned on, press the **<F2>** button during the BIOS POST (Power-On Self Test) will take you to the CMOS SETUP screen. You can enter the BIOS setup screen by pressing "Ctrl + F1".

CONTROLKEYS

<↑>	Move to previous item
<↓>	Move to next item
<←>	Move to the item in the left hand
<→>	Move to the item in the right hand
<Esc>	Main Menu - Quit and not save changes into CMOS Status Page Setup Menu and Option Page Setup Menu - Exit current page and return to Main Menu
<+/PgUp>	Increase the numeric value or make changes
<-/PgDn>	Decrease the numeric value or make changes
<F1>	General help, only for Status Page Setup Menu and Option Page Setup Menu
<F2>	Reserved
<F3>	Reserved
<F4>	Reserved
<F6>	Reserved
<F7>	Reserved
<F8>	Reserved
<F9>	Load the Optimized Defaults
<F10>	Save all the CMOS changes, only for Main Menu

GETTINGHELP

Main Menu

The on-line description of the highlighted setup function is displayed at the bottom of the screen.

Status Page Setup Menu / Option Page Setup Menu

Press F1 to pop up 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>.

Select the **Load Setup Defaults** item in the BIOS Exit Setup menu when somehow the system is not stable as usual. This action makes the system reset to the default settings for stability.

- **Main**

  This setup page includes all the items in standard compatible BIOS.

- **Advanced**

  This setup page includes all the items of Phoenix BIOS special enhanced features.

  (ex: Auto detect fan and temperature status, automatically configure hard disk parameters.)

- **Power**

  This setup page includes all the items of Green function features.

- **Security**

  Change, set, or disable password. It allows you to limit access the system and setup.

- **Server**

  Server additional features enabled/disabled setup menus.

- **Boot**

  This setup page include all the items of first boot function features.

- **Exit**

  There are five optionsin this selection: Exit Saving Changes, Exit Discarding Changes, Load Optimal Defaults, Load Failsafe Defaults, and Discard Changes.

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Main

Once you enter Phoenix BIOS Setup Utility, the Main Menu (Figure 1) will appear on the screen. Use arrow keys to select among the items and press <Enter> to accept or enter the sub-menu.

```
                  Phoenix SecureCore(tm) Setup Utility
    Main     Advanced    Power    Security    Server    Boot     Exit

                                                  Item Specific Help
    System Date:         [12/16/2009]
    System Time:         [19:07:12]
                                              <Tab>, <Shift-Tab>, or
    BIOS Version:        7TESM-D3              <Enter> selects field.
    BIOS Date:           11/27/2009

    CPU Type:            Intel(R) Xeon(R) CPU
    CPU Speed:           3.33 GHz
    CPU Count:           2

    Total Memory Size:   8192 MB




    F1   Help   ↑↓  Select Item  -/+   Change Values    F9   Setup Defaults
    Esc  Exit   ↔   Select Menu   Enter Select ▶ Sub-Menu  F10  Save and Exit
```

Figure 1: Main

☞ **System Date**

Set the System Date. Note that the "Day" automatically changed after you set the date.

☞ **System Time**

The time is calculated based on the 24-hour military time clock. Set the System Time (HH:MM:SS)

☞ **CPU Type/CPU Speed/ CPU Count**

This category includes the information of **CPU type**, **Speed** ,and **number of CPU count.**

☞ **Total Memory**

The BIOS determines how much total memory is present during the POST.

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Advanced

About This Section: Advanced

With this section, allowing user to configure your system for advanced operation. User can set the Processor configuration, Memory configuration, Advanced chipset control, PCI configuration , SATA configuration, I/O Device configuration, Boot configuration, and Thermal and Acoustic configuration.

```
          Phoenix SecureCore(tm) Setup Utility
  Main    Advanced    Power    Security    Server    Boot    Exit

                                               Item Specific Help
  ▶ Processor Configuration
  ▶ Memory Configuration
  ▶ Advanced Chipset Configuration            Select options for
  ▶ PCI Configuration                         Processor Configuration
  ▶ SATA Configuration
  ▶ I/O Device Configuration
  ▶ Boot Configuration
  ▶ Thermal and Acoustic Configuration




  F1   Help  ↑↓  Select Item  -/+   Change Values    F9   Setup Defaults
  Esc  Exit  ↔   Select Menu  Enter  Select ▶ Sub-Menu  F10  Save and Exit
```

Figure 2: Advanced

Processor Configuration

```
                Phoenix SecureCore(tm) Setup Utility
        Advanced
┌─────────────────────────────────────────────────┬──────────────────────┐
│       Processor Configuration                     │   Item Specific Help │
│                                                   │                      │
│   CPU 0 Information:                              │  Configures the MP   │
│       Processor Speed:           3.33 GHz         │  Specification revision│
│       Processor CPUID:           000106A5         │  level.  Some operating│
│       Processor L2 Cache:        1024 KB          │  systems will require │
│       Processor L3 Cache:        8192 KB          │  1.1 for compatibility│
│                                                   │  reasons.            │
│   CPU 1 Information:                              │                      │
│       Processor Speed:           3.33 GHz         │                      │
│       Processor CPUID:           000106A5         │                      │
│       Processor L2 Cache:        1024 KB          │                      │
│       Processor L3 Cache:        8192 KB          │                      │
│                                                   │                      │
│   QPI Frequency:                 6.400 GT/s       │                      │
│   Multiprocessor Specification:  [1.4]            │                      │
│                                          ▼        │                      │
├─────────────────────────────────────────────────┴──────────────────────┤
│ F1   Help  ↑↓  Select Item  -/+   Change Values   F9   Setup Defaults   │
│ Esc  Exit  ↔   Select Menu  Enter Select ▶ Sub-Menu F10  Save and Exit  │
└──────────────────────────────────────────────────────────────────────────┘
```

```
                Phoenix SecureCore(tm) Setup Utility
        Advanced
┌─────────────────────────────────────────────────┬──────────────────────┐
│       Processor Configuration                     │   Item Specific Help │
│                                                   │                      │
│   Intel Virtualization Technology:  [Enabled]  ▲  │  Enabling Hyper-     │
│   Execute Disable Bit:              [Enabled]     │  Threading Technology│
│   Hardware Prefetcher:              [Enabled]     │  activates additional│
│   Adjacent Cache Line Prefetch:     [Enabled]     │  CPU threads.  These │
│   CPU Thermal Trip:                 [Enabled]     │  threads may appear as│
│   BMC Action for CPU Thermal Trip:  [Power Off]   │  additional processors│
│   Processor Retest:                 [Disabled]    │  but will share some │
│                                                   │  resources with the  │
│   MPS Ordering                      [Legacy Order]│  other threads within│
│ ▶ Processor Power Management                       │  the physical package.│
│                                                   │                      │
│   NUMA Aware:                       [Enabled]     │                      │
│   ACPI SRAT Report:                 [Enabled]     │                      │
│   Active Processor Cores:           [Max. Cores]  │                      │
│   Hyper-Threading Technology:       [Enabled]  ▼  │                      │
├─────────────────────────────────────────────────┴──────────────────────┤
│ F1   Help  ↑↓  Select Item  -/+   Change Values   F9   Setup Defaults   │
│ Esc  Exit  ↔   Select Menu  Enter Select ▶ Sub-Menu F10  Save and Exit  │
└──────────────────────────────────────────────────────────────────────────┘
```

Figure 2-1: Processor Configuration

SUPER LOW

```
                Phoenix SecureCore(tm) Setup Utility
        Advanced

        Processor Configuration                  Item Specific Help

   BMC Action for CPU Thermal Trip:  [Power Off]  ▲   Enable Thermal Monitor
   Processor Retest:                 [Disabled]

   MPS Ordering                      [Legacy Order]
 ▶ Processor Power Management

   NUMA Aware:                       [Enabled]
   ACPI SRAT Report:                 [Enabled]
   Active Processor Cores:           [Max. Cores]
   Hyper-Threading Technology:       [Enabled]
   A20M Support:                     [Enabled]
   Machine Checking:                 [Enabled]

   Discrete MTRR Allocation:         [Disabled]
   Thermal Management:               [Enabled]   ▼

 F1   Help  ↑↓  Select Item  -/+   Change Values    F9   Setup Defaults
 Esc  Exit  ↔   Select Menu  Enter Select ▶ Sub-Menu F10  Save and Exit
```

Figure 2-1: Processor Configuration

☞ **Processor Configuration**

This category includes the information of **CPU Speed, Processor ID ,Processor L2 / L3 Cache**, and **QPI Frequency.** And setup sub-menu for **CPU Power Management**.

Please note that setup menu options will be variable depends on the type of CPU.

☞**Multiprocessor Specification**

This option allows user to configure the multiprocessor(MP) specification revision level. Some operating system will require 1.1 for compatibility reasons.

▶▶1.4   Support MPS Version 1.4 . (Default setting)

▶▶1.1   Support M PS Version 1.1.

☞**Intel (R) Virtualization Technology**

Intel(R) Virtualization Technology will allow a platform to run multiple operating systems and applications in independent partitions. With virtualization, one computer system can function as multiple "virtual" systems. With processor and I/O enhancements to Intel's various platforms, Intel Virtualization Technology can improve the performance and robustness of today's software-only virtual machine solutions.

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> ▶▶Enabled   Enable Intel Virtualization Technology. (Default setting)

> ▶▶Disabled   Disable this function.

☞**Execute Disable Bit**

> ▶▶Enabled   Enable Execute Disable Bit. (Default setting)

> ▶▶Disabled   Disable this function.

☞**Hardware Prefetcher**

The Hardware Prefetcher looks the streams of data. The data is prefetched into L2 from external memory. Disabling of this item may impact processor performance.

> ▶▶Enabled   Enabled Hardware Prefetcher. (Default setting)

> ▶▶Disabled   Disables this function.

☞**Adjacent Cache Line Prefetch**

When enable this item, both cache lines that comprise a cache line pair when it determines data required is not currently in its cache.

> ▶▶Enabled   Adjacent Cache Line Prefetch. (Default setting)

> ▶▶Disabled   Disables this function.

☞**CPU Thermal Trip**

> ▶▶Enabled   Enable CPU Thermal Trip. (Default setting)

> ▶▶Disabled   Disable CPU Thermal Trip.

☞**BMC Action for CPU Thermal Trip**

> ▶▶Options   No Action, Power Off, Power Cycle. Default setting is Power off.

☞**Processor Retest**

> ▶▶Enabled   Enable Processor Retest.

> ▶▶Disabled   Disable Processor Retest. (Default setting)

☞**MPS Ordering**

The legacy ordering should be used for Windows 2000 or eariler operaying systems. The modern ordering should be used for Windows XP or a later operating systems.

> ▶▶Options   Legacy Ordering, and Modern Ordering.

☞**NUMA Aware**

> ▶▶Enabled   Enable NUMA Aware. (Default setting)

▶▶Disabled   Disable NUMA Aware.

☞ **ACPI SRAT Report**

▶▶Enabled   Enable ACPI SRAT Report. (Default setting)

▶▶Disabled   Disable ACPI SRAT Report.

☞ **Active Processor Cores**

▶▶Options   One Core, Two cores, Max Cores. Default setting is Max Cores.

☞ **Hyper-Threading Technology**

▶▶Enabled   Enable Intel Hyper Threading Technology. (Default setting)

▶▶Disabled   Disable Intel Hyper Threading Technology.

☞ **A20M Support**

▶▶Enabled   Enable A20M Support. (Default setting)

▶▶Disabled   Disable A20M Support.

☞ **Machine Checking**

▶▶Enabled   Enable Machine Checking. (Default setting)

▶▶Disabled   Disable Machine Checking.

☞ **Discrete MTRR Allocation**

▶▶Enabled   Enable Discrete MTRR Allocation.

▶▶Disabled   Disable Discrete MTRR Allocation. (Default setting)

☞ **Thermal Management**

▶▶Enabled   Enable Thermal Management. (Default setting)

▶▶Disabled   Disable Thermal Management.

Power Management

```
          Phoenix SecureCore(tm) Setup Utility
        Advanced

        Processor Power Management              Item Specific Help

    EIST (GV3) & C State:        [Enabled]       Enable EIST (GV3) &
    EIST (GV3):                  [Enabled]       C State Items
        EIST PSD Function:       [HW_ALL]
        Turbo Mode:              [Enabled]
    T-State:                     [Enabled]
    CPU C State:                 [Enabled]
        CPU C1E:                 [Enabled]
        OS ACPI C3 Report:       [C2]
        CPU C6 Report:           [Enabled]
        Package C State Limit:   [No Limit]
        ACPI MWAIT Extensions:   [Enabled]

    F1   Help  ↑↓  Select Item  -/+   Change Values    F9   Setup Defaults
    Esc  Exit  ↔   Select Menu  Enter Select ▶ Sub-Menu F10  Save and Exit
```

Figure 2-1-1: Power Management

) **EIST (GV3) & C State**

    ▶▶ Enabled   Enable EIST (GV3) and C State items. (Default setting)

    ▶▶ Disabled   Disable EIST (GV3) and C State items.

) **EIST (GV3)**

    ▶▶ Enabled   Enable EIST (GV3. (Default setting)

    ▶▶ Disabled   Disable EIST (GV3).

) **EIST PSD Function**

    ▶▶ HW_ALL   In HW_ALL mode, the rpocessor hardware is responsible for coordinating the P-state among logical processors dependencies. The OS is responsible for keeping the P-state request up to date on all logical processors. (Default setting)

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  ▹ SW_ALL   In SW_ALL mode, the OS Power Manager is responsible for coordinating the P-state among loical processors with dependencies and must initiate the transition on all of those Logical Processors.

  ▹ SW_ANY   In SW_ANY mode, the OS Power Manager is responsible for corrdinating the P-state among logical processors with dependencies and may initiate the transition on any of those Logical Processors .

☞ **Turbo Mode**

Turbo Mode automatically allows processor cores to run faster than marked frequency if the physical processor is operating below power, temperature and current specification limits.

Turbo Mode can be engaged with SMT (Simultanceous Multi Threading) enabled and 1 to 4 cores active and is not limited to only a single core or logical processor.

  ▹ Enabled   Turbo Mode. (Default setting)

  ▹ Disabled   Disable Turbo Mode.

☞ **T State**

  ▹ Enabled   Enable CPU T-State. (Default setting)

  ▹ Disabled   Disable T-State.

☞ **CPU C State**

  ▹ Enabled   Enable ACPI C-State (C0, C1/C1E, C3, C6 and C7). (Default setting)

  ▹ Disabled   Disable C-State.

☞ **CPU C1E**

  ▹ Enabled   Enable CPU C1E. (Default setting)

  ▹ Disabled   Disable CPU C1E.

☞ **OS ACPI C3 Report**

  ▹ C3   Desire state for the Nehalem core C3 state include in the CST as ACPI C3 state.

  ▹ C2   Desire state for the Nehalem core C2 state include in the CST as ACPI C2 state. (Default setting)

  ▹ Disabled   Disable OS ACPI C3 Report.

☞ **CPU C6 Report**

  ▹ Enabled   Desire state for the Nehalem core C6 state include in the CST as ACPI C3

state. (Default setting)

▶ Disabled   Disable CPU C6 Report.

☞ **Package C State Limit**

Desired state for the C-State package limit.

▶ Options   C0, C1 State, C3 State, C6 State, C7 State, No Limit. The default setting
is No Limit.

☞ **ACPI MWAIT Extensions**

▶ Enabled   CST using MWAIT extension isenabled for OSPM use. (Default setting)

▶ Disabled   Disable ACPI MWAIT extensions.

Memory Configuration

```
Phoenix SecureCore(tm) Setup Utility
     Advanced

┌──────────────────────────────────────────────┬─────────────────────────┐
│           Memory Configuration                │    Item Specific Help   │
│                                                │                         │
│   Base Memory:            633 KB               │  Clears the memory error│
│   Extended Memory:        1021 MB              │  status.                │
│   Memory Frequency:       1333 MHz             │                         │
│                                                │                         │
│   Memory Retest:          [No]                 │                         │
│                                                │                         │
│   DDR_P0C0D0 :            Not Installed        │                         │
│   DDR_P0C0D1 :            Not Installed        │                         │
│   DDR_P0C0D2 :            Not Installed        │                         │
│   DDR_P0C1D0 :            Not Installed        │                         │
│   DDR_P0C1D1 :            Not Installed        │                         │
│   DDR_P0C1D2 :            Not Installed        │                         │
│   DDR_P0C2D0 :            Not Installed        │                         │
│   DDR_P0C2D1 :            Not Installed        │                         │
│   DDR_P0C2D2 :            Not Installed    v   │                         │
└──────────────────────────────────────────────┴─────────────────────────┘
 F1  Help  ^v  Select Item  -/+  Change Values   F9   Setup Defaults
 Esc Exit  <>  Select Menu  Enter Select > Sub-Menu  F10  Save and Exit
```

```
Phoenix SecureCore(tm) Setup Utility
     Advanced

┌──────────────────────────────────────────────┬─────────────────────────┐
│           Memory Configuration                │    Item Specific Help   │
│                                                │                         │
│   DDR_P1C0D0 :            1024 MB          ^   │  Valid options are 1, 2,│
│   DDR_P1C0D1 :            Not Installed        │  3, 4. Defalut to 4-way.│
│   DDR_P1C0D2 :            Not Installed        │                         │
│   DDR_P1C1D0 :            Not Installed        │                         │
│   DDR_P1C1D1 :            Not Installed        │                         │
│   DDR_P1C1D2 :            Not Installed        │                         │
│   DDR_P1C2D0 :            Not Installed        │                         │
│   DDR_P1C2D1 :            Not Installed        │                         │
│   DDR_P1C2D2 :            Not Installed        │                         │
│                                                │                         │
│   Memory Control Settings: [Manual]            │                         │
│   Memory RAS Mode:         [Independent]       │                         │
│   Memory Frequency:        [Auto]              │                         │
│   Channel Interleave Setting: [6-way]          │                         │
│   Rank Interleave Setting:    [4-way]          │                         │
└──────────────────────────────────────────────┴─────────────────────────┘
 F1  Help  ^v  Select Item  -/+  Change Values   F9   Setup Defaults
 Esc Exit  <>  Select Menu  Enter Select > Sub-Menu  F10  Save and Exit
```
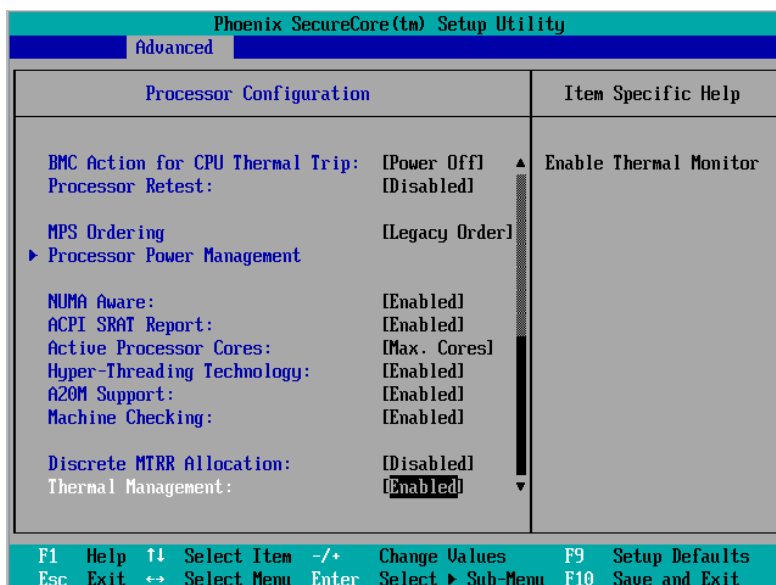
Figure 2-2: Memory Configuration

☞ **Base Memory/Extended Memory/DIMM Status**

These category is display-only which is determined by POST (Power On Self Test) of the BIOS.

☞ **Memory Reset**

▶▶ Yes   Select 'Yes', system will clear the memory error status. Save the changes and restart system. After rebooting system, the Memory Reset item will set to 'No' automatically.

▶▶ No   No chnages. (Default setting)

☞ **Memory Control Settings**

▶▶ Manual   Select 'Manual" will pops up sub-menu for configuration.

▶▶ Auto   Auto configuration. (Default setting)

☞ **Memory RAS Mode**

▶▶ Identify the Memory RAS mode.

☞ **Memory Frequency**

▶▶ Select the desire value of Memory frequency. Options available: Auto, DDR-3 800, DDR-3 1066, and DDR-3 1333.

☞ **Channel Interleave setting**

▶▶ Options available: 1-way, 2-way, 3-way, 4-way, and 6-way.

☞ **Rank Interleave setting**

▶▶ Configure interleave setting. Options available: 1-way, 2-way, and 4-way.

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Advanced Chipset Configuration

```
┌──────────────────────────────────────────────────────────────────────┐
│              Phoenix SecureCore(tm) Setup Utility                      │
│    Advanced                                                            │
├──────────────────────────────────────────────┬───────────────────────┤
│      Advanced Chipset Configuration            │   Item Specific Help  │
│                                                │                       │
│ ▶ Intel VT for Directed I/O                    │ Press <Enter> to bring│
│   Intel(R) I/OAT:            [Enabled]         │ up the Intel VT for   │
│   IOH IOxAPIC:              [Enabled]          │ Directed I/O (VT-d)   │
│                                                │ Configration menu.    │
│   QPI Control Setting:      [Enabled]          │                       │
│   QPI Link Fast Mode:       [Enabled]          │                       │
│   QPI Frequency Selection:  [Auto]             │                       │
│   QPI DCA Support:          [Enabled]          │                       │
│   QPI Error Report:         [Disabled]         │                       │
│   Memory ECC Error Log:     [Both]             │                       │
│   ECC Threshold:            [    0]            │                       │
│   Enable Multimedia Timer:  [Yes]              │                       │
│                                                │                       │
├──────────────────────────────────────────────┴───────────────────────┤
│ F1  Help  ↑↓ Select Item  -/+  Change Values   F9  Setup Defaults      │
│ Esc Exit  ↔  Select Menu  Enter Select ▶ Sub-Menu F10 Save and Exit    │
└──────────────────────────────────────────────────────────────────────┘
```

Figure 2-3: Advanced Chipset Configuration

```
                Phoenix SecureCore(tm) Setup Utility
        Advanced

    Advanced Chipset Configuration              Item Specific Help

  Intel(R) I/OAT:              [Enabled]     ^  Available options:
  IOH IOxAPIC:                 [Enabled]        [Enabled], [Disabled]
  4GB PCI Hole Granularity:    [1.0 GB]
  QPI Control Setting:         [Enabled]        Default value:
  QPI Link Fast Mode:          [Enabled]        [Enabled]
  QPI Frequency Selection:     [6.400 GT/s]
  QPI Isoch-Support:           [Disabled]
  QPI DCA Support:             [Enabled]
  QPI Scramble Selection:      [Disabled]
  QPI Error Report:            [Disabled]
  Memory ECC Error Log:        [Both]
  ECC Threshold:               [    0]
  UnCorrectable Pass to OS:    [Enabled]
  Enable Multimedia Timer:     [Yes]
  PCIe SR-IOV Support:         [Enabled]

  F1   Help   ^v  Select Item  -/+   Change Values     F9   Setup Defaults
  Esc  Exit   <>  Select Menu  Enter Select > Sub-Menu F10  Save and Exit
```

Figure 2-3-1: Intel VT for Directed I/O (VT-d)

GA-7TESM Motherboard

☞ **Intel VT for Directed I/O (VT-d)**

☞ **Interrupt Remapping**

    ▸▸Enabled   Enable Interrupt Remapping. (Default setting)

    ▸▸Disabled   Disable Interrupt Remapping.

☞ **Coherency Support**

    ▸▸Enabled   Enable Coherency Support.

    ▸▸Disabled   Disable Coherency Support. (Default setting)

☞ **ATS**

    ▸▸Enabled   Enable ATS. (Default setting)

    ▸▸Disabled   Disable ATS.

☞ **PassThrough DMA**

    ▸▸Enabled   Enable PassThrough DMA. (Default setting)

    ▸▸Disabled   Disable PassThrough DMA.

☞ **VT-d for Port1~Port 10**

    ▸▸Enabled   Enable VT-d support for Port 1~Port 10 ports through ATSR structures in ACPI Tables. (Default setting)

    ▸▸Disabled   Disable VT-d for Port1~Port 10.

☞ **Advanced Chipset Control Main Menu Options**

☞ **Intel (R) I/OAT**

    ▸▸Enabled   Enable configuration mapped accesses to the I/OAT configuration sapce. (Default setting)

    ▸▸Disabled   Disable I/OAT.

☞ **IOH IOxAPIC**

    ▸▸Enabled   Enable IOH IOxAPIC. (Default setting)

    ▸▸Disabled   Disable IOH IOxAPIC.

☞ **QPI Control Settings**

    ▸▸Enabled   Enable QPI Control settings.

    ▸▸Disabled   QPI Control settings. (Default setting)

☞ **QPI Link Fast Mode**

    ▸▸Enabled   Enable QPI Link Fast Mode. (Default setting)

    ▸▸Disabled   Disable QPI Link Fast Mode.

☞ **QPI Frequency Selection**

▸▸Identify the desire value of QPI frequency. Option available: Auto, 4.800GT, 5.866GT, and 6.400GT. Default setting is Auto.

☞ **QPI DCA Support**

▸▸Enabled   Enable QPI DCA Support. (Default setting)

▸▸Disabled   Disable QPI DCA Support.

☞ **QPI Error Report**

▸▸Enabled   Enable QPI Error Report.

▸▸Disabled   Disable QPI Error Report. (Default setting)

☞ **Memory ECC Error Log**

▸▸Identify the the memory ecc error log. Option available: Disable, Correctable Error, Uncorrectable Error, and Both. The default setting is Both.

☞ **ECC Threshold**

▸▸Use the "+" and "-" keys to adjust the desire value of ECC Threshold.

☞ **Enable Multimedia Timer**

▸▸Yes   Enable Multimedia Timer support. (Default setting)

▸▸No   Disable this function.

PCI Configuration

```
                    Phoenix SecureCore(tm) Setup Utility
          Advanced

            PCI Configuration                        Item Specific Help

     PCI Slot 1 Option ROM:        [Enabled]         Initialize device
     PCI Slot 2 Option ROM:        [Enabled]         expansion ROM
     PCI Slot 3 Option ROM:        [Enabled]
     PCI Slot 4 Option ROM:        [Enabled]
     Onboard LSI SAS OPROM:        [Enabled]
     Onboard LAN iSCSI Boot ROM:   [Disabled]
     Onboard LAN1 Controller:      [Enabled]
     LAN1 Option ROM:              [Enabled]
     Onboard LAN2 Controller:      [Enabled]
     LAN2 Option ROM:              [Enabled]
     Onboard LAN3 Controller:      [Enabled]
     LAN3 Option ROM:              [Enabled]
     Onboard LAN4 Controller:      [Enabled]
     LAN4 Option ROM:              [Enabled]
     Legacy USB Support:           [Enabled]


     F1   Help   ^v  Select Item  -/+   Change Values    F9   Setup Defaults
     Esc  Exit   <>  Select Menu  Enter Select > Sub-Menu F10  Save and Exit
```

Figure 2-4: PCI Configuration

☞ **PCI Slot 1/2/3/4 Option ROM**

    ▶▶ Enabled   Enable this item to initialize device expansion ROM.

                           (Defualt setting)

    ▶▶ Disabled   Disable this function.

☞ **Onboard LSI SAS OPROM**

    ▶▶ Enabled   Enable onboard LSI SAS device and initialize device expansion

                           ROM. (Default setting)

                           (Defualt setting)

    ▶▶ Disabled   Disable this function.

☞ **Onboard LAN iSCSI Boot ROM**

    ▶▶ Enabled   Enable onboard LAN iSCSI device and initialize device

                           expansion ROM. (Default setting)

    ▶▶ Disabled   Disable this function.

☞ **Onboard LAN1 Controller**

    ▶▶ Enabled   Enable Onboard LAN controller. (Defualt setting)

    ▶▶ Disabled   Disable this function.

☞ **LAN1 Option ROM Scan**

    ▶▶ Enabled   Enable onboard LAN1 device and initialize device expansion
                                 ROM. (Default setting)

    ▶▶ Disabled   Disable this function.

☞ **Onboard LAN2 Controller**

    ▶▶ Enabled   Enable Onboard LAN controller. (Defualt setting)

    ▶▶ Disabled   Disable this function.

☞ **LAN2 Option ROM Scan**

    ▶▶ Enabled   Enable onboard LAN2 device and initialize device expansion
                                 ROM. (Default setting)

    ▶▶ Disabled   Disable this function.

☞ **Onboard LAN3 Controller**

    ▶▶ Enabled   Enable Onboard LAN controller. (Defualt setting)

    ▶▶ Disabled   Disable this function.

☞ **LAN3 Option ROM Scan**

    ▶▶ Enabled   Enable onboard LAN3 device and initialize device expansion
                                 ROM. (Default setting)

    ▶▶ Disabled   Disable this function.

☞ **Onboard LAN4 Controller**

    ▶▶ Enabled   Enable Onboard LAN controller. (Defualt setting)

    ▶▶ Disabled   Disable this function.

☞ **LAN4 Option ROM Scan**

    ▶▶ Enabled   Enable onboard LAN4 device and initialize device expansion
                                 ROM. (Default setting)

    ▶▶ Disabled   Disable this function.

 ☞ **Legacy USB Support**

This option allows user to function support for legacy USB.

▶ Enabled   Enables support for legacy USB (Default setting)

▶ Disabled   Disables support for legacy USB.

SATA Configuration

```
        Phoenix SecureCore(tm) Setup Utility
        Advanced

        SATA Configuration                         Item Specific Help

   Serial ATA:          [Enabled]                  Enable the SATA
      SATA RAID Enable:  [Disabled]
      SATA AHCI Enable:  [Disabled]
 > SATA Port 0          [None]
 > SATA Port 1          [None]
 > SATA Port 2          [None]
 > SATA Port 3          [None]
 > SATA Port 4          [None]
 > SATA Port 5          [None]




 F1   Help   ^v  Select Item  -/+   Change Values     F9   Setup Defaults
 Esc  Exit   <>  Select Menu  Enter Select > Sub-Menu  F10  Save and Exit
```

Figure 2-5: SATA Configuration

☞**Serial ATA**

▸▸Enabled   Enables on-board serial ATA function. (Default setting)

▸▸Disabled   Disables on-board serial ATA function.

▸▸**SATA RAID Enable**

▸▸Enabled   Enabled SATA RAID function.

▸▸Disabled   Disable this function. (Default setting)

▸▸**SATA AHCI Enable**

▸▸Enabled   Set this item to enable SATA AHCI function for WinXP-SP1+IAA
                            driver supports AHCI mode.

▶▶Disabled   Disabled this function. (Default setting)

☞ **SATA Port 0/1/2/3/4/5**

The category identifies the types of Serial SATA hard disk from drive 1 to 6 that has been installed in the computer. System will automatically detect HDD type.

Note that the specifications of your drive must match with the drive table. The hard disk will not work properly if you enter improper information for this category.

Hard drive information should be labled on the outside device casing. Enter the appropriate option based on this information.

▶▶ TYPE

1-39: Predefined types.

Users: Set parameters by User.

Auto: Set parameters automatically. (Default setting)

CD-ROM: Use for ATAPI CD-ROM drives or double click [Auto] to set all HDD parameters automatically.

ATAPI Removable: Removable disk drive is installed here.

▶▶ Multi-Sector Transfer

This field displays the information of Multi-Sector Transfer Mode.

Disabled: The data transfer from and to the device occurs one sector at a time.

Auto: The data transfer from and to the device occurs multiple sectors at a time if the device supports it.

▶▶ **LBA Mode**   This field shows if the device type in the specific IDE channel support LBA Mode.

▶▶ **32-Bit I/O**   Enable this function to max imize the IDE data transfer rate.

▶▶ **Transfer Mode**   This field shows the information of Teansfer Mode.

▶▶ **Ultra DMA Mode**   This filed displays the DMA mode of the device in the specific IDE channel.

I/O DeviceConfiguration

```
                Phoenix SecureCore(tm) Setup Utility
        Advanced

        I/O Device Configuration              Item Specific Help

    Serial Port A:        [Enabled]          PilotII Configure serial
      Base I/O Address:   [3F8-IRQ 4]        port A using options:

    Serial Port B:        [Enabled]          [Disabled]
      Base I/O Address:   [2F8-IRQ 3]          No configuration

                                             [Enabled]
                                               User configuration




    F1   Help  ↑↓  Select Item  -/+   Change Values    F9   Setup Defaults
    Esc  Exit  ↔   Select Menu  Enter  Select ▶ Sub-Menu  F10  Save and Exit
```

Figure 2-6: I/O Device Configuration

✏ **Serial Port A**

This allows users to configure serial prot A by using this option.

▶▶Enabled   Enable the configuration. (Default setting)

▶▶Disabled   Disable the configuration.

▶▶**Base I/O Address/IRQ**

▶▶ 3F8-IRQ4   Set IO address to 3F8/IRQ4.(Default setting)

▶▶ 2F8-IRQ3   Set IO address to 2F8/IRQ3.

▶▶ 3E8-IRQ4   Set IO address to 3E8/IRQ4.

▶▶ 2E8-IRQ3   Set IO address to 2E8/IRQ3.

✏ **Serial Port B**

This allows users to configure serial prot B by using this option.

▶▶Enabled   Enable the configuration (Default setting)

▶▶Disabled   Disable the configuration.

▶▶**Base I/O Address/IRQ**

▶ 3F8-IRQ4   Set IO address to 3F8/IRQ4.

▶ 2F8-IRQ3   Set IO address to 2F8/IRQ3. (Default setting)

▶ 3E8-IRQ4   Set IO address to 3E8/IRQ4.

▶ 2E8-IRQ3   Set IO address to 2E8/IRQ3.

Boot DeviceConfiguration

```
                    Phoenix SecureCore(tm) Setup Utility
          Advanced

       Boot Configuration                        Item Specific Help

   Boot Time Diagnostic Screen:   [Disabled]     Display the diagnostic
   POST Error Pause:              [All, but Keyboard]  screen during boot
   NumLock:                       [On]












   F1   Help   ^v  Select Item  -/+   Change Values    F9   Setup Defaults
   Esc  Exit   <>  Select Menu  Enter Select > Sub-Menu F10  Save and Exit
```
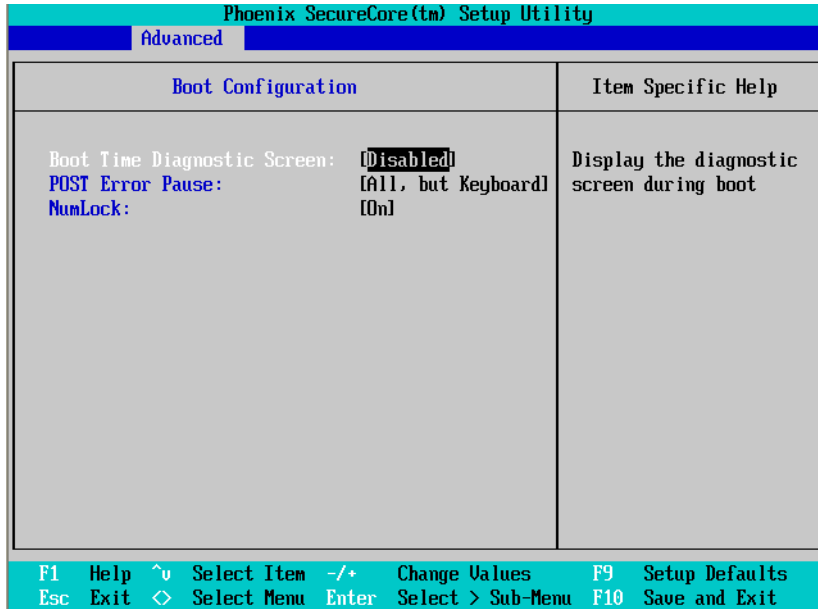
Figure 2-7: Boot Configuration

☞ **Boot -time Diagnostic**

When this item is enabled, system will shows Diagnostic status when system boot.

▶▶ Enabled   Enable Boot-time Diagnostic. (Default setting)

▶▶ Disabled   Disable this function.

☞ **Post Error Pause**

The category determines whether the computer will stop if an error is detected during power up.

▶▶ All Error   Whenever the BIOS detects a non-fatal error the system will be
                       stopped.

▶▶ No Error   The system boot will not stop for any error that may be detected
                       and you will be prompted.

▶▶ All, But Keyboard The system boot will not stop for a keyboard error; it will stop for all
                       other errors. (Default setting)

☞**NumLock**

This option allows user to select power-on state for NumLock.

➠On   Enable NumLock. (Default setting)

➠Off   Disable this function.

Thermal abd Acoustic Configuration

```
┌─────────────────────────────────────────────────────────────────┐
│            Phoenix SecureCore(tm) Setup Utility                   │
│     ┌──────────────┐                                              │
│     │   Advanced   │                                              │
├─────┴──────────────┴──────────────────────┬──────────────────────┤
│   Thermal and Acoustic Configuration       │   Item Specific Help │
│                                            │                      │
│                                            │                      │
│  Open-loop Thermal Throttle:  [Enabled]    │   Enable/Disable     │
│    Temperature Chasis inlet:  [ 35]        │   Open-loop Thermal  │
│    Temperature Rise:          [ 10]        │   Throttle           │
│    Air Speed to the DIMMs:    [1500]       │                      │
│    System Altitude:           [    0]      │                      │
│    Pitch between DIMMs:       [400]        │                      │
│                                            │                      │
│  Close-loop Thermal Throttle: [Enabled]    │                      │
│    Temperature Hysteresis:    [1]          │                      │
│    Temperature Guardband:     [  3]        │                      │
│    Temperature Chasis inlet:  [ 35]        │                      │
│    Temperature Rise:          [ 10]        │                      │
│    Air Speed to the DIMMs:    [1500]       │                      │
│    System Altitude:           [    0]      │                      │
│    Pitch between DIMMs:       [400]      υ  │                      │
│                                            │                      │
├────────────────────────────────────────────────────────────────┤
│  F1   Help   ^υ   Select Item   -/+   Change Values   F9   Setup Defaults │
│  Esc  Exit   <>   Select Menu   Enter Select > Sub-Menu  F10  Save and Exit │
└────────────────────────────────────────────────────────────────┘
```

Figure 2-8: Thermal and Acoustic Configuration

☞ **Open loop Thermal Throttle**

▸▸Enabled   Open loop Thermal Throttle. (Default setting)

▸▸Disabled   Disable Open loop Thermal Throttle.

☞ **Temperature Chassis inlet**

▸▸This item is user defined. Use nuber key to adjust desired value.

☞ **Temperature Rise**

▸▸This item is user defined. Use nuber key to adjust desired value.

☞ **Air speed to the DIMMs**

▸▸This item is user defined. Use nuber key to adjust desired value.

☞ **System Altitude**

▸▸This item is user defined. Use nuber key to adjust desired value.

☞ **Pitch between DIMMs**

▸▸This item is user defined. Use nuber key to adjust desired value.

☞ **Close loop Thermal Throttle**

   ▶▶Enabled   Close loop Thermal Throttle. (Default setting)

   ▶▶Disabled   Disable Close loop Thermal Throttle.

☞ **Temperature Hysteresis**

   ▶▶This item is user defined. Use nuber key to adjust desired value.

☞ **Temperature Guardband**

   ▶▶This item is user defined. Use nuber key to adjust desired value.

☞ **Temperature Chassis inlet**

   ▶▶This item is user defined. Use nuber key to adjust desired value.

☞ **Temperature Rise**

   ▶▶This item is user defined. Use nuber key to adjust desired value.

☞ **Air speed to the DIMMs**

   ▶▶This item is user defined. Use nuber key to adjust desired value.

☞ **System Altitude**

   ▶▶This item is user defined. Use nuber key to adjust desired value.

☞ **Pitch between DIMMs**

   ▶▶This item is user defined. Use nuber key to adjust desired value.

GA-7TESM Motherboard

Power

```
              Phoenix SecureCore(tm) Setup Utility
   Main     Advanced    Power    Security    Server    Boot    Exit

                                              Item Specific Help

   Power On by RTC Alarm:       [Off]
   Power On by PCI & PCIE Devices:  [Enabled]   Enabled wakes the
   Power On by Modem Ring:      [Enabled]    system up at a
   After Power Failure:         [Last State]  specific time.
```

```
 F1   Help  ↑↓  Select Item  -/+   Change Values   F9   Setup Defaults
 Esc  Exit  ↔   Select Menu  Enter Select ▶ Sub-Menu F10  Save and Exit
```
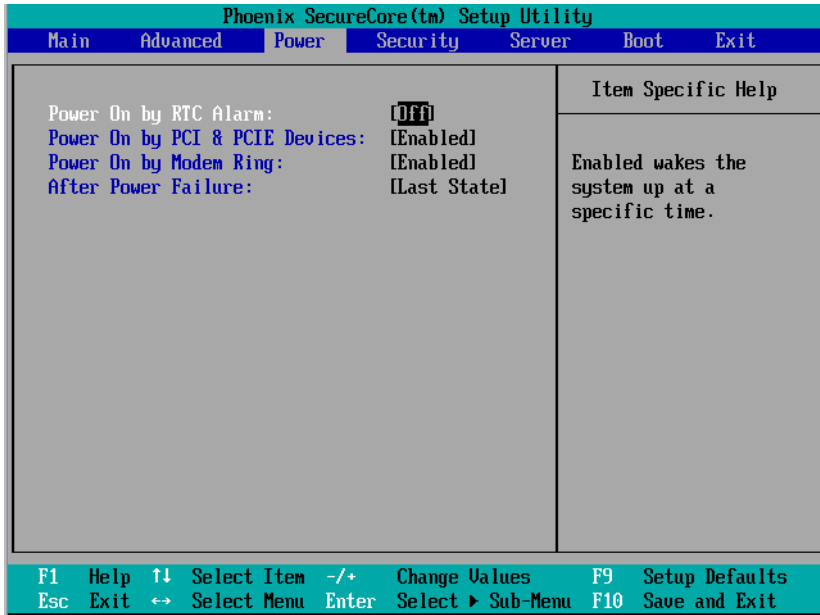
Figure 3: Power

☞ **Power On by RTC Alarm**

You can set item to Enabled and key in Date/Time to power on system.

▸▸On   Enable alarm function to POWER ON system. (Default setting)

▸▸Off   Disable this function.

If Resume On Time is set to On status:

▸▸RTC Alarm control select: Manual/Auto

▸▸Time (0~23) : (0~59) : (0~59)

☞ **Power On PCI & PCIE Devices**

▸▸Enabled   Enable Power On PCI & PCIe Devices. (Default setting)

▸▸Disabled   Disable this function.

☞ **Power On by Modem Ring**

▸▸Enabled   Enable Resume on Modem Ring.

▸▸Disabled   Disable Resume on Modem Ring. (Default setting)

☞ **After Power Failure**

This option provides user to set the mode of operation if an AC / power loss occurs.

▸▸Power On   System power state when AC cord is re-plugged.

▸▸Stay Off   Do not power on system when AC power is back.

▸▸Last State   Set system to the last sate when AC power is removed. Do not power on system when AC power is back. (Default setting)

Security

♪ About This Section: Security

In this section, user can set either supervisor or user passwords, or both for different level of password securities. In addition, user also can set the virus protection for boot sector.

```
          Phoenix SecureCore(tm) Setup Utility
   Main    Advanced    Power    Security    Server    Boot    Exit
 ┌──────────────────────────────────────────────┬─────────────────────┐
 │                                                │  Item Specific Help │
 │  Supervisor Password Is:    Clear              │                     │
 │  User Password Is:          Clear              │                     │
 │                                                │  Supervisor Password│
 │  Set Supervisor Password:  [Enter]             │  controls access to the│
 │  Set User Password:        [Enter]             │  setup utility.     │
 │  Password on Boot:         [Disabled]          │                     │
 │                                                │                     │
 │  Security for PWR/RST:     [Disabled]          │                     │
 │                                                │                     │
 │                                                │                     │
 │                                                │                     │
 │                                                │                     │
 │                                                │                     │
 │                                                │                     │
 │                                                │                     │
 └──────────────────────────────────────────────┴─────────────────────┘
  F1   Help  ^v  Select Item   -/+   Change Values   F9   Setup Defaults
  Esc  Exit  <>  Select Menu   Enter Select > Sub-Menu  F10  Save and Exit
```

Figure 4: Security

☞ **Set Supervisor Password**

You can install and change this options for the setup menus. Type the password up to 6 characters in lengh and press <Enter>. The password typed now will clear any previously entered password from the CMOS memory. You will be asked to confirm the entered password. Type the password again and press <Enter>. You may also press <Esc> to abort the selection and not enter a specified password or press <Enter> key to disable this option.

BIOS Setup

☞**Set User Password**

You can only enter but do not have the right to change the options of the setup menus. When you select this function, the following message will appear at the center of the screen to assist you in creating a password.

Type the password up to 6 characters in lengh and press <Enter>. The password typed now will clear any previously entered password from the CMOS memory. You will be asked to confirm the entered password. Type the password again and press <Enter>. You may also press <Esc> to abort the selection and not enter a specified password.

☞**Password on boot**

Password entering will be required when system on boot.

> ▸▸Enabled   Requries entering password when system on boot.

> ▸▸Disabled   Disable this function. (Default setting)

☞**Security Mode for PWR/RST Button**

> ▸▸Enabled   Enable Security Mode for PWR/RST Button.

> ▸▸Disabled   Disable this function. (Default setting)

Server
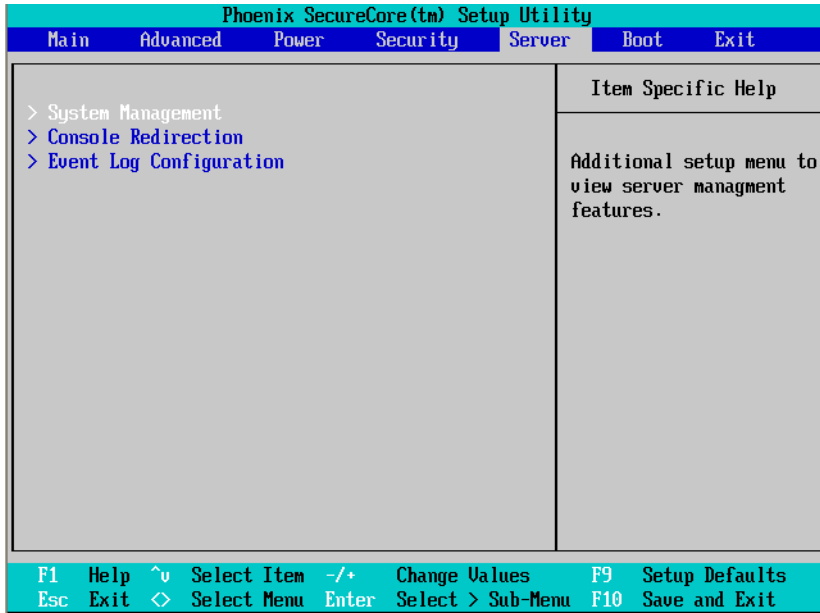
Figure 5: Server

System Management

```
           Phoenix SecureCore(tm) Setup Utility
                                    Server

           System Management


  System Manufacture:           GIGABYTE
  System Product Name:          GA-7TESM
  System Serial Number:         000000000001
  Base Board Product Name:      GA-7TESM
  Base Board Serial Number:     000000000001
  UUID:                         00241DC5386EFFFFFFFFFFFFFFFFFFFF

  NIC1 MAC Address:             00-24-1D-C5-38-6E
  NIC2 MAC Address:             00-24-1D-C5-38-6F
  NIC3 MAC Address:             00-24-1D-C5-38-70
  NIC4 MAC Address:             00-24-1D-C5-38-71

  GBIA Module Version:          00.01
  Management Engine F/W Version: 1.5
  BMC Firmware Version:         00.09

  F1   Help  ↑↓  Select Item  -/+   Change Values   F9   Setup Defaults
  Esc  Exit  ↔   Select Menu  Enter  Select ▶ Sub-Menu  F10  Save and Exit
```

```
           Phoenix SecureCore(tm) Setup Utility
                                    Server

           System Management


  NIC1 MAC Address:             00-24-1D-C5-38-6E
  NIC2 MAC Address:             00-24-1D-C5-38-6F
  NIC3 MAC Address:             00-24-1D-C5-38-70
  NIC4 MAC Address:             00-24-1D-C5-38-71

  GBIA Module Version:          00.01
  Management Engine F/W Version: 1.5
  BMC Firmware Version:         00.09
  SDR Version:                  00.05
  FRU Version:                  00.02

  BMC IP Address Source:        [DHCP]
  IP Address:                   [010.001.007.180]
  IP Subnet Mask:               [255.255.255.000]
  Default Gateway:              [010.001.007.253]

  F1   Help  ↑↓  Select Item  -/+   Change Values   F9   Setup Defaults
  Esc  Exit  ↔   Select Menu  Enter  Select ▶ Sub-Menu  F10  Save and Exit
```
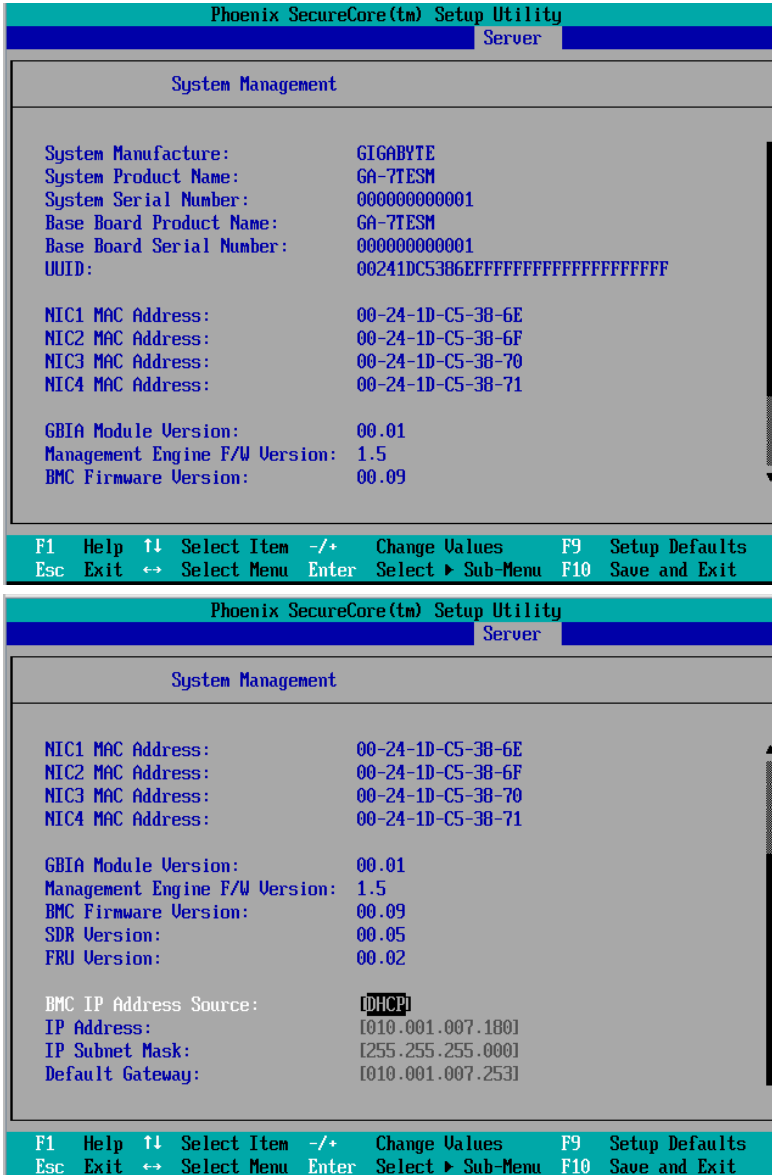
Figure 5-1: System Management

) **System Management**

This category allows user to view the server management features. Including information of Motherboard Hardware information and software information.

) **BMC IP Address Source**

▸Address obtained by BMC running DHCP or Static address.

Option available: DHCP, Static.

Console Redirection

```
                Phoenix SecureCore(tm) Setup Utility
                                           Server

         Console Redirection                    Item Specific Help

   Console Redirection:    [On-board COM A]      If enabled, it will
   Flow Control:           [CTS/RTS]             use a port on the _
   Baud Rate:              [19.2k]               motherboard.
   Terminal Type:          [PC-ANSI]
   Continue CR after POST: [Off]








   F1   Help  ^v   Select Item  -/+   Change Values     F9   Setup Defaults
   Esc  Exit  <>   Select Menu  Enter Select > Sub-Menu F10  Save and Exit
```
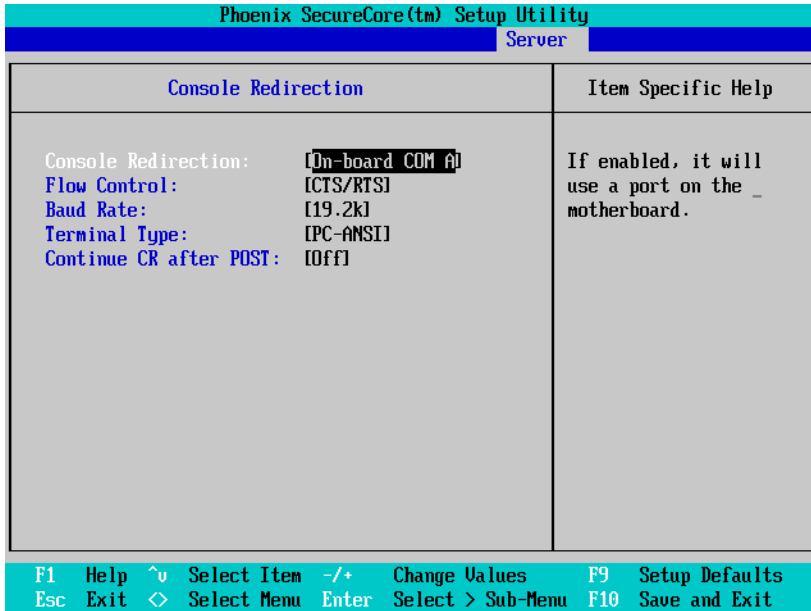
Figure 5-2: Console Redirection

☞**Console Redirection**

If this option is set to enabled, it will use a port on the motherboard to run console redirection function.

▸▸On-board COM A   Use Serial Port A as the COM port address.

▸▸On-board COM B   Use Serial Port B as the COM port address.

▸▸ Disabled   Disable this function. (Default setting)

☞**Flow Control**

This option provide user to enable the flow control function.

▸▸ None   Not supported.

▸▸XON/OFF   Software control.

▸▸ CTS/RTS   Hardware control. (Default setting)

☞**Baud Rate**

This option allows user to set the specified baud rate.

➧Options   9600, 19.2k, 38.4k.

☞**Terminal Type**

This option allows user to select the specified terminal type. This is defined by IEEE.

➧Options   VT100, VT100 8bit, PC-ANSI 7bit, VT100+, VT-UTF8, ASCII.

☞**Continue C.R. after POST**

This option allows user to enable console redirection after O.S has loaded.

➧On   Enable console redirection after O.S has loaded.

➧Off   Disable this function. (Default setting)

Console Redirection

```
┌─────────────────────────────────────────────────────────────────────────┐
│                  Phoenix SecureCore(tm) Setup Utility                     │
│                                          Server                           │
├───────────────────────────────────────────────┬───────────────────────┤
│        Event Log Configuration                 │   Item Specific Help  │
│                                                 │                       │
│   Assert NMI on SERR:      [Enabled]            │   Control Assert NMI on│
│   Assert NMI on PERR:      [Enabled]            │   SERR function support│
│   Clear All Event Logs:    [Enter]              │   or not.             │
│   Log POST System Event:   [Enabled]            │                       │
│                                                 │                       │
│                                                 │                       │
│                                                 │                       │
│                                                 │                       │
│                                                 │                       │
│                                                 │                       │
│                                                 │                       │
├───────────────────────────────────────────────┴───────────────────────┤
│  F1   Help  ↑↓  Select Item  -/+   Change Values   F9   Setup Defaults   │
│  Esc  Exit  ↔   Select Menu  Enter  Select ▶ Sub-Menu  F10  Save and Exit │
└─────────────────────────────────────────────────────────────────────────┘
```

Figure 5-3: Event Log Configuration

☞ **Assert NMI on SERR**

    If thisoption is set to enabled, PCI bus system error (SERR) is enabled and is routed to NMI.

    ▶▶Enabled   Enable Assert NMI on SERR. (Default setting)

    ▶▶Disabled   Disable this function.

☞ **Assert NMI on PERR**

    ▶▶Enabled   Enable Assert NMI on PERR. (Default setting)

    ▶▶Disabled   Disable this function.

☞ **Clear All Event Logs**

    Press [Enter] to lear all system vent logs.

☞ **FAN Speed Control**

    ▶▶Enabled   Enable FAN Speed Control. (Default setting)

    ▶▶Disabled   Disable this function.

Boot

```
              Phoenix SecureCore(tm) Setup Utility
   Main      Advanced    Power    Security    Server    Boot    Exit

                                                   Item Specific Help
   Boot Priority Order:
     1:
     2:                                         Keys used to view or
     3:                                         configure devices:
     4:                                         Up and Down arrows
     5:                                         select a device.
     6:                                         <+> and <-> moves
     7:                                         the device up or down.
     8:                                         <f> and <r> specifies
   Excluded from Boot Order:                    the device fixed or
     :  PCI BEV: IBA GE Slot 0100 v1331         removable.
     :  PCI BEV: IBA GE Slot 0A00 v1331         <x> exclude or include
     :  PCI BEV: IBA GE Slot 0B00 v1331         the device to boot.
     :  PCI BEV: IBA GE Slot 0101 v1331         <Shift + 1> enables or
     :  Legacy Network Card                     disables a device.
     :  Bootable Add-in Cards                   <1 - 4> Loads default
                                                boot sequence.

   F1   Help   ^v   Select Item   -/+    Change Values    F9    Setup Defaults
   Esc  Exit   <>   Select Menu   Enter  Select > Sub-Menu F10   Save and Exit
```
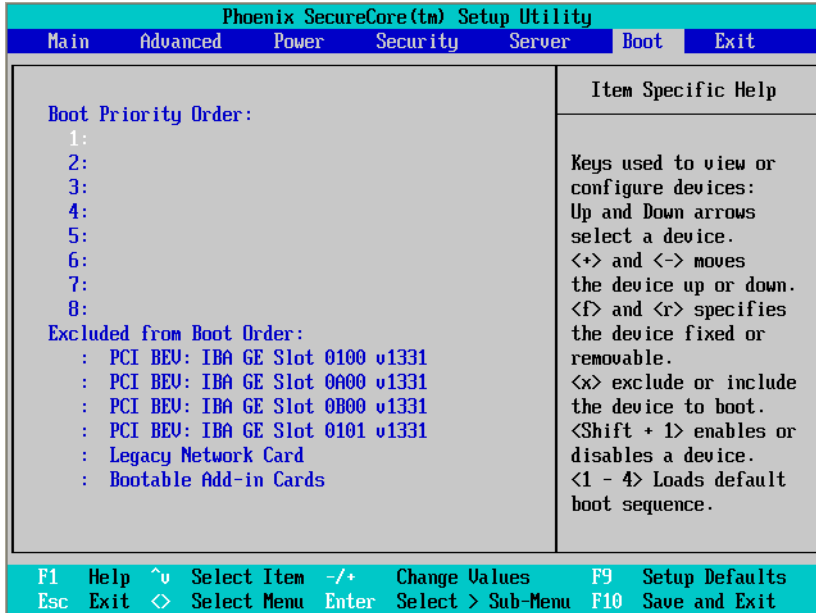
Figure 6: Boot

☞ Boot Priority Order

This field determines which type of device the system attempt to boot from after **PhoenixBIOS Post** completed. Specifies the boot sequence from the available devices. If the first device is not a bootable device, the system will seek for next available device.

Key used to view or configure devices:

Up and Down arrows select a device.

<+> and <-> moves the device up or down.

<f> and <r> specifies the device fixed or removable.

 <x> exclude or include the device to boot.

<Shift + 1> Enable or disable a device.

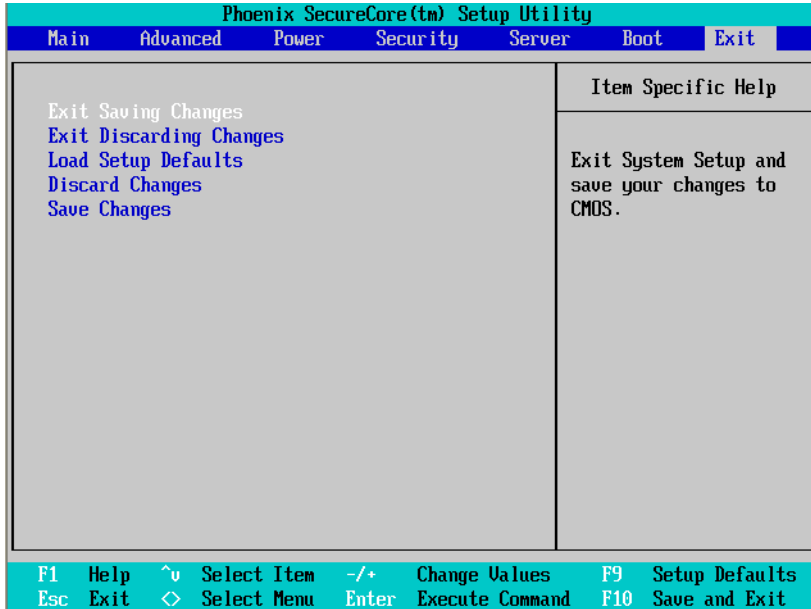<1-4> Loads default boot secquence.

GA-7TESM Motherboard

Exit

Figure 7: Exit

☞ **About This Section: Exit**

Once you have changed all of the set values in the BIOS setup, you should save your
changes and exit BIOS setup program. Select **"Exit"** from the menu bar, to display the
following sub-menu.

☞ **Exit Saving Changes**

This option allows user to exit system setup with saving the changes.
Press <Enter> on this item to ask for the following confirmation message:
Pressing 'Y' to store all the present setting values the user made in this time into CMOS.
Therefore, when you boot up your computer next time, the BIOS will re-configure your system
according data in CMOS.

☞ **Exit Discarding Changes**

This option allows user to exit system setup without changing any previous settings values in
CMOS. The previous selection remain in effect.
This will exit the Setup Utility and restart your computer when selecting this option.

☞**Load Setup Default**

if you highlight this item and press Enter, a dialog box asks if you want to install optimal settings for all the items in the Setup utility. Press the Y key to indicate Yes, and then press Enter to install the optimal settings.

☞**Discard Changes**

Select this item and press Enter to discard any changes you have made without leaving the setup utility.

☞**Save Changes**

This option allows user to save setup dat ato CMOS.

Press [Yes] to save setup data to CMOS.