GA-7BESH-RH

Dual Xeon Processor Motherboard

USER'S MANUAL

Table of Content

Item Checklist

☑ The GA-7BESH-RH motherboard   ☑ Serial ATA cable x 4

☑ IDE (ATA100) cable x 1 / Floppy cable x 1   ☑ I/O Shield Kit

☑ CD for motherboard driver & utility   ☑ Power cable x 4

☑ GA-7BESH-RH user's manual   ☑ SCSI cable x 1

⚠ WARNING!

Computer motherboards and expansion cards contain very delicate Integrated Circuit (IC) chips. To protect them against damage from static electricity, you should follow some precautions whenever you work on your computer.

1. Unplug your computer when working on the inside.
2. Use a grounded wrist strap before handling computer components. If you do not have one, touch both of your hands to a safely grounded object or to a metal object, such as the power supply case.
3. Hold components by the edges and try not touch the IC chips, leads or connectors, or other components.
4. Place components on a grounded antistatic pad or on the bag that came with the components whenever the components are separated from the system.
5. Ensure that the ATX power supply is switched off before you plug in or remove the ATX power connector on the motherboard.

Installing the motherboard to the chassis…

If the motherboard has mounting holes, but they don't line up with the holes on the base and there are no slots to attach the spacers, do not become alarmed you can still attach the spacers to the mounting holes. Just cut the bottom portion of the spacers (the spacer may be a little hard to cut off, so be careful of your hands). In this way you can still attach the motherboard to the base without worrying about short circuits. Sometimes you may need to use the plastic springs to isolate the screw from the motherboard PCB surface, because the circuit wire may be near by the hole. Be careful, don't let the screw contact any printed circuit write or parts on the PCB that are near the fixing hole, otherwise it may damage the board or cause board malfunctioning.

Chapter 1 Introduction

1.1   Features Summary

|	
Form Factor	• 12″ x 13″ EATX size form factor, 8 layers PCB
CPU	• Supports Dual Intel® Xeon™ processors
	• Xeon™ Dual Core in LGA 771 socket
	• Supports 667/1066MHz FSB (Dempsey)
	• Supports 1066/1333MHz FSB (Woodcrest)
	• L2 cache on-die per processor from 4M
Chipset	• Intel® 5000P Chipset
	• Intel® 6321ESB
Memory	• 8 x 240-pin DIMM sockets
	• Supports up to 32GB 533/667 memory
	• 4 Channel memory bus
	• Fully Buffered DIMM (FBD) 533/667MHz
	• Support 512MB, 1GB, 2GB and 4GB memory
	• Single-bit Errors Correction, Multiple-bit Errors Detection
I/O Control	• ITE Super I/O
Expansion Slots	• Supports 1 PCI slots 32-Bit/33MHz (5V)
	• Supports 2 PCI-X slots 64-Bit/100MHz
	• Supports 3 PCI-Express x8 slot
SCSI Controller	• Adaptec® AIC-7901 chipset supports ultra 320 SCSI channel
	• Mirroring supports automatic background rebuilds
	• Supports RAID 0 ,1, 10
	• Supports HOST RAID
	• Features LBA and Extended Interrupt 13 drive translation in controller onboard BIOS
SAS RAID Controller	• SAS daughter card supports 8 independant SAS 3.0 Gb/s with Host RAID 0,1,10
SATA RAID Controller	• Built in Intel® ESB2E with SATA RAID 0,1
	• Supports 6 SATA connectors
On-Board Graphic	• ATI ES1000
	• 16Mb SDRAM

On-Board Peripherals	• 1 ATA 100 connector
	• 1 Floppy port supports 360K, 720K, 1.2M, 1.44M and 2.88M bytes.
	• 2 PS/2 connectors
	• 1 Parallel port supports Normal/EPP/ECP mode
	• 2 Serial port (COM, 1 by cable)
	• 7 x USB 2.0 (3 by cable)
	• 1 VGA connector
	• 2 x LAN RJ45
	• 6 x SATA connectors
Hardware Monitor	• CPU/Power/System Fan Revolution Detect
	• CPU shutdown when overheat
	• System Voltage Detect
On-Board LAN	• Build in Intel® ESB2E chipset supports dual Gigabit Ethernet ports
	• Supports WOL, PXE
	• Flexible hardware design to switch remote transactions through IPMI interface
Hardware Monitor	• Winbond 83792G controller
	• Enhanced features with CPU Vcore, 1.5V reference, VCC3 (3.3V) , VBAT3V, +5VSB, CPUA/B Temperature, and System Temperature Values viewing by
	• Support basic ASF remote transaction through CSA Bus with hardware circuit
BIOS	• Phoenix BIOS on 8Mb flash RAM
Special Features	• Ehanced feature with GSMT Lite Utility
Additional Features	• PS/2 Mouse wake up from S1 under Windows Operating System
	• External Modem wake up
	• Supports S1, S4, S5 under Windows Operating System
	• Wake on LAN (WOL)
	• Wake on Ring (WOR)
	• AC Recovery
	• Supports Console Redirection
	• Supports 4-pin Fan controller

1.2 GA-7BESH-RH Motherboard Components

1.	Primary CPU	27.	PCI7 Slot(32bit/33MHz)
2.	Secondary CPU	28.	IPMI Slot
3.	Intel Blackford	29.	PCI-E x8 Slot
4.	Intel ESB2E	30.	PCI-E x8 Slot
5.	Adaptec AIC-7901	31.	PCI-X 3 Slot (64bit/133MHz)
6.	ITE 8712F-A	32.	PCI-X 2 Slot (64bit/133MHz)
7.	BIOS Flash	33.	PCI-E x8 Slot
8.	Winbond W83792G	34.	FBD DIMM A1/A2
9.	ATI ES1000	35.	FBD DIMM B1/B2
10.	Hynix 574U	36.	FBD DIMM C1/C2
11.	Intel LAN chip	37.	FBD DIMM D1/D2
12.	IDE Connector	38.	RJ45 LAN/USB ports
13.	Front USB1 Connector	39.	VGA Port
14.	Front USB2 Connector	40.	Parallel Port
15.	SCSI Connector	41.	COM Port
16.	Floppy Connector	42.	PS/2 Connectors
17.	COM2 Connector	43.	CPU 1 FAN
18.	Front Panel Connector	43.	CPU 2 FAN
19.	IPMB1	45.	FAN 1 (System Front Fan)
20.	SATA1 Connector	46.	FAN 2 (SystemFront Fan)
21.	SATA2 Connector	47.	FAN R1 (System Rear Fan)
22.	SATA3 Connector	48.	FAN R2 (System Rear Fan)
23.	SATA4 Connector	49.	Auxiliary Power (ATX1)
24.	SATA5 Connector	50.	Auxiliary Power (+12V)
25.	SATA6 Connector	51.	Battery
26.	ZCR	52.	ibutton**

** ibutton functions for LSI Software RAID 0,1,5,10
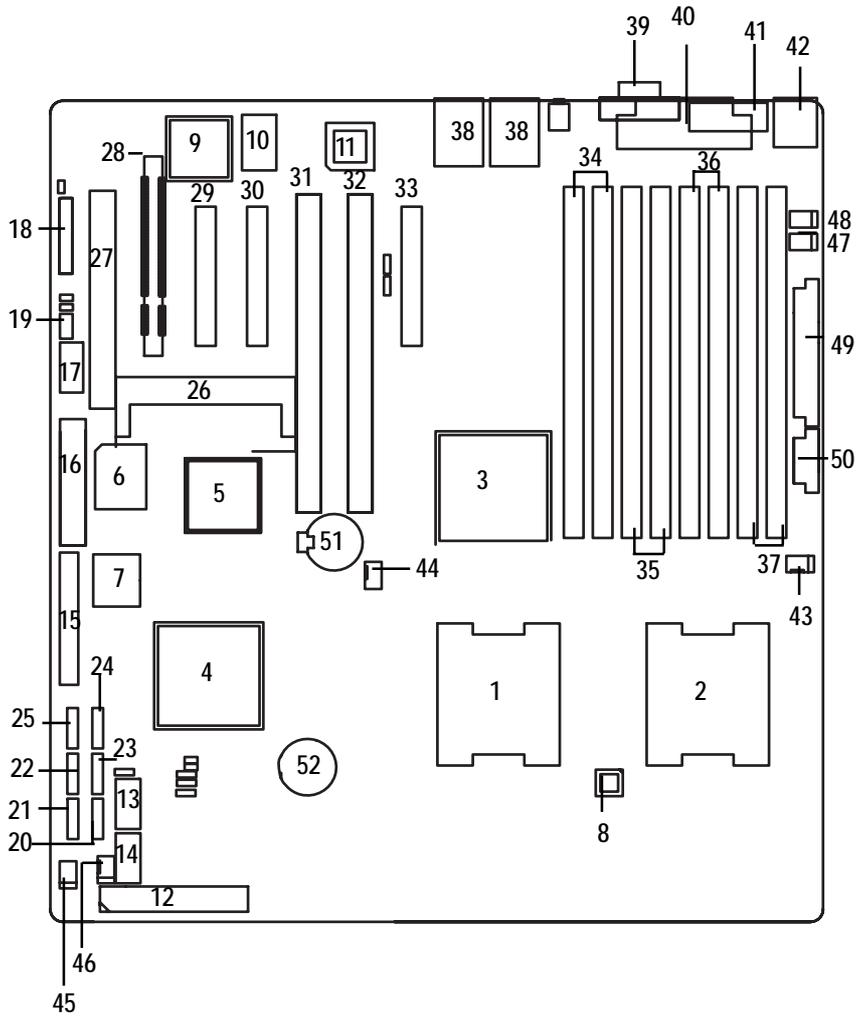
Chapter 2 Hardware Installation Process

2-1: Installing Processor and CPU Haet Sink

⚠️ **CAUTION**

**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 plastic covering and push the metal lever back into locked position.
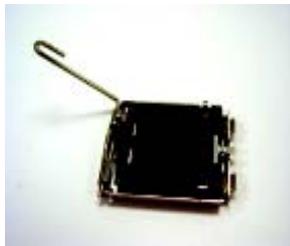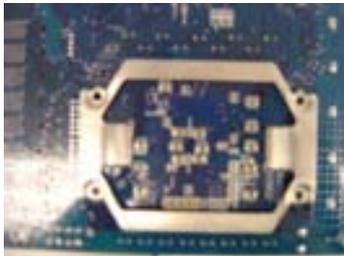
2-1-2: Installing Heat Sink

Step 1.
Please apply heatsink paste on the surface of the installed CPU.
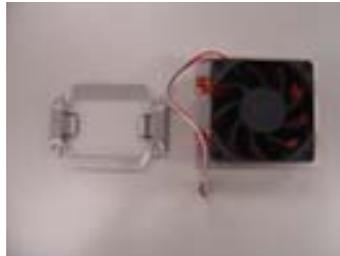
Step 2.
Preparing heat sink installation kit.

Step 3.
Turn the mother bord to the backside. Lock the retention module on the mother board
Make sure the position of the 4 holes on the retention module match exactly the position on the motherboard.
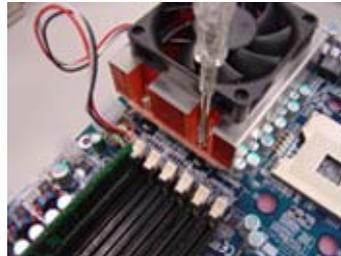
Step 4.
Secure the heatsink supporting-base onto the CPU socket on the mainboard.

Step 5.
Attach the power connector of the heatsink to the CPU fan header located on the motherboard.

2-2: Install memory modules

Before installing the processor and heatsink, adhere to the following warning:
When DIMM LED is ON, do not install/remove DIMM from socket.

CAUTION

GA-7BESH-RH has 8 dual inline memory module (DIMM) sokcets. It supports the 4 FB-DIMM
Channels Technology. The BIOS will automatically detects memory type and size during system boot.
For detail DIMM installation, please refer to the following instructions.
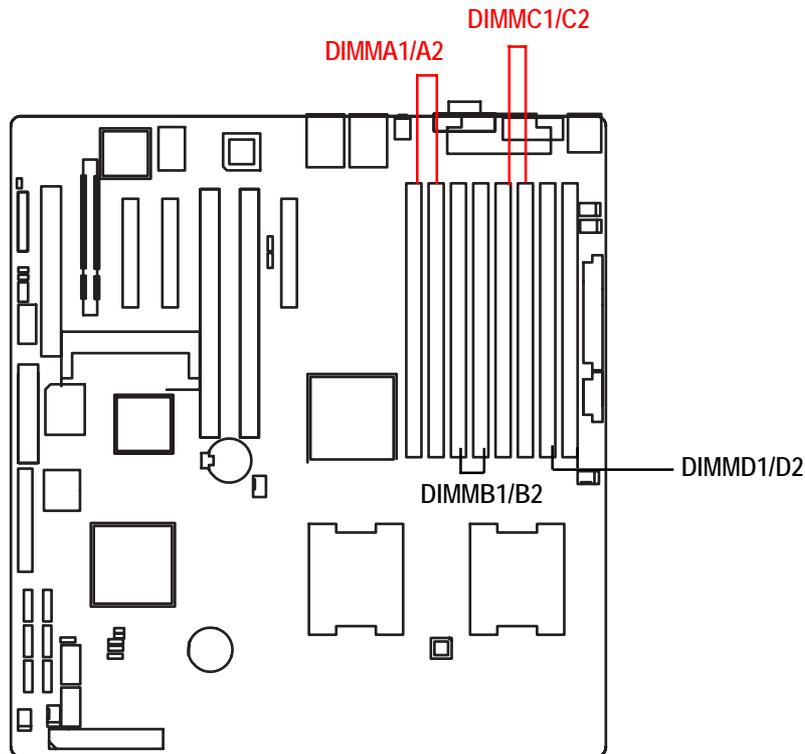
Installation Steps:

1. Unlock a DIMM socket by pressing the retaining clips outwards.
2. Aling a DIMM on the socket such that the notch on the DIMM exactly match the notches in the socket.
3. Firmly insert the DIMMinto the socket until the retaining clips snap back in place.
4. **Please note that each logical DIMM must be made of two identical DIMMs having the same device size on each and the same DIMM size.**
5. Reverse the installation steps when you want to remove the DIMM module.

Locked Retaining Clip

2-3: Connect ribbon cables, cabinet wires, and power supply

2-3-1 : I/O Back Panel Introduction
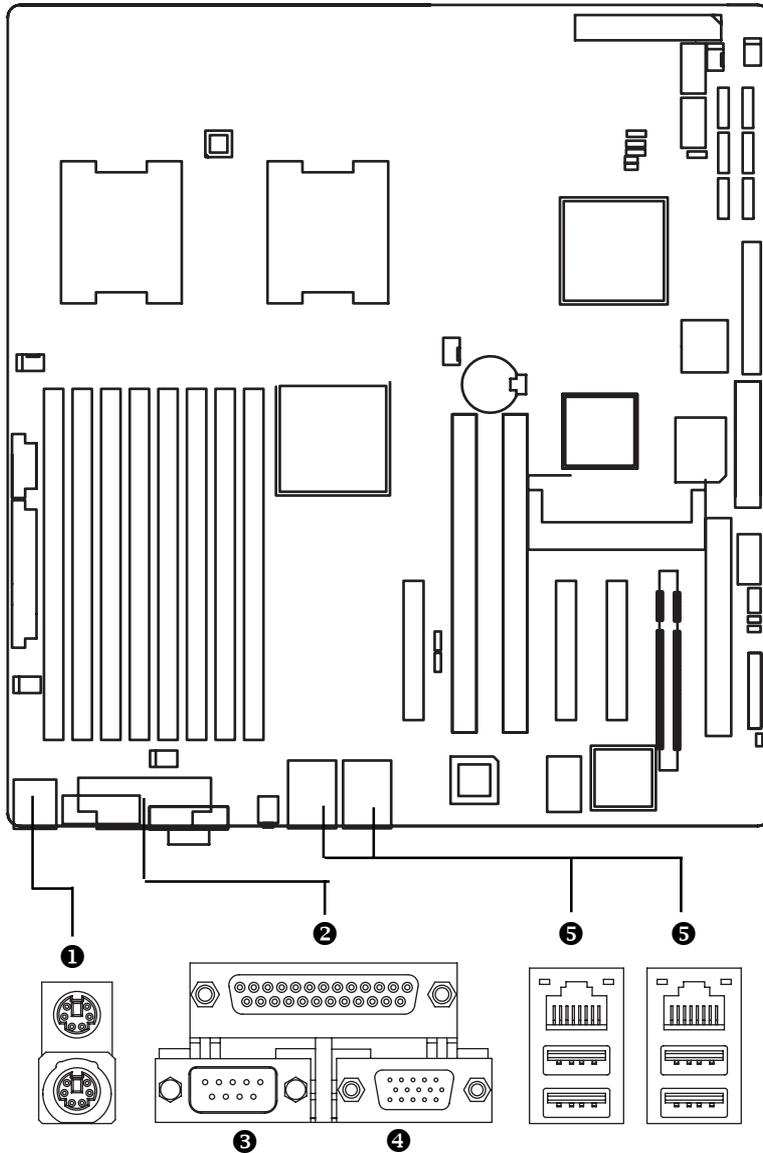
❶   **PS/2 Keyboard and PS/2 Mouse Connector**

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).

❷/❸/❹   **Parallel Port / Serial Port / VGA Port**

This connector supports 1 standard COM port and 1 Parallel port. Device like printer can be connected to Parallel port ; mouse and modem etc can be connected to Serial port.

❺   **LAN Port / USB**

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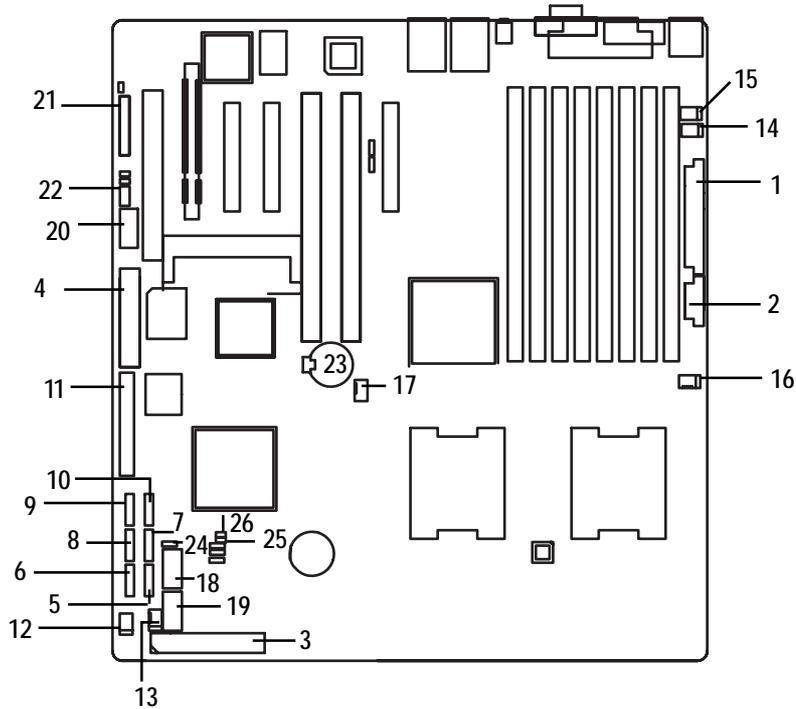, speaker...etc. have a standard USB interface. Also make sure your OS supports USB controller. If your OS does not support USB controller, please contact OS vendor for possible patch or driver updated. For more information please contact your OS or device(s) vendors.

LAN LED Description

Yellow ➞ 🔲 ⬅ Green

Name	Color	Condition	Description
LAN Link/Activity	Green	ON	LAN Link / no Access
	Green	BLINK	LAN Access
	-	OFF	Idle
10/100 LAN Speed	Green	ON	100Mbps connection
	-	OFF	10Mbps connection
GbE LAN Speed	Yellow	ON	1Gbps connection
	Yellow	BLINK	Port identification with 1Gbps connection
	Green	ON	100Mbps connection
	Green	BLINK	Port identification with 10 or 100Mbps connection
	-	OFF	10Mbps connection

2-3-2 :Connectors & Jumper Setting Introduction

1. ATX1
2. ATX3
3. IDE1 (IDE Connector)
4. FDD1 (Floppy Connector)
5. SATA 1 (SATA Connector)
6. SATA 2 (SATA Connector)
7. SATA 3 (SATA Connector)
8. SATA 4 (SATA Connector)
9. SATA 5 (SATA Connector)
10. SATA 6 (SATA Connector)
11. SCSI (SCSI Connector)
12. FAN_F1 (System Fan Connector)
13. FAN_F2 (System Fan Connector)
14. FAN_R1 (System Fan Connector)

15. FAN_R2 (System Fan Connector)
16. CPU_FAN1 (CPU 1 Fan Connector)
17. CPU_FAN2 (CPU 2 Fan Connector)
18. F_USB1 (Front USB Connector)
19. F_USB2 (Front USB Connector)
20. COM2
21. F_Panel (Front Panel Connector)
22. IPMB1
23. Battery
24. CLR_CMOS (Clear CMOS)
25. JP_REC1 (BIOS Recovery)
26. JP_PASS1(Pasword skip)

1) ATX1 (Auxukiary Power Connector)
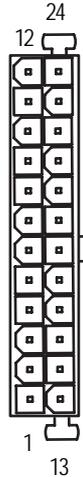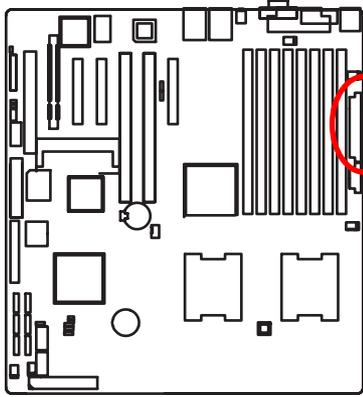
PIN No.	Definition
1	+3.3V
2	+3.3V
3	GND
4	+5V
5	GND
6	+5V
7	GND
8	POK
9	5VSB
10	+12V
11	+12V
12	+3.3V
13	+3.3V
14	-12V
15	GND
16	PSON
17	GND
18	GND
19	GND
20	-5V
21	+5V
22	+5V
23	+5V
24	GND

➢ AC power cord should only be connected to your power supply unit after ATX power cable and other related devices are firmly connected to the mainboard.

2) ATX2 (Auxukiary +12V Power Connector)
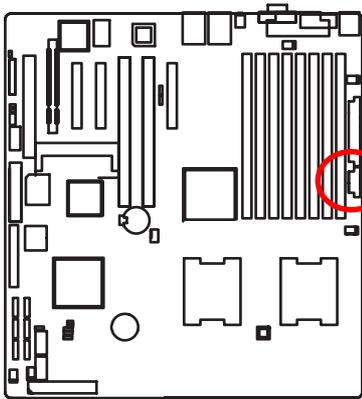
Pin No.	Definition
1	GND
2	GND
3	GND
4	GND
5	P12V_CPU
6	P12V_CPU
7	P12V_CPU
8	P12V_CPU

➢This connector (ATX +12V) is used only for CPU Core Voltage.

17

3) IDE1 (IDE Connector)

Please connect first harddisk to IDE1. The red stripe of the ribbon cable must be the same side with the Pin1.
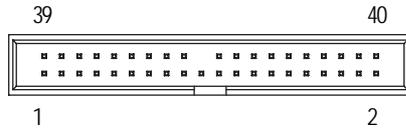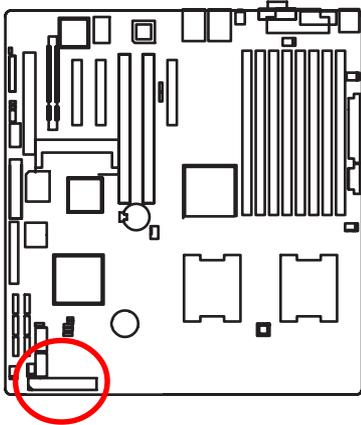
4) FDD1 (Floppy Connector)

Please connect the floppy drive ribbon cables to FDD. It supports 720K,1.2M,1.44M and 2.88Mbytes floppy disk types. The red stripe of the ribbon cable must be the same side with the Pin1.

5/ 6/ 7/ 8/ 9/ 10) SATA 1~6 (Serial ATA Connectors)

You can connect the Serial ATA device to this connector, it provides you high speed transfer rates (150MB/sec).

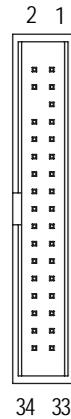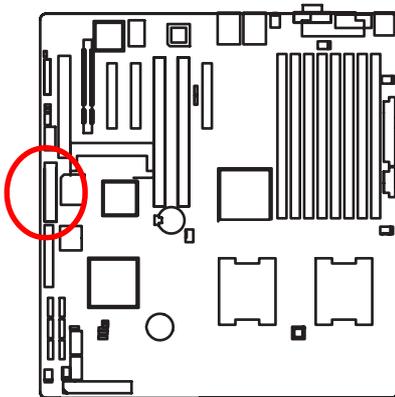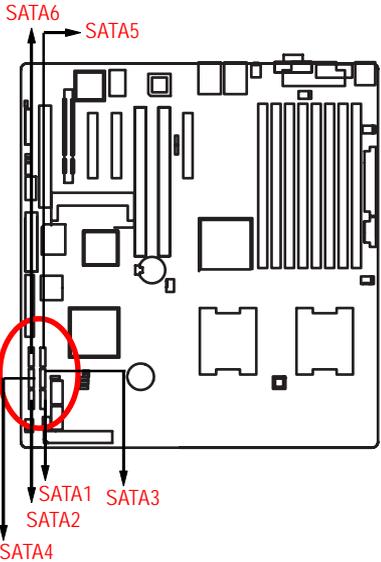| Pin No.	Definition
1	GND
2	TXP
3	TXN
4	GND
5	RXN
6	RXP
7	GND

11) SCSI 1 (SCSI Connector)

You can connect all major SCSI peripherals to this connector. Ultra320 SCSI technology is compatible with Ultra160, Ultra2, Ultra Wide and all other previous-generation SCSI devices. The data transfer rate is up to 320 MB/sec per channel. Only compatible with Win 2000/XP/NT.
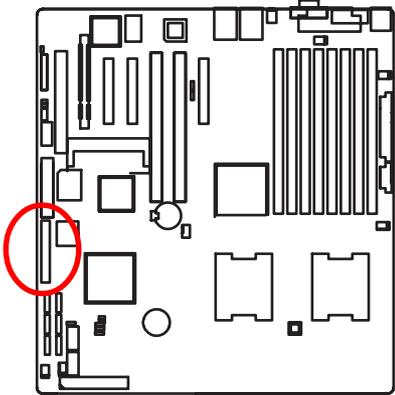
12/ 13/ 14/ 15) FAN 1/2/3 (System Front and Rear Fan Connectors)

This connector allows you to link with the cooling fan on the system case to lower the system temperature. These connectors are for system use only.

Pin No.	Definition
1	GND
2	12V
3	Sense
4	Control
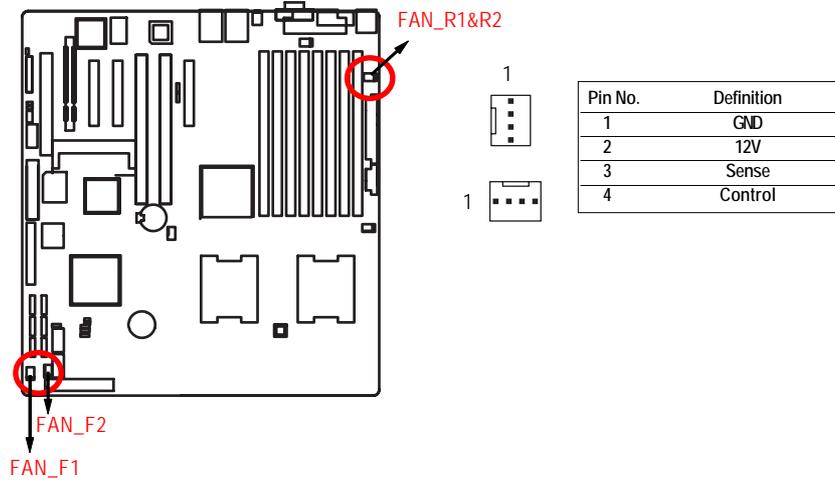
16/ 17) CPU1/2_FAN   (CPU Fan Connectors)

Please note, a proper installation of the CPU cooler is essential to prevent the CPU from running under abnormal condition or damaged by overheating.The CPU fan connector supports Max. current up to 1A .

Pin No.	Definition
1	GND
2	12V
3	Sense
4	Control
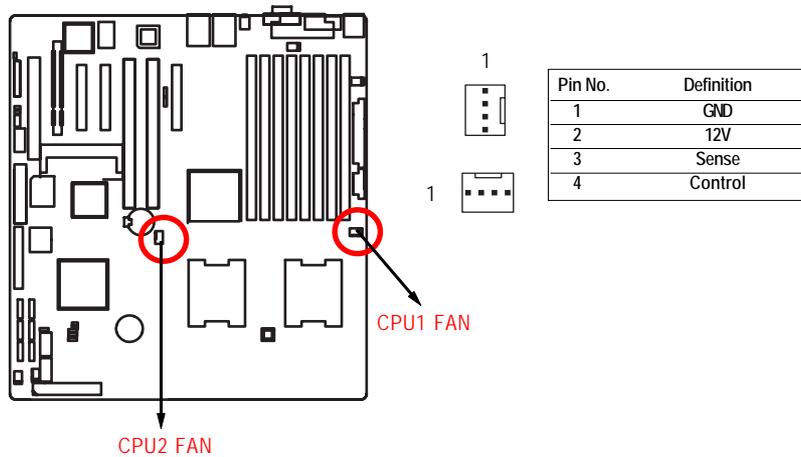
18/ 19) F_USB1/2 (Front USB Connectors)

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.

1 2

9 10
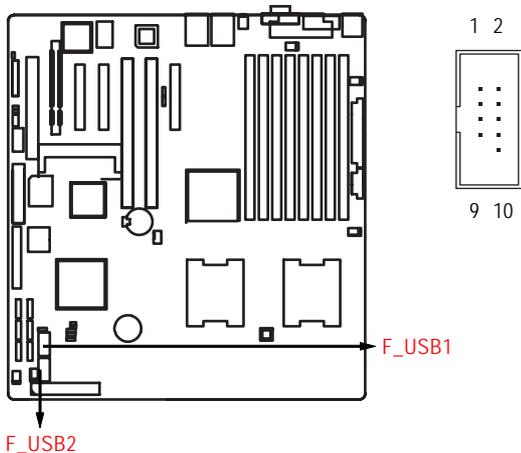
Pin No.	Definition
1	Power
2	Power
3	USB Dx-
4	USB Dy-
5	USB Dx+
6	USB Dy+
7	GND
8	GND
9	No Pin
10	NC

F_USB1

F_USB2

20) COM2

2

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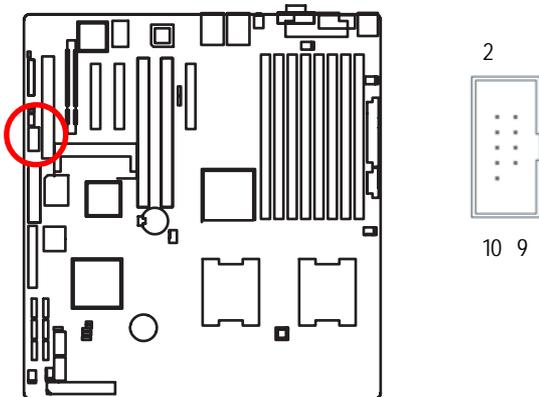
Pin No.	Definition
1	DCD-
2	SIN2
3	SOUT2
4	DTR2-
5	GND
6	DSR2-
7	RTS2-
8	CTS2-
9	RI2-
10	NC

21

21) 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.

1 2

23 24
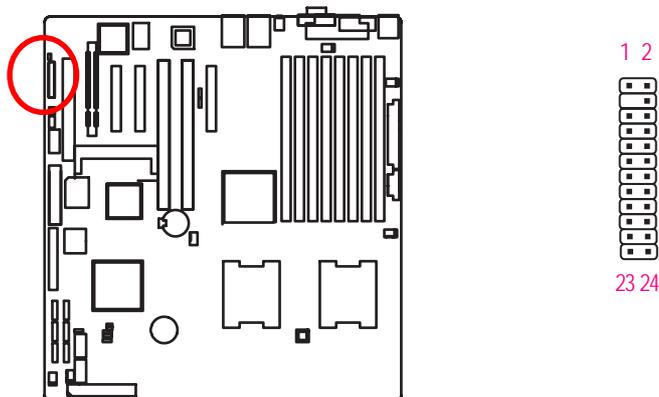
| Pin No.	Signal Name	Description
1.	PWLED+	Power LED Signal anode (+)
2.	5VSB	P5VStand By Power
3.	KEY	Pin Removed
4.	ID_LED+	ID LED Signal anode (+)
5.	PWLED-	Power LED Signal cathode(-)
6.	ID_LED-	ID LED Signal cathode(-)
7.	HD+	Hard Disk LED Signal anode (+)
8.	F_SYSRDY	System Fan Fail LED Signal
9.	HD-	Hard Disk LED Signal cathode(-)
10.	F_SYSTATUS	System Status LED Signal
11.	PWB+	Power Button Signal anode (+)
12.	L1_ACT	LAN1 access LED Signal
13.	PWB+_GND	Power Button Ground
14.	L1_LNK-	LAN1 linked LED Signal cathode(-)
15.	RST_BTN-	Reset Button cathode(-)
16.	SENSOR_SDA	SMBus Data
17.	RST_BTN_GND	Reset Button Ground
18.	SENSOR_SCL	SMBus Clock
19.	ID_SW-	ID Switch Signal cathode(-)
20.	CASE_OPEN-	Chassis intrusion Signal
21.	ID_SW-_GND	ID Switch Ground
22.	L2_ACT	LAN2 access LED Signal
23.	NMI_SW-	NMI Switch cathode(-)
24.	L2_LNK-	LAN2 linked LED Signal cathode(-)

22) IPMB1

1
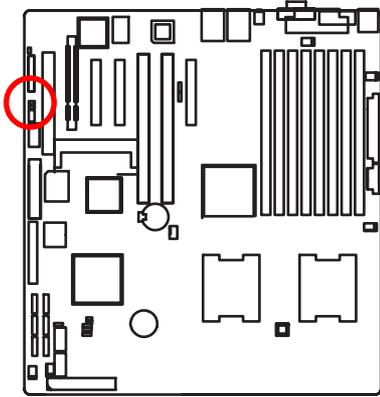
Pin No.	Definition
1	IPMB_SDA
2	GND
3	IPMB_SCL

23) Battery
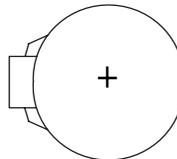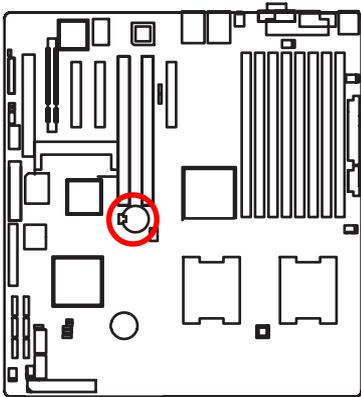
CAUTION

❖ 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.

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.

24) CLR_CMOS1 (Clear CMOS Function)

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

Default value doesn't include the "Shunter" to prevent from improper use this jumper. To clear CMOS, temporarily short 1-2 pin.
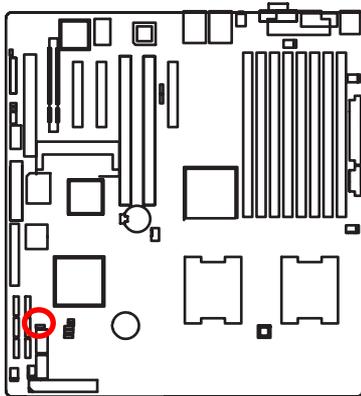
1   1-2 close: Normal (Default)

1   2-3 close: Clear CMOS

25) JP_REC1 (BIOS Recovery Function)
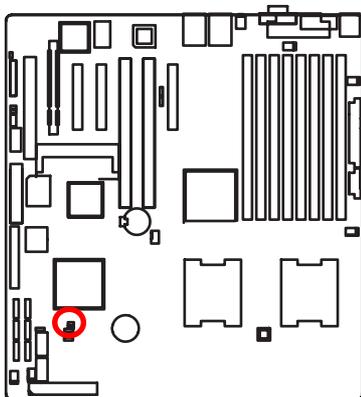
Open: Enable BIOS Recovery function.

Short: Disable this function. (Default)

Please remove the jumper when system access recovery flopp disk.

26) JP_PASS1 (Password Disable Function)
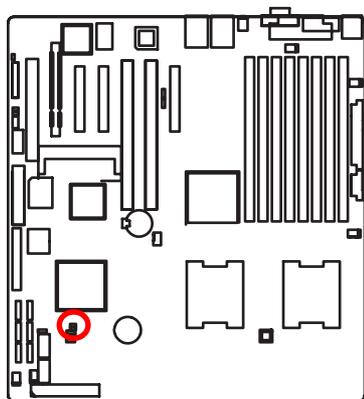
⊡⊡ Open: Normal (Default)

◨◧ Short: Clear Password

Please remove the jumper when system reboot next time.

Chapter 3 BIOS Setup

BIOS Setup is an overview of the BIOS Setup Program. The program that allows users to modify the basic system configuration. This type of information is stored in battery-backed CMOS RAM so that it retains the Setup information when the power is turned off.

ENTERINGSETUP

Power ON the computer and press <F2> immediately will allow you to enter Setup.

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>.

● **Main**

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

● **Advanced**

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

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

● **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.

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.
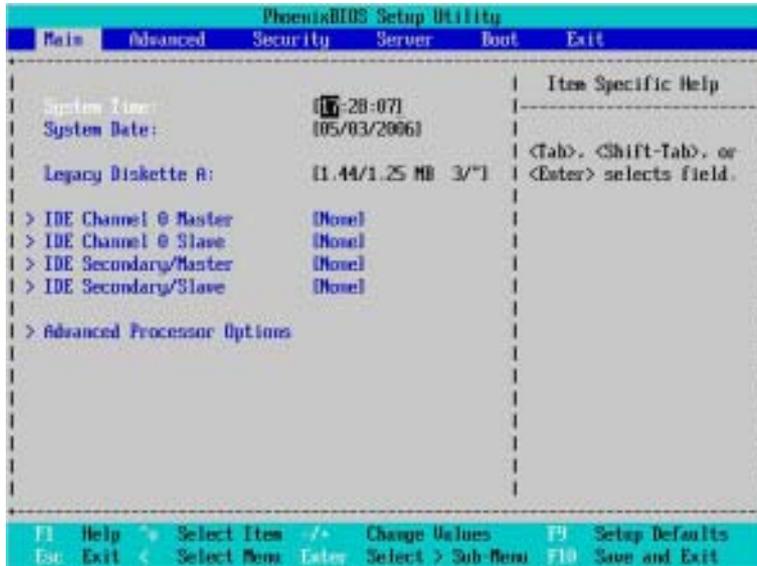

Figure 1: Main

☞ **System Time**

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

☞ **System Date**

Set the System Date. Note that the "Day" automatically changed after you set the date.
(Weekend: DD: MM: YY) (YY: 1099~2099)

↸ **Legacy Diskette A**

This category identifies the type of floppy disk drive A that has been installed in the computer.

▸▸Disabled   Disable this device.

▸▸720K, $3^{1/2}$ in. $3^{1/2}$ inch double-sided drive; 720K byte capacity

▸▸1.44M, $3^{1/2}$ in. $3^{1/2}$ inch double-sided drive; 1.44M byte capacity.

▸▸2.88M, $3^{1/2}$ in. $3^{1/2}$ inch double-sided drive; 2.88M byte capacity.

↸ **IDE Primary Master, Slave / Secondary Master, Slave**

The category identifies the types of hard disk from drive C to F that has been installed in the computer. There are two types: auto type, and manual type. Manual type is user-definable; Auto type which 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.

If you select User Type, related information will be asked to enter to the following items. Enter the information directly from the keyboard and press <Enter>. Such information should be provided in the documentation form your hard disk vendor or the system manufacturer.

▸▸ **TYPE**

1-39: Predefined types.

Users: Set parameters by User.

Auto: Set parameters automatically. (Default Vaules)

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.
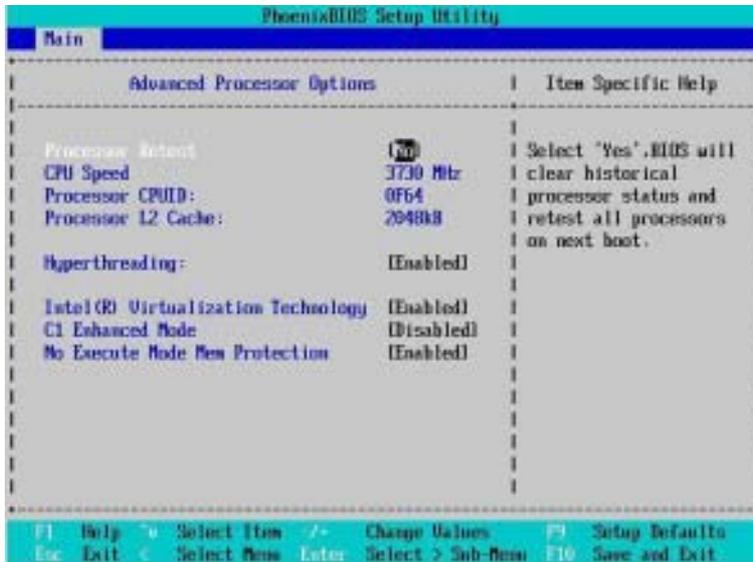
Advanced Processor Options

Figure 1-1: Advanced Processor Option

☞ **Advanced Processor Option**

This category includes the information of **CPU Speed, Processor ID**. And setup menu for **Hyperthreading**, **Intel Virtualizational Technology**, **Thermal Management 2**, **C1 Enhanced Mode**, **No Execute Mode Memory**, **and Set Max Ext CPUID=3**.

☞ **Processor Reset**

   ▸▸ Yes   Select 'Yes' BIOS will clear historical processor status and reset all processors on next boot.

   ▸▸ No   Disables Processor Reset function. (Default value)

☞ **Hyper Threading**

   ▸▸ Enabled   Enables Hyper-Threading Technology Feature when using Windows XP and Linux 2.4x operating systems that are optimized for Hyper-Threading technology. (Default value)

   ▸▸ Disabled   Disables Hyper-Threading Technology when using other operating systems.

☞ 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.

- ▶▶ Enabled   Enabled Intel Virtualization Technology. (Default value)
- ▶▶ Disabled   Disables this function.

☞ Thermal Management2

Thermal Management 2 enhances the features of power reduction capability. When TM2 is enabled, it will reduce the frequency and VID which results in a saving of power consumption of processor.

- ▶▶ Enabled   Enabled Thermal Management 2. (Default value)
- ▶▶ Disabled   Disables this function.

☞ C1 Enhanced Mode

With enabling C1 Enhanced Mode, all loical processors in the physical processor have entered the C1 state, the processor will reduce the core clock frequency to system bus ratio and VID.

- ▶▶ Enabled   Enabled C1 Enhanced Mode.
- ▶▶ Disabled   Disables C1 Enhanced Mode. (Default value)

☞ No Execute Mode Mem. Protection

- ▶▶ Enabled   Enable No Execute Mode Memory Protection function. (Default value)
- ▶▶ Disabled   Disables No Execute Mode Memory Protection function.

Advanced

About This Section: Advanced

With this section, allowing user to configure your system for basic operation. User can change the processor options, chipset configuration, PCI configuration and chipset control.
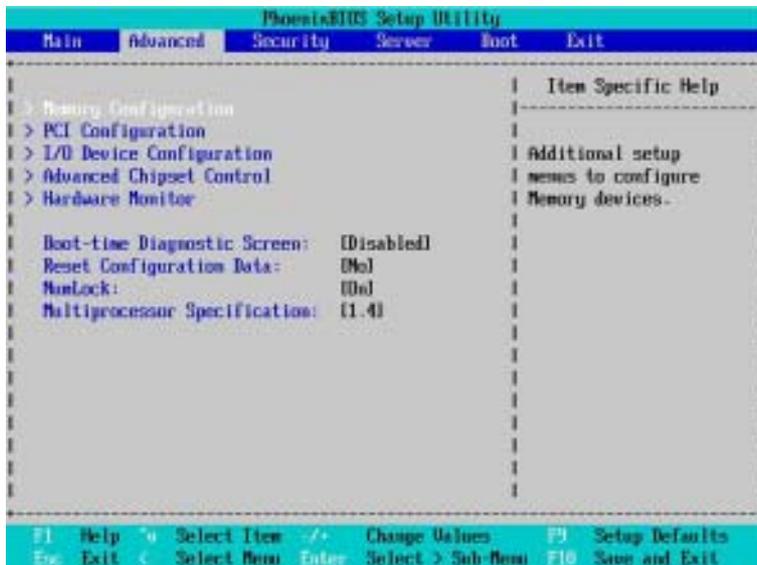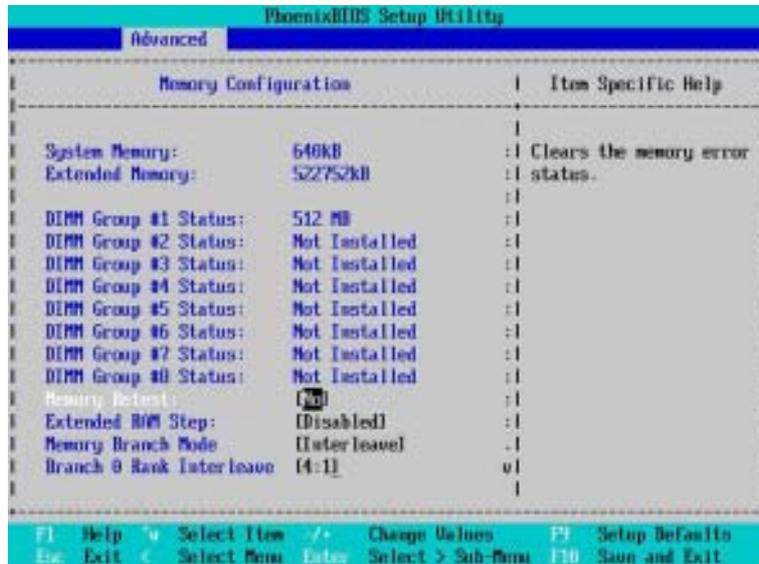

Figure 2: Advanced

Memory Configuration

Figure 2-1: Memory Configuration

☞ **System Memory/Extended Memory/DIMM Group 1~8 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   Disable this function. (Default value)

☞Extend RAM Step

    ➡Enabled   Enable test extended memroy process.

    ➡Disabled   Disable this function. (Default value)

☞Memory Branch Mode

    ➡Sequential   Memory will use sequential mode to save date.

    ➡Interleave   Memory will use Interleave mode for to distribute every one memory to save date. (Default value)

    ➡Mirror   Mirror will use backup date by image. Only half of the total memory is report to OS.

    ➡Single Channel 0   Disable Default operate Dual channel Mode. Only Single channel 0 will be detect.

☞Branch 0 Rank Sparing

    ➡Enabled   Enable this item, memory will spare two(dual channel) of all slots.

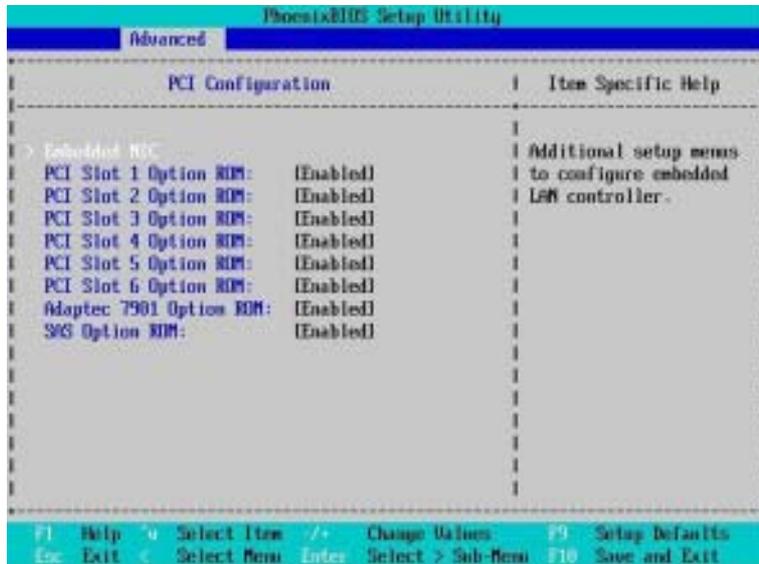   ➡Disabled   Disable this function. (Default value)

PCI Configuration

Figure 2-2: PCI Configuration

☞**Embedded NIC**

▶ **LAN 1 Option ROM Scan**

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

▶▶Disabled   Disable this function.

▶ **LAN2 Option ROM Scan**

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

▶▶Disabled   Disable this function.

☞PCI Slot 1/2/3/4/5/6 Option ROM

> ▶Enabled   Enableing this item to initialize device expansion ROM.
> (Defualt value)
>
> ▶Disabled   Disable this function.

☞SAS Option ROM

> ▶Enabled   Enableing this item to initialize device expansion ROM.
> (Default value)
>
> ▶Disabled   Disable this function.

Please note that this option will appear and enable when SAS daughter card is populated.

☞Adaptec 7901 Option ROM

> ▶Enabled   Enableing this item to initialize device expansion ROM.
> (Default value)
>
> ▶Disabled   Disable this function.

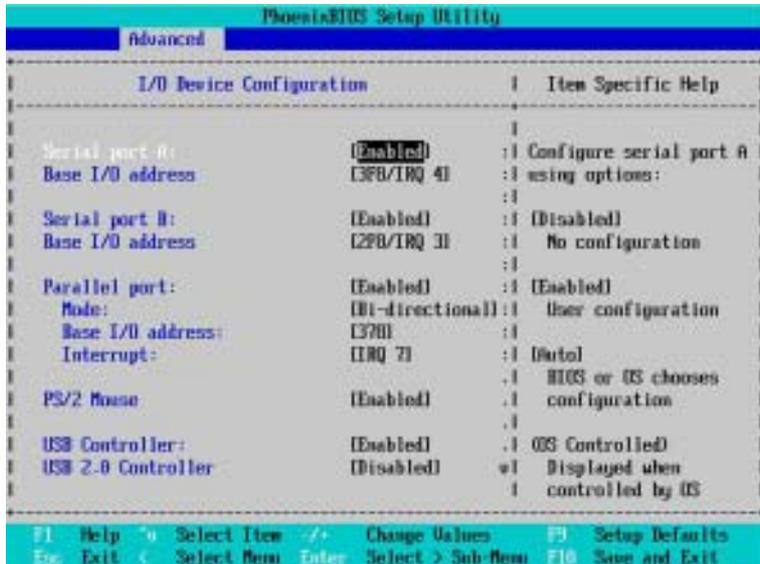## I/O Device Configuration

Figure 2-3: I/O Device Configuration

⌒Serial Port A

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

▸▸Enabled   Enable the configuration (Default value)

▸▸Disabled   Disable the configuration.

  ▸ **Base I/O Address/IRQ**

▸▸3F8/IRQ4   Set IO address to 3F8. (Default value)

▸▸2F8/IRQ3   Set IO address to 2F8.

▸▸3E8/IRQ4   Set IO address to 3E8.

▸▸2E8/IRQ3   Set IO address to 2E8.

☞ Serial Port B

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

▶▶ Enabled   Enable the configuration

▶▶ Disabled   Disable the configuration.(Default value)

   ▶   Base I/O Address/IRQ

▶▶ 3F8/IRQ4   Set IO address to 3F8.

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

▶▶ 3E8/IRQ4   Set IO address to 3E8.

▶▶ 2E8/IRQ3   Set IO address to 2E8.

☞ Parallel Port

This allows users to configure parallel port by using this option.

▶▶ Enabled   Enable the configuration.

▶▶ Disabled   Disable the configuration. (Default value)

   ▶   Mode

This option allows user to set Parallel Port transfer mode.

▶▶ Bi-directional   Use this setting to support bi-directional transfers on the parallel

                                    port. (Default value)

▶▶ EPP   Using Parallel port as Enhanced Parallel Port.

▶▶ ECP   Using Parallel port as Extended Capabilities Port.

   ▶   Base I/O Address

▶▶ 378   Set IO address to 378. (Default value)

▶▶ 278   Set IO address to 278.

   ▶   Iterrupt

▶▶ IRQ5   Set Interrupt as IRQ5.

▶▶ IRQ7   Set Interrupt as IRQ7. (Default value)

☞**PS/2 Mouse**

Set this option 'Enabled' to allow BIOS support for a PS/2 - type mouse.

➡Enabled   'Enabled' forces the PS/2 mouse port to be enabled regardless if a
           mouse is present. (Default value)

➡Disabled   'Disabled' prevents any installed PS/2 mouse from functioning,
           but frees up IRQ12.

☞**USB Controller**

This item allows users to enable or disable the USB device by setting item to the desired
value.

➡Enabled   Enable USB controller. (Default value)

➡Disabled   Disbale this function.

☞**USB 2.0 Controller**

This item allows users to enable or disable the USB 2.0 device by setting item to the desired
value.

➡Enabled   Enable USB 2.0 controller.(Default value)

➡Disabled   Disbale this function.

☞**Legacy USB Support**

This option allows user to function support for legacy USB.

➡Enabled   Enables support for legacy USB (Default Value)

➡Disabled   Disables support for legacy USB.

☞**Route Port 80h cycles to**

Set route port 80h cycles to either PCI or LPC bus.

➡ PCI   Set Route Port 80h I/O cycles to the PCI bus. (Default Value)

➡ LPC   Set Route Port 80h I/O cycles to the LPC bus.

☞Parallel ATA

▶▶Enabled   Enable Parallel ATA. (Default value)

▶▶Disabled   Disable the device.

☞Serial ATA

▶▶Enabled   Enables on-board serial ATA function. (Default Value)

▶▶Disabled   Disables on-board serial ATA function.

▶ Native Mode Operation

This option allows user to set the native mode for Serial ATA function.

▶▶Auto   Auto detected. (Default value)

▶▶Serial ATA   Set Native mode to Serial ATA.

▶ SATA Controller Mode Option

▶▶Compatible Mode   SATA and PATA drives are auto-detected and placed in
                                                Legacy mode. (Default value)

▶▶Enhanced Mode   SATA and PATA drives are auto-detected and placed in
                                                Native mode.

Note: Pre-Win2000 operating system do not work in Enhanced mode.

Advanced Chipset Control
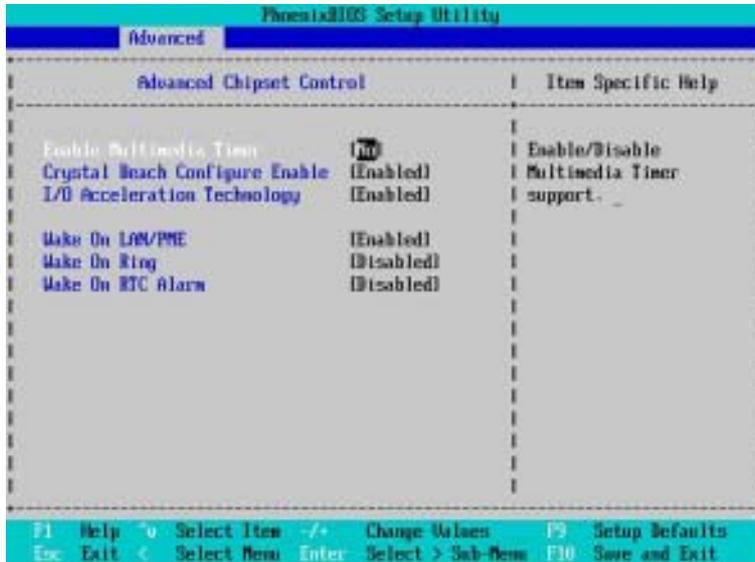
Figure 2-4: Advanced Chipset Control

☞**Enable Multimedia Timer**

    ▸▸Yes   Enable Multimedia Timer support.

    ▸▸No   Disable this function. (Default value)

☞**Crystal Beach Configure Enable**

    Enable Configuration/Memory mapped accesses to the Crystal Beach Configuration sapce
located in Device 8, Fn0, and Fn1.

    ▸▸Enabled   Crystal Beach Configure function. (Default value)

    ▸▸Disabled   Disable this function.

❤I/O Acceleration Technology

It addresses all segments of the server I/O bottleneck problem using TCP/IP and without requiring any modification of existing or future applications.

▸Enabled   Enable I/O Acceleration Technology. (Default value)

▸Disabled   Disable this function.

❤Wake On LAN / PME

This option allow user to determine the action of the system when a LAN/PME wake up event occurs.

▸Enabled   Enable Wake On LAN/PME. (Default value)

▸Disabled   Disable this function.

Note: This item must enabled if you're running under Windows operating system.

❤Wake On Ring

This option allow user to determine the action of the system power is off and the modem is ringing.

▸Enabled   Enable Wake On Ring. (Default value)

▸Disabled   Disable this function.

Note: This item must enabled if you're running under Windows operating system.

❤Wake On RTC Alarm

When "RTC Alarm Resume" item is set to enabled, system will wakeup from RTC. (This item will be functionalized under ACPI OS)

▸Enabled   Enable alarm function to POWER ON system. (Default value)

▸Disabled   Disable this function.

Note: This item must enabled if you're running under Windows operating system.

Hardware Monitor
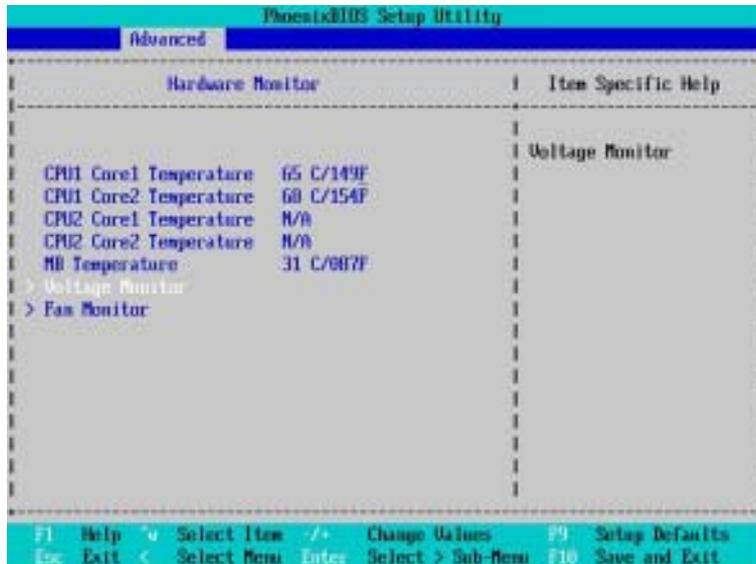
Figure 2-5: Hardware Monitor

❧ **CPU1/2 Core1/2 Temperature/ Motherboard Temperature**

▸▸ Display the current CPU1/CPU2 Core1/2 temperature, and Motherboard temperature.

❧ **Voltage Monitor: +3.3V, +5V, VCOREA, VCOREB, VBAT**

▸▸ Detect system's voltage status automatically.

❧ **FAN Monitor: System 1/2/3/4/5/6 (RPM)**

▸▸ Display the current System FAN 1/2/3/3/4/5/6 speed.

This Menu will disappear when BMC module is populated.

☞Boot -time Diagnostic

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

➡ Enabled   Enable Boot-time Diagnostic.

➡ Disabled   Disable this function. (Default value)

☞Reset Configuration Data

➡ Yes   Reset all configuration data.

➡ No   Do not make any changes. (Default value)

☞**NumLock**

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

▸▸ On   Enable NumLock. (Default value)

▸▸ Off   Disable this function.

☞**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 value)

▸▸ 1.1   Support M PS Version 1.1.

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.
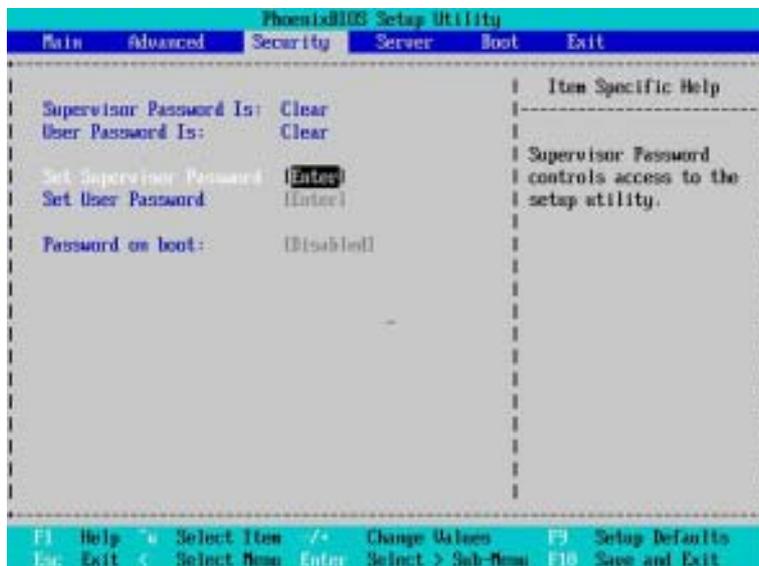
Figure 3: Security

☞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.

☞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 value)

Server
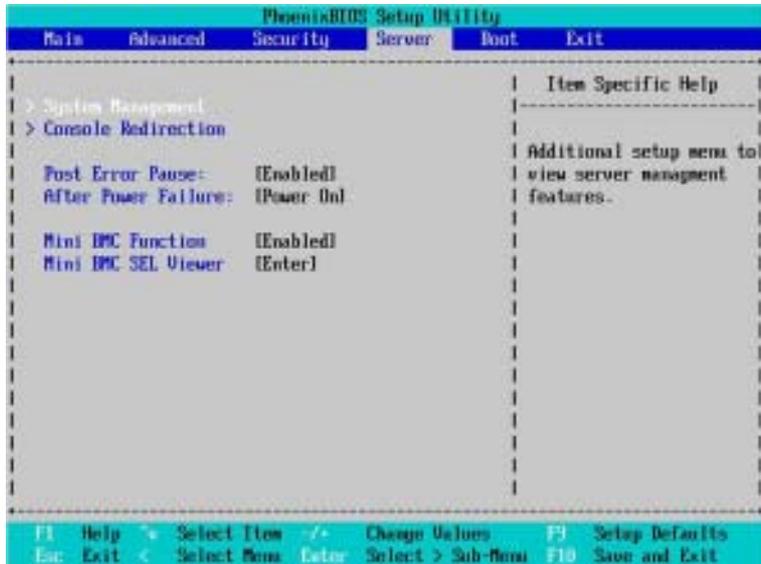
Figure 4: Server

System Management
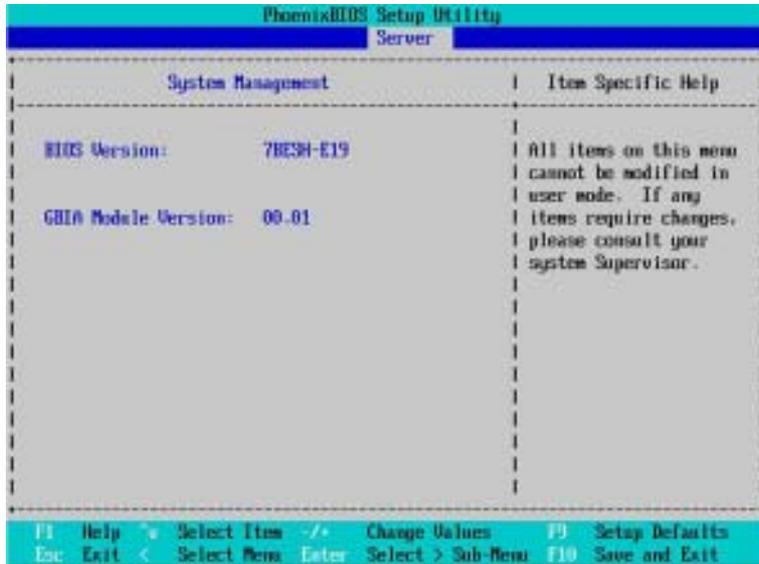
Figure 4-1: System Management

☞**Server Management**

This category allows user to view the server management features. Including information of **BIOS Version** and **GBIA Module Version**. All items in this menu cannot be modified in user's mode. If any items require changes, please consult your system supervisor.

Console Redirection
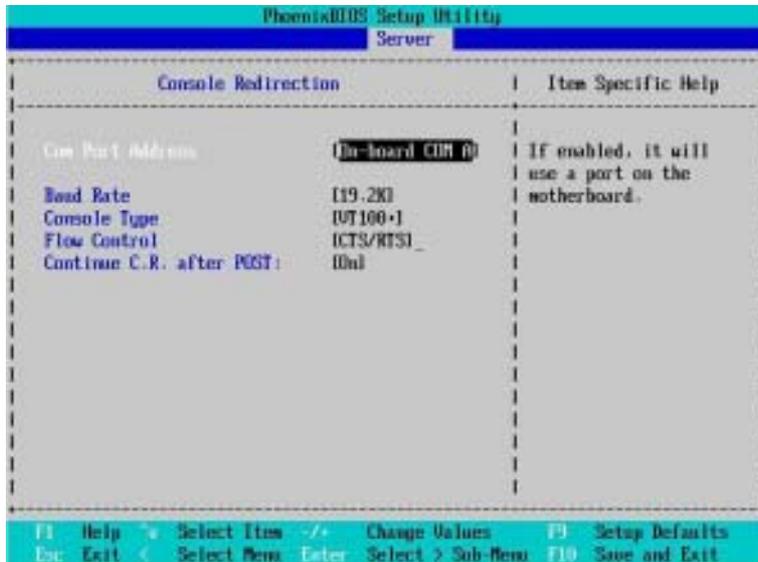
Figure 4-2: Console Redirection

☞ **COM Port Address**

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

▸ On-board COMA   Use COMA as he COM port address.

▸ Disabled   Disable this function. (Default value)

☞ **Baud Rate**

This option allows user to set the specified baud rate.

▸ Options   300, 1200, 2400, 9600, 19.2K, 38.4K, 57.6K, 115.2K.

☞ **Console 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.

 Flow Control

This option provide user to enable the flow control function.

▸▸None   Not supported.

▸▸XON/OFF   Software control.

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

 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 value)

☞ Post Error Pause

If this item is set to enabled, the system will wai for user intervention on critical POST errors.

If this item is disabled, the system will boot with no intervention if possible.

▶Enabled   Enable Post Error Pause. (Default value)

▶Disabled   Disable this function.

☞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 value)

☞ **Mini BMC Function**

      ▸ Enabled   Enable Mini BMC function. (Default value)

      ▸ Disabled   Disable this function.

This option will disappear and disable when BMC module is populated.

☞ **Mini BMC SEL View**

      Press [Enter] to view the Mini BMC SEL.

This option will disappear and disable when BMC module is populated.

Boot

♪ About This Section: Boot

The "Boot" menu allows user to select among four possible types of boot devices listed

using the up and down arrow keys. By applying <+> and <Space> key, you can promote

devices and by using the <-> key, you can demote devices. Promotion or demotion of devices

alerts the priority that the system uses to search for boot device on system power on.
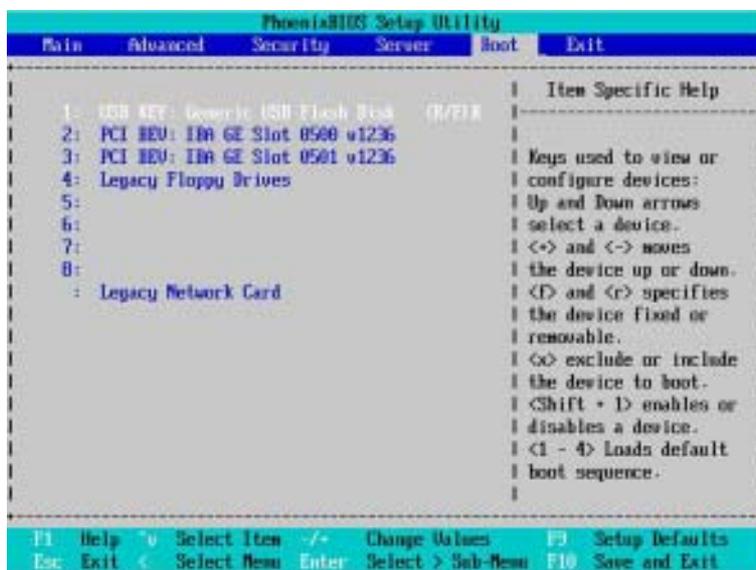
Figure 5: Boot

☞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 ot 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.

<1-4> Loads default boot secquence.
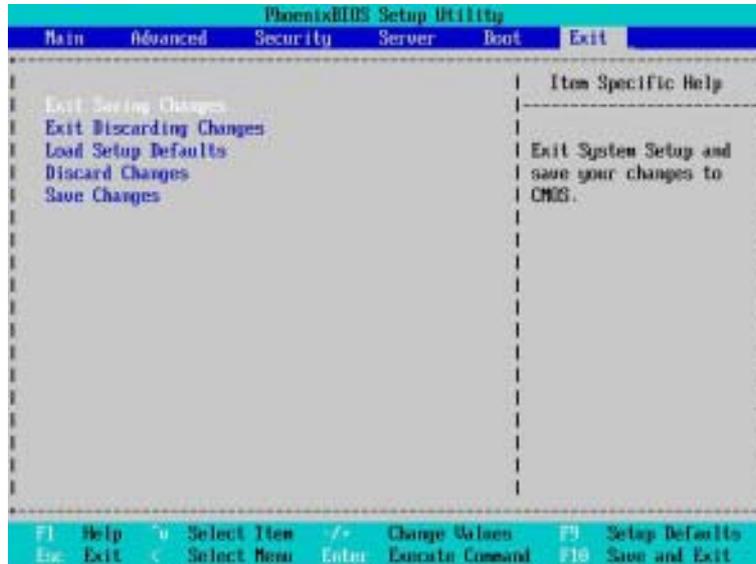
Exit

Figure 6: Exit

♦ About This Section: Exit

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

- ☛ Exit Saving Changes
- ☛ Exit Discarding Changes
- ☛ Load Settup Default
- ☛ Discard Change
- ☛ Save Changes

☞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 tha user made in this time into CMOS.

Therefore, whenyou boot up your computer next time, the BIOS will

re-configure your system according data in CMOS.
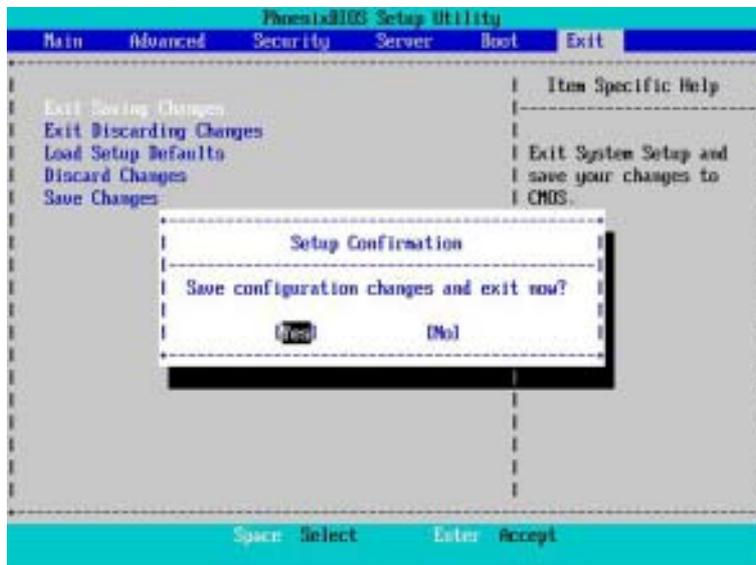
☞Exit Discarding Changes

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 compuetr when selecting this option.
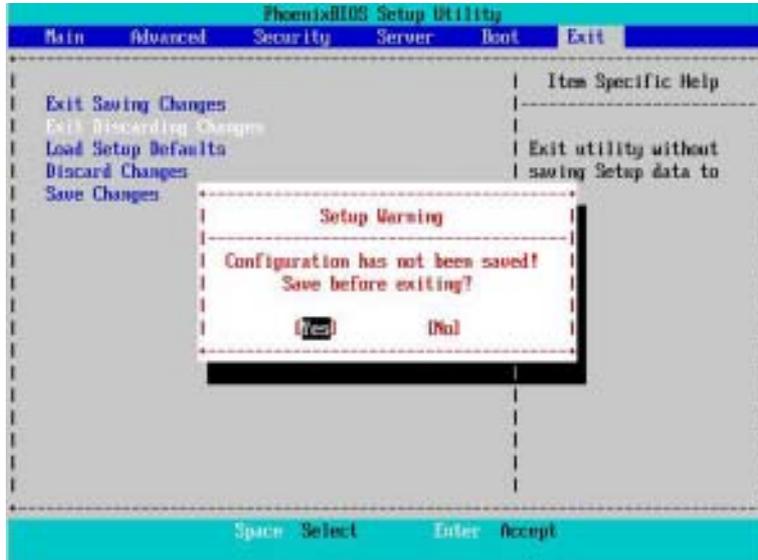
☞Load Setup Default

This option allows user to load default values for all setup items.

When you press <Enter> on this item, you will get a confirmation dialog box with a message as below:
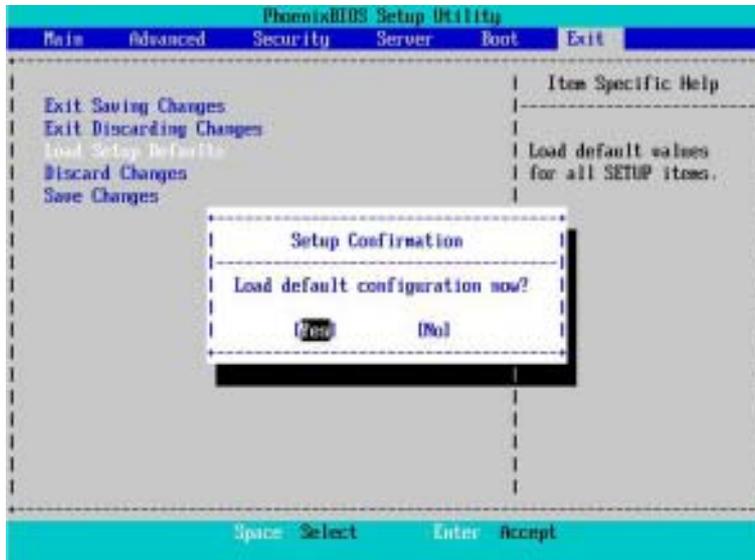
☞Discard Changes

This option allows user to load previos values from CMOS for all setup item.

When you press <Enter> on this item, you will get a confirmation dialog box with a message as below:
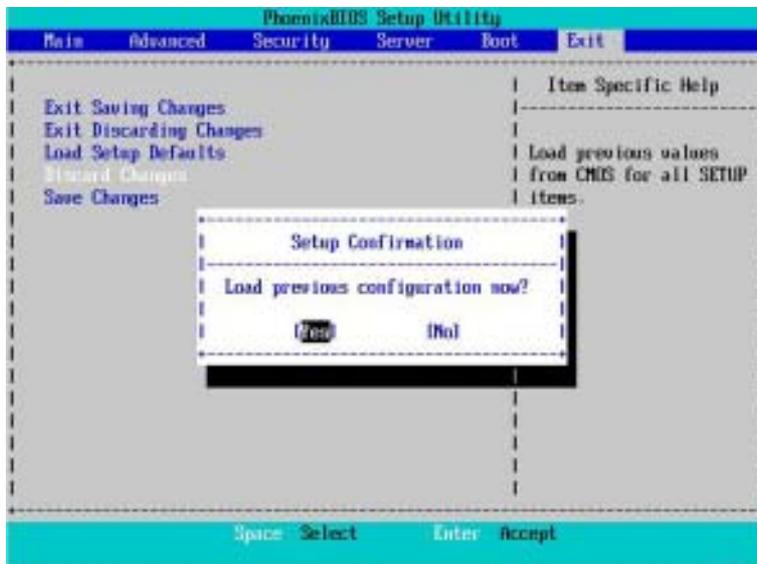
↻**Save Changes**

This option allows user to save setup dat ato CMOS.

When you press <Enter> on this item, you will get a confirmation dialog box with a message as below:
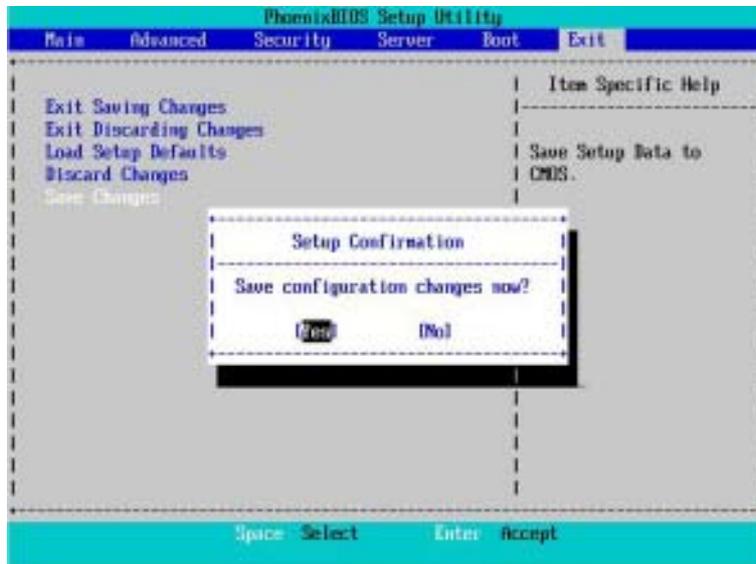
Press [Yes] to save setup daya to CMOS.

Chapter 4   Technical Reference

Block Diagram

Chapter 5 Driver Installation

A. Intel Chipset Software Installation Utilities

Insert the driver CD-title that came with your motherboard into your CD-ROM driver, the driver

CD-title will auto start and show a series of Setup Wizard dialog boxes. If not, please double click

the CD-ROM device icon in "My computer", and execute the setup.exe.

Installation Procedures:

1. The CD auto run program starts, **Double click** on "Intel Chipset Software Installation Utilities"
   to start the installation.

2. Then, a series of installation wizards appear. Follow up the wizards to install the drivers.

3. Setup completed, click "Finish" to restart your computer.
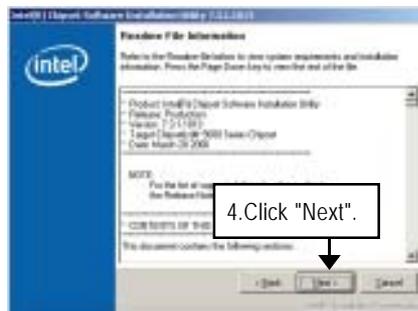
Auto Run window

Setup Wizard

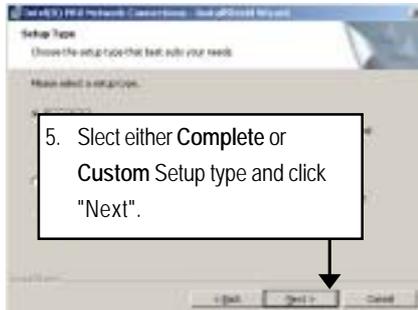(1)

(2)

License Aggremment
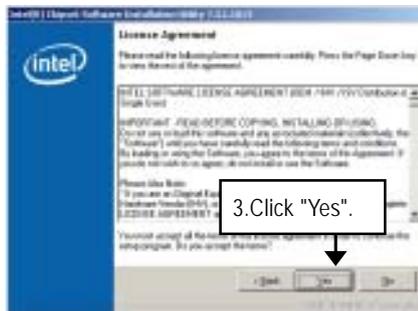
Readme Information

(3)

(4)

Installation Completed

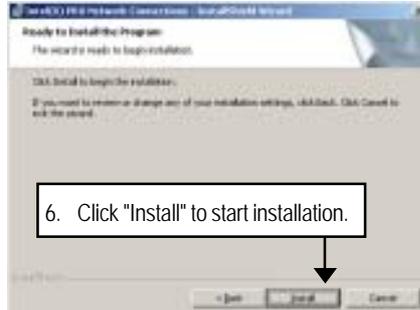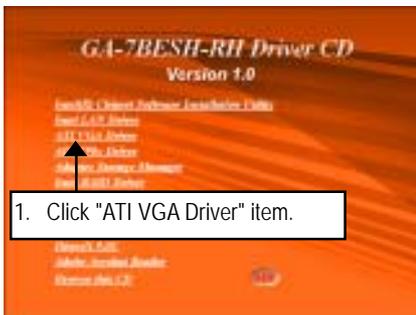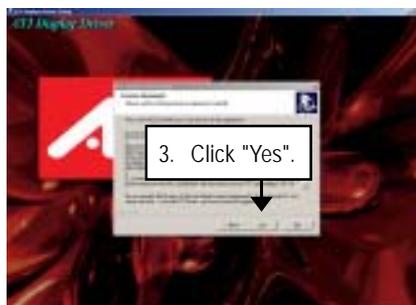5. Installation completed, Click "Finish" to restart computer.

(5)

B. Intel LAN Driver Installation

Insert the driver CD-title that came with your motherboard into your CD-ROM driver, the driver CD-title will auto start and show a series of Setup Wizard dialog boxes. If not, please double click the CD-ROM device icon in "My computer", and execute the setup.exe.

Installation Procedures:

1. The CD auto run program starts, **Double click** on "Intel LAN Driver" to start the installation.

2. Select "Install Base Driver.

3. System starts to install the LAN Driver automatically.

Auto Run window

1.Click "Intel LAN Driver" item.

(1)

Installation Wizard

2. Click "Install Base Driver" item.

(2)

Installation Wizard

3. Click "Next".

(3)

License Agreement

4. Click "Next".

(4)

66

Select Setup Type

5. Slect either **Complete** or **Custom** Setup type and click "Next".

(5)

Ready to instll program

6. Click "Install" to start installation.

(6)

Step 5. User can select either **Complete** or **Custom** Setup Types. **Complete** setup type allows users to Installs drivers, Intel PROSet for Windows* Device Manager, and Advanced Networking Services. **Custom** setup type embraces installing features and subfeatures user selects, including modern utilities, manage ment components and drivers. Recommended for advanced users.

Installation Completed

7. Wizard Completed. Click "Finish".

(7)

C. ATI VGA Driver Installation

Insert the driver CD-title that came with your motherboard into your CD-ROM driver, the driver CD-title will auto start and show a series of Setup Wizard dialog boxes. If not, please double click the CD-ROM device icon in "My computer", and execute the setup.exe.

Installation Procedures:

1. The CD auto run program starts, **Double click** on "ATI VGA Driver" to start the installation.
2. Then, a series of installation wizards appear. Follow up the wizards to install the drivers.
3. Setup completed, click "Finish" to restart your computer.

Auto Run window   **Setup Wizard**

(1)   (2)

License Aggremment   **Installation Complete**

(3)   (4)

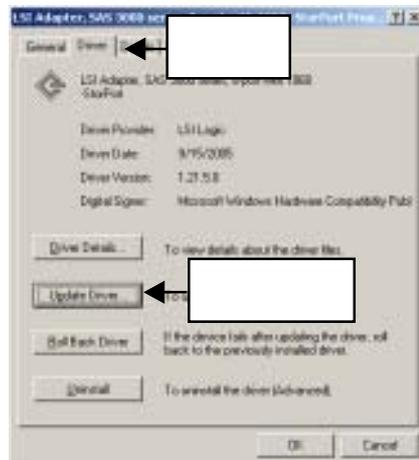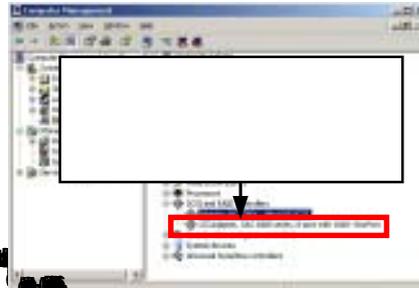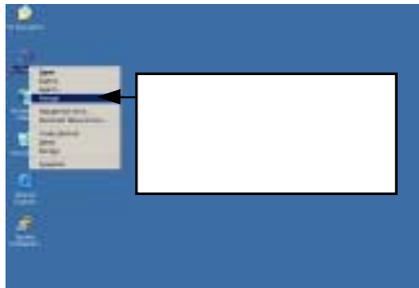## D.   AIC-790x SCSI Driver Installation
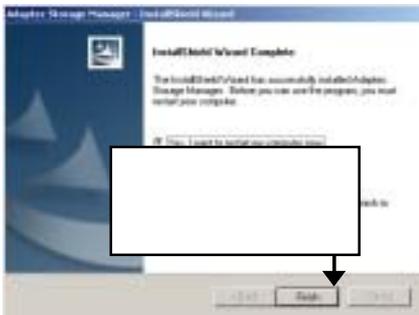
Installation Procedures:

1.   Insert the driver CD-title that came with your motherboard into your CD-ROM driver.

2.   Right click **My Computer** and select **Manage**.

3.   Click on **Device Manager**.

4.   On the right side of windows, right click on **SCSI and RAID controller** and select **Properties**.

5.   Select **Driver** Tab, and click on **Update Driver** tab.

6.   Select **Install the software automatically**, then click **Next**.

7.   Hardware Update Wizard widow pops up. Click **Next**.
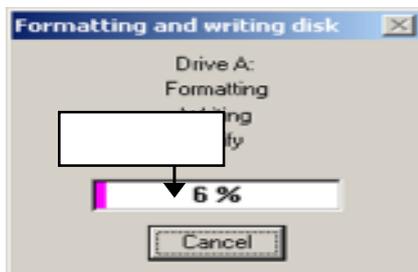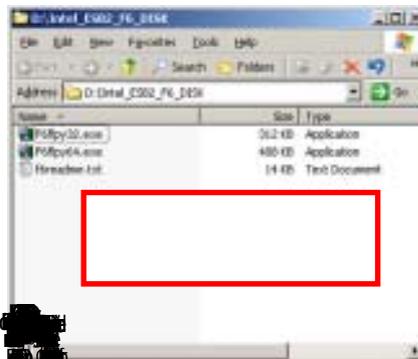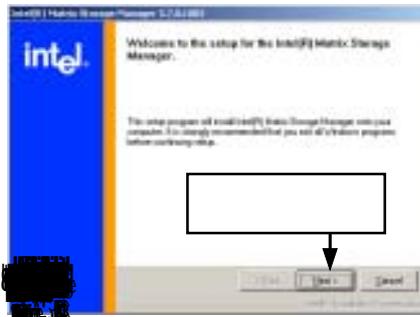
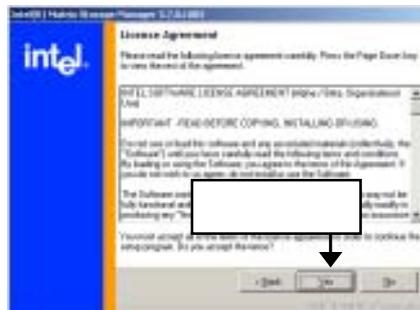8.   Installation completed, click **Finish**.

07

GA-7BESH-RH Driver CD
Version 1.0

Intel(R) Chipset Software Installation Utility
Intel LAN Driver
ATI VGA Driver
AC'97Rc Driver
Adaptec Device Manager
Intel RAID Driver
Marvell Raw Manager
LSI RAID Driver
LSI RAID Utility

D:\Intel_ESB2_F6_DISK
File Edit View Favorites Tools Help
Address: D:\Intel_ESB2_F6_DISK

Name	Size	Type
F6flpy32.exe	312 KB	Application
F6flpy64.exe	488 KB	Application
Itreadme.txt	14 KB	Text Document

Formatting and writing disk

Drive A:
Formatting

6 %

Cancel

Batch assistant

Insert floppy to write

OK   Cancel

GA-7BESH-RH Driver CD
Version 1.0

GA-7BESH-RH Driver CD
Version 1.0

Welcome to setup for DirectX

DirectX Setup

Restart Computer