KFN5-D SLI

Motherboard

E2551

First Edition V1
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Notices

Federal Communications Commission Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

• This device may not cause harmful interference, and
• This device must accept any interference received including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with manufacturer's instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

• Reorient or relocate the receiving antenna.
• Increase the separation between the equipment and receiver.
• Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
• Consult the dealer or an experienced radio/TV technician for help.

> The use of shielded cables for connection of the monitor to the graphics card is required to assure compliance with FCC regulations. Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

Canadian Department of Communications Statement

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

This class B digital apparatus complies with Canadian ICES-003.

Safety information

Electrical safety

- To prevent electrical shock hazard, disconnect the power cable from the electrical outlet before relocating the system.

- When adding or removing devices to or from the system, ensure that the power cables for the devices are unplugged before the signal cables are connected. If possible, disconnect all power cables from the existing system before you add a device.

- Before connecting or removing signal cables from the motherboard, ensure that all power cables are unplugged.

- Seek professional assistance before using an adapter or extension cord. These devices could interrupt the grounding circuit.

- Make sure that your power supply is set to the correct voltage in your area. If you are not sure about the voltage of the electrical outlet you are using, contact your local power company.

- If the power supply is broken, do not try to fix it by yourself. Contact a qualified service technician or your retailer.

Operation safety

- Before installing the motherboard and adding devices on it, carefully read all the manuals that came with the package.

- Before using the product, make sure all cables are correctly connected and the power cables are not damaged. If you detect any damage, contact your dealer immediately.

- To avoid short circuits, keep paper clips, screws, and staples away from connectors, slots, sockets and circuitry.

- Avoid dust, humidity, and temperature extremes. Do not place the product in any area where it may become wet.

- Place the product on a stable surface.

- If you encounter technical problems with the product, contact a qualified service technician or your retailer.

The symbol of the crossed out wheeled bin indicates that the product (electrical and electronic equipment) should not be placed in municipal waste. Check local regulations for disposal of electronic products.

About this guide

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

How this guide is organized

This manual contains the following parts:

- **Chapter 1: Product introduction**

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

- **Chapter 2: Hardware information**

  This chapter lists the hardware setup procedures that you have to perform when installing system components. It includes description of the switches, jumpers, and connectors on the motherboard.

- **Chapter 3: Powering up**

  This chapter describes the power up sequence, the vocal POST messages, and ways of shutting down the system.

- **Chapter 4: BIOS setup**

  Tells how to change system settings through the BIOS Setup menus. Detailed descriptions of the BIOS parameters are also provided.

- **Chapter 5: RAID configuration**

  Provides information on RAID configurations for this motherboard.

- **Chapter 6: Driver installation**

  This chapter provides information on RAID and LAN driver installation for this motherboard.

Where to find more information

Refer to the following sources for additional information and for product and software updates.

1. **ASUS websites**

   The ASUS website provides updated information on ASUS hardware and software products. Refer to the ASUS contact information.

2. **Optional documentation**

   Your product package may include optional documentation, such as warranty flyers, that may have been added by your dealer. These documents are not part of the standard package.

Conventions used in this guide

To make sure that you perform certain tasks properly, take note of the following symbols used throughout this manual.

DANGER/WARNING: Information to prevent injury to yourself when trying to complete a task.

CAUTION: Information to prevent damage to the components when trying to complete a task.

IMPORTANT: Instructions that you MUST follow to complete a task.

NOTE: Tips and additional information to help you complete a task.

Typography

Bold text	Indicates a menu or an item to select.
Italics	Used to emphasize a word or a phrase.
<Key>	Keys enclosed in the less-than and greater-than sign means that you must press the enclosed key.
	Example: <Enter> means that you must press the Enter or Return key.
<Key1> + <Key2> + <Key3>	If you must press two or more keys simultaneously, the key names are linked with a plus sign (+).
	Example: <Ctrl> + <Alt> +<Del>
`Command`	Means that you must type the command exactly as shown, then supply the required item or value enclosed in brackets.
	Example: At the DOS prompt, type the command line: `format A:/S`

KFN5-D SLI specifications summary

CPU	Socket F for next generation AMD® Opteron™ 200 and 800 Series processor Supports AMD 64 architecture that enables simultaneous 32-bit and 64-bit architecture
Chipset	NVIDIA® nForce Professional 3600
System bus	1 GHz
Memory	Dual-channel memory architecture 8 x 240-pin DIMM sockets support registered ECC DDR2-533/667 memory modules Supports up to 16 GB system memory
Expansion slots	2 x PCI Express x16 slots with Scalable Link Interface (SLI™) support 1 x PCI Express x1 slot 1 x PCI slot 33 MHz/32-bit/5V slot (PCI 2.3)

Scalable Link Interface (SLI™)	SLI™ mode supports:
	  - 2 x Identical SLI™-ready PCI Express x16 graphics cards
	Single card mode supports (default):
	  - 1 x PCI Express x16 graphics card on the first slot (PCIE_1)
	ASUS EZ Plug™

Dual LAN	Dual embedded Broadcom BCM5754 Gigabit LAN controllers that comply with PCI Express 1.0a specifications
USB	Supports up to 10 USB 2.0 ports (four on the rear panel, three connectors on the mid-borad for up to six additional ports)
Special features	ASUS Q-Fan ASUS CrashFree BIOS 2 ASUS MyLogo2 ASUS Post Reporter ASUS EZ Flash ASUS EZ Plug ASUS CPU Overheating Protection (C.O.P) ASUS CPU Parameter Recall (C.P.R)
BIOS features	AMI BIOS, 8 MB LPC, Green, PnP, DMI, SMBIOS 2.3, ACPI 2.0a

(continued on the next page)

KFN5-D SLI specifications summary

Storage	NVIDIA® nForce Professional 3600 chipset supports:
	    1 x IDE port supports two Ultra DMA 100/66/33 devices
	    - 6 x Serial ATA II devices
	    - RAID 0, RAID 1, RAID 0+1, RAID 5 and JBOD configuration that spans across the Serial ATA and Parallel ATA drives
	Silicon Image Sil3132 RAID controller supports:
	    - 2 x Serial ATA II with RAID 0, and RAID 1 configurations

Audio	Realtek® ALC880 8-channel CODEC
IEEE 1394	TI 1394a controller supports: - 2 x IEEE 1394 connectors
Internal connectors	1 x Floppy disk drive connector 1 x IDE connector 8 x Serial ATA connectors 2 x CPU fan connectors 1 x SMBus header for back-plane 2 x Front fan connectors 2 x Rear fan connectors 1 x 24-pin ATX power connector 1 x 8-pin ATX 12 V power connector 1 x 4-pin ASUS EZ Plug™ connector 3 x USB 2.0 connectors for 6 additional USB 2.0 ports 1 x Internal audio connector (CD) 2 x IEEE 1394 connectors 1 x GAME/MIDI connector 1 x Chassis intrusion connector 1 x LPC debug connector 1 x Front panel audio connector System panel connector
Rear panel	1 x Parallel port 1 x Serial port (COM) 2 x LAN (RJ-45) ports 4 x USB 2.0 ports 1 x Optical S/PDIF out port 1 x Coaxial S/PDIF out port 1 x PS/2 keyboard port 1 x PS/2 mouse port 8-channel audio ports
Power Requirement	SSI power supply (with 24-pin and 8-pin 12 V plugs) ATX 12 V 2.0 compliant
Form Factor	Extended-ATX form factor: 12.0" x 10.5" (30.5 cm x 26.7 cm)
Support CD contents	Device drivers ASUS Live Update utility ASUS Server Web-based Management (ASWM) Anti-virus software

*Specifications are subject to change without notice.

This chapter describes the motherboard features and the new technologies it supports.

Product introduction

1

Chapter summary

1

1.1   Welcome!

Thank you for buying an ASUS® KFN5-D SLI motherboard!

The motherboard delivers a host of new features and latest technologies, making it another standout in the long line of ASUS quality motherboards!

Before you start installing the motherboard, and hardware devices on it, check the items in your package with the list below.

1.2   Package contents

Check your motherboard package for the following items.

		MB Retail Pack	MB Bulk Pack
Cables	Serial ATA signal cable	8 pieces	-
	Serial ATA power cable	4 pieces	-
	3-in-1 Floppy/Ultra ATA disk drive cable	1 piece	-
Accessories	I/O shield	1 piece	1 piece
Application CD	KFN5-D SLI support CD	1 piece	1 piece
Documentation	User guide	1 piece	1 piece
MB Packing Quantity	KFN5-D SLI motherboard	1 piece per box	10 pieces per carton

If any of the above items is damaged or missing, contact your retailer.

1.3   Special features

1.3.1   Product highlights

Latest processor technology

The motherboard comes with a 1207-pin surface mount Land Grid Array (LGA) socket coded Socket F, designed for the next generation AMD Opteron™ 200 and 800 series processors. The motherboard with the new socket supports registered DDR2-667/533/400 memory, delivering advanced performance and ensuring reliable data protection. See page 2-7 for details.

Scalable Link Interface (SLI™) technology

The NVIDIA® Scalable Link Interface (SLI™) technology allows two graphics processing units (GPUs) in a single system. This technology takes advantage of the PCI Express™ bus architecture and features intelligent hardware and software solutions that allows multiple GPUs to work together and achieve exceptional graphics performance.

DDR2-667 memory support

The motherboard supports DDR2 memory which features data transfer rates of up to 667 MHz to meet the higher bandwidth requirements of the latest server applications. The dual-channel memory architecture doubles the bandwidth of your system memory to boost system performance, eliminating bottlenecks with peak bandwidths of up to 10.7 GB/s. See page 2-13 for details.

PCI Express™ interface

The motherboard fully supports PCI Express, the latest I/O interconnect technology that speeds up the PCI bus. PCI Express features point-to-point serial interconnections between devices and allows higher clockspeeds by carrying data in packets. This high speed interface is software compatible with existing PCI or PCI-X specifications. See page 2-18 for details.

Gigabit LAN solution

The motherboard comes with dual Gigabit LAN controllers and ports to provide a total solution for your networking needs. The onboard Broadcom® BCM5754 Gigabit LAN controllers use the PCI Express interface and could achieve network throughput close to Gigabit bandwidth. See page 2-21 and 2-23 for details.

Serial ATA II technology

The motherboard supports the Serial ATA II technology through the Serial ATA interfaces controlled by the NVIDIA® chipset. The SATA specification allows for thinner, more flexible cables with lower pin count, reduced voltage requirement, and up to 300 MB/s data transfer rate. See page 2-27 and 2-28 for details.

Dual RAID solution

Onboard RAID controllers provide the motherboard with dual-RAID functionality that allows you to select the best RAID solution using IDE or Serial ATA devices.

The NVIDIA® MCP55 Professional allows RAID 0, RAID 1, RAID 0+1, RAID 5 and JBOD configuration for six SATA connectors. See pages 2-27 and 5-3 for details.

The Silicon Image Sil3132 controller supports two additional SATA connectors and allows RAID 0 and RAID 1 configurations. See pages 2-28 and 5-11 for details.

8-channel high definition audio

The motherboard supports 8-channel audio through the onboard ALC880 CODEC with 16-bit DAC, a stereo 16-bit ADC, and an AC97 2.3 compatible multi-channel audio. It also provides Jack-Sensing function, S/PDIF out support, interrupt capability and includes the Realtek® proprietary UAJ® (Universal Audio Jack) technology. See pages 2-24 and 6-12 for details.

USB 2.0 technology

The motherboard implements the Universal Serial Bus (USB) 2.0 specification, dramatically increasing the connection speed from the 12 Mbps bandwidth on USB 1.1 to a fast 480 Mbps on USB 2.0. USB 2.0 is backward compatible with USB 1.1. See pages 2-24 and 2-30 for details.

IEEE 1394a support

The IEEE 1394a interface provides high-speed and flexible PC connectivity to a wide range of peripherals and devices compliant to the IEEE 1394a standard. The IEEE 1394a interface allows up to 400 Mbps transfer rates through simple, low-cost, high-bandwidth asynchronous (real-time) data interfacing between computers, peripherals, and consumer electronic devices such as camcorders, VCRs, printers, TVs, and digital cameras. See pages 2-22 and 2-30 for details.

Temperature, fan, and voltage monitoring

The CPU temperature is monitored by the ASIC (integrated in the Winbond hardware monitor) to prevent overheating and damage. The system fan rotations per minute (RPM) is monitored for timely failure detection. The ASIC monitors the voltage levels to ensure stable supply of current for critical components.

1.3.2 Innovative ASUS features

CrashFree BIOS 2

This feature allows you to restore the original BIOS data from the support CD in case when the BIOS codes and data are corrupted. This protection eliminates the need to buy a replacement ROM chip. See page 4-5 for details.

ASUS Q-Fan technology

The ASUS Q-Fan technology smartly adjusts the fan speeds according to the system loading to ensure quiet, cool, and efficient operation.

ASUS MyLogo2™

This new feature present in the motherboard allows you to personalize and add style to your system with customizable boot logos. See page 4-37 for details.

ASUS POST Reporter™

The motherboard offers a new exciting feature called the ASUS POST Reporter™ to provide friendly voice messages and alerts during the Power-On Self-Test (POST) informing you of the system boot status and causes of boot errors, if any. The bundled Winbond Voice Editor software lets you to customize the voice messages in different languages. See page 3-3 for details.

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

Hardware information

2

Chapter summary

2.1 Before you proceed

Take note of the following precautions before you install motherboard components or change any motherboard settings.

- Make sure that your power supply unit (PSU) can provide at least the minimum power required by your system. See "8. ATX power connectors" on page 2-25 for details.

- Unplug the power cord from the wall socket before touching any component.

- Use a grounded wrist strap or touch a safely grounded object or to a metal object, such as the power supply case, before handling components to avoid damaging them due to static electricity.

- Hold components by the edges to avoid touching the ICs on them.

- Whenever you uninstall any component, place it on a grounded antistatic pad or in the bag that came with the component.

- Before you install or remove any component, ensure that the ATX power supply is switched off or the power cord is detached from the power supply. Failure to do so may cause severe damage to the motherboard, peripherals, and/or components.

Onboard LEDs

1. Standby power LED (SB_PWR1)

The motherboard comes with a green standby power LED that lights up to indicate that the system is ON, in sleep mode, or in soft-off mode. This is a reminder that you should shut down the system and unplug the power cable before removing or plugging in any motherboard component.

2. CPU warning LED (CPU_WARN1)

The CPU warning LED lights up to indicate that a processor is not installed or the processor is not installed properly in CPU 1 socket.

3. Plug Power warning LED (WARN_LED1)

The plug power warning LED lights up when you installed two graphics card but did not connect the ASUS EZ Plug™. The illustration below shows the location of the onboard LEDs.

WARN_LED1

ON **(Red)**   OFF

When use 2 Graphics   No detected Graphics
but do not plug EZ-PLUG   problem

WARN_LED1

CPU_WARN1

CPU_WARN1

ON **(Red)**   OFF

CPU not installed or not   No detected CPU problem
installed in CPU 1 socket

SB_PWR1

SB_PWR1

KFN5-D SLI Onboard LED

ON   OFF
Standby   Powered
Power   Off
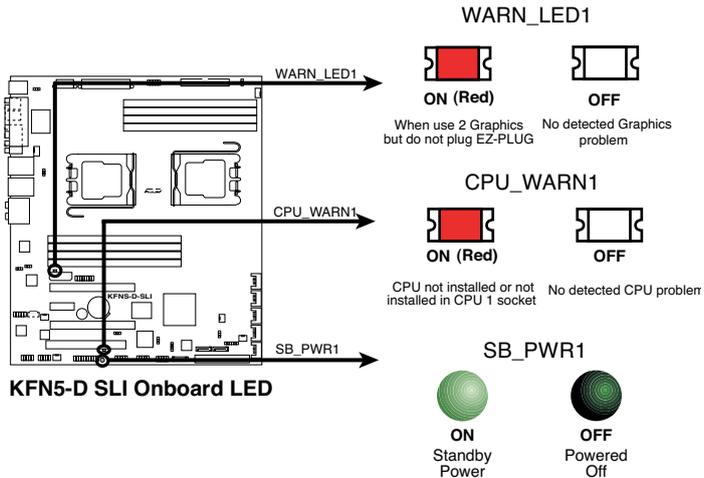
2.2 Motherboard overview

Before you install the motherboard, study the configuration of your chassis to ensure that the motherboard fits into it.

⚡ Make sure to unplug the power cord before installing or removing the motherboard. Failure to do so can cause you physical injury and damage motherboard components.

2.2.1 Placement direction

When installing the motherboard, make sure that you place it into the chassis in the correct orientation. The edge with external ports goes to the rear part of the chassis as indicated in the image below.

2.2.2 Screw holes

Place ten (10) screws into the holes indicated by circles to secure the motherboard to the chassis.

⚠ Do not overtighten the screws! Doing so can damage the motherboard.

Place this side towards the rear of the chassis

KFNS-D-SLI
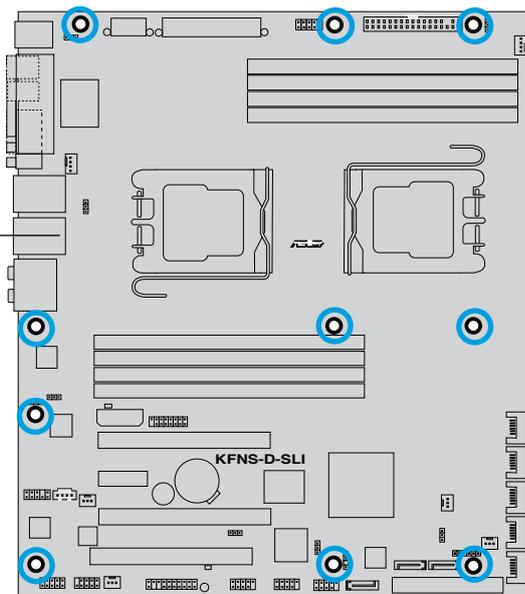
2.2.3 Motherboard layout

26.7cm(10.5in)

30.5cm(12.0in)

PS/2KBMS
T: Mouse
B: Keyboard

KBPWR1

ATX12V1

ATXPWR1

LPC_DEBUG1

FLOPPY

FM_CPU1

CPU_FAN1

SPDIF_O1

SPDIF_O2

PARALLE PORT

Super I/O

DDR2 DIMM_B2 (128 bit,240-pin module)

DDR2 DIMM_B1 (128 bit,240-pin module)

DDR2 DIMM_A2 (128 bit,240-pin module)

DDR2 DIMM_A1 (128 bit,240-pin module)

COM1

CPU_FAN2

FM_CPU2

LAN_USB34

LAN_USB12

Socket F (1207)

Socket F (1207)

AUDIO1

BCM5754KFBG

DDR2 DIMM_A3 (128 bit,240-pin module)

DDR2 DIMM_A4 (128 bit,240-pin module)

DDR2 DIMM_B3 (128 bit,240-pin module)

DDR2 DIMM_B4 (128 bit,240-pin module)

LAN_EN1
LAN_EN2

BCM5754KFBG

WARN_LED1

EZ_PLUG

GAME1

PCI_E1

KFNS-D-SLI

PCI_E2

CR2032 3V
Lithium Cell
CMOS Power

BUZZ1

8Mb
BIOS

nVIDIA
MCP55

FRNT_FAN1

SATA6

SATA5

AAFP1

CD1

REAR_FAN1

PCI_E3

ALC880

W83791G

1394_EN1

PCI4

CPU_WARN1

IE1394_2

IE1394_1

REAR_FAN2

PANEL1

SB_PWR1

USB3

USB2

USB1

3132_SATA1

TSB43AB22A

3132_EN1

CHASSIS1

SIL3132

3132_SATA2

SATA1

PRI_IDE1

CLRTC1

FRNT_FAN2

BPSMB1

SATA4

SATA2

SATA3

2.2.5 Layout Contents

Slots/Sockets	Page
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8. Line Out port (lime)	2-24
9. Microphone port (pink)	2-24
10. Rear Speaker Out port (gray)	2-24
11. USB 2.0 ports 3 and 4	2-24
12. USB 2.0 ports 1 and 2	2-24
13. Serial (COM 1) port	2-24
14. Optical S/PDIF out port	2-24
15. Coaxial S/PDIF out port	2-24
16. PS/2 keyboard port (purple)	2-24

2.3   Central Processing Unit (CPU)

The motherboard comes with a surface mount Socket F designed for the AMD® Opteron® CPU in the Land Grid Array (LGA) package.

> - Upon purchase of the motherboard, make sure that the PnP cap is on the socket and the socket contacts are not bent. Contact your retailer immediately if the PnP cap is missing, or if you see any damage to the PnP cap/socket contacts/motherboard components. ASUS shoulders the repair cost only if the damage is shipment/transit-related.
> - Keep the cap after installing the motherboard. ASUS will process Return Merchandise Authorization (RMA) requests only if the motherboard comes with the cap on the Socket 1207.
> - The product warranty does not cover damage to the socket contacts resulting from incorrect CPU installation/removal, or misplacement/loss/incorrect removal of the PnP cap.

2.3.1   Installing the CPU

To install a CPU:

1.   Locate the CPU socket on the motherboard.
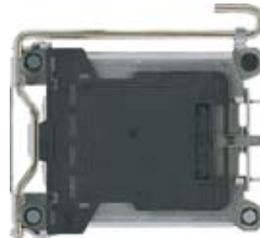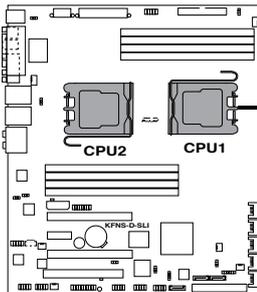
KFN5-D SLI CPU Socket 1207

> - Before installing the CPU, make sure that the cam box is facing towards you and the load lever is on your left.
> - If you install one CPU only, install it on CPU1 socket.

2.	Press the load lever with your thumb (A), then move it to the left (B) until it is released from the retention tab.

Retention tab

Load lever

A

B

PnP cap

This side of the socket box should face you.
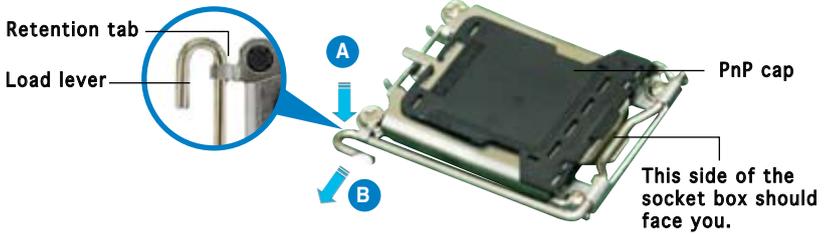
To prevent damage to the socket pins, do not remove the PnP cap unless you are installing a CPU.

3.	Lift the load lever in the direction of the arrow to a 135º angle.

4.	Lift the load plate with your thumb and forefinger to a 100º angle (A), then push the PnP cap from the load plate window to remove (B).

B

A

Load plate
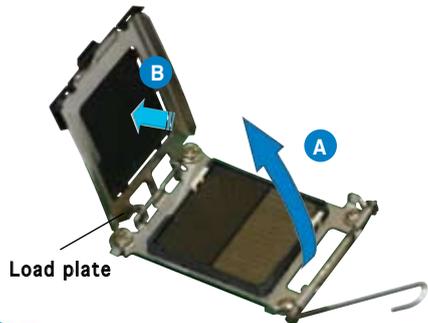
5.	Position the CPU over the socket, making sure that the gold triangle is on the bottom-right corner of the socket. The socket alignment keys should fit into the CPU notches.

Alignment keys

Gold triangle mark
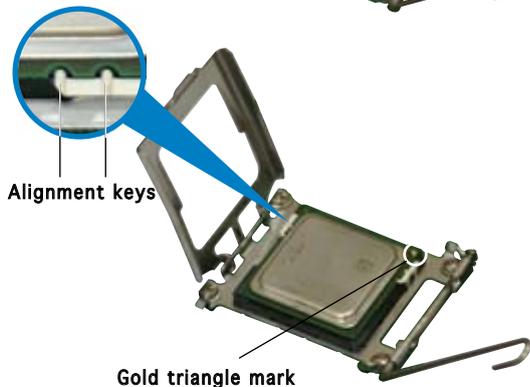
The CPU fits in only one correct orientation. DO NOT force the CPU into the socket to prevent bending the connectors on the socket and damaging the CPU!

6. Close the load plate (A), then push the load lever (B) until it snaps into the retention tab.
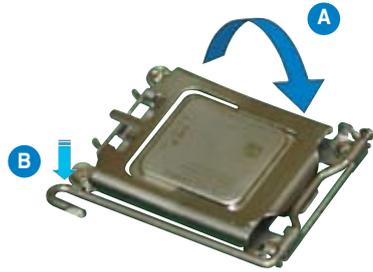
2.3.3 Installing the heatsink and fan

The AMD Opteron™ processors require a specially designed heatsink and fan assembly to ensure optimum thermal condition and performance.

> Make sure that you use only qualified heatsink and fan assembly.

Follow these steps to install the CPU heatsink and fan.

1. Place the heatsink on top of the installed CPU, making sure that the heatsink fits properly on the retention module base.

> • The retention module base and CPU back plane are already installed on the motherboard upon purchase.
>
> • You do not have to remove the retention module base when installing the CPU or installing other motherboard components.
>
> • If you purchased a separate CPU heatsink and fan assembly, make sure that a Thermal Interface Material is properly applied to the CPU heatsink or CPU before you install the heatsink and fan assembly.

CPU Fan

CPU Heatsink

Retention Module Base

Retention bracket   **Retention bracket lock**
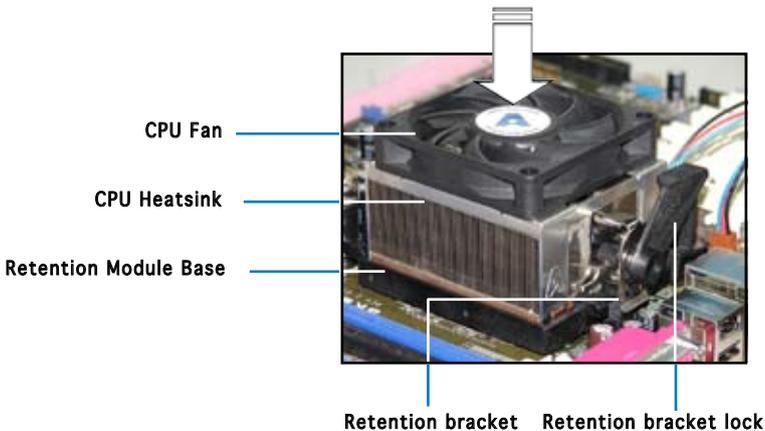
> Your boxed CPU heatsink and fan assembly should come with installation instructions for the CPU, heatsink, and the retention mechanism. If the instructions in this section do not match the CPU documentation, follow the latter.

2.   Attach one end of the retention bracket to the retention module base.
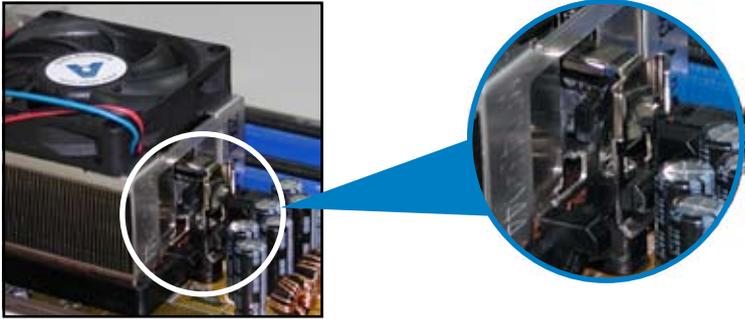
3.   Align the other end of the retention bracket (near the retention bracket lock) to the retention module base. A clicking sound denotes that the retention bracket is in place.

Make sure that the fan and heatsink assembly perfectly fits the retention mechanism module base, otherwise you cannot snap the retention bracket in place.

4.   Push down the retention bracket lock on the retention mechanism to secure the heatsink and fan to the module base.
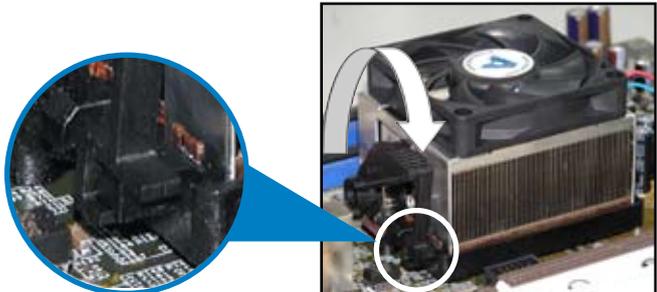
5. When the fan and heatsink assembly is in place, connect the CPU fan cable to the appropriate connector on the motherboard, CPU_FAN1 or CPU_FAN2.

CPU_FAN1

CPU FAN PWM
CPU FAN IN
CPU FAN PWR
GND

CPU_FAN2

GND
CPU FAN PWR
CPU FAN IN
CPU FAN PWM
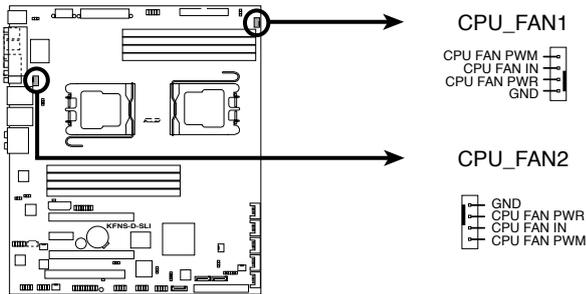
KFN5-D SLI CPU Fan Connectors

- Do not forget to connect the CPU fan connector! Hardware monitoring errors can occur if you fail to plug this connector.

- If there is only one CPU fan cable, connect it to the connector labeled CPU_FAN1. Failure to do so may cause hardware monitoring errors.

- Before connecting the CPU fan cables, select the appropriate jumper settings for 3 pin or 4 pin CPU fan connectors. See **CPU fan pin selection** on page 2-22 for details.

2.4 System memory

2.4.1 Overview

The motherboard comes with eight 240-pin Double Data Rate II (DDR2) Dual Inline Memory Modules (DIMM) sockets.

The following figure illustrates the location of the sockets:

128 Pins   112 Pins

DIMM_B2
DIMM_B1
DIMM_A2
DIMM_A1

DIMM_A3
DIMM_A4
DIMM_B3
DIMM_B4
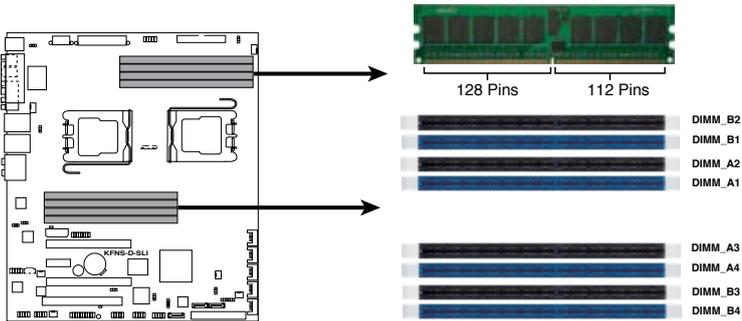
KFN5-D SLI 240-pin DDR2 DIMM Sockets

For CPU 1	Sockets
Channel A	DIMM_A1 and DIMM_A2
Channel B	DIMM_B1 and DIMM_B2

For CPU 2	Sockets
Channel A	DIMM_A3 and DIMM_A4
Channel B	DIMM_B3 and DIMM_B4

2.4.2 Memory Configurations

You may install 256 MB, 512 MB, 1 GB, or 2GB registered ECC DDR2 533/667 DIMMs into the DIMM sockets using the memory configurations in this section.

- For dual-channel configuration, the total size of memory module(s) installed per channel must be the same for better performance.
  Single CPU:
    DIMM_A1+DIMM_A2=DIMM_B1+DIMM_B2
  Dual CPU:
    DIMM_A1+DIMM_A2=DIMM_B1+DIMM_B2
    DIMM_A3+DIMM_A4 =DIMM_B3+DIMM_B4

- Always install DIMMs with the same CAS latency. For optimum compatibility, we recommend that you obtain memory modules from the same vendor. Refer to the DDR2 Qualified Vendors List at the ASUS web site.

Recommended memory configuration for CPU1

Mode	DIMM_A1	DIMM_A2	DIMM_B1	DIMM_B2
Single channel	—	populated	—	—
	populated	—	—	—
Dual channel	—	populated	—	populated
	populated	—	populated	—
	populated	populated	populated	populated

Recommended memory configuration for CPU2

Mode	DIMM_A3	DIMM_A4	DIMM_B3	DIMM_B4
Single channel	—	populated	—	—
	populated	—	—	—
Dual channel	—	populated	—	populated
	populated	—	populated	—
	populated	populated	populated	populated

2.4.3 Installing a DIMM

⚠️ Unplug the power supply before adding or removing DIMMs or other system components. Failure to do so can cause severe damage to both the motherboard and the components.

To install a DIMM:

1. Unlock a DIMM socket by pressing the retaining clips outward.

2. Align a DIMM on the socket such that the notch on the DIMM matches the break on the socket.

3. Firmly insert the DIMM into the socket until the retaining clips snap back in place and the DIMM is properly seated.
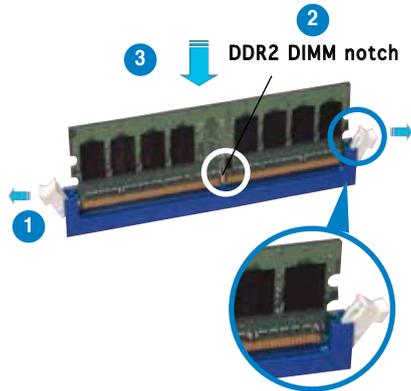
DDR2 DIMM notch

Unlocked retaining clip

✎ • A DDR2 DIMM is keyed with a notch so that it fits in only one direction. DO NOT force a DIMM into a socket to avoid damaging the DIMM.

• The DDR2 DIMM sockets do not support DDR DIMMs. DO NOT install DDR DIMMs to the DDR2 DIMM sockets.

2.4.4 Removing a DIMM

Follow these steps to remove a DIMM.

1. Simultaneously press the retaining clips outward to unlock the DIMM.

✎ Support the DIMM lightly with your fingers when pressing the retaining clips. The DIMM might get damaged when it flips out with extra force.

DDR2 DIMM notch
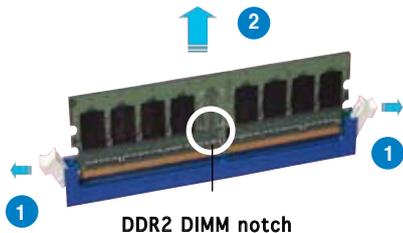
2. Remove the DIMM from the socket.

2.5 Expansion slots

In the future, you may need to install expansion cards. The following sub-sections describe the slots and the expansion cards that they support.

Make sure to unplug the power cord before adding or removing expansion cards. Failure to do so may cause you physical injury and damage motherboard components.

2.5.1 Installing an expansion card

To install an expansion card:

1.   Before installing the expansion card, read the documentation that came with it and make the necessary hardware settings for the card.
2.   Remove the system unit cover (if your motherboard is already installed in a chassis).
3.   Remove the bracket opposite the slot that you intend to use. Keep the screw for later use.
4.   Align the expansion card connector with the slot and press firmly until the riser card is completely seated on the slot.
5.   Secure the card to the chassis with the screw you removed earlier.
6.   Replace the system cover.

2.5.2 Configuring an expansion card

After installing the expansion card, the system will automatically assign an IRQ to the card.

2.5.3 Interrupt assignments

Standard interrupt assignments

IRQ	Priority	Standard Function
0	1	System Timer
1	2	Keyboard Controller
2	–	Programmable interrupt
3	11	Communications Port (COM2)
4	12	Communications Port (COM1)*
5	13	IRQ holder for PCI steering*
6	14	Floppy Disk Controller
7	15	Printer Port (LPT1)*
8	3	System CMOS/Real Time Clock
9	4	IRQ holder for PCI steering*
10	5	IRQ holder for PCI steering*
11	6	IRQ holder for PCI steering*
12	7	PS/2 Compatible Mouse Port*
13	8	Numeric Data Processor
14	9	Primary IDE Channel
15	10	Secondary IDE Channel

* These IRQs are usually available for ISA or PCI devices.

PCI Bus Number, IDSEL, and IRQ assignments

Description	INTA	INTB	INTC	INTD	REQ#	GNT#
PCI slot 1	IRQF#				REQ0#	GNT0#
PCI E x16 slot	IRQA#					
PCI E x1 slot	IRQA#					
PCI E x16 slot	IRQA#					
Onboard USB controller 1	IRQA#					
Onboard USB controller 2		IRQF#				
Onboard SATA controller 1	IRQF#					
Onboard SATA controller 2		IRQ5#				
Onboard SATA controller 3			IRQB#			
Onboard PCI E X1 LAN1	IRQ5#					
Onboard PCI E X1 LAN2	IRQF#					
Onboard 1394	IRQB#				REQ2#	GNT2#

2.5.4 PCI slot

The PCI slot supports cards such as a LAN card, SCSI card, USB card, and other cards that comply with PCI specifications. The figure shows a LAN card installed on a PCI slot.

2.5.5 Two PCI Express x16 slots

This motherboard supports one PCI Express x16 graphics card or two SLI-ready PCI Express x16 graphic cards that comply with the PCI Express specifications. The figure shows a graphics card installed on the PCI Express x16 slot.

In Single Video Card mode, only the master PCI Express slot (PCI_E1) can be used for PCI Express x16 graphics cards.

2.5.6 PCI Express x1 slot

This motherboard supports PCI Express x1 network cards, SCSI cards and other cards that comply with the PCI Express specifications. The figure shows a network card installed on the PCI Express x1 slot.
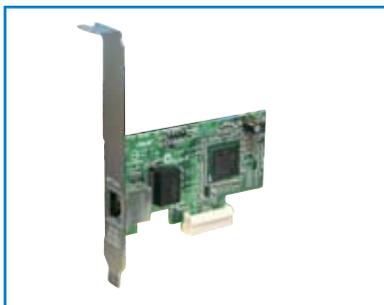
2.6 Jumpers

1. Clear RTC RAM (CLRTC1)

This jumper allows you to clear the Real Time Clock (RTC) RAM in CMOS. You can clear the CMOS memory of date, time, and system setup parameters by erasing the CMOS RTC RAM data. The onboard button cell battery powers the RAM data in CMOS, which include system setup information such as system passwords.

To erase the RTC RAM:

1. Turn OFF the computer and unplug the power cord.
2. Remove the onboard battery.
3. Move the jumper cap from pins 1-2 (default) to pins 2-3. Keep the cap on pins 2-3 for about 5~10 seconds, then move the cap back to pins 1-2.
4. Re-install the battery.
5. Plug the power cord and turn ON the computer.
6. Hold down the <Del> key during the boot process and enter BIOS setup to re-enter data.

> ⚠️ Except when clearing the RTC RAM, never remove the cap on CLRTC jumper default position. Removing the cap will cause system boot failure!

CLRTC1

1
2
Normal
(Default)

2
3
Clear CMOS

KFN5-D SLI Clear RTC RAM
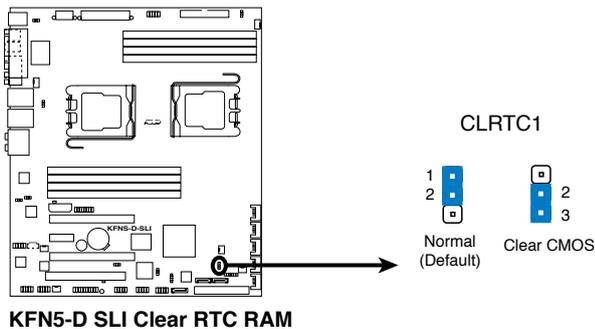
2. Keyboard power (3-pin KBPWR1)

This jumper allows you to enable or disable the keyboard wake-up feature. Set this jumper to pins 2-3 (+5VSB) to wake up the computer when you press a key on the keyboard (the default is the Space Bar). This feature requires an ATX power supply that can supply at least 1A on the +5VSB lead, and a corresponding setting in the BIOS.

KBPWR1

1 2   2 3

+5V   +5VSB
(Default)
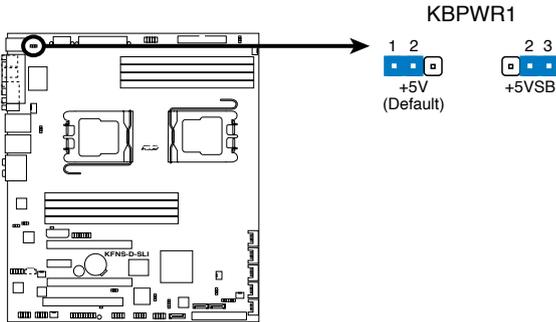
KFN5-D SLI Keyboard Power Setting

3. Sil3132 RAID controller setting (3-pin 3132_EN1)

This jumper allows you to enable or disable the Silicon Image Sil3132 RAID controller. Set this jumper to 1-2 (Default) to enable the Sil3132 RAID controller.

3132_EN1

2
1   3
2

Enabled   Disabled
(Default)
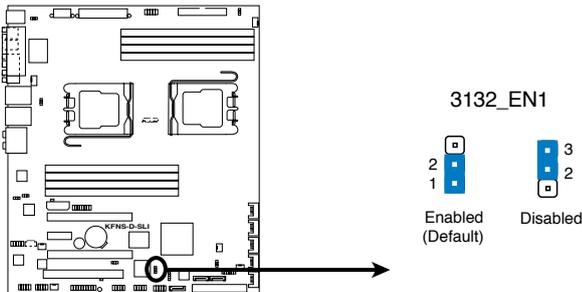
KFN5-D SLI 3132_EN1 Setting

4. Gigabit LAN controller setting (3-pin LAN_EN1, LAN_EN2)

These jumpers allow you to enable or disable the onboard Broadcom® BCM5754 Gigabit LAN controllers. The LAN_EN1 jumper controls the LAN1 port. The LAN_EN2 iumper controls the LAN2 port.
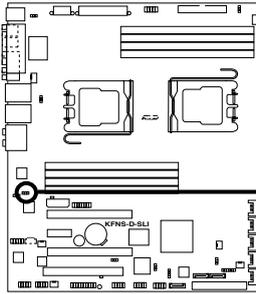
LAN_EN1

1 2
Enabled
(Default)

2 3
Disabled

KFN5-D SLI LAN_EN1 Setting
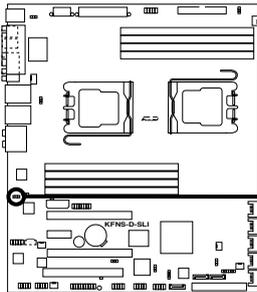
LAN_EN2

1 2
Enabled
(Default)

2 3
Disabled

KFN5-D SLI LAN_EN2 Setting

5. IEEE1394 controller setting (3-pin 1394_EN1)

This jumper allows you to enable or disable the IEEE1394 controller. Set this jumper to 1-2 (Default) to enable the controller.

1394_EN1

2 1
Enabled
(Default)

3 2
Disabled

KFN5-D SLI 1394_EN1 Setting
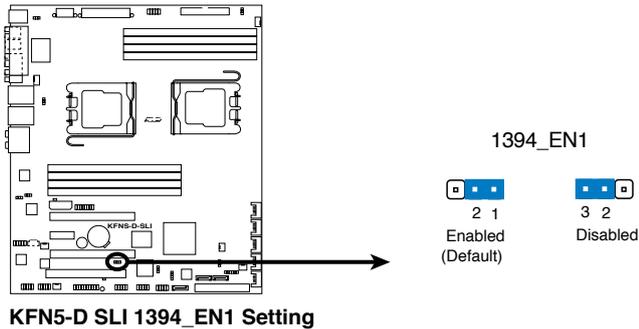
6. CPU fan pin selection (3-pin FM_CPU1, FM_CPU2)

These jumpers allow you to connect either a 3-pin or a 4-pin fan cable plug to the CPU fan connectors (CPU_FAN1, CPU_FAN2). Set these jumpers to pins 1-2 if you are using a 3-pin fan cable plug, or to pins 2-3 if you are using a 4-pin plug.

FM_CPU1

FM_CPU2

FM_CPU1

3
2
PWM
(Default)

2
1
DC Mode

FM_CPU2

2
3
PWM
(Default)

1
2
DC Mode

KFN5-D SLI FM_CPU Setting
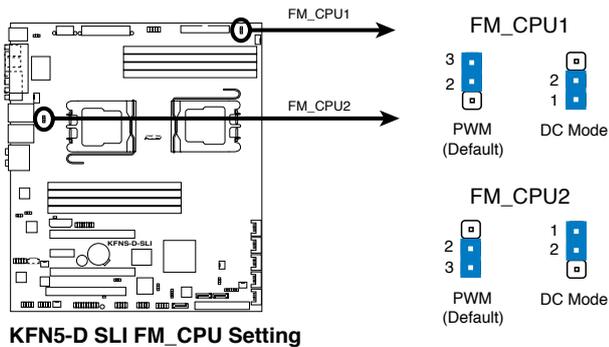
- If you set the FM_CPU1/2 jumper for a 3-pin fan, when you install a 4-pin CPU fan, the fan may not work.

- If you set the FM_CPU1/2 jumper for a 4-pin fan, when you install a 3-pin CPU fan, the fan controller may not work and the fan will run at full speed.

2.7 Connectors

2.7.1 Rear panel connectors
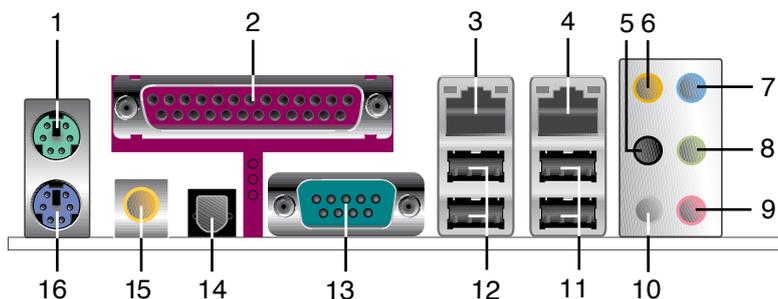
1. **PS/2 mouse port (green).** This port is for a PS/2 mouse.
2. **Parallel port.** This 25-pin port connects a parallel printer, a scanner, or other devices.
3. **LAN2 (RJ-45) port.** Supported by the BROADCOM® BCM5754 Gigabit LAN controller, this port allows Gigabit connection to a Local Area Network (LAN) through a network hub. Refer to the table below for the LAN port LED indications.
4. **LAN1 (RJ-45) port.** Supported by the BROADCOM® BCM5754 Gigabit LAN controller, this port allows Gigabit connection to a Local Area Network (LAN) through a network hub. Refer to the table below for the LAN port LED indications.

LAN port LED indications

ACT/LINK LED		SPEED LED	
Status	**Description**	**Status**	**Description**
OFF	No link	OFF	10 Mbps connection
GREEN	Linked	ORANGE	100 Mbps connection
BLINKING	Data activity	GREEN	1 Gbps connection

ACT/LINK   SPEED
LED   LED

LAN port
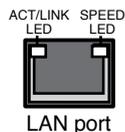
5. **Side Speaker Out port (black).** This port connects the side speakers in an 8-channel audio configuration.
6. **Center/Subwoofer port (yellow orange).** This port connects the center/subwoofer speakers.
7. **Line In port (light blue).** This port connects the tape, CD, DVD player, or other audio sources.

8. **Line Out port (lime).** This port connects a headphone or a speaker. In 4-channel, 6-channel, and 8-channel configuration, the function of this port becomes Front Speaker Out.

9. **Microphone port (pink).** This port connects a microphone.

10. **Rear Speaker Out port (gray).** This port connects the rear speakers on a 4-channel, 6-channel, or 8-channel audio configuration.

> •   Refer to the audio configuration table below for the function of the audio ports in 2, 4, 6, or 8-channel configuration.
>
> •   See section "6.4. 1 Audio configurations" on page 6-12 for details.

Audio 2, 4, 6, or 8-channel configuration

Port	Headset 2-channel	4-channel	6-channel	8-channel
Light Blue	Line In	Line In	Line In	Line In
Lime	Line Out	Front Speaker Out	Front Speaker Out	Front Speaker Out
Pink	Mic In	Mic In	Mic In	Mic In
Orange	•	•	Center/Subwoofer	Center/Subwoofer
Black	•	•	•	Side Speaker Out
Gray	•	Rear Speaker Out	Rear Speaker Out	Rear Speaker Out

11. **USB 2.0 ports 3 and 4.** These two 4-pin Universal Serial Bus (USB) ports are available for connecting USB 2.0 devices.

12. **USB 2.0 ports 1 and 2.** These two 4-pin Universal Serial Bus (USB) ports are available for connecting USB 2.0 devices.

13. **Serial (COM 1) port.** This 9-pin communication port is for pointing devices or other serial devices.

14. **Optical S/PDIF Out port.** This port connects an external audio output device via an optical S/PDIF cable.

15. **Coaxial S/PDIF Out port.** This port connects an external audio output device via a coaxial S/PDIF cable.

16. **PS/2 keyboard port (purple).** This port is for a PS/2 keyboard.

2.7.2 Internal connectors

1. Floppy disk drive connector (34-1 pin FLOPPY1)

This connector is for the provided floppy disk drive (FDD) signal cable. Insert one end of the cable to this connector, then connect the other end to the signal connector at the back of the floppy disk drive.

> Pin 5 on the connector is removed to prevent incorrect cable connection when using a FDD cable with a covered Pin 5.
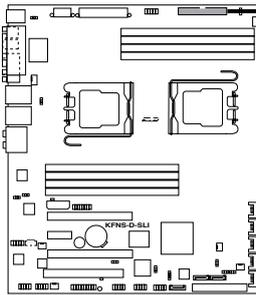
FLOPPY

PIN 1

NOTE: Orient the red markings on the floppy ribbon cable to PIN 1.

KFN5-D SLI Floppy Disk Drive Connector

2. Primary IDE connector (40-1 pin PRI_IDE1)

The onboard IDE connector is for Ultra DMA 133/100/66 signal cable. There are three connectors on each Ultra DMA 133/100/66 signal cable: blue, black, and gray. Connect the blue connector to the motherboard's IDE connector, then select one of the following modes to configure your device(s).

PRI_IDE

KFN5-D SLI IDE Connector
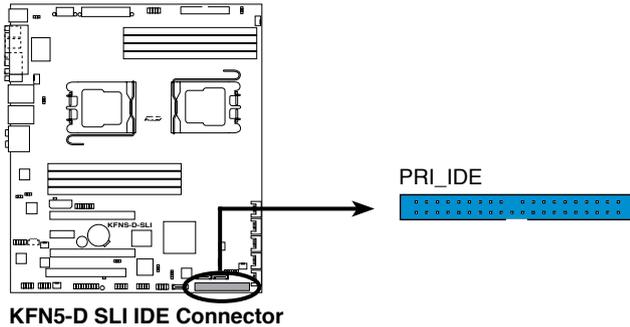
	Drive jumper setting	Mode Cable of device(s)	Cable connector
Single device	Cable-Select or Master	-	Black
Two devices	Cable-Select	Master	Black
		Slave	Gray
	Master Slave	/	Black or gray

• Pin 20 on the IDE connector is removed to match the covered hole on the Ultra DMA cable connector. This prevents incorrect insertion when you connect the IDE cable.

• Use the 80-conductor IDE cable for Ultra DMA 133/100/66 IDE devices.

If any device jumper is set as "Cable-Select," make sure another device jumper has the same setting.

3. Serial ATA connectors (7-pin SATA1, SATA2, SATA3, SATA4, SATA5, SATA6)

Supported by the NVIDIA® MCP55 Professional chipset, these connectors are for the Serial ATA signal cables for Serial ATA hard disk drives that allows up to 3Gb/s of data transfer rate.

If you installed Serial ATA hard disk drives, you can create a RAID 0, RAID 1, RAID 0+1, RAID 5, or JBOD configuration. Refer to Chapter 5 for details on how to set up the RAID configurations.

These connectors are set to **SATA** by default. In SATA mode, you can connect Serial ATA boot or data hard disk drives to these connectors. If you intent to create a Serial ATA RAID set using these connectors, enable the RAID function of each port from the **nVidia RAID Setup** sub-menu item in the BIOS. See section "4.3.5 IDE Configuration" on page 4-14 for details.

KFN5-D SLI SATA Connectors
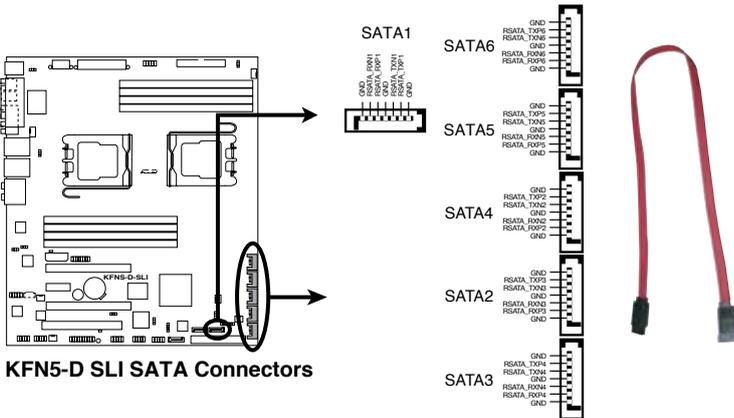
The actual data transfer rate depends on the speed of Serial ATA hard disks installed.

4. Silicon Image Serial ATA RAID connectors (7-pin 3132_SATA1, 3132_SATA2)

Supported by the Silicon Image Sil3132 RAID controller, these connectors are for Serial ATA II signal cables. These connectors support up to two Serial ATA II hard disk drives that can be configured as a disk array through the onboard Sil3132 SATA RAID controller. Refer to Chapter 5 for details on how to set up Serial ATA RAID configurations.

By default, the RAID function of these connectors are disabled. Set the **Onboard Sil3132 SATALink** item to RAID Mode in the BIOS, if you are configuring a set with these connectors. See section "4.4.5 Onboard Devices Configuration" on page 4-26 for details.
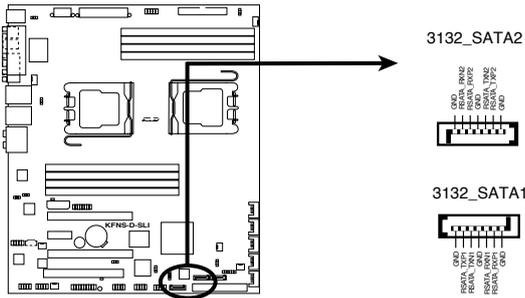
KFN5-D SLI SATA RAID Connectors

The actual data transfer rate depends on the speed of Serial ATA hard disks installed.

5. CPU, Front and Rear fan connectors (4-pin CPU_FAN1/2, 3-pin FRNT_FAN1/2, 3-pin REAR_FAN1/2)

The fan connectors support cooling fans of 350mA~2000mA (24 W max.) or a total of 1A~3.48A (41.76 W max.) at +12V. Connect the fan cables to the fan connectors on the motherboard, making sure that the black wire of each cable matches the ground pin of the connector.

⚠️

- Do not forget to connect the fan cables to the fan connectors. Lack of sufficient air flow inside the system may damage the motherboard components. These are not jumpers! DO NOT place jumper caps on the fan connectors!

- All fans feature the ASUS Q-Fan technology.

KFN5-D SLI Fan Connectors

CPU_FAN1
- CPU FAN PWM
- CPU FAN IN
- CPU FAN PWR
- GND

CPU_FAN2
- GND
- CPU FAN PWR
- CPU FAN IN
- CPU FAN PWM

REAR_FAN1
- GND
- +12V
- Rotation

REAR_FAN2
- GND
- +12V
- Rotation

FRNT_FAN1
- GND
- +12V
- Rotation

FRNT_FAN2
- GND
- +12V
- Rotat
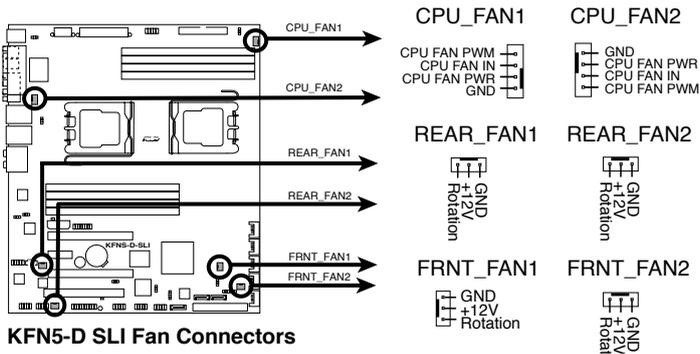
6. Backplane SMBus connector (6-1 pin BPSMB1)

This connector allows you to connect SMBus (System Management Bus) devices. Devices communicate with an SMBus host and /or other SMBus devices using the SMBus interface.

KFN5-D SLI SMBus Connector

BPSMB1
- FAN_PWM
- I2C_CLK#
- GND
- I2C_DATA#
- +5VSB
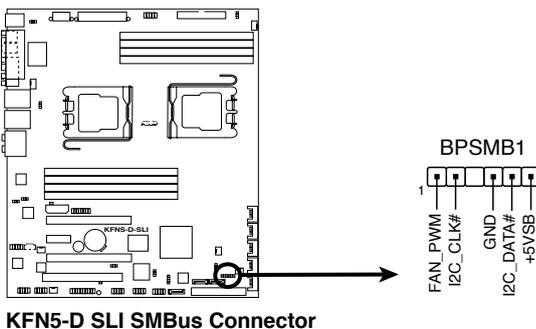
7. USB connectors (10-1 pin USB1, USB2, USB3)

These connectors are for USB 2.0 ports. These connectors comply with the USB 2.0 specification that supports up to 480 Mbps connection speed.

USB1   USB2

USB3
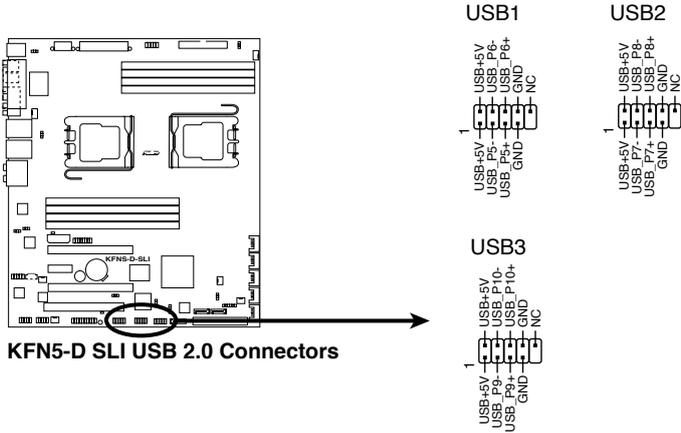
KFN5-D SLI USB 2.0 Connectors

The USB module is purchased separately.

8. IEEE 1394 connectors (10-1 pin IE1394_1, IE1394_2)

These connectors are for the IEEE 1394a module(s). Connect the IEEE 1394 module cable(s) to the connector(s), then install the module to a slot opening(s) at the back of the system chassis.

IE1394_2   IE1394_1
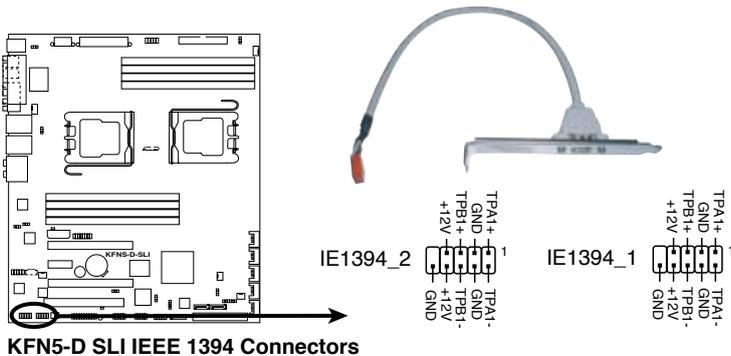
KFN5-D SLI IEEE 1394 Connectors

The IEEE 1394a module is purchased separately.

9. SSI power connectors (24-pin ATXPWR1, 8-pin ATX12V1, 4-pin EZ-Plug)

These connectors are for SSI power supply plugs. The power supply plugs are designed to fit these connectors in only one orientation. Find the proper orientation and push down firmly until the connectors completely fit.

- Use of an SSI 12 V Specification 2.0-compliant power supply unit (PSU) that provides a minimum power of 450 W is recommended for a fully-configured system.

- By default, four ATX12V1 connector pins are covered to prevent incorrent insertion of a 4-pin ATX +12V power plug. Remove this cover when using a PSU with an 8-pin ATX +12V power plug.

- Do not forget to connect the 4-pin or 8-pin ATX +12 V power plug; otherwise, the system will not boot up.

- Use of a PSU with a higher power output is recommended when configuring a system with more power consuming devices. The system may become unstable or may not boot up if the power is inadequate.

- You must install a PSU with a higher power rating if you intend to install additional devices.

KFN5-D SLI ATX Power Connector
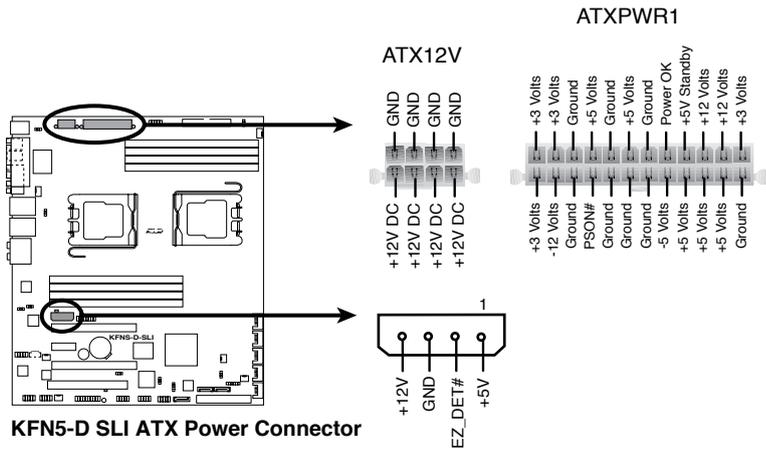
10. Internal audio connector (4-pin CD1)

This connector allows you to receive stereo audio input from sound sources such as a CD-ROM, TV-tuner, or MPEG card.
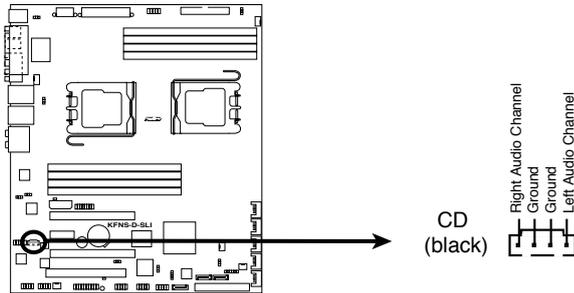
KFN5-D SLI Internal Audio Connector

CD (black)

Right Audio Channel
Ground
Ground
Left Audio Channel

11. GAME/MIDI port connector (16-1 pin GAME1)

This connector is for a GAME/MIDI port. Connect the GAME/MIDI module cable to this connector, then install the module to a slot opening at the back of the system chassis. The GAME/MIDI port connects a joystick or game pad for playing games, and MIDI devices for playing or editing audio files.
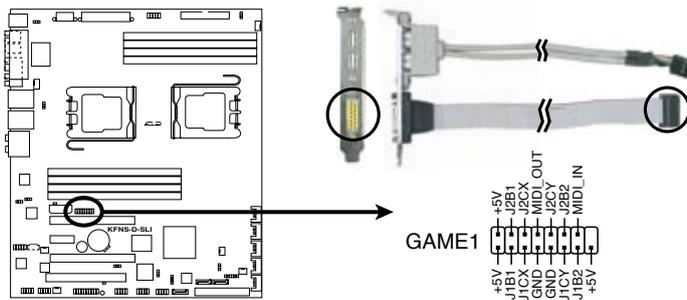
KFN5-D SLI Game Connector

GAME1

+5V
J1B1
J1CX
GND
J1CY
J1B2
+5V

+5V
J2B1
J2CX
MIDI_OUT
J2CY
J2B2
MIDI_IN

The GAME/MIDI module is purchased separately.

12. Front panel audio connector (10-1 pin AAFP1)

This connector is for a chassis-mounted front panel audio I/O module that supports either HD Audio or legacy AC'97 audio standard.

AAFP1
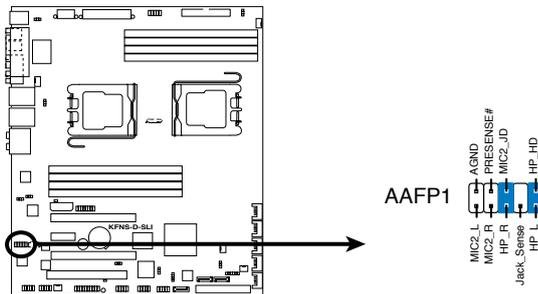
KFN5-D SLI Azalia Analog Front Panel Connector

We recommend that you connect a high-definition front panel audio module to this connector to avail of the motherboard's high-definition audio capability.

13. Chassis intrusion connector (4-1 pin CHASSIS)

This connector is for a chassis-mounted intrusion detection sensor or switch. Connect one end of the chassis intrusion sensor or switch cable to this connector. The chassis intrusion sensor or switch sends a high-level signal to this connector when a chassis component is removed or replaced. The signal is then generated as a chassis intrusion event.

By default, the pins labeled "Chassis Signal" and "Ground" are shorted with a jumper cap. Remove the jumper cap only when you intend to use the chassis intrusion detection feature.

CHASSIS

GND
Chassis Signal

+5VSB_MB

1

(Default)
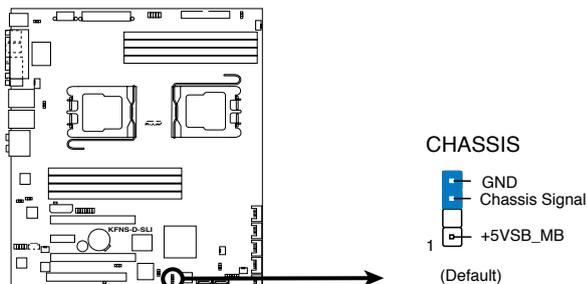
KFN5-D SLI Chassis Intrusion Connector

14. System panel connector (20-pin PANEL1)

This connector supports several chassis-mounted functions.

PANEL1

HDLED+
HDLED-
NMIBTN#
GND
POWERBTN#
GND
NC
RESETBTN#
GND

POWERLED+
GND
POWERLED-
MLED+
MLED-
NC
+5V
GND
GND
SPKROUT
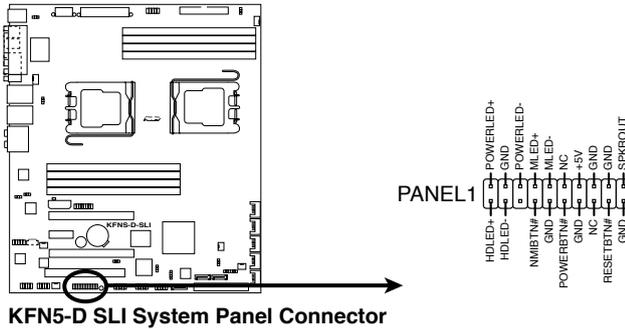
KFN5-D SLI System Panel Connector

The system panel connector is color-coded for easy connection. Refer to the connector description below for details.

- **System power LED (Green 3-pin POWERLED)**
  This 3-pin connector is for the system power LED. Connect the chassis power LED cable to this connector. The system power LED lights up when you turn on the system power, and blinks when the system is in sleep mode.

- **Hard disk drive activity (Red 2-pin HDDLED)**
  This 2-pin connector is for the HDD Activity LED. Connect the HDD Activity LED cable to this connector. The IDE LED lights up or flashes when data is read from or written to the HDD.
  If an optional SATA add-in card is installed, the read or write activities of any device connected to the SATA add-in card causes this LED to light up.

- **System warning speaker (Orange 4-pin SPKROUT)**
  This 4-pin connector is for the chassis-mounted system warning speaker. The speaker allows you to hear system beeps and warnings.

- **Power/Soft-off button (Yellow 2-pin POWERBTN)**
  This connector is for the system power button. Pressing the power button turns the system ON or puts the system in SLEEP or SOFT-OFF mode depending on the BIOS settings. Pressing the power switch for more than four seconds while the system is ON turns the system OFF.

- **Reset button (Blue 2-pin RESETBTN)**
  This 2-pin connector is for the chassis-mounted reset button for system reboot without turning off the system power.

This chapter describes the power up sequence, the vocal POST messages, and ways of shutting down the system.

Powering up 3

Chapter summary

3

3.1 Starting up for the first time

1. After making all the connections, replace the system case cover.

2. Be sure that all switches are off.

3. Connect the power cord to the power connector at the back of the system chassis.

4. Connect the power cord to a power outlet that is equipped with a surge protector.

5. Turn on the devices in the following order:

   a. Monitor

   b. External storage devices (starting with the last device on the chain)

   c. System power

6. After applying power, the system power LED on the system front panel case lights up. For systems with ATX power supplies, the system LED lights up when you press the ATX power button. If your monitor complies with "green" standards or if it has a "power standby" feature, the monitor LED may light up or switch between orange and green after the system LED turns on.

   The system then runs the Power-On Self-Test (POST). While the tests are running, the BIOS beeps or additional messages appear on the screen. If you do not see anything within 30 seconds from the time you turned on the power, the system may have failed a power-on test. Check the jumper settings and connections or call your retailer for assistance.

AMI BIOS beep codes

Beep Description	Error
One continuous beep followed by two short beeps	System failed to detect memory
One short beep	Systemfound VGA, or system failed to detect keyboard
Two short beeps as	System failed to detect FDD if user set it enabled
Four short beeps errors	Hardware monitoring function detects

7. At power on, hold down the <Delete> key to enter the BIOS Setup. Follow the instructions in Chapter 4.

3.2   Powering off the computer

3.2.1 Using the OS shut down function

IIf you are using Windows® 2000:

1.   Click the **Start** button then click **Shut Down...**
2.   Make sure that the **Shut Down** option button is selected, then click
       the **OK** button to shut down the computer.
3.   The power supply should turn off after Windows® shuts down.

If you are using Windows® XP:

1.   Click the **Start** button then select **Turn Off Computer**.
2.   Click the **Turn Off** button to shut down the computer.
3.   The power supply should turn off after Windows® shuts down.

3.2.2 Using the dual function power switch

While the system is ON, pressing the power switch for less than four
seconds puts the system to sleep mode or to soft-off mode, depending
on the BIOS setting. Pressing the power switch for more than four seconds
lets the system enter the soft-off mode regardless of the BIOS setting.
Refer to section "4.5 Power Menu" in Chapter 4 for details.

3.3 ASUS POST Reporter™

This motherboard includes the Winbond speech controller to support a special feature called the ASUS POST Reporter™. This feature lets you hear vocal messages during POST that alerts you of system events and boot status. In case of a boot failure, you will hear the specific cause of the problem.

These POST messages are customizable using the Winbond Voice Editor software that came with your package. You can record your own messages to replace the default messages.

POST Message	Action
No CPU installed	• Install a supported processor to the CPU socket. See section "2.3 Central Processing Unit (CPU)" for details.
System failed CPU test	• Check the CPU if properly installed. • Call ASUS technical support for assistance. See the "ASUS contact information" on the inside front cover of this user guide.
System failed memory test	• Install supported DIMMs into the memory sockets. • Check if the DIMMs on the DIMM sockets are properly installed. • Make sure that your DIMMs are not defective. • Refer to section "2.4 System memory" for instructions on installing a DIMM.
System failed VGA test	• Install a PCI graphics card into one of the PCI slots, or a PCI Express graphics card into the PCI Express x16 slot. • Make sure that your graphics card is not defective.
System failed due to CPU	• Check your CPU overclocking settings in the BIOS setup and restore the default CPU parameters.
No keyboard detected	• Check if your keyboard is properly connected to the purple PS/2 connector on the rear panel. • See section "2.7.1 Rear panel connectors" for the location of the connector.
No IDE hard disk detected	• Make sure you have connected an IDE hard disk drive to the IDE connectors on the motherboard.

POST Message	Action
CPU temperature too high	• Check if the CPU fan is working properly.
CPU fan failed	• Check the CPU fan and make sure it turns on after you apply power to the system. • Make sure that your CPU fan supports the fan speed detection function.
CPU voltage out of range	• Check your power supply and make sure it is not defective. • Call ASUS technical support for assistance. See the "ASUS contact information" on the inside front cover of this user guide.
Computer now booting from operating system	• No action required

You can enable or disable the ASUS POST Reporter™ in the **Speech Configuration** option in the BIOS setup. See section 4.4.2 for details.

3.3.1 Winbond Voice Editor

The Winbond Voice Editor software allows you to customize the vocal POST messages. You can install this application from the support CD.

> To avoid conflicts, do not run the Winbond Voice Editor while running the ASUS PC Probe application.

Launching the Voice Editor

You can launch the program from the Windows® desktop by clicking **Start > All Programs > Winbond Voice Editor > Voice Editor**.

The Winbond Voice Editor screen appears.
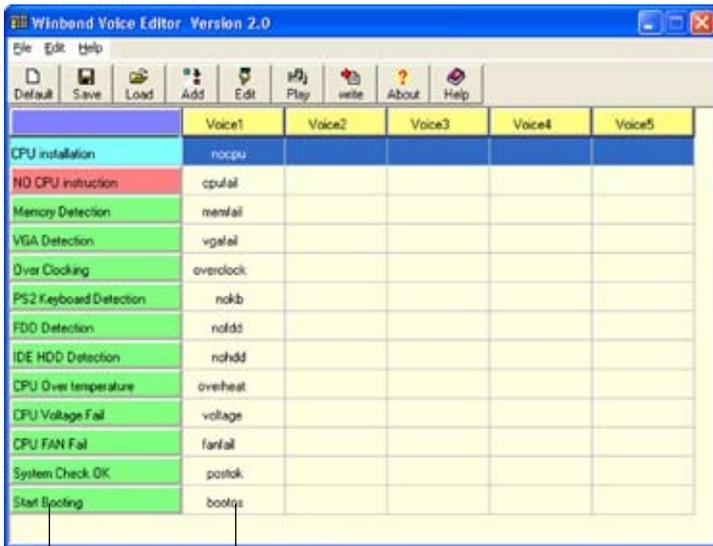
POST Events   **Default Messages**

Playing the default wave files

To play the default wave files, simply click on a POST event on the left side of the screen, then click the **Play** button.

> The default language setting is English.

Changing the default language

To change the default language:

1. Click the **Load** button from the Voice Editor main window. A window with the available languages appears.

2. Select your desired language, then click **Open**.

    The event messages for the language you selected appear on the Voice Editor main window.
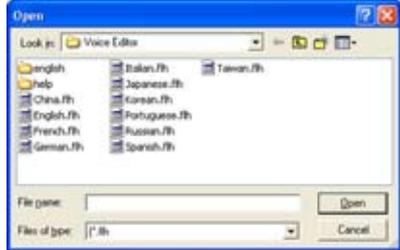
Not all events in some languages have a corresponding message due to file size constraints.

3. Click the **Write** button from the Voice Editor main window to update the EEPROM.
4. Click **Yes** to confirm.

The next time when you boot your computer, the ASUS Post Reporter announces the messages in the selected language.

Customizing your POST messages

The Voice Editor application allows you to record your own POST messages if your language is not supported or if you wish to replace the pre-installed wave files.

To customize your POST messages:

1. Launch the Voice Editor application and note the list of POST events on the leftmost column of the screen.
2. Prepare your message for each event.
3. Use a recording software (e.g. Windows® Recorder) to record your messages, then save the messages as wave files (.WAV).

> • The total compressed size for all the wave files must not exceed 1Mbit, so keep your messages as short as possible.
>
> • To keep file sizes small, save your files at a low quality. For example, use 8-bit, mono quality at 22Khz sampling rate.
>
> • Create a separate folder for your wave files so you can locate them easily.

4. From the Voice Editor screen, click the **Add** button to display the **Add Wave File** window.
5. Copy the wave files that you recorded to the database, then close the window when done.
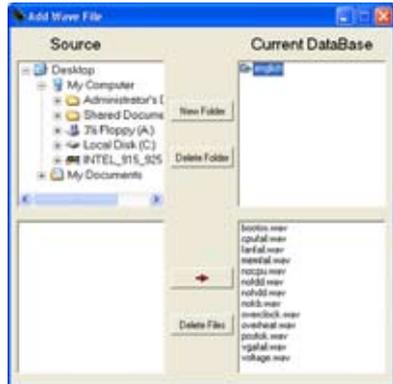
6. Select a POST event on the Voice Editor main window, then click the **Edit** button. The **Event Sound Editor** window appears.

7. Locate and select your wave file for the event, then click on the arrow opposite Voice1. The file you select appears in the space next to it.

8. Click **OK** to return to the Voice Editor main window.

9. Do steps 6 to 8 for the other events.

10. When done, click **Save**. A window appears prompting you to save your configuration.

11. Type a file name with an **.flh** extension, then click **Save**.
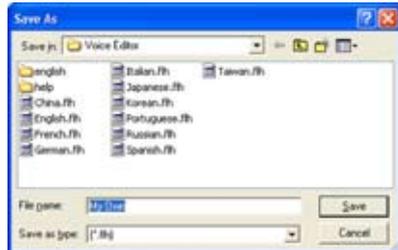
12. Click the **Write** button to compress the file and copy into the EEPROM.

13. Click **Yes** on the confirmation window that appears.
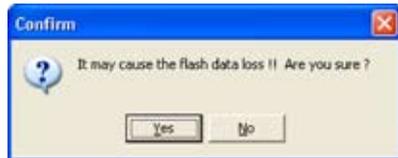
If you receive an error message telling you that the files exceed the total allowable size, do any or all of the following:

• Shorten your messages.

• Save the wave files at a lower quality

• Do not include seldom-used events like FDD Detection, IDE HDD Detection, etc.

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

BIOS setup *4*

Chapter summary

4

4.1 Managing and updating your BIOS

The following utilities allow you to manage and update the motherboard Basic Input/Output System (BIOS) setup.

1. **ASUS AFUDOS** (Updates the BIOS in DOS mode using a bootable floppy disk.)
2. **ASUS CrashFree BIOS 2** (Updates the BIOS using a bootable floppy disk or the motherboard support CD when the BIOS file fails or gets corrupted.)
3. **ASUS Update** (Updates the BIOS in Windows® environment.)

Refer to the corresponding sections for details on these utilities.

Save a copy of the original motherboard BIOS file to a bootable floppy disk in case you need to restore the BIOS in the future. Copy the original motherboard BIOS using the ASUS Update or AFUDOS utilities.

4.1.1 Creating a bootable floppy disk

1. Do either one of the following to create a bootable floppy disk.
    DOS environment

    a. Insert a 1.44MB floppy disk into the drive.

    b. At the DOS prompt, type `format A:/S` then press <Enter>.
    Windows® XP environment

    a. Insert a 1.44 MB floppy disk to the floppy disk drive.

    b. Click **Start** from the Windows® desktop, then select **My Computer**.

    c. Select the 3 1/2 Floppy Drive icon.

    d. Click **File** from the menu, then select **Format**. A **Format 3 1/2 Floppy Disk** window appears.

    e. **Windows® XP users**: Select **Create an MS-DOS startup disk** from the format options field, then click **Start**.

4.1.2 AFUDOS utility

The AFUDOS utility allows you to update the BIOS file in DOS environment using a bootable floppy disk with the updated BIOS file. This utility also allows you to copy the current BIOS file that you can use as backup when the BIOS fails or gets corrupted during the updating process.

Copying the current BIOS

To copy the current BIOS file using the AFUDOS utility:

• Make sure that the floppy disk is not write-protected and has at least 1.1MB free space to save the file.

• The succeeding BIOS screens are for reference only. The actual BIOS screen displays may not be same as shown.

1. Copy the AFUDOS utility (afudos.exe) from the motherboard support CD to the bootable floppy disk you created earlier.

2. Boot the system in DOS mode, then at the prompt type:

   afudos /o[filename]

   where the [filename] is any user-assigned filename not more than eight alphanumeric characters for the main filename and three alphanumeric characters for the extension name.

```
A:\>afudos /oOLDBIOS1.rom
```

Main filename Extension name

3. Press <Enter>. The utility copies the current BIOS file to the floppy disk.

```
A:\>afudos /oOLDBIOS1.rom
AMI Firmware Update Utility - Version 1.19(ASUS V2.07(03.11.24BB))
Copyright (C) 2002 American Megatrends, Inc. All rights reserved.
   Reading flash ..... done
   Write to file...... ok
A:\>
```

The utility returns to the DOS prompt after copying the current BIOS file.

Updating the BIOS file

To update the BIOS file using the AFUDOS utility:

1. Visit the ASUS website (www.asus.com) and download the latest BIOS file for the motherboard. Save the BIOS file to a bootable floppy disk.

    Write the BIOS filename on a piece of paper. You need to type the exact BIOS filename at the DOS prompt.

2. Copy the AFUDOS utility (afudos.exe) from the motherboard support CD to the bootable floppy disk you created earlier.
3. Boot the system in DOS mode, then at the prompt type:

    afudos /i[filename]

    where [filename] is the latest or the original BIOS file on the bootable floppy disk.

    ```
    A:\>afudos /iKFN5-D.ROM
    ```

4. The utility verifies the file and starts updating the BIOS.

    ```
    A:\>afudos /iKFN5-D.ROM
    AMI Firmware Update Utility - Version 1.19(ASUS V2.07(03.11.24BB))
    Copyright (C) 2002 American Megatrends, Inc. All rights reserved.

        WARNING!! Do not turn off power during flash BIOS
        Reading file ....... done
        Reading flash ...... done

        Advance Check ......
        Erasing flash ...... done
        Writing flash ...... 0x0008CC00 (9%)
    ```

    Do not shut down or reset the system while updating the BIOS to prevent system boot failure!

5. The utility returns to the DOS prompt after the BIOS update process is completed. Reboot the system from the hard disk drive.

```
A:\>afudos /iKFN5-D.ROM
AMI Firmware Update Utility - Version 1.19(ASUS V2.07(03.11.24BB))
Copyright (C) 2002 American Megatrends, Inc. All rights reserved.

    WARNING!! Do not turn off power during flash BIOS
    Reading file ....... done
    Reading flash ...... done

    Advance Check ......
    Erasing flash ...... done
    Writing flash ...... done
    Verifying flash .... done

    Please restart your computer

A:\>
```

To update the BIOS file from the support CD:

1. Place the motherboard support CD in the optical drive.
2. Restart the computer, then enter the BIOS Setup.
3. Select the optical drive as the first boot priority to boot from the support CD. Save your changes, then exit the BIOS Setup.
4. Restart the computer.
5. Press any key when prompted to boot from CD.

```
A) FreeDOS command prompt
B) Create Serial ATA miniport for Win32 driver disk
C) Create Serial ATA miniport Win64 driver disk
D) Create SATA SoftRAID 5 miniport Win32 driver disk
E) Create SATA SoftRAID 5 miniport Win64 driver disk
F) Create NVIDIAR nForce(TM) MCP55 RAID Win2K driver disk
G) Create NVIDIAR nForce(TM) MCP55 RAID Win2K3 32 bit driver disk
H) Create NVIDIAR nForce(TM) MCP55 RAID Win2K3 64 bit driver disk
I) Create NVIDIAR nForce(TM) MCP55 RAID WinXP 32 bit driver disk
J) Create NVIDIAR nForce(TM) MCP55 RAID WinXP 64 bit driver disk
Please choose A To J:
```

6. Select **FreeDOS commend prompt** from the menu.
7. At the prompt, type: **x**
8. Go to CD\software\afudos, and type:

afudos /ix:\KFN5-D.rom

4.1.3 ASUS CrashFree BIOS 2 utility

The ASUS CrashFree BIOS 2 is an auto recovery tool that allows you to restore the BIOS file when it fails or gets corrupted during the updating process. You can update a corrupted BIOS file using the motherboard support CD or the floppy disk that contains the updated BIOS file.

> • Prepare the motherboard support CD or the floppy disk containing the updated motherboard BIOS before using this utility.
>
> • Make sure that you rename the original or updated BIOS file in the floppy disk to **KFN5-D.ROM**.

Recovering the BIOS from a floppy disk

To recover the BIOS from a floppy disk:

1. Turn on the system.
2. Insert the floppy disk with the original or updated BIOS file to the floppy disk drive.
3. The utility displays the following message and automatically checks the floppy disk for the original or updated BIOS file.

```
Bad BIOS checksum. Starting BIOS recovery...
Checking for floppy...
```

When found, the utility reads the BIOS file and starts flashing the corrupted BIOS file.

```
Bad BIOS checksum. Starting BIOS recovery...
Checking for floppy...
Floppy found!
Reading file "KFN5-D.ROM". Completed.
Start flashing...
```

> DO NOT shut down or reset the system while updating the BIOS! Doing so can cause system boot failure!

4. Restart the system after the utility completes the updating process.

Recovering the BIOS from the support CD

To recover the BIOS from the support CD:

1.   Remove any floppy disk from the floppy disk drive, then turn on the
      system.
2.   Insert the support CD to the optical drive.
3.   The utility displays the following message and automatically checks
      the floppy disk for the original or updated BIOS file.

```
Bad BIOS checksum. Starting BIOS recovery...
Checking for floppy...
```

When no floppy disk is found, the utility automatically checks the
optical drive for the original or updated BIOS file. The utility then
updates the corrupted BIOS file.

```
Bad BIOS checksum. Starting BIOS recovery...
Checking for floppy...
Floppy not found!
Checking for CD-ROM...
CD-ROM found!
Reading file "KFN5-D.ROM". Completed.
Start flashing...
```

> DO NOT shut down or reset the system while updating the BIOS! Doing
> so can cause system boot failure!

4.   Restart the system after the utility completes the updating process.

> The recovered BIOS may not be the latest BIOS version for this
> motherboard. Visit the ASUS website (www.asus.com) to download the
> latest BIOS file.

4.1.4 ASUS Update utility

The ASUS Update is a utility that allows you to manage, save, and update the motherboard BIOS in Windows® environment. The ASUS Update utility allows you to:

- Save the current BIOS file
- Download the latest BIOS file from the Internet
- Update the BIOS from an updated BIOS file
- View the BIOS version information.

This utility is available in the support CD that comes with the motherboard package.

> ASUS Update requires an Internet connection either through a network or an Internet Service Provider (ISP).

Installing ASUS Update

To install ASUS Update:

1. Place the support CD in the optical drive. The **Drivers** menu appears.
2. Click the **Utilities** tab, then click **Install ASUS Update VX.XX.XX**.
3. The ASUS Update utility is copied to your system.

> Quit all Windows® applications before you update the BIOS using this utility.

Updating the BIOS through a BIOS file

To update the BIOS through a BIOS file:

1. Launch the ASUS Update utility from the Windows® desktop by
    clicking **Start > Programs > ASUS > ASUSUpdate > ASUSUpdate**. The
    ASUS Update main window appears.

2. Select **Update BIOS from a file**
    option from the drop-down menu,
    then click **Next**.

3. Locate the BIOS file from the **Open** window, then click **Save**.
4. Follow the screen instructions to complete the update process.

4.2   BIOS setup program

This motherboard supports a programmable firmware chip that you can update using the provided utility described in section "4.1 Managing and updating your BIOS."

Use the BIOS Setup program when you are installing a motherboard, reconfiguring your system, or prompted to "Run Setup". This section explains how to configure your system using this utility.

Even if you are not prompted to use the Setup program, you can change the configuration of your computer in the future. For example, you can enable the security password feature or change the power management settings. This requires you to reconfigure your system using the BIOS Setup program so that the computer can recognize these changes and record them in the CMOS RAM of the firmware hub.

The firmware hub on the motherboard stores the Setup utility. When you start up the computer, the system provides you with the opportunity to run this program. Press <Del> during the Power-On Self-Test (POST) to enter the Setup utility; otherwise, POST continues with its test routines.

If you wish to enter Setup after POST, restart the system by pressing <Ctrl> + <Alt> + <Del>, or by pressing the reset button on the system chassis. You can also restart by turning the system off and then back on. Do this last option only if the first two failed.

The Setup program is designed to make it as easy to use as possible. Being a menu-driven program, it lets you scroll through the various sub-menus and make your selections from the available options using the navigation keys.

- The default BIOS settings for this motherboard apply for most conditions to ensure optimum performance. If the system becomes unstable after changing any BIOS settings, load the default settings to ensure system compatibility and stability. Select the **Load Setup Defaults** item under the Exit Menu. See section "4.7 Exit Menu."

- The BIOS setup screens shown in this section are for reference purposes only, and may not exactly match what you see on your screen.

- Visit the ASUS website (www.asus.com) to download the latest BIOS file for this motherboard.

4.2.1 BIOS menu screen

Menu items   Menu bar   Configuration fields   General help

```
                    BIOS SETUP UTILITY
   Main  Advanced  Power    Boot    Exit

   System Time                [11:51:19]          Use [ENTER], [TAB]
   System Date                [Fri 01/6/2006]     or [SHIFT-TAB] to
   Legacy Diskette A          [1.44M, 3.5 in.]    select a field.

►  Primary IDE Master        :[ST320413A]         Use [+] or [-] to
►  Primary IDE Slave         :[ASUS CD-S520/A]    configure system
►  Serial-ATA 0 Primary Channel   :[Not Detected] time.
►  Serial-ATA 0 Secondary Channel :[Not Detected]
►  Serial-ATA 1 Primary Channel   :[Not Detected]
►  Serial-ATA 1 Secondary Channel :[Not Detected]
►  Serial-ATA 2 Primary Channel   :[Not Detected]
►  Serial-ATA 2 Secondary Channel :[Not Detected]  ←→   Select Screen
►  IDE Configuration                                ↑↓   Select Item
                                                    +-   Change Option
►  System Information                               F1   General Help
                                                    F10  Save and Exit
                                                    ESC  Exit

            v00.00 (C)Copyright 1985-2003, American Megatrends, Inc.
```

Sub-menu items   Navigation keys

4.2.2 Menu bar

The menu bar on top of the screen has the following main items:

Main   For changing the basic system configuration

Advanced   For changing the advanced system settings

Power   For changing the advanced power management (APM)
                configuration

Boot   For changing the system boot configuration

Exit   For selecting the exit options and loading default
                settings

To select an item on the menu bar, press the right or left arrow key on the keyboard until the desired item is highlighted.

4.2.3 Navigation keys

At the bottom right corner of a menu screen are the navigation keys for that particular menu. Use the navigation keys to select items in the menu and change the settings.

Some of the navigation keys differ from one screen to another.

4.2.4 Menu items

The highlighted item on the menu bar displays the specific items for that menu. For example, selecting **Main** shows the Main menu items.

The other items (Advanced, Power, Boot, and Exit) on the menu bar have their respective menu items.
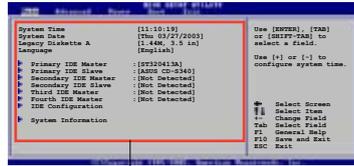
Main menu items

4.2.5 Sub-menu items

A solid triangle before each item on any menu screen means that the iteam has a sub-menu. To display the sub-menu, select the item and press <Enter>.

4.2.6 Configuration fields

These fields show the values for the menu items. If an item is user-configurable, you can change the value of the field opposite the item. You cannot select an item that is not user-configurable.

A configurable field is enclosed in brackets, and is highlighted when selected. To change the value of a field, select it then press <Enter> to display a list of options. Refer to "4.2.7 Pop-up window."

4.2.7 Pop-up window

Select a menu item then press <Enter> to display a pop-up window with the configuration options for that item.

4.2.8 Scroll bar

A scroll bar appears on the right side of a menu screen when there are items that do not fit on the screen. Press the Up/Down arrow keys or <Page Up> /<Page Down> keys to display the other items on the screen.

Pop-up window

Scroll bar

4.2.9 General help

At the top right corner of the menu screen is a brief description of the selected item.

4.3   Main menu

When you enter the BIOS Setup program, the **Main** menu screen appears, giving you an overview of the basic system information.

Refer to section "4.2.1 BIOS menu screen" for information on the menu screen items and how to navigate through them.

```
                         BIOS SETUP UTILITY
   Main    Advanced   Power    Boot    Exit

   System Time                   [11:51:19]           Use [ENTER], [TAB]
   System Date                   [Fri 01/6/2006]      or [SHIFT-TAB] to
   Legacy Diskette A             [1.44M, 3.5 in.]     select a field.

 ▶ Primary IDE Master          :[ST320413A]           Use [+] or [-] to
 ▶ Primary IDE Slave           :[ASUS CD-S520/A]      configure system
 ▶ Serial-ATA 0  Primary Channel   :[Not Detected]    time.
 ▶ Serial-ATA 0  Secondary Channel :[Not Detected]
 ▶ Serial-ATA 1  Primary Channel   :[Not Detected]
 ▶ Serial-ATA 1  Secondary Channel :[Not Detected]
 ▶ Serial-ATA 2  Primary Channel   :[Not Detected]
 ▶ Serial-ATA 2  Secondary Channel :[Not Detected]    ←→    Select Screen
 ▶ IDE Configuration                                  ↑↓    Select Item
                                                      +-    Change Option
 ▶ System Information                                 F1    General Help
                                                      F10   Save and Exit
                                                      ESC   Exit

         v00.00 (C)Copyright 1985-2003, American Megatrends, Inc.
```

4.3.1   System Time [xx:xx:xx]

Allows you to set the system time.

4.3.2   System Date [Day xx/xx/xxxx]

Allows you to set the system date.

4.3.3   Legacy Diskette A [1.44M, 3.5 in.]

Sets the type of floppy drive installed. Configuration options: [Disabled] [360K, 5.25 in.] [1.2M , 5.25 in.] [720K , 3.5 in.] [1.44M, 3.5 in.] [2.88M, 3.5 in.]

4.3.4 Primary IDE Master/Slave, Serial-ATA 0, 1, 2 Primary/Secondary Channel

The BIOS automatically detects the connected IDE and SATA devices. There is a separate sub-menu for each IDE and SATA device. Select a device item, then press <Enter> to display the IDE and SATA device information.

```
                        BIOS SETUP UTILITY
Main

  Primary IDE Master
  Device          : Hard Disk
  Vendor          : ST320413A
  Size            : 20.0GB
  LBA Mode        : Supported
  Block Mode      : 16 Sectors
  PIO Mode        : Supported
  Async DMA       : MultiWord DMA-2
  Ultra DMA       : Ultra DMA-5
  SMART Monitoring: Supported

  Type                          [Auto]          ↔    Select Screen
  LBA/Large Mode                [Auto]          ↑↓   Select Item
  Block(Multi-Sector Transfer)M [Auto]          +-   Change Option
  PIO Mode                      [Auto]          F1   General Help
  DMA Mode                      [Auto]          F10  Save and Exit
  SMART Monitoring              [Auto]          ESC  Exit
  32Bit Data Transfer           [Disabled]

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```

The BIOS automatically detects the values opposite the dimmed items (Device, Vendor, Size, LBA Mode, Block Mode, PIO Mode, Async DMA, Ultra DMA, and SMART monitoring). These values are not user-configurable. These items show N/A if no IDE device is installed in the system.

Type [Auto]

Selects the type of IDE drive. Setting to [Auto] allows automatic selection of the appropriate IDE device type. Select [CDROM] if you are specifically configuring a CD-ROM drive. Select [ARMD] (ATAPI Removable Media Device) if your device is either a ZIP, LS-120, or MO drive. Configuration options: [Not Installed] [Auto] [CDROM] [ARMD]

LBA/Large Mode [Auto]

Enables or disables the LBA mode. Setting to [Auto] enables the LBA mode if the device supports this mode, and if the device was not previously formatted with LBA mode disabled. Configuration options: [Disabled] [Auto]

Block (Multi-sector Transfer) M [Auto]

Enables or disables data multi-sectors transfers. When set to [Auto], the data transfer from and to the device occurs multiple sectors at a time if the device supports multi-sector transfer feature. When set to [Disabled], the data transfer from and to the device occurs one sector at a time. Configuration options: [Disabled] [Auto]

PIO Mode [Auto]

Selects the PIO mode.
Configuration options: [Auto] [0] [1] [2] [3] [4]

SMART Monitoring [Auto]

Sets the Smart Monitoring, Analysis, and Reporting Technology.
Configuration options: [Auto] [Disabled] [Enabled]

32Bit Data Transfer [Disabled]

Enables or disables 32-bit data transfer.
Configuration options: [Disabled] [Enabled]

4.3.5   IDE Configuration

The items in this menu allow you to set or change the configurations for
the IDE devices installed in the system. Select an item then press <Enter>
if you wish to configure the item.

```
                         BIOS SETUP UTILITY
 Main

   IDE Configuration                              DISABLED: disables
                                                  the intergrated IDE
   OnBoard PCI IDE Controller      [Enabled]      Controller.
   Serial-ATA Devices              [Device 0/1/2] PRIMARY: enables
                                                  only the Primary IDE
  ▶ nVidia RAID Setup                             Controller.
                                                  SECODARY: enables
   Hard Disk Write Protect         [Disabled]     only the Secondary
   IDE Dectect Time Out (Sec)      [35]           IDE Controller.
   ATA(PI) 80Pin Cable Detection   [Host]         BOTH: enables both
                                                  IDE Controllers.

                                                  ↔    Select Screen
```

OnBoard PCI IDE Controller [Enabled]

Enables or disables the integrated IDE controller.
Configuration options: [Disabled] [Enabled]

Serial-ATA Devices [Device 0/1/2]

Enables or disables the SATA IDE devices.
Configuration options: [Disabled] [Device 0] [Device 0/1] [Device 0/1/2]

Hard Disk Write Protect [Disabled]

Enables or disables the device wirte protection. This will be effective
only if device is accessed through BIOS.
Configuration options: [Disabled] [Enabled]

IDE Detect Time Out [35]

Selects the time out value for detecting ATA/ATAPI devices.
Configuration options: [0] [5] [10] [15] [20] [25] [30] [35]

ATA(PI) 80Pin Cable Detection [Host]

Selects the mechanism for detecting 80Pin ATA(PI) Cable.
Configuration options: [Host & Device] [Host] [Device]

nVidia RAID Setup

```
                          BIOS SETUP UTILITY
Main

    RAID Setup

    nVidia RAID Function              [Disabled]
                                                        Disable/Enable nVidia
                                                        ROM.
```
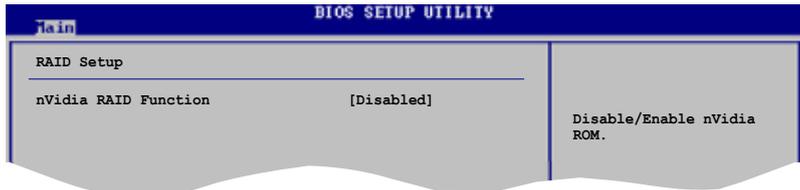
nVidia RAID Function [Disabled]
Enables or disables the NVIDIA® RAID function.
Configuration options: [Disabled] [Enabled]

The following items appear when this item is Enabled.

SATA0 Primary Channel [Disabled]
Sets the SATA0 Primary Channel as RAID. This channel connects to
SATA1. Configuration options: [Disabled] [Enabled]

SATA0 Secondary Channel [Disabled]
Sets the SATA0 Secondary Channel as RAID. This channel connects to
SATA2. Configuration options: [Disabled] [Enabled]

SATA1 Primary Channel [Disabled]
Sets the SATA1 Primary Channel as RAID. This channel connects to
SATA3. Configuration options: [Disabled] [Enabled]

SATA1 Secondary Channel [Disabled]
Sets the SATA1 Secondary Channel as RAID. This channel connects to
SATA4. Configuration options: [Disabled] [Enabled]

SATA2 Primary Channel [Disabled]
Sets the SATA2 Primary Channel as RAID. This channel connects to
SATA5. Configuration options: [Disabled] [Enabled]

SATA2 Secondary Channel [Disabled]
Sets the SATA2 Secondary Channel as RAID. This channel connects to
SATA6. Configuration options: [Disabled] [Enabled]

4.3.6 System Information

This menu gives you an overview of the general system specifications. The BIOS automatically detects the items in this menu.

```
                        BIOS SETUP UTILITY
 Main
┌─────────────────────────────────────────┬──────────────────────────────┐
│ AMIBIOS                                  │                              │
│ Version    : 0120                        │                              │
│ Build Date : 05/17/06                    │                              │
│                                          │                              │
│ Processor                                │                              │
│ Type       : AMD Opteron(tm) Processor 146│                             │
│ Speed      : 2000 MHz                    │                              │
│ Count      : 1                           │                              │
│                                          │                              │
│ System Memory                            │                              │
│ Size       : 256MB                       │                              │
│                                          │  ←→   Select Screen          │
│                                          │  ↑↓   Select Item            │
│                                          │  +-   Change Option          │
│                                          │  F1   General Help           │
│                                          │  F10  Save and Exit          │
│                                          │  ESC  Exit                   │
│                                          │                              │
└─────────────────────────────────────────┴──────────────────────────────┘
        v00.00 (C)Copyright 1985-2002, American Megatrends, Inc.
```
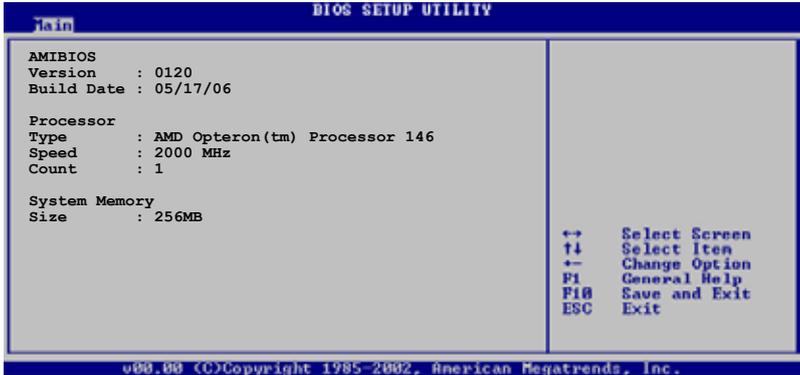
AMI BIOS

Displays the auto-detected BIOS information

Processor

Displays the auto-detected CPU specification

System Memory

Displays the auto-detected system memory

4.4 Advanced menu

The Advanced menu items allow you to change the settings for the CPU and other system devices.

> Take caution when changing the settings of the Advanced menu items. Incorrect field values can cause the system to malfunction.

```
                        BIOS SETUP UTILITY
   Main   Advanced   Power    Boot    Exit

   ▶ JumperFree Configuration           Configure CPU.
   ▶ Speech Configuration

   ▶ CPU Configuration
   ▶ Chipset
   ▶ Onboard Devices Configuration
   ▶ PCIPnP
   ▶ MPS Configuration
   ▶ USB Configuration

                                        ←→    Select Screen
                                        ↑↓    Select Item
                                        Enter Go to Sub-screen
                                        F1    General Help
                                        F10   Save and Exit
                                        ESC   Exit

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```

4.4.1 JumperFree Configuration

```
                        BIOS SETUP UTILITY
   Advanced

   Config System Frequency/Voltage          Adjust CPU1 DDR2
   ──────────────────────────────           Voltage
   CPU Frequency, MHz          [200.9]
   CPU1 DDR2 Voltage           [1.80V]
   CPU2 DDR2 Voltage           [1.80V]
   Chipset Voltage             [1.40V]
   CPU1 Voltage Control        [Default VID]
   CPU2 Voltage Control        [Default VID]
   Hyper Transport Voltage     [1.20V]

                                        ←→    Select Screen
                                        ↑↓    Select Item
                                        +-    Change Option
                                        F1    General Help
                                        F10   Save and Exit
                                        ESC   Exit

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```

CPU Frequency [200.9]

Allows you to select the CPU frequency.The values range from 200.9 to 300. Refer to the table on the next page for the correct Front Side Bus and CPU External Frequency settings. Configuration options: [200.9] [201.0] [201.5] [202.0] [202.5] [203.0] [203.5] [204.0] [204.5] [205.0] [205.5] [206.0] [206.5] [207.0] [207.5] [208.0] [208.5] [209.0] [209.5] [210.0]

Selecting a very high CPU frequency may cause the system to become unstable! If this happens, revert to the default setting.

CPU1/CPU2 DDR2 Voltage [1.80V]

Allows you to set the DDR2 operating voltage. Set to Auto for safe mode. Configuration options: [1.70V] [1.80V] [1.90V] [2.00V]

Refer to the DDR2 documentation before setting the memory voltage. Setting a very high memory voltage may damage the memory module(s)!

Chipset Core Voltage [1.50V/1.40V]

Allows you to set the 1.4v chipset core voltage.
Configuration options: [1.40V/1.35V] [1.50V/1.40V] [1.60V/1.50V] [1.70V/1.55V]

CPU1/CPU2 Voltage Control [Default VID]

Allows you to set the CPU1or CPU2 voltage.
Configuration options: [Default VID] [Default VID+100mV]

Hyper Transport Voltage [1.20V]

Allows you to set the Hyper Transport voltage.
Configuration options: [1.15V] [1.20V] [1.25V] [1.30V]

4.4.2 Speech Configuration

```
                        BIOS SETUP UTILITY
    Advanced

   Speech Option                                    Adjust CPU1 DDR2
                                                    Voltage
   Speech Post Reporter          [Enabled]
   Report IDE Error              [Disabled]
   Report System Checking        [Disabled]
   Report System Booting         [Disabled]


                                                  ←→   Select Screen
                                                  ↑↓   Select Item
                                                  +-   Change Option
                                                  F1   General Help
                                                  F10  Save and Exit
                                                  ESC  Exit

        vMM.mm (C)Copyright 1985-2002, American Megatrends, Inc.
```
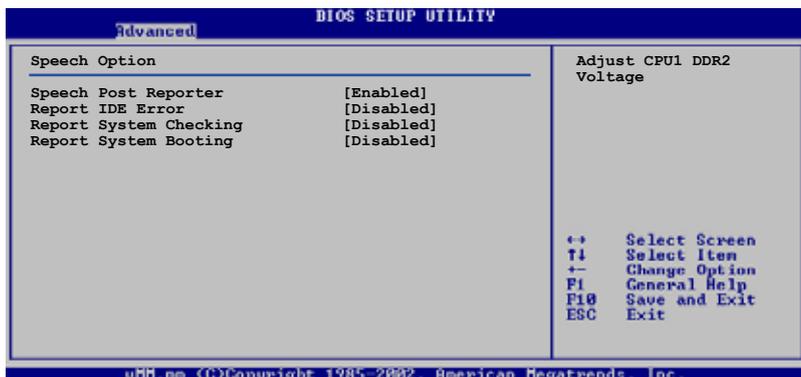
Speech Post Reporter [Enabled]

Enables or disables the Speech post reporter.
Configuration options: [Enabled] [Disabled]

Reporter IDE Error [Disabled]

Enables or disables the IDE error report.
Configuration options: [Enabled] [Disabled]

Reporter System Checking [Disabled]

Enables or disables the system checking report.
Configuration options: [Enabled] [Disabled]

Reporter System Booting [Disabled]

Enables or disables the system booting report.
Configuration options: [Enabled] [Disabled]

4.4.3 CPU Configuration

The items in this menu show the CPU-related information that the BIOS automatically detects.

```
                    BIOS SETUP UTILITY
 Advanced

 CPU Configuration                          This option should
 Module Version: 14.08                      remain disabled for
 Physical Count: 2                          the normal operation.
 Logical Count : 4                          The driver developer
                                            may enable it for
 AMD Opteron(tm) Processor 146              testing purpose.
 Revision: CG
 Cache L1: 128KB
 Cache L2: 1024KB
 Speed   : 2000MHz
 Current FSB Multiplier: 12x
 Maximum FSB Multiplier: 12X
 Able to Change Freq   : Yes                ←→   Select Screen
 uCode Patch Level     : None Required      ↑↓   Select Item
                                            +-   Change Option
 GART Error Reporting         [Disabled]    F1   General Help
 MTRR Mapping                 [Continuous]   F10  Save and Exit
 Runtime Legacy PSB           [Disabled]    ESC  Exit
 ACPI 2.0 Objects             [Enabled]

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```

GART Error Reporting [Disabled]

Enables or disables the GART Error reporting feature.
Configuration options: [Disabled] [Enabled]

MTRR Mapping [Continuous]

Sets the method used for programming CPU MTRRs when 4GB or more memory is installed on the system. When set to Discrete, the BIOS leaves the PCI hole below the 4GB boundary undescribed. Set to Continuous to describe the PCI hole as non-cacheable.
Configuration options: [Continuous] [Discrete]

ACPI 2.0 Objects [Enabled]

Enables or disables generation of the ACPI 2.0 objects.
Configuration options: [Disabled] [Enabled]

4.4.4   Chipset

The Chipset menu allows you to change the advanced chipset settings. Select an item then press <Enter> to display the sub-menu.

```
                    BIOS SETUP UTILITY
    Advanced

   Advanced Chipset Settings                     Options for NB.

   WARNING: Setting wrong values in below sections
            may cause system to malfunction.

    ▶ NorthBridge Configuration
    ▶ SouthBridge/MCP55 Configuration
    ▶ Hyper Transport Configuration
```
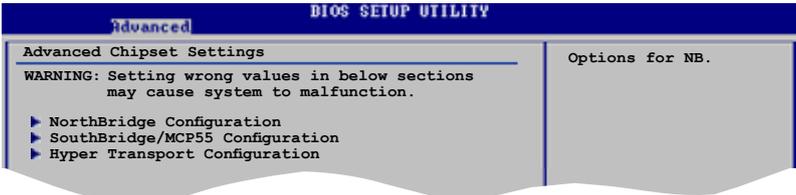
NorthBridge Configuration

The NorthBridge Configuration menu allows you to change the Northbridge settings.

```
                    BIOS SETUP UTILITY
    Advanced

   NorthBridge Chipset Configuration

    ▶ Memory Configuration
    ▶ ECC Configuration
      Power Down Control      [Auto]
      Alternate VID           [0.850 V]

   Memory Timing Parameters   [CPU Node 0]
     Memory CLK            : 200 MHz
     CAS Latency (Tcl)     : 3.0
     RAS/CAS Delay (Trcd)  : 3 CLK
     Min Active RAS (Tras) : 8 CLK
     Row Precharge Time (Trp): 3 CLK      ←    Select Screen
     RAS/RAS Delay (Trrd)  : 2 CLK        ↑↓   Select Item
     Row Cycle (Trc)       : 13 CLK       +-   Change Option
     Asynchronous Latency  : 5 ns         F1   General Help
                                          F10  Save and Exit
                                          ESC  Exit

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```

Memory Configuration

The memory configuration menu allows you to change the memory settings.

```
                    BIOS SETUP UTILITY
    Advanced

     Memory Configuration                     MEMCLK can be set
                                              by the code using
     Memclock Mode             [Auto]         AUTO, or if you use
     MCT Timing Mode           [Auto]         LIMIT, you can set
     Bank Interleaving         [Auto]         one of the standard
     Enable Clock to All DIMMS [Disabled]     values.
     DQS Signal Training Control [Enabled]
     MemClk Tristate C3/ATLVID [Disabled]
     CS Sparing Enable         [Disabled]
     Memory Hole Remapping     [Enabled]
```

Memclock Mode [Auto]
Sets the memory clock mode.
Configuration options: [Auto] [Limit] [Manual]

The following item appears when the Memclock Mode is set to Limit or Manual.

Memclock Value [200 MHz]
Sets the memory clock mode limit.
Configuration options: [200 MHz] [266 MHz] [333 MHz]

MCT Timing Mode [Auto]
Sets the MCT Timing Mode. Configuration options: [Auto] [Limit]

Bank Interleaving [Auto]

Allows you to enable the bank memory interleaving.
Configuration options: [Disabled] [Auto]

Enable Clock to All DIMMs [Disabled]
Configuration options: [Disabled] [Enabled]

DQS Signal Training Control [Enabled]
Enables or disables the DQS Signal Timing Training control.
Configuration options: [Disabled] [Enabled]

MemClk Tristate C3/ALTVID [Disabled]
Configuration options: [Disabled] [Enabled]

CS Sparing Enable [Disabled]
Configuration options: [Disabled] [Enabled]

Memoryy Hole Remapping [Enabled]
Enables or disables the memory remapping around memory hole.
Configuration options: [Disabled] [Enabled]

ECC Configuration

```
                           BIOS SETUP UTILITY
    Advanced

    ECC Configuration                         DRAM ECC allows
                                              hardware to report
    DRAM ECC Enable            [Enabled]      and correct memory
     ECC MCE Enable            [Disabled]     errors automatically
     4-Bit ECC Mode            [Disabled]     maintaining system
     DRAM SCRUB REDIRECT       [Disabled]     integrity.
     DRAM BG Scrub             [Disabled]
    L2 Cache BG Scrub          [Disabled]
    Data Cache BG Scrub        [Disabled]
    DRAM ADDRESS PARITY Enable [Disabled]
                                              ←→   Select Screen
                                              ↑↓   Select Item
```

DRAM ECC Enable [Enabled]
Allows you to enable or disable the DRAM ECC.
Configuration options: [Disabled] [Enabled]

ECC MCE Enable [Disabled]

Enables or disables the MCE DRAM ECC logging or reporting.
Configuration options: [Disabled] [Enabled]

4-Bit ECC Mode [Disabled]

Enables or disables the 4-Bit ECC mode.
Configuration options: [Disabled] [Enabled]

DRAM SCRUB REDIRECT [Disabled]

Enables or disables the DRAM SCRUB REDIRECT. When set to
Enabled, system corrects DRAM ECC errors immediately when
they occur, even if the background scrubbing is on. Configuration
options: [Disabled] [Enabled]

DRAM BG SCRUB [Disabled]

When set to Enabled, the DRAM scrubbing corrects memory errors.
Configuration options: [Disabled] [40ns] [80ns] [160ns] [320ns]
[640ns] [1.28us] [2.56us] [5.12us] [10.2us] [20.5us] [41.0us]
[81.9us] [163.8us] [327.7us] [655.4us] [1.31ms] [2.62ms]
[5.24ms] [10.49ms] [20.97ms] [42.00ms] [84.00ms]

L2 Cache BG Scrub [Disabled]
Disables or sets the L2 Cache BG Scrub.
Configuration options: [Disabled] [40ns] [80ns] [160ns] [320ns]
[640ns] [1.28us] [2.56us] [5.12us] [10.2us] [20.5us] [41.0us]
[81.9us] [163.8us] [327.7us] [655.4us] [1.31ms] [2.62ms]
[5.24ms] [10.49ms] [20.97ms] [42.00ms] [84.00ms]

Power Down Control [Auto]

Allows the DIMMs to enter power down mode by deasserting the clock enable signal when DIMMs are not in use.
Configuration options: [Auto] [Disabled]

Alternate VID [0.850 V]

Allows you to specify the alternate VID in low power states.
Configuration options: [1.050 V] [1.025 V] [1.000 V] [0.975 V] [0.950 V] [0.925 V] [0.900 V] [0.875 V] [0.850 V] [0.825 V] [0.800 V]

Memory Timing Parameters [CPU Node 0]

Allows you to select a CPU node to dispaly its memory timing parameters.
Configuration options: [CPU Node 0] [CPU Node 1]

SouthBridge Configuration

The SouthBridge Configuration menu allows you to change the SouthBridge settings.
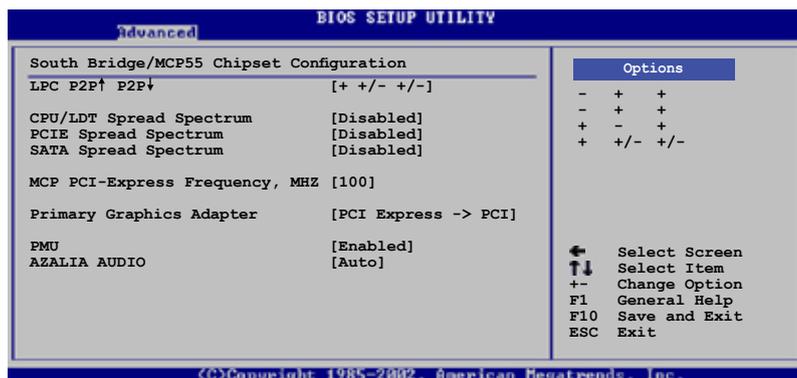
LPC P2P↓P2P↑ [+ +/- +/-]

Configuration options: [- + +] [- + +] [+ - +] [+ +/- +/-]

> DO NOT change the option of **LPC P2P ↓ P2P ↑** item! This item is for debug use only.

CPU/LTD Spread Spectrum [Disabled]

Sets or disables the processor or Lightning Data Transport (LTD) spread

PCI-Express Spread Spectrum [Disabled]

Enables or disables the PCI-Express spread spectrum.
Configuration options: [Disabled] [Enabled]

SATA Spread Spectrum [Disabled]

Enables or disables the SATA spread spectrum.
Configuration options: [Disabled] [Enabled]

MCP PCI Express Frequency [100]

Allows you to set the PCI Express frequency.
Configuration options: [100] [101]...[145]

Primary Graphics Adapter [PCI Express -> PCI]

Allows you to select the primary graphics adapter.
Configuration options: [PCI Express -> PCI] [PCI -> PCI Express]

PMU [Enabled]

Configuration options: [Disabled] [Enabled]

AZALIA Audio [Auto]

Allows you to enable or disable the Azalia audio CODEC.
Configuration options: [Auto] [Disabled]

Hyper Transport Configuration

The sub-menu allows you to change the Hyper Transport settings.

```
                        BIOS SETUP UTILITY
          Advanced

   Hyper Transport MCP55 Configuration           MCP55(SB) to K8(CPU)
                                                 frequency selection
   MCP55(SB) to K8(CPU) Freq Auto    [Disabled]  by CPU capability
   MCP55(SB) to K8(CPU) Frequency    [1000 MHZ]
   MCP55(SB) to K8(CPU) LinkWidth    [16↓ 16↑]
```
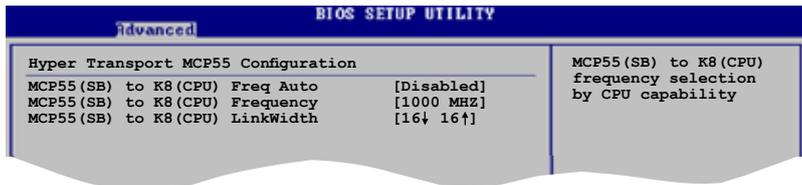
MCP55(SB) to K8(CPU) Freq Auto [Disabled]

Enables or disables the CPU to automatically adjust Hyper Transport
frequency. Configuration options: [Disabled] [Enabled]

MCP55(SB) to K8(CPU) Frequency [1000 MHz]

Allows you to set the Hyper Transport frequency. This item appears when
you set the MCP55(SB) to K8(CPU) Freq Auto to Disabled.
Configuration options: [200 MHz] [400 MHz] [600 MHz] [800 MHz]
[1000 MHz].

MCP55(SB) to K8(CPU) LinkWidth [16 ↑ 16 ↓]

Sets the Hyper Transport width.
Configuration options: [4 ↑ 4 ↓] [8 ↑ 8 ↓] [16 ↑ 16 ↓]

4.4.5   Onboard Devices Configuration

```
                    BIOS SETUP UTILITY
 Advanced

 Configure Win627THF Super IO Chipset         Allows BIOS to Select
 Serial Port1 Address        [3F8/IRQ4]       Serial Port1 Base
 Parallel Port Address       [378]            Addresses.
 Parallel Port Mode          [Normal]
   Parallel Port IRQ         [IRQ7]
 OnBoard Game/MIDI Port      [Disabled]

 Configure Onboard Device

 Onboard BCM5754 Lan               [Enabled]
   Onboard LAN Boot ROM            [Disabled]
 Onboard T43AB22A 1394             [Enabled]
 Onboard Sil3132 SATALink          [SATA2 Mode]
   Onboard Serial-ATA BOOTROM      [Disabled]
```

Serial Port1 Address [3F8/IRQ4]

Allows you to select the Serial Port1 base address.
Configuration options: [Disabled] [3F8/IRQ4] [2F8/IRQ3] [3E8/IRQ4]
[2E8/IRQ3]Parallel Port Address [378]

Parallel Port Address [378]

Allows you to select the Parallel Port base addresses.
Configuration options: [Disabled] [378] [278] [3BC]

Parallel Port Mode [Normal]

Allows you to select the Parallel Port mode.
Configuration options: [Normal] [Bi-Directional] [EPP] [ECP]

The following item appears when the Parallel Port Mode is set to EPP.

EPP Version [1.9]

Allows you to select the Parallel Port EPP version.
Configuration options: [1.9] [1.7]

> The following item appears when the Parallel Port Mode is set to ECP.

ECP Mode DMA Channel [DMA3]

Allows you to select the Parallel Port ECP DMA.
Configuration options: [DMA0] [DMA1] [DMA3]

Parallel Port IRQ [IRQ7]
Allows you to set the Parallel Port IRQ.
Configuration options: [IRQ5] [IRQ7]

Onboard Game/MIDI Port [Disabled]

Allows you to disable or set the Game/MIDI port.
Configuration options: [Disabled] [200/300] [200/330] [208/300] [208/330]

> The following item appears when the Onboard Game/MIDI Port is set to Enabled.

EPP Version [1.9]

Allows you to select the Parallel Port EPP version.
Configuration options: [1.9] [1.7]

Onboard BCM5754 LAN [Enabled]

Enable or disable the Onboard BCM5754 LAN.
Configuration options: [Disabled] [Enabled]

Onboard LAN Boot ROM [Disabled]
Allows you to enable or disable the option ROM in the onboard LAN controller. Configuration options: [Disabled] [Enabled]

Onboard T43AB22A 1394 [Enabled]

Enable or disable the 1394 controller T43AB22A.
Configuration options: [Disabled] [Enabled]

Onboard Sil3132 SATALink [SATA2 Mode]

Allows you to set the onboard Silicon Image RAID controller. When selecting SATA2 mode, you can connect any SATA device to the two SATA ports controlled by the Sil3132 controller. Sets the item to RAID Mode if you want to set up the RAID configurations through the Sil3132 RAID controller. Configuration options: [Disabled] [SATA2 Mode] [RAID Mode]

Onboard LAN Boot ROM [Disabled]
Allows you to enable or disable the option ROM for the onboard Silicon Image RAID controller. Configuration options: [Disabled] [Enabled]

4.4.6 PCI PnP

The PCI PnP menu items allow you to change the advanced settings for PCI/PnP devices. The menu includes setting IRQ and DMA channel resources for either PCI/PnP or legacy ISA devices, and setting the memory size block for legacy ISA devices.

![warning icon] Take caution when changing the settings of the PCI PnP menu items. Incorrect field values can cause the system to malfunction.

```
                        BIOS SETUP UTILITY
  Advanced

  Advanced PCI/PnP Settings                          NO: Lets the BIOS
                                                     configure all the
  WARNING: Setting wrong values in below sections    devices in the system.
           may cause system to malfunction.          YES: Lets the
                                                     operating system
  Plug And Play O/S          [No]                    configure Plug and Play
  PCI Latency Timer          [64]                    (PnP) devices not
  Allocate IRQ to PCI VGA    [Yes]                   required for boot if
  Palette Snooping           [Disabled]              your system has a Plug
                                                     and Play operating
  IRQ-3 assigned to          [PCI Device]            system.
  IRQ-4 assigned to          [PCI Device]
  IRQ-5 assigned to          [PCI Device]            ←→   Select Screen
  IRQ-7 assigned to          [PCI Device]            ↑↓   Select Item
  IRQ-9 assigned to          [PCI Device]            +-   Change Option
  IRQ-10 assigned to         [PCI Device]            F1   General Help
  IRQ-11 assigned to         [PCI Device]            F10  Save and Exit
  IRQ-14 assigned to         [PCI Device]            ESC  Exit
  IRQ-15 assigned to         [PCI Device]

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```

Plug And Play O/S [No]

When set to [No], BIOS configures all the devices in the system. When set to [Yes] and if you install a Plug and Play operating system, the operating system configures the Plug and Play devices not required for boot. Configuration options: [No] [Yes]

PCI Latency Timer [64]

Allows you to select the value in units of PCI clocks for the PCI device latency timer register. Configuration options: [32] [64] [96] [128] [160] [192] [224] [248]

Allocate IRQ to PCI VGA [Yes]

When set to [Yes], BIOS assigns an IRQ to PCI VGA card if the card requests for an IRQ. When set to [No], BIOS does not assign an IRQ to the PCI VGA card even if requested. Configuration options: [No] [Yes]

Palette Snooping [Disabled]

When set to [Enabled], the pallete snooping feature informs the PCI devices that an ISA graphics device is installed in the system so that the latter can function correctly. Configuration options: [Disabled] [Enabled]

IRQ-xx assigned to [PCI Device]

When set to [PCI Device], the specific IRQ is free for use of PCI/PnP devices. When set to [Reserved], the IRQ is reserved for legacy ISA devices. Configuration options: [PCI Device] [Reserved]

4.4.7 MPS Configuration

The items in this menu allows you to configure the Multi-Processor Table. Select an item then press <Enter> to display the configuration options.

```
                         BIOS SETUP UTILITY
           Advanced

  MPS Configuration                          Select MPS Revision.
  MPS Revision              [1.4]
```

MPS Revision [1.4]

Allows you to select the multi-processor system revision.
Configuration options: [1.1] [1.4]

4.4.8 USB Configuration

The items in this menu allows you to change the USB-related features. Select an item then press <Enter> to display the configuration options.

```
                         BIOS SETUP UTILITY
           Advanced

  USB Configuration                          Enables USB host
  Module Version - 2.24.0-12.4               controllers.

  USB Devices Enabled: None

  USB 1.1 Controller          [Enabled]
  USB 2.0 Controller          [Enabled]

  Legacy USB Support          [Enabled]
  USB 2.0 Controller Mode     [HiSpeed]
  BIOS EHCI Hand-Off          [Enabled]
```
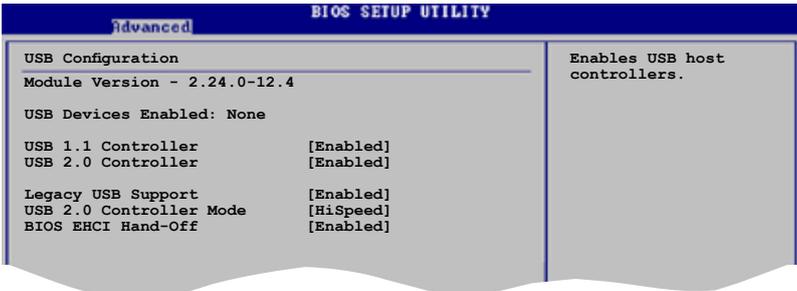
The Module Version and USB Devices Enabled items show the auto-detected values. If no USB device is detected, the USB Devices Enabled item shows None.

USB 1.1/2.0 Controller [Enabled]

Allows you to enable or disable the USB 1.1/2.0 controller.
Configuration options: [Enabled] [Disabled]

Legacy USB Support [Enabled]

Allows you to enable or disable support for legacy USB devices. Setting to [Auto] allows the system to detect the presence of USB devices at startup. If detected, the USB controller legacy mode is enabled. If no USB device is detected, the legacy USB support is disabled.
Configuration options: [Disabled] [Enabled] [Auto]

USB 2.0 Controller Mode [FullSpeed]

Allows you to set the USB 2.0 controller mode to HiSpeed (480 Mbps) or FullSpeed (12 Mbps). Configuration options: [HiSpeed] [FullSpeed]

BIOS EHCI Hand-Off [Enabled]

Enables or disables the BIOS EHCI hand-off feature.
Configuration options: [Enabled] [Disabled]

4.5 Power menu

The Power menu items allow you to change the settings for the ACPI and Advanced Power Management (APM) features. Select an item then press <Enter> to display the configuration options.

```
                          BIOS SETUP UTILITY
  Main    Advanced   Power    Boot    Exit

                                                   Select the ACPI state
  ACPI APIC Support          [Enabled]             used for System
  ACPI MCFG Support          [Enabled]             Suspend.

▶   APM Configuration
▶   Hardware Monitor



                                                   ←→     Select Screen
                                                   ↑↓     Select Item
                                                   Enter  Go to Sub Screen
                                                   F1     General Help
                                                   F10    Save and Exit
                                                   ESC    Exit


        vMM.mm (C)Copyright 1985-2002, American Megatrends, Inc.
```
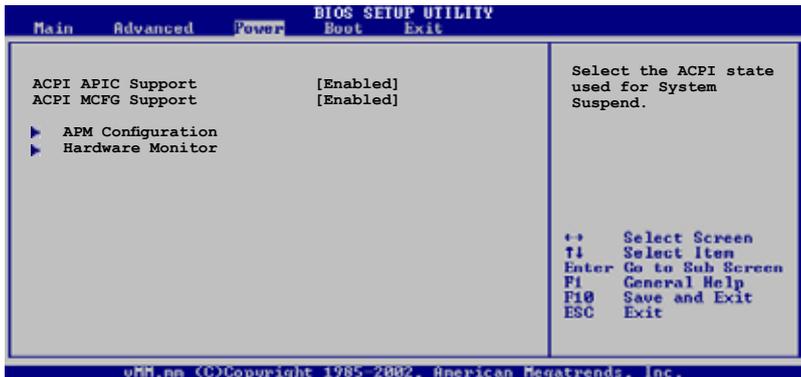
4.5.1 ACPI APIC Support [Enabled]

Allows you to enable or disable the Advanced Configuration and Power Interface (ACPI) support in the Application-Specific Integrated Circuit (ASIC). When set to Enabled, the ACPI APIC table pointer is included in the RSDT pointer list. Configuration options: [Disabled] [Enabled]

> Do not change the ACPI APIC support after you have installed the operating system (OS), otherwise, a boot failure may occur.

4.5.2 ACPI MCFG Support [Enabled]

Allows you to enable or disable the Memory Mapped Configuration (MCFG) support. When set to Enabled, the MCFG table pointer is included in the RSDT pointer list. Configuration options: [Disabled] [Enabled]

> Set the ACPI MCFG Support to Disable, when you install RedHat WS4.0 UP3 operation system, and 4 GB memory.

4.5.3 APM Configuration


```
                    BIOS SETUP UTILITY
                   Power

Power Management/APM        [Disabled]         <Enter> to select
                                              whether or not to
Restore on AC Power Loss    [Last State]      restart the system
                                              after AC power loss.




                                              ↔    Select Screen
                                              ↑↓   Select Item
                                              +-   Change Option
                                              F1   General Help
                                              F10  Save and Exit
                                              ESC  Exit

     vMM.mm (C)Copyright 1985-2002, American Megatrends, Inc.
```
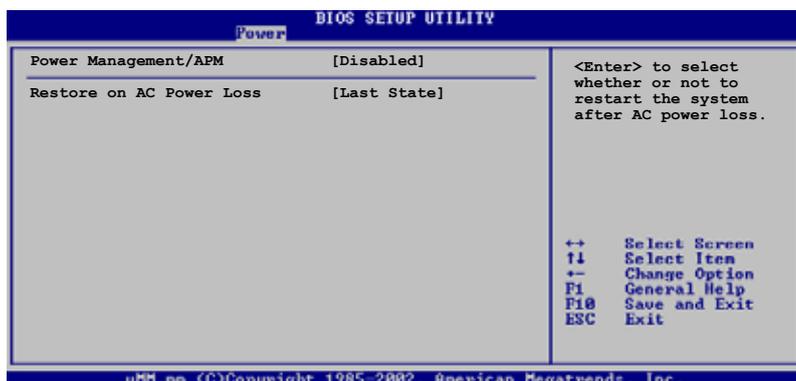
Power Management/APM [Disabled]

Allows you to enable or disable the motherboard Advance Power Management (APM) feature. Configuration options: [Enabled] [Disabled]

Restore on AC Power Loss [Last State]

When set to Power Off, the system goes into off state after an AC power loss. When set to Power On, the system goes on after an AC power loss. When set to Last State, the system goes into either off or on state, whatever the system state was before the AC power loss. Configuration options: [Power Off] [Power On] [Last State]

> The following items appear when the Power Management/APM is enabled.

Power Button Mode [On/Off]

Allows the system to go into On/Off mode or suspend mode when the power button is pressed. Configuration options: [On/Off] [Suspend]

Video Power Down Mode [Suspend]

Allows you to select the video power down mode. Configuration options: [Disabled] [Standby] [Suspend]

Green PC Monitor Power State [Standby]

Allows you to select the PC monitor power state. Configuration options: [Disabled] [Standby] [Suspend]

Force Throttle [Disabled]

Enables or disables the force to thermal throttling function. Configuration options: [Disabled] [Enabled]

Manual Throttle Ratio [50%]

Selects the duty cycle in throttle mode. Configuration options: [87.5%] [75.0%] [62.5%] [50%] [37.5%] [25%] [12.5%]

System Thermal [Disabled]

Enables or disables thermal to generate a power management event. Configuration options: [Disabled] [Enabled]

Thermal Throttle Ratio [50%]

Selects the duty cycle in throttle mode when the thermal override condition occurs. Configuration options: [87.5%] [75.0%] [62.5%] [50%] [37.5%] [25%] [12.5%]

Resume on PME# [Enabled]

When set to [Enabled], the system enables the PME to generate a wake event while the computer is in Soft-off mode.
Configuration options: [Disabled] [Enabled]

Resume On PCIE PME [Disabled]

Allows you to enable or disable the PCIE devices or Onboard Lan to generate a wake event. Configuration options: [Disabled] [Enabled]

Resume On Ring [Disabled]

Allows you to enable or disable the RI to generate a wake event. Configuration options: [Disabled] [Enabled]

Power On By PS/2 Keyboard [Disabled]

Allows you to disable or enable the PS/2 Power-On by keyboard feature. This feature requires an ATX power supply that provides at least 1A on the +5VSB lead. Configuration options: [Disabled] [Enabled]

Resume On PS/2 Mouse [Disabled]

When set to [Enabled], this parameter allows you to use the PS/2 mouse to turn on the system. This feature requires an ATX power supply that provides at least 1A on the +5VSB lead.
Configuration options: [Disabled] [Enabled]

Resume On RTC Alarm [Disabled]

Allows you to enable or disable RTC to generate a wake event. When this item is set to [Enabled], the items RTC Alarm Date, RTC Alarm Hour, RTC Alarm Minute, and RTC Alarm Second appear with set values.
Configuration options: [Disabled] [Enabled]

4.5.4 Hardware Monitor

```
                      BIOS SETUP UTILITY
              Power

  Hardware Monitor                              CPU1 Temperature

  CPU1 Temperature          [38°C/100°F]
  CPU2 Temperature          [41°C/105.5°F]
  MB Temperature            [47°C/114°F]

  CPU Fan1 Speed            [3884RPM]
  CPU Fan2 Speed            [3648RPM]
  Front Fan1 Speed          [1917RPM]
  Front Fan2 Speed          [N/A]
  Rear Fan1 Speed           [N/A]
  Rear Fan2 Speed           [N/A]

  Smart Fan Control         [Enabled]           ↔    Select Screen
  CPU Target Temperature    [045]               ↑↓   Select Item
  MB Target Temperature     [050]               +-   Change Option
                                                F1   General Help
  VCORE1 Voltage            [ 1.320V]           F10  Save and Exit
  VCORE2 Voltage            [ 1.320V]           ESC  Exit
  3.3V Voltage              [ 3.345V]

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```

Use the arrow down key to display additional items.

```
  5V Voltage                [ 5.094V]           F10  Save and Exit
  5VSB Voltage              [ 4.980V]           ESC  Exit
  VBAT Voltage              [ 3.120V]
  12V Voltage               [12.053V]

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```

CPU1/CPU2 Temperature [xxxºC/xxxºF]
MB Temperature [xxxºC/xxxºF]

The onboard hardware monitor automatically detects and displays the motherboard and CPU temperatures. Select [Ignored] if you do not wish to display the detected temperatures.

CPU Fan1/Fan2 Speed [xxxxRPM] or [Ignored]
Front Fan1/Fan2 Speed [xxxxRPM] or [Ignored]
Rear Fan1/Fan2 Speed [xxxxRPM] or [Ignored]

The onboard hardware monitor automatically detects and displays the CPU, front, and rear fan speed in rotations per minute (RPM). If the fan is not connected to the motherboard, the field shows N/A. Select [Ignored] if you do not wish to display the detected temperatures.

Smart Fan Control [Enabled]

Allows you to enable or disable the ASUS Smart Fan feature that smartly adjusts the fan speeds for more efficient system operation. Configuration options: [Disabled] [Enabled]

/ The **CPU Target Temperature** and **MB Target Temperature** items appear when you enabled the Smart Fan Control feature.

CPU Target Temperature [XXX]
MB Target Temperature [XXX]

Allows you to set the CPU and system threshold temperature before the Smart Fan Control is disabled.

VCORE1 Voltage, VCORE2 Voltage, 3.3V Voltage, 5V Voltage, 5VSB Voltage, VBAT Voltage, 12V Voltage

The onboard hardware monitor automatically detects the voltage output through the onboard voltage regulators.

4.6   Boot menu

The Boot menu items allow you to change the system boot options. Select
an item then press <Enter> to display the sub-menu.

```
                      BIOS SETUP UTILITY
  Main     Advanced    Power    Boot    Exit

 APM Configuration

 ▶  Boot Device Priority

 ▶  Boot Settings Configuration
 ▶  Security


                                          ←      Select Screen
                                          ↑↓     Select Item
                                          Enter  Go to Sub-screen
                                          F1     General Help
                                          F10    Save and Exit
                                          ESC    Exit

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```

4.6.1   Boot Device Priority

```
                      BIOS SETUP UTILITY
  Main     Advanced    Power    Boot    Exit

 Boot Device Priority                      Specifies the boot
 1st Boot Device       [1st FLOPPY DRIVE]  sequence from the
 2nd Boot Device       [PM-ST330620A]      available devices.
 3rd Boot Device       [PS-ASUS CD-S360]
                                           A device enclosed
                                           in parenthesis has
                                           been disabled in the
                                           corresponding type
                                           menu.


                                          ←      Select Screen
                                          ↑↓     Select Item
                                          Enter  Go to Sub-screen
                                          F1     General Help
                                          F10    Save and Exit
                                          ESC    Exit

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```

1st ~ xxth Boot Device [1st Floppy Drive]

These items specify the boot device priority sequence from the available
devices. The number of device items that appears on the screen depends
on the number of devices installed in the system.
Configuration options: [xxxxx Drive] [Disabled]

4.6.2 Boot Settings Configuration

```
                         BIOS SETUP UTILITY
                              Boot

  Boot Settings Configuration                    Allows BIOS to skip
                                                 certain tests while
  Quick Boot                  [Enabled]          booting. This will
  Full Screen Logo            [Disabled]         decrease the time
  AddOn ROM Display Mode       [Force BIOS]      needed to boot the
  Bootup Num-Lock              [On]              system.
  PS/2 Mouse Support          [Auto]
  Wait For 'F1' If Error      [Enabled]
  Hit 'DEL' Message Display   [Enabled]
  Interrupt 19 Capture        [Disabled]
```

Quick Boot [Enabled]

Enabling this item allows the BIOS to skip some power on self tests (POST) while booting to decrease the time needed to boot the system. When set to [Disabled], BIOS performs all the POST items.
Configuration options: [Disabled] [Enabled]

Full Screen Logo [Disabled]

Allows you to enable or disable the full screen logo display feature.
Configuration options: [Disabled] [Enabled]

Set this item to [Enabled] to use the ASUS MyLogo2™ feature.

Add On ROM Display Mode [Force BIOS]

Sets the display mode for option ROM.
Configuration options: [Force BIOS] [Keep Current]

Bootup Num-Lock [On]

Allows you to select the power-on state for the NumLock.
Configuration options: [Off] [On]

PS/2 Mouse Support [Auto]

Allows you to enable or disable support for PS/2 mouse.
Configuration options: [Disabled] [Enabled] [Auto]

Wait for 'F1' If Error [Enabled]

When set to Enabled, the system waits for the F1 key to be pressed when error occurs. Configuration options: [Disabled] [Enabled]

Hit 'DEL' Message Display [Enabled]

When set to Enabled, the system displays the message "Press DEL to run Setup" during POST. Configuration options: [Disabled] [Enabled]

Interrupt 19 Capture [Disabled]

When set to [Enabled], this function allows the option ROMs to trap Interrupt 19. Configuration options: [Disabled] [Enabled]

4.6.3 Security

The Security menu items allow you to change the system security settings. Select an item then press <Enter> to display the configuration options.

```
                    BIOS SETUP UTILITY
                        Boot

 Security Settings                          <Enter> to change
                                            password.
 Supervisor Password    : Not Installed     <Enter> again to
 User Password          : Not Installed     disabled password.

 Change Supervisor Password
 Change User Password




                                            ←    Select Screen
                                            ↑↓   Select Item
                                            +-   Change Option
                                            F1   General Help
                                            F10  Save and Exit
                                            ESC  Exit

          (C)Copyright 1985-2002, American Megatrends, Inc.
```
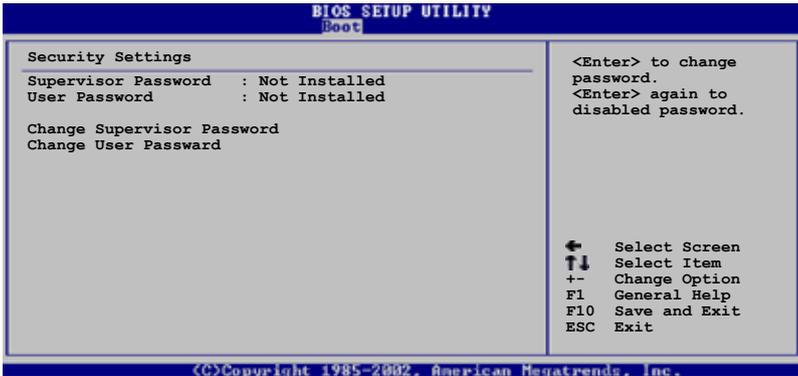
Change Supervisor Password

Select this item to set or change the supervisor password. The Supervisor Password item on top of the screen shows the default Not Installed. After you set a password, this item shows Installed.

To set a Supervisor Password:

1.   Select the Change Supervisor Password item, then press <Enter>.
2.   From the password box, type a password composed of at least six letters and/or numbers, then press <Enter>.
3.   Confirm the password when prompted.

The message "Password Installed" appears after you successfully set your password.

To change the supervisor password, follow the same steps as in setting a user password.

To clear the supervisor password, select the Change Supervisor Password then press <Enter>. The message "Password Uninstalled" appears.

> If you forget your BIOS password, you can clear it by erasing the CMOS Real Time Clock (RTC) RAM. See section "2.6 Jumpers" for information on how to erase the RTC RAM.

After you have set a supervisor password, the other items appear to allow you to change other security settings.

```
                        BIOS SETUP UTILITY
                        Boot

 Security Settings                              <Enter> to change
                                                password.
 Supervisor Password    : Not Installed         <Enter> again to
 User Password          : Not Installed         disabled password.

 Change Supervisor Password
 User Access Level               [Full Access]
 Change User Password
 Clear User Password
 Password Check                  [Setup]

                                                ←→    Select Screen
                                                ↑↓    Select Item
                                                Enter Change
                                                F1    General Help
                                                F10   Save and Exit
                                                ESC   Exit

        v02.58 (C)Copyright 1985-2002, American Megatrends, Inc.
```

User Access Level [Full Access]

This item allows you to select the access restriction to the Setup items. Configuration options: [No Access] [View Only] [Limited] [Full Access]

No Access prevents user access to the Setup utility.

View Only allows access but does not allow change to any field.

Limited allows changes only to selected fields, such as Date and Time.

Full Access allows viewing and changing all the fields in the Setup utility.

Change User Password

Select this item to set or change the user password. The User Password item on top of the screen shows the default Not Installed. After you set a password, this item shows Installed.

To set a User Password:

1. Select the Change User Password item and press <Enter>.
2. On the password box that appears, type a password composed of at least six letters and/or numbers, then press <Enter>.
3. Confirm the password when prompted.

The message "Password Installed" appears after you set your password successfully.

To change the user password, follow the same steps as in setting a user password.

Clear User Password

Select this item to clear the user password.

Password Check [Setup]

When set to [Setup], BIOS checks for user password when accessing the Setup utility. When set to [Always], BIOS checks for user password both when accessing Setup and booting the system.
Configuration options: [Setup] [Always]

4.7 Exit menu

The Exit menu items allow you to load the optimal or failsafe default values for the BIOS items, and save or discard your changes to the BIOS items.

```
                           BIOS SETUP UTILITY
   Main    Advanced    Power    Boot    Exit

  Exit Options                                Exit system setup
  Exit & Save Changes                         after saving the
  Exit & Discard Changes                      changes.
  Discard Changes
                                              F10 key can be used
  Load Setup Defaults                         for this operation.




                                              ←     Select Screen
                                              ↑↓    Select Item
                                              Enter Go to Sub-screen
                                              F1    General Help
                                              F10   Save and Exit
                                              ESC   Exit

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```
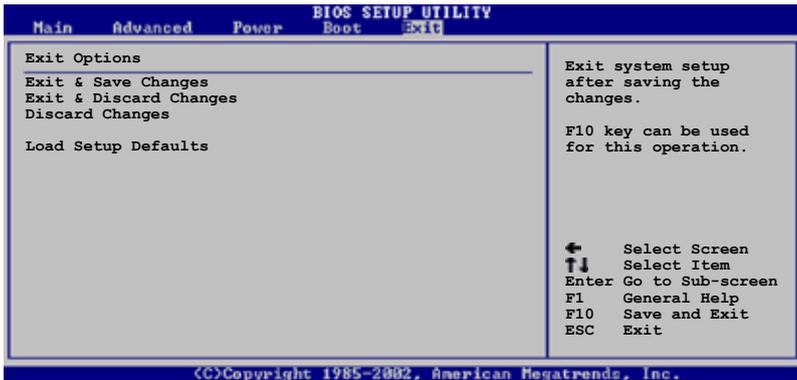
Pressing <Esc> does not immediately exit this menu. Select one of the options from this menu or <F10> from the legend bar to exit.

Exit & Save Changes

Once you are finished making your selections, choose this option from the Exit menu to ensure the values you selected are saved to the CMOS RAM. An onboard backup battery sustains the CMOS RAM so it stays on even when the computer is turned off. When you select this option, a confirmation window appears. Select **Ok** to save the changes and exit.

If you attempt to exit the Setup program without saving your changes, the program prompts you with a message asking if you want to save your changes before exiting. Press <Enter> to save the changes while exiting.

Exit & Discard Changes

Select this option only if you do not want to save the changes that you made to the Setup program. If you made changes to fields other than System Date, System Time, and Password, the BIOS asks for a confirmation before exiting.

Discard Changes

Allows you to discard the selections you made and restore the previously saved values. After selecting this option, a confirmation appears. Select **Ok** to discard any changes and load the previously saved values.

Load Setup Defaults

Allows you to load the default values for each of the parameters on the Setup menus. When you select this option or if you press <F5>, a confirmation window appears. Select **Ok** to load default values. Select **Exit & Save** Changes or make other changes before saving the values to the non-volatile RAM.

This chapter provides information on RAID configurations for this motherboard.

RAID support 5

5

Chapter summary

5.1   Setting up RAID

The motherboard comes with the NVIDIA® MCP55 Professional and Silicon Image Sil3132 SATA RAID controller that allows you to configure IDE and Serial ATA hard disk drives as RAID sets. The motherboard supports the following RAID configurations:

5.1.1   RAID definitions

RAID 0 *(Data striping)* optimizes two identical hard disk drives to read and write data in parallel, interleaved stacks. Two hard disks perform the same work as a single drive but at a sustained data transfer rate, double that of a single disk alone, thus improving data access and storage. Use of two new identical hard disk drives is required for this setup.

RAID 1 *(Data mirroring)* copies and maintains an identical image of data from one drive to a second drive. If one drive fails, the disk array management software directs all applications to the surviving drive as it contains a complete copy of the data in the other drive. This RAID configuration provides data protection and increases fault tolerance to the entire system. Use two new drives or use an existing drive and a new drive for this setup. The new drive must be of the same size or larger than the existing drive.

RAID 0+1 is *data striping* and *data mirroring* combined without parity (redundancy data) having to be calculated and written. With the RAID 0+1 configuration you get all the benefits of both RAID 0 and RAID 1 configurations. Use four new hard disk drives or use an existing drive and three new drives for this setup.

JBOD *(Spanning)* stands for **Just a Bunch of Disks** and refers to hard disk drives that are not yet configured as a RAID set. This configuration stores the same data redundantly on multiple disks that appear as a single disk on the operating system. Spanning does not deliver any advantage over using separate disks independently and does not provide fault tolerance or other RAID performance benefits.

RAID 5 stripes both data and parity information across three or more hard disk drives. Among the advantages of RAID 5 configuration include better HDD performance, fault tolerance, and higher storage capacity. The RAID 5 configuration is best suited for transaction processing, relational database applications, enterprise resource planning, and other business systems. Use a minimum of three identical hard disk drives for this setup.

> If you want to boot the system from a hard disk drive included in a created RAID set, copy first the RAID driver from the support CD to a floppy disk before you install an operating system to the selected hard disk drive. Refer to Chapter 6 for details.

5.1.2 Installing hard disk drives

The motherboard supports Serial ATA hard disk drives for RAID set configuration. For optimal performance, install identical drives of the same model and capacity when creating a disk array.

To install the SATA hard disks for RAID configuration:

1. Install the SATA hard disks into the drive bays following the instructions in the system user guide.
2. Connect a SATA signal cable to the signal connector at the back of each drive and to the SATA connector on the motherboard.
3. Connect a SATA power cable to the power connector on each drive.

5.1.3 RAID configuration utility

You can create a RAID set using the utility embedded in each RAID controller. For example, you can use the NVIDIA® RAID Utility if you installed IDE and/or SATA hard disk drives to the IDE and/or SATA connectors supported by the NVIDIA® MCP55 Professional chip. Refer to the succeeding sections for details on how to enter the RAID configuration utility.

5.2 NVIDIA® RAID configurations

The motherboard includes a high performance SATA RAID controller integrated in the NVIDIA® MCP55 Professional chip. The RAID controller supports RAID 0, RAID 1, RAID 0+1, RAID 5, and JBOD configurations using the six Serial ATA ports.

5.2.1 Setting the BIOS RAID items

After installing the hard disk drives, make sure to set the necessary RAID items in the BIOS before setting your RAID configuration.

To set the BIOS RAID items:

1. Enter the BIOS Setup during POST.
2. Go to the **Main Menu**, select **IDE Configuration**, then press <Enter>.
3. Set the **nVidia RAID Option ROM** item to [Enabled], then press <Enter>. The master and slave drive list appears.
4. Enable the drives you want to set as RAID.
5. Save your changes, then exit the BIOS Setup.

- • Refer to Chapter 4 for details on entering and navigating through the BIOS Setup.

- • The RAID BIOS setup screens shown in this section are for reference only, and may not exactly match the items on your screen.

5.2.2 Entering the NVIDIA® RAID Utility

To enter the NVIDIA® RAID Utility:

1. Restart the computer.
2. During POST, press <F10> to display the utility main menu.

```
              NVIDIA RAID Utility   Oct 5 2004
                   - Define a New Array -

  RAID Mode: Striping              Striping Block: Optimal

  Free Disks                       Array Disks
  Loc     Disk Model Name          Loc     Disk Model Name

  1.0.M   XXXXXXXXXXXXXXXXXX
  1.1.M   XXXXXXXXXXXXXXXXXX       [→] Add
  2.0.M   XXXXXXXXXXXXXXXXXX
  2.1.M   XXXXXXXXXXXXXXXXXX


                                   [←] Del



   [F6] Back  [F7] Finish  [TAB] Navigate  [↑↓] Select  [ENTER] Popup
```
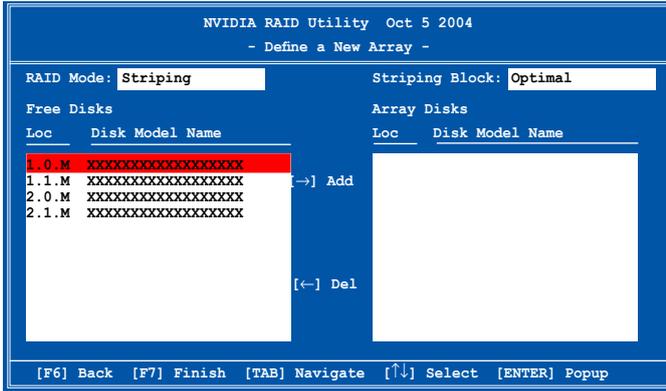
At the bottom section of the screen are the navigation keys. These keys allow you to move through and select menu options.

```
   [F6] Back  [F7] Finish  [TAB] Navigate  [↑↓] Select  [ENTER] Popup
```

The navigation keys vary depending on the menu level or option.

5.2.3 Creating a RAID 0 set (Stripe)

To create a RAID 0 set:

1. From the Define a New Array menu, select **RAID Mode**, then press <Enter>. A pop-up menu appears.

2. Use the up or down arrow keys to select **Striping**, then press <Enter>.

```
   Mirroring
   Striping
   Stripe Mirroring
   Spanning
   RAID 5
```

3. Press <TAB> to move to the Striping Block option, then press <Enter>.

4. Use the up or down arrow keys to select the stripe block size appropriate to your drive usage, then press <Enter>.

```
   8K      ↑
   16K
   32K
   64K
   128K
   Optim   ↓
```
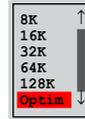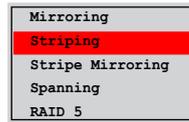
   The available stripe size values range from 8KB to 128KB. The default stripe size is 128KB. You must choose the stripe size value based on the projected drive usage. For low disk usage, select 8KB/16KB. For typical disk usage, select 64KB. Select 128KB for performance disk usage.

> **TIP**: For server systems, we recommend using a lower array block size. For multimedia computer systems used mainly for audio and video editing, we recommend a higher array block size for optimum performance.

5. Press <TAB> to move to the Free Disks section.

6. Highlight the hard disk drives that you want to add in the RAID set, then press the right arrow key to select. The selected hard disk drives appear in the Array Disks section. Repeat the process until all desired hard disk drives are added.

```
                    NVIDIA RAID Utility  Oct 5 2004
                        - Define a New Array -

    RAID Mode: Striping              Striping Block: Optimal

    Free Disks                       Array Disks
    Loc     Disk Model Name          Loc    Disk Model Name

    1.0.M   XXXXXXXXXXXXXXXXXXX       1.0.M  XXXXXXXXXXXXXXXXXX
    1.1.M   XXXXXXXXXXXXXXXXXXX   [→] Add
    2.0.M   XXXXXXXXXXXXXXXXXXX
    2.1.M   XXXXXXXXXXXXXXXXXXX


                                  [←] Del


    [F6] Back  [F7] Finish  [TAB] Navigate  [↑↓] Select  [ENTER] Popup
```
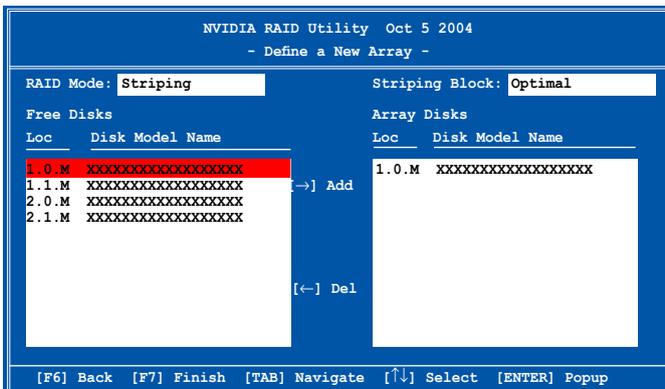
7. After selecting the hard disk drives, press
    <F7> to create the RAID 0 set. A pop-up
    window appears.

```
          Clear disk data?
      [Y] YES      [N] Cancel
```

8. Press <Y> to delete all data from the hard disk drives, or <N> to
    continue creating the RAID set without deleting the data on the disks.

    You will lose all data on the drives if you clear the disk data!

9. The utility displays the created RAID 0 set. Press <Ctrl> + <X> to save
    your settings and exit the utility.

```
              NVIDIA RAID Utility   Oct 5 2004
                      - Array List -


     Boot   Id   Status    Vendor    Array Model Name

     No     4    Healthy   NVIDIA    STRIPING   XXX.XXG










   [Ctrl-X]Exit   [↑↓]Select   [B]Set Boot   [N]New Array   [ENTER]Detail
```

5.2.4 Creating a RAID 1 set (Mirror)

To create a RAID 1 set:

1. From the Define a New Array menu, select **RAID Mode**, then press <Enter>. A pop-up menu appears.

2. Use the up or down arrow keys to select **Mirroring**, then press <Enter>.
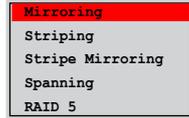
```
  Mirroring
  Striping
  Stripe Mirroring
  Spanning
  RAID 5
```

5. Press <TAB> to move to the Free Disks section.

6. Highlight the hard disk drives that you want to add in the RAID set, then press the right arrow key to select. The selected hard disk drives appear in the Array Disks section. Repeat the process until all desired hard disk drives are added.

```
                  NVIDIA RAID Utility   Oct 5 2004
                       - Define a New Array -

  RAID Mode: Mirroring              Striping Block: Optimal

  Free Disks                        Array Disks

  Loc     Disk Model Name           Loc     Disk Model Name

  1.0.M   XXXXXXXXXXXXXXXXXX         1.0.M   XXXXXXXXXXXXXXXXXX
  1.1.M   XXXXXXXXXXXXXXXXXX   →] Add
  2.0.M   XXXXXXXXXXXXXXXXXX
  2.1.M   XXXXXXXXXXXXXXXXXX


                                [←] Del



  [F6] Back   [F7] Finish   [TAB] Navigate   [↑↓] Select   [ENTER] Popup
```
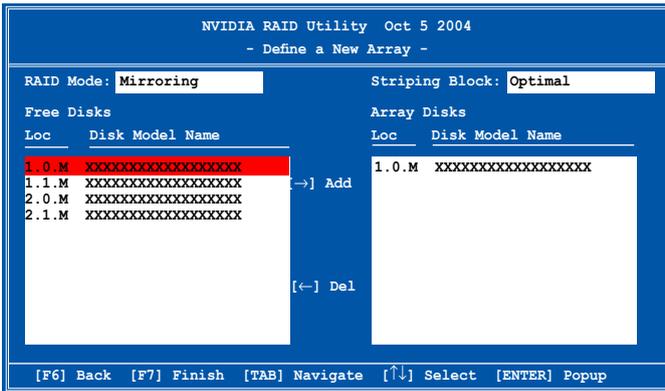
7. After selecting the hard disk drives, press <F7> to create the RAID 1 set. A pop-up window appears.

```
       Clear disk data?

  [Y] YES      [N] Cancel
```

8. Press <Y> to delete all data from the hard disk drives and continue creating the RAID set. Press <N> to backup existing data to a target hard disk drive.
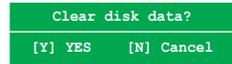
⚠️ You will lose all data on the drives if you clear the disk data!

9. The utility displays the created RAID 1 set. Press <Ctrl> + <X> to save your settings and exit the utility.

5.2.5 Rebuilding a RAID set

To rebuild a RAID set:

1. From the Array List, use the up or down arrow keys to select the RAID set you want to rebuild, then press <Enter>. The RAID set details appear.

```
                 NVIDIA RAID Utility   Oct 5 2004
                        - Array List -

            Boot   Id  Status    Vendor    Array Model Name

            No     4   Healthy   NVIDIA    STRIPING   XXX.XXG
            No     3   Healthy   NVIDIA    MIRRORING XXX.XXG














     [Ctrl-X]Exit  [↑↓]Select  [B]Set Boot  [N]New Array  [ENTER]Detail
```
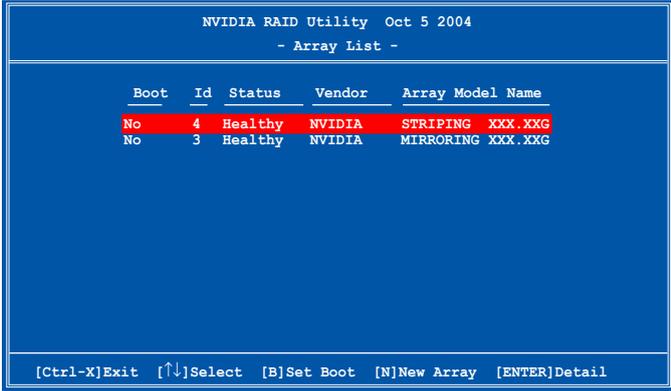
2. Press <Enter> then press <R>.

3. Use the up or down arrow keys to select the RAID set you want to rebuild, then press <F7>. A confirmation message appears.

```
                   Array 1 : NVIDIA MIRROR  XXX.XXG
                          - Array Detail -

     RAID Mode: Striping
       Striping Width: 1           Striping Block: 64K

       Adapt   Channel   M/S      Index   Disk Model Name          Capacity

       2       1         Master   0       XXXXXXXXXXXXXXXXX         XXX.XXGB
       1       0         Master   1       XXXXXXXXXXXXXXXXX         XXX.XXGB









              [↑↓] Select [F6] Back  [F7] Finish
```
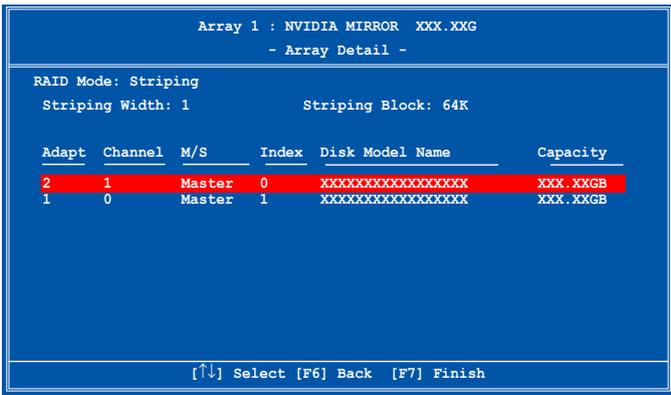
4. Press <Enter> to start rebuilding the array, or <Esc> to cancel. The Array List screen displays the RAID set after rebuilding.

```
         Rebuild array?
    [Enter] OK    [Esc] Cancel
```
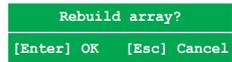
5.2.6 Deleting a RAID array

To delete a RAID array:

1.   From the Array List, use the up or down arrow keys to select the RAID set you want to delete, then press <Enter>. The RAID set details appear.

```
                   NVIDIA RAID Utility  Oct 5 2004
                          - Array List -


          Boot   Id  Status     Vendor     Array Model Name

          No     4   Healthy    NVIDIA     STRIPING  XXX.XXG
          No     3   Healthy    NVIDIA     MIRRORING XXX.XXG










          [R] Rebuild  [D] Delete  [C] Clear Disk  [ENTER] Return
```
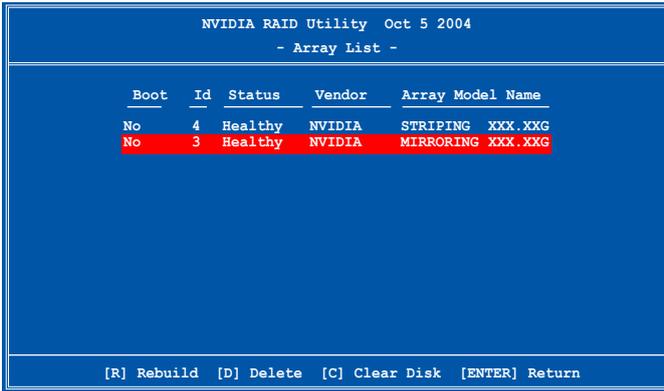
2.   When the array details appear, press <D> to delete the RAID set. A confirmation message appears.

3.   Press <Y> to delete the array, or press <N> to cancel.

```
            Delete this array?

          [Y] Yes    [N] Cancel
```
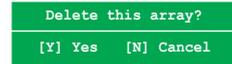
⚠️ You will lose all data on the drives if you delete a disk array!

4.   The Define a New Array menu appears when you press <Y>. Create a new RAID set following the instructions in the previous sections.

5.2.7 Clearing the disk data

⚠️ You will lose all data when you clear a disk!

To clear the disk data:

1. From the Array List, use the up or down arrow keys to select a RAID set, then press <Enter>. The RAID set details appear.

```
                NVIDIA RAID Utility   Oct 5 2004
                          - Array List -


            Boot   Id   Status    Vendor    Array Model Name

            No     4    Healthy   NVIDIA    STRIPING   XXX.XXG
            No     3    Healthy   NVIDIA    MIRRORING XXX.XXG








        [Ctrl-X]Exit   [↑↓]Select   [B]Set Boot   [N]New Array   [ENTER]Detail
```

2. When the array details appear, select the hard disk drive you want to clear, then press <C>. A confirmation message appears.

```
                Array 1 : NVIDIA MIRROR   XXX.XXG
                          - Array Detail -

        RAID Mode: Striping
          Striping Width: 1              Striping Block: 64K


          Adapt   Channel   M/S       Index   Disk Model Name          Capacity

          2       1         Master    0       XXXXXXXXXXXXXXXXX         XXX.XXGB
          1       0         Master    1       XXXXXXXXXXXXXXXXX         XXX.XXGB








                [R] Rebuild   [D] Delete   [C] Clear Disk   [ENTER] Return
```

3. Press <Y> to clear the disk data, or press <N> to cancel. Press <C> to clear disk. The following confirmation message appears.

```
         Clear disk data?

    [Y] Yes     [N] Cancel
```

5.3   Silicon Image RAID configurations

The Silicon Image Sil3132 RAID controller supports RAID 0 and RAID 1 configurations. Use the Silicon Image RAID utility to configure a disk array.

5.3.1   Setting the BIOS RAID items

After installing the hard disk drives, make sure to set the necessary RAID items in the BIOS before setting your RAID configuration.

To set the BIOS RAID items:

1. Boot the system and press <Del> during the Power-On Self-Test (POST) to enter the BIOS Setup Utility.
2. From the **Advanced > Onboard Devices Configuration menu** item in the BIOS set the **Onboard Sil3132 SATALink** item to RAID Mode and set the **Onboard Serial-ATA BOOTROM** item to Enabled. See section "4.4.5 Onboard Devices Configuration" for details.
3. Save your changes and Exit Setup.

Launching the Silicon Image Array Management Software

Launch the Silicon Image Array Management software from Windows® XP by clicking the **Start** button and selecting **All Programs > Silicon Image > Sam**

For details on the Silicon Image SATARaid™ RAID configuration, refer to the "Sil3132 User's Manual" in your motherboard support CD:
  \Drivers\Sil3132\Raid\SATARAID5-UserGuide_v1.40.pdf

5.3.2 Entering the Silicon Image BIOS RAID Configuration Utility

To enter the Silicon Image BIOS RAID configuration utility:

1. Boot up your computer.
2. During POST, press <Ctrl> + <S> or <F4>.

> The RAID BIOS setup screens shown in this section are for reference only, and may not exactly match the items on your screen.

```
         RAID Configuration Utility - Silicon Image Inc. Copyright (C) 2004

 ┌ MAIN MENU ─────────────────────────────┐   ┌ HELP ──────────────────────────┐
 │                                        │   │                                │
 │  Create RAID set                       │   │  Press "Enter" to create       │
 │  Delete RAID set                       │   │  RAID set                      │
 │  Rebuild Raid1 set                     │   │                                │
 │  Resolve Conflicts                     │   │                                │
 │  Low Level Format                      │   │                                │
 │  Logical Drive Info                    │   │                                │
 │                                        │   │                                │
 └────────────────────────────────────────┘   └────────────────────────────────┘

 ┌ PHYSICAL DRIVE ────────────────────────┐   ┌ LOGICAL DRIVE ─────────────────┐
 │                                        │   │                                │
 │  0  XXXXXXXXXXX          XXXXXXMB       │   │  STXXXXXXXXX         XXXXXXMB   │
 │  1  XXXXXXXXXXX          XXXXXXMB       │   │  STXXXXXXXXX         XXXXXXMB   │
 │                                        │   │                                │
 │                                        │   │                                │
 │                                        │   │                                │
 │                                        │   │                                │
 └────────────────────────────────────────┘   └────────────────────────────────┘

 ↑↓:Select Menu    ESC:Previous Menu    Enter:Select    Ctrl-E:Exit
```
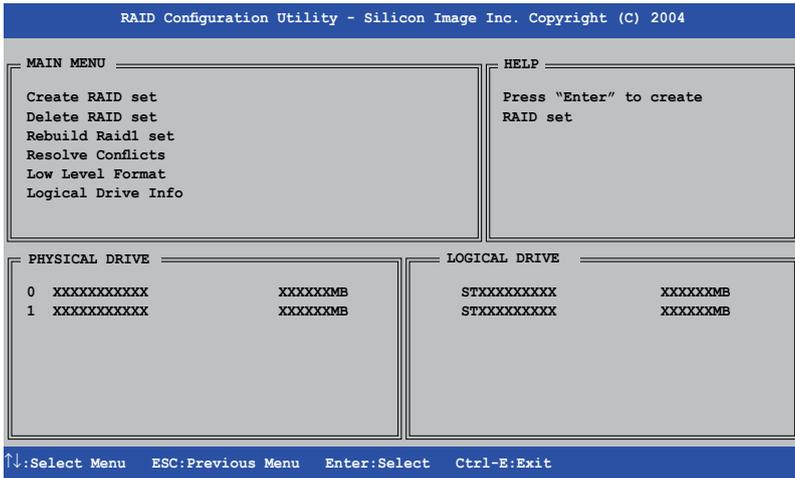
The Main Menu on the upper left corner allows you to select an operation to be performed. The Main Menu options include the following:

Create RAID set - creates a new legacy RAID set or allocates spare drives.

Delete RAID set - deletes a RAID set or deallocates a spare drive.

Rebuild RAID1 set - rebuilds a RAID 1 set (e.g., swapped drives).

Resolve Conflicts - automatically restores disrupted drives on a RAID set.

Low Level Format - creates a pattern of reference marks on a drive.
        Formatting the disks erases all data previously stored in the drive.

Logical Drive Info - shows the current configuration of each RAID set.
On the upper right corner of the screen is the Help message box. The message describes the function of each menu item. At the bottom of the screen is the legend box. The keys on the legend box allow you to navigate through the setup menu options. The following lists the keys found in the legend box and their corresponding functions.

↑, ↓   :   Select/Move to the next item
ESC   :   Previous Menu
**Enter**   :   Select
Ctrl-E :   Exit

5.3.3 Creating a RAID 0 set (Striped)

To create a RAID set:

1. From the Silicon Image configuration utility main menu, select **Create RAID set** then press <Enter> to display an option menu.

```
╔═ MAIN MENU ═════════════════════════════════╗
║                                              ║
║  Create RAID set                             ║
║  Delete RAID set      ┌──────────────────┐   ║
║  Rebuild Raid1 set    │      RAID0       │   ║
║  Resolve Conflicts    │      RAID1       │   ║
║  Low Level Format     │   SPARE DRIVE    │   ║
║  Logical Drive Info   │  CONCATENATION   │   ║
║                       │                  │   ║
║                       └──────────────────┘   ║
║                                              ║
╚══════════════════════════════════════════════╝
```
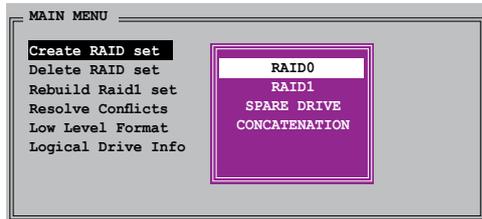
2. Select **RAID 0** then press <Enter> to display the following.
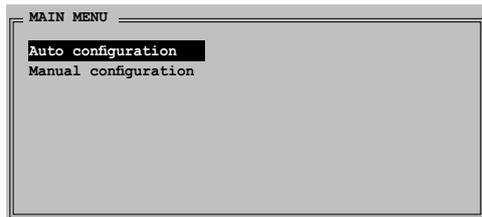
```
╔═ MAIN MENU ═════════════════════════════════╗
║                                              ║
║  Auto configuration                          ║
║  Manual configuration                        ║
║                                              ║
║                                              ║
║                                              ║
║                                              ║
║                                              ║
╚══════════════════════════════════════════════╝
```

3. Select your desired method of configuration.

   Auto configuration

   a. Select **Auto Configuration** and press <Enter>.

   b. The utility prompts a message to input the RAID size, use the up or down arrow keys to set the RAID size then press <Enter>.

   c. Press <Y> to confirm or <N> to return to the Main Menu.

   > By default, Auto configuration sets the stripe size to 64K and sets the logical drives based on the physical drives installed.

   Manual configuration

   a. Select Manual configuration and press <Enter>. The following pop-up menu appears.

   b. Use the up or down arrow keys to select a chunk size appropriate to your drive usage then press <Enter>.

```
╔═ MAIN MENU ═════════════════════════════════╗
║                                              ║
║  Auto configuration   ┌──────────────┐       ║
║  Manual configuration │  chunk size  │       ║
║                       │      4K      │       ║
║                       │      8K      │       ║
║                       │     16K      │       ║
║                       │     32K      │       ║
║                       │     64K      │       ║
║                       │    128K      │       ║
║                       └──────────────┘       ║
╚══════════════════════════════════════════════╝
```
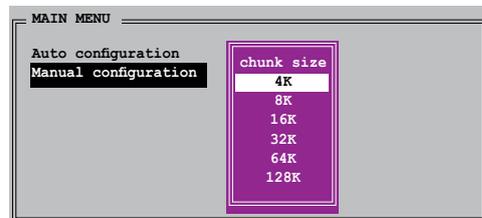
TIP: For server systems, we recommend using a lower array chunk size. For multimedia computer systems used mainly for audio and video editing, we recommend a higher array chunk size for optimum performance.

c. The selection bar moves to the Physical Drive menu. Using the up or down arrow keys, select a drive then press <Enter> to set the first drive of the RAID set.

```
┌ PHYSICAL DRIVE ──────────────────────┐
│                                       │
│  0  XXXXXXXXXXX              XXXXXXMB  │
│  1  XXXXXXXXXXX              XXXXXXMB  │
│                                       │
│                                       │
│                                       │
│                                       │
│                                       │
│                                       │
└───────────────────────────────────────┘
```
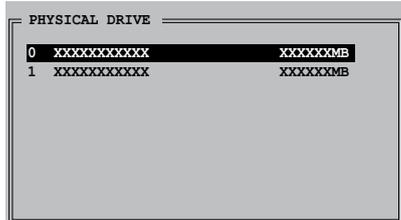
d. Repeat step c to set the second drive. The number of available drives depend on the installed and enabled physical drives in the system.

e. The utility prompts a message to input the RAID size, use the up or down arrow keys to set the RAID size then press <Enter>.

f. Press <Y> to confirm or <N> to return to the Main Menu.

5.3.4 Creating a RAID 1 set (Mirrored)

To create a RAID 1 set:

1. From the Silicon Image configuration utility main menu, select **Create RAID set** then press <Enter>. The following sub-menu appears.

```
┌ MAIN MENU ──────────────────────────────┐
│                                          │
│  Create RAID set                         │
│  Delete RAID set      ┌──────────────┐   │
│  Rebuild Raid1 set    │    RAID0      │   │
│  Resolve Conflicts    │    RAID1      │   │
│  Low Level Format     │  SPARE DRIVE  │   │
│  Logical Drive Info   │ CONCATENATION │   │
│                       └──────────────┘   │
│                                          │
└──────────────────────────────────────────┘
```

2. Select **RAID 1** then press <Enter> to display the following.
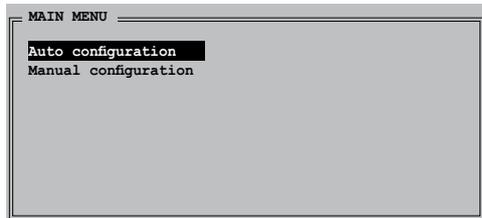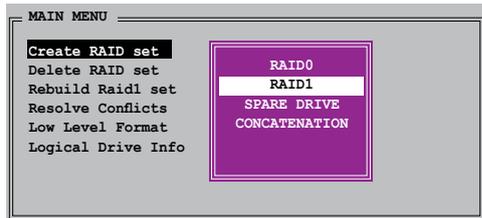
```
┌ MAIN MENU ──────────────────────────────┐
│                                          │
│  Auto configuration                      │
│  Manual configuration                    │
│                                          │
│                                          │
│                                          │
│                                          │
│                                          │
└──────────────────────────────────────────┘
```

3. Select your desired method of configuration.

   Auto configuration

   a. Select **Auto Configuration** then press <Enter>.

   b. The utility prompts a message to input the RAID size, use the up or down arrow keys to set the RAID size then press <Enter>.

   c. Press <Y> to confirm or <N> to return to the Main Menu.

   - Auto-configuration creates a RAID 1 set without a backup copy of the current source disk data.

   - When migrating a single hard disk drive to a RAID 1 set, use of the Manual configuration is recommended.

   Manual configuration

   a. Select **Manual configuration** and press <Enter>. The selection bar moves to the Physical Drives menu.

   b. Using the up or down arrow keys, select the *source drive* and press <Enter>.

```
┌─ PHYSICAL DRIVE ────────────────────────────┐
│                                             │
│  0   XXXXXXXXXXX              XXXXXXMB       │
│  1   XXXXXXXXXXX              XXXXXXMB       │
│                                             │
│                                             │
│                                             │
└─────────────────────────────────────────────┘
```

   c. Repeat step b to select the *target drive*.

   d. After selecting the source and target drives, the following pop-up menu appears.

```
┌─ MAIN MENU ─────────────────────────────────┐
│                                             │
│  Auto configuration                         │
│  Manual configuration                       │
│                    ┌──────────────────────┐ │
│                    │  Create with data copy│ │
│                    │  Create without data copy│
│                    └──────────────────────┘ │
└─────────────────────────────────────────────┘
```
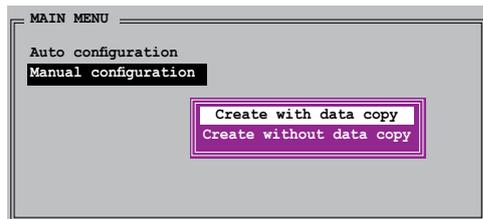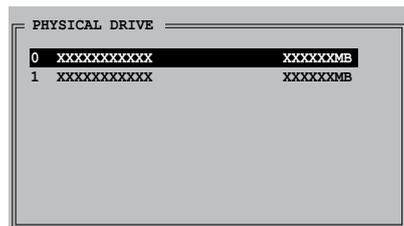
   - The **Create with data copy** option allows you to copy the current data from the source drive to the mirror drive.

   - Select **Create with data copy** if you have important data in your source drive.

   - The **Create without data copy** option disables the disk copy function of the Mirrored set.

   - If you selected **Create without data copy**, the RAID 1 set must be repartitioned and reformatted to guarantee the consistency of its contents.

e. If you selected
    Create with data
    copy, the following
    pop-up menu
    appears.

```
┌─ MAIN MENU ──────────────────────────────┐
│                                          │
│  Auto configuration                      │
│  Manual configuration   ┌──────────────┐ │
│                         │  online copy │ │
│                         │  offline copy │ │
│                         └──────────────┘ │
│                                          │
│                                          │
│                                          │
└──────────────────────────────────────────┘
```
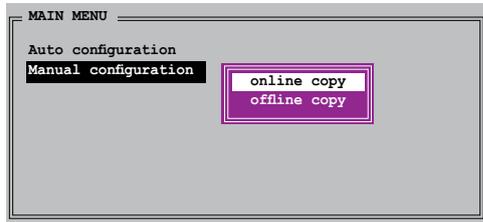
The **online copy** option automatically copies the data to the target drives on the background while writing to the source drives. The **offline copy** option allows you to copy the contents of the source drive to the target drives now.

f. Use the up or down arrow keys to select desired copy method, then press <Enter>.

g. The utility prompts a message to input the RAID size, use the up or down arrow keys to set the RAID size then press <Enter>.

h. Press <Y> to confirm or <N> to return to the Main Menu.

A copy progress appears if you previously selected **offline copy**.

5.3.5 Creating a CONCATENATION set

To create a CONCATENATION set:

1. From the Silicon Image configuration utility main menu, select **Create RAID set** then press <Enter>.

2. From the sub-menu Select **CONCATENATION** then press <Enter>.

```
┌─ MAIN MENU ──────────────────────────────┐
│                                          │
│   Create RAID set      ┌──────────────┐  │
│   Delete RAID set      │    RAID0     │  │
│   Rebuild Raid1 set    │    RAID1     │  │
│   Resolve Conflicts    │  SPARE DRIVE │  │
│   Low Level Format     │ CONCATENATION│  │
│   Logical Drive Info   └──────────────┘  │
│                                          │
└──────────────────────────────────────────┘
```
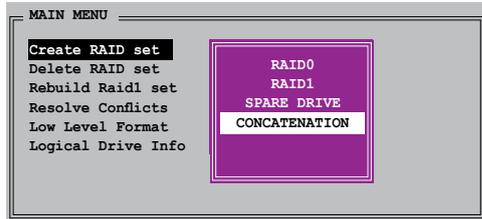
3. The selection bar moves to the Physical Drive menu. Using the up or down arrow keys, select a drive then press <Enter> to set a drive for the RAID set.

4. The utility prompts a message to input the RAID size, use the up or down arrow keys to set the RAID size then press <Enter>.

```
┌─ PHYSICAL DRIVE ─────────────────────────┐
│                                          │
│  0  XXXXXXXXXXX            XXXXXXMB       │
│  1  XXXXXXXXXXX            XXXXXXMB       │
│                                          │
│                                          │
│                                          │
└──────────────────────────────────────────┘
```
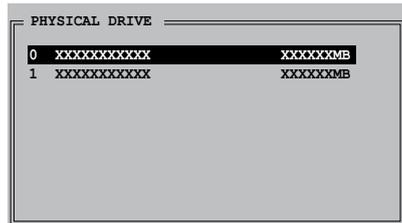
5. Press <Y> to confirm or <N> to return to the Main Menu.

> • Configure a CONCATENATION set when using a single Serial ATA drive; otherwise, the system will not recognize the drive.
>
> • You can also create a RAID set using the SATARAID5 GUI utility under a Windows® environment.

This chapter provides information on
RAID, LAN and VGA driver installation
for this motherboard.

Driver installation 6

Chapter summary

6.1 RAID driver installation

After creating the RAID sets for your workstation system, you are now ready to install an operating system to the independent hard disk drive or bootable array. This part provides instructions on how to install the RAID controller drivers during OS installation.

6.1.1 Creating a RAID driver disk

✎ You may have to use another system to create the RAID driver disk from the system/motherboard support CD or from the Internet.

A floppy disk with the RAID driver is required when installing Windows® XP or Red Hat® Enterprise ver. 4.0/SuSE operating system on a hard disk drive that is included in a RAID set. You can create a RAID driver disk in DOS (using the Makedisk application in the support CD).

To create a RAID driver disk in DOS environment:

1. Place the motherboard support CD in the optical drive.
2. Restart the computer, then enter the BIOS Setup.
3. Select the optical drive as the first boot priority to boot from the support CD. Save your changes, then exit the BIOS Setup.
4. Restart the computer.
5. Press any key when prompted to boot from CD.

```
Loading FreeDOS FAT KERNEL GO!
Press any key to boot from CDROM...
```

The Makedisk menu appears.

```
A) FreeDOS command prompt
B) Create Silicon Image 3132 Serial ATA miniport for Win32 driver disk
C) Create Silicon Image 3132 Serial ATA miniport for Win64 driver disk
D) Create Silicon Image 3132 SATA SoftRAID 5 miniport Win32 driver disk
E) Create Silicon Image 3132 SATA SoftRAID 5 miniport Win64 driver disk
F) Create NVIDIA nForce(TM) MCP55 RAID WinXP 32 bit driver disk
G) Create NVIDIA nForce(TM) MCP55 RAID WinXP 64 bit driver disk
Please choose A To G:
```

6. Place a blank, high-density floppy disk to the floppy disk drive, then select the type of RAID driver disk you want to create by typing the number before the option.

7.	Press <Enter>.

8.	Follow screen instructions to create the driver disk.

Windows® XP

To create a RAID driver disk in Windows® XP environment:

1.	Restart the system from the hard disk drive, then place the system/ motherboard support CD in the optical drive.

2.	Browse the contents of the support CD to locate the driver disk utility. The Windows XP 32-bit and 64-bit OS RAID driver disk for the NVIDIA™ MCP55 are located in:

	\Drivers\nvidia\mcp55\Makedisk

	The Windows XP 32-bit and 64-bit OS RAID driver disk for the Silicon™ image 3132 are located in:

	RAID mode: \Drivers\Sil3132\Makedisk\Raid
	Non-RAID mode: \Drivers\Sil3132\Makedisk\Non-raid

3.	Insert a formatted high-density floppy disk to the floppy disk drive.

4.	Follow screen instructions to complete the process.

5.	After creating a RAID driver disk, eject the floppy disk, then write-protect it to prevent computer virus infection.

6.1.2 Installing the RAID controller driver

Windows® XP OS

During Windows® XP OS installation

To install the RAID controller driver when installing Windows® XP OS:

1. Boot the computer using the Windows® XP installation CD. The Windows® XP Setup starts.
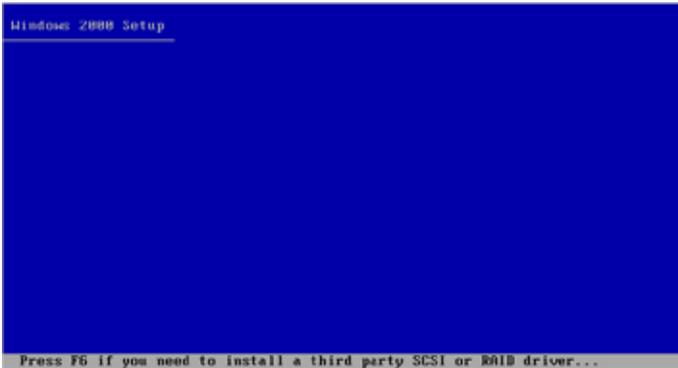
2. Press <F6> when the message **"Press F6 if you need to install a third party SCSI or RAID driver..."** appears at the bottom of the screen.

3. When prompted, press **<S>** to specify an additional device.

4.   Insert the RAID driver disk you created earlier to the floppy disk drive, then press <Enter>.

5.   Select the RAID controller driver from the list, then press <Enter>.
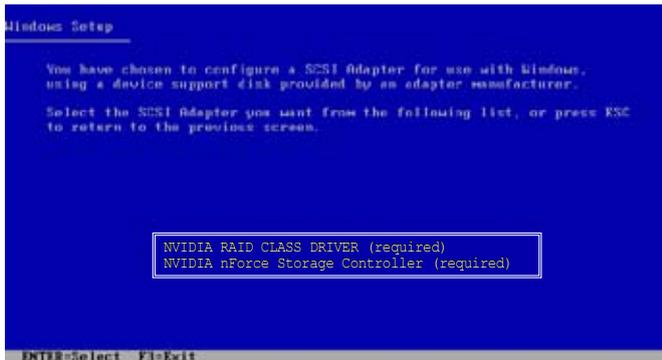
For NVIDIA® RAID driver, select **NVDIA RAID CLASS DRIVER (required)**. Then press <S> key, and select **NVIDIA nForce Storage Controller (required)**.
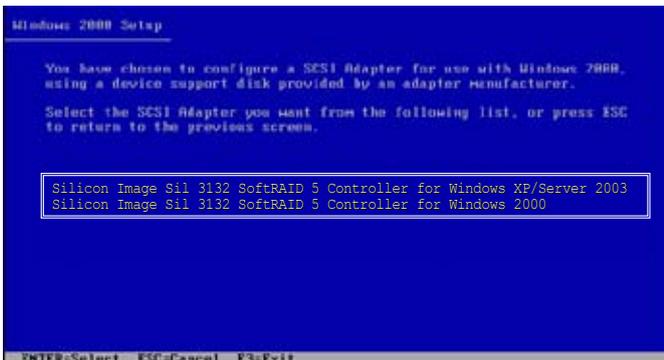
For Silicon controller RAID mode driver, select **Silicon Image Sil 3132 SoftRAID 5 Controller for Windows XP/Server 2003**, for Windows XP.
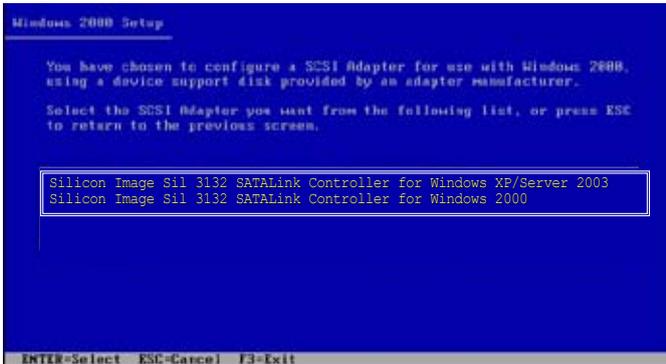
For Silicon controller non-RAID mode driver, select **Silicon Image Sil 3132 SATALink Controller for Windows XP/Server 2003**, for Windows XP.

6. The Windows® XP Setup loads the RAID controller drivers from the RAID driver disk. When prompted, press <Enter> to continue installation.
7. Setup then proceeds with the OS installation. Follow screen instructions to continue.

To an existing Windows® XP OS

To install the RAID controller driver on an existing Windows® XP OS:

1. Restart the computer, then log on with **Administrator** privileges.
2. Windows® automatically detects the RAID controller and displays a **New Hardware Found** window. Click **Cancel**.
3. Right-click the **My Computer** icon on the Windows® desktop , then select **Properties** from the menu.
4. Click the **Hardware** tab, then click the **Device Manager** button to display the list of devices installed in the system.
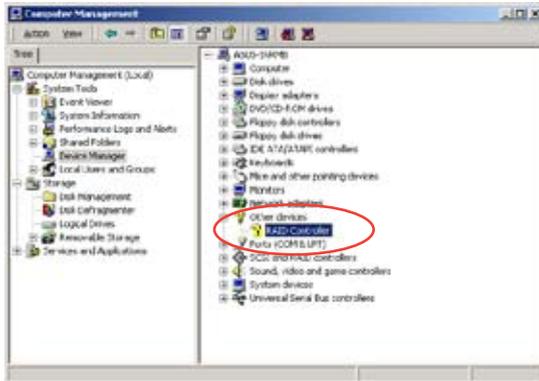
5. Right-click the **RAID controller** item, then select **Properties**.

6. Click the **Driver** tab, then click the **Update Driver** button.

7. The **Upgrade Device Driver Wizard** window appears. Click **Next**.

8. Insert the RAID driver disk you created earlier to the floppy disk drive.

9. Select the option **"Search for a suitable driver for my device (recommended)"**, then click **Next**.

10. The wizard searches the RAID controller drivers. When found, click **Next** to install the drivers.

11. Click **Finish** after the driver installation is done.

To verify the RAID controller driver installation:

1. Right-click the **My Computer** icon on the Windows® desktop , then select **Properties** from the menu.
2. Click the **Hardware** tab, then click the **Device Manager** button.
3. Click the "+" sign before the item **SCSI and RAID controllers**.
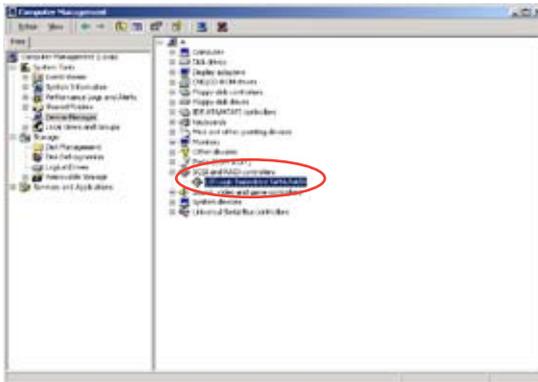
When you installed the NVIDIA® RAID driver, the **NVDIA RAID CLASS DRIVER** item should appear.
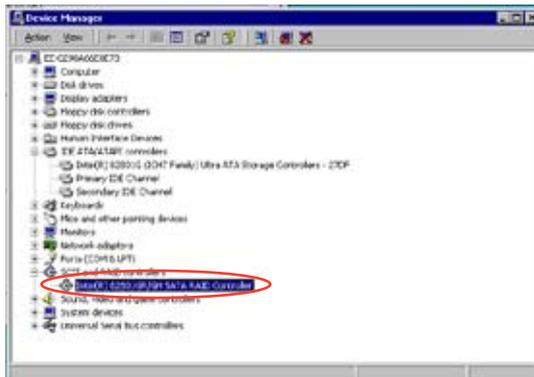
When you installed the Silicon controller driver,
the **Silicon Image Sil 3132 SoftRAID 5 Controller** item should appear.

4. Right-click the RAID controller driver item, then select **Properties** from the menu.
5. Click the **Driver** tab, then click the **Driver Details** button to display the RAID controller drivers.
6. Click **OK** when finished.

6.2 LAN driver installation

This section provides instructions on how to install the Broadcom® Gigabit LAN controller drivers.

6.2.1 Windows® XP

To install the Broadcom® Gigabit LAN controller driver on a Windows® XP OS:

1. Restart the computer, then log on with **Administrator** privileges.

2. Insert the motherboard/system support CD to the optical drive. The CD automatically displays the **Drivers** menu if Autorun is enabled in your computer.

> • Windows® automatically detects the LAN controllers and displays a **New Hardware Found** window. Click **Cancel** to close this window.
>
> • If Autorun is NOT enabled in your computer, browse the contents of the support CD to locate the file ASSETUP.EXE from the BIN folder. Double-click the **ASSETUP.EXE** to run the CD.

3. Click the **Broadcom 5754 Driver** option to begin installation.

4. Click **Next** when the InstallShield Wizard window appears. Follow screen instructions to continue installation.
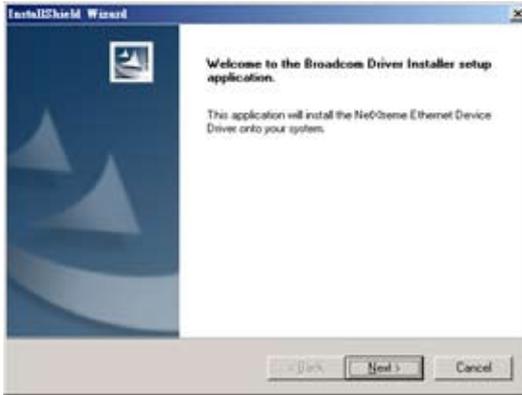
6.3   Management applications and utilities installation

The support CD that came with the motherboard package contains the drivers, management applications, and utilities that you can install to avail all motherboard features.

> The contents of the support CD are subject to change at any time without notice. Visit the ASUS website (www.asus.com) for updates.

6.3.1   Running the support CD

Place the support CD to the optical drive. The CD automatically displays the Drivers menu if Autorun is enabled in your computer.

> If Autorun is NOT enabled in your computer, browse the contents of the support CD to locate the file ASSETUP.EXE from the BIN folder. Double-click the **ASSETUP.EXE** to run the CD.

6.3.2   Drivers menu

The Drivers menu shows the available device drivers if the system detects installed devices. Install the necessary drivers to activate the devices.

> The screen display and driver options vary under different operating system versions.

6.3.3 Management Software menu

The **Management Software** menu displays the available network and server monitoring applications. Click on an item to install.

6.3.4 Utilities menu

The **Utilities** menu displays the software applications and utilities that the motherboard supports. Click on an item to install.

6.3.5 Contact information

Click the **Contact** tab to display the ASUS contact information. You can also find this information on the inside front cover of this user guide.

6.4 Software information

6.4.1 Audio configurations

The Realtek® ALC882 audio CODEC provides 8-channel audio capability to deliver the ultimate audio experience on your computer. The software provides Jack-Sensing function, S/PDIF Out support, and interrupt capability. The ALC882 also includes the Realtek® proprietary UAJ® (Universal Audio Jack) technology for all audio ports, eliminating cable connection errors and giving users plug and play convenience.

Follow the installation wizard to install the Realtek® Audio Driver from the support CD that came with the motherboard package.

If the Realtek audio software is correctly installed, you will find the Realtek HD Audio Manager icon on the taskbar.

From the taskbar, double-click on the SoundEffect icon to display the Realtek HD Audio Manager.

Realtek HD Audio Manager

Realtek HD Audio Manager

Configuration options

Control settings window

Information button

Tool button

Exit button

Minimize button

Information

Click the information button ( ) to display information about the audio driver version, DirectX version, audio controller, audio codec, and language setting.

Minimize

Click the minimize button ( ) to minimize the window.

Exit

Click the exit button ( ) to exit the Realtek HD Audio Manager.

Configuration options

Click any of the tabs in this area to configure your audio settings. Click the arrow button ( ) to display more options.

Sound Effect

The Realtek® ALC882 Audio CODEC allows you to set your listening environment, adjust the equalizer, set the karaoke, or select pre-programmed equalizer settings for your listening pleasure.

To set the sound effect options:

1.   From the Realtek HD Audio Manager, click the Sound Effect tab.

2.   Click the shortcut buttons or the drop-down menus for options on changing the acoustic environment, adjust the equalizer, or set the karaoke to your desired settings.

3.   Click to effect the Sound Effect settings and exit.

Mixer

The Mixer option allows you to configure audio output (playback) volume and audio input (record) volume.

To set the mixer options:

1. From the Realtek HD Audio Manager, click the Mixer tab.

2. Turn the volume buttons to adjust the Playback and/or Record volume.

The Mixer option activates voice input from all channels by default. Make sure to set all channels to mute ([image]) if you do not want voice input.

3. Make adjustments to Wave, SW Synth, Front, Rear, Subwoofer, CD volume, Mic volume, Line Volume, and Stereo mix by clicking the control tabs and dragging them up and down until you get the desired levels.

4. Click [OK] to effect the Mixer settings and exit.

Audio I/O

The Audio I/O option allows you configure your input/output settings.

To set the Audio I/O options:

1. From the Realtek HD Audio Manager, click the Audio I/O tab.

2. Click the drop-down menu to select the channel configuration.

3. The control settings window displays the status of connected devices. Click [image] for analog and digital options.

4. Click <OK> to effect the Audio I/O settings and exit

Microphone

The Microphone option allows you configure your input/output settings and to check if your audio devices are connected properly.

To set the Microphone options:

1. From the Realtek HD Audio Manager, click the Microphone tab.
2. Click the Noise Suppression option button to reduce the static background noise when recording.
3. Click the Acoustic Echo Cancellation option button to reduce the echo from the front speakers when recording.
4. Click [OK] to effect the Microphone settings and exit.

3D Audio Demo

The 3D Audio Demo option gives you a demonstration of the 3D audio feature.

To start the 3D Audio Demo:

1. From the Realtek HD Audio Manager, click the 3D Audio Demo tab.
2. Click the option buttons to change the sound, moving path, or environment settings.
3. Click ▶ to test your settings.
4. Click [OK] to effect the 3D Audio Demo settings and exit.