Preface

Copyright

This publication, including all photographs, illustrations and software, is protected under international copyright laws, with all rights reserved. Neither this manual, nor any of the material contained herein, may be reproduced without written consent of the author.

Version 1.3

Disclaimer

The information in this document is subject to change without notice. The manufacturer makes no representations or warranties with respect to the contents hereof and specifically disclaim any implied warranties of merchantability or fitness for any particular purpose. The manufacturer reserves the right to revise this publication and to make changes from time to time in the content hereof without obligation of the manufacturer to notify any person of such revision or changes.

Trademark Recognition

Microsoft, MS-DOS and Windows are registered trademarks of Microsoft Corp.

MMX, Pentium, Pentium-II, Pentium-III, Celeron are registered trademarks of Intel Corporation.

Other product names used in this manual are the properties of their respective owners and are acknowledged.

Federal Communications Commission (FCC)

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 the 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 the receiver.
- Connect the equipment onto 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.

Shielded interconnect cables and a shielded AC power cable must be employed with this equipment to ensure compliance with the pertinent RF emission limits governing this device. Changes or modifications not expressly approved by the system's manufacturer could void the user's authority to operate the equipment.

Declaration of Conformity

This device complies with part 15 of the FCC rules. Operation is subject to the following conditions:

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

Canadian Department of Communications

This class B digital apparatus meets all requirements of the Canadian Interference-causing Equipment Regulations.

Cet appareil numérique de la classe B respecte toutes les exigences du Réglement sur le matériel brouilieur du Canada.

About the Manual

The manual consists of the following:

TABLE OF CONTENTS

CHAPTER 4   38

Using the Mainboard Software   38

Introducing the Mainboard

Introduction

Thank you for choosing the P4S8AG ATX mainboard. This mainboard has a Socket-478 processor socket for Intel Pentium 4 type of processors supporting front side bus (FSB) speeds up to 533 MHz.

With a measurement of 305 x 220 mm, this mainboard is built using the leading edge technology of SiS648 Northbridge along with SiS963 Southbridge chipsets that supports built-in 6-channel speak-out AC97 Codec, 2 DDR400 (by overclocking) modules up to 2GB system memory.

It also supports the Xabre200 GPU, which integrates a 256-bit 3D/2D graphics engines and motion compensation MPEG 1/MPEGII accelerator. In addition to superior hardware capabilities, the mainboard has one CNR (Communications and Networking Riser) slot to support Audio and Modem application, built-in 10BaseT/100Base TX Network Interface and an advanced full set of I/O ports such as two PS/2 ports for mouse and keyboard, one serial port, one VGA port, one parallel port, one IEEE port and six USB ports (USB 2.0) – consisting of four back-panel ports and onboard USB header USB3 providing two extra ports by connecting the Extended USB Module to the mainboard.

Checklist

Compare the mainboard's package contents with the following checklist:

Standard Items

- One mainboard
- One diskette drive ribbon cable
- One IDE drive ribbon cable
- One auto-install software support CD
- This user's manual

Features

Processor	The mainboard uses a micro PGA 478-pin socket that has the following features: • Supports 533 MHz frontside bus (FSB) • Accommodates Intel Pentium 4 series processors
Chipset	The **SiS648** Northbridge and **SiS963** Southbridge chipsets are based on an innovative and scalable architecture with proven reliability and performance.
Memory	• Two 184-pin DIMM slots for DDR memory modules • Support DDR up to 400 MHz memory bus • Maximum installed memory is 2GB **Note:** You can work on DDR400 by overclocking, but there is no guarantee that it will run under normal operation.
Expansion Slots	• One CNR (Communications and Networking Riser) slot to insert special riser cards with Audio/Modem functionality • Three 32-bit PCI slots for PCI 2.2-compliant bus interface
Onboard IDE channels	• Primary and Secondary PCI IDE channels • Support for PIO (programmable input/output) modes • Support for Multiword DMA modes • Support for Bus Mastering and Ultra DMA ATA 100/**133** modes
Power Supply & Power Management	• ATX power supply connector • Meets ACPI 1.0b and APM 1.2 requirements, keyboard power on/off • Supports RTC Alarm, Wake On Modem, AC97 Wake-Up and USB Wake-Up

Integrated VGA Specification	• GPU (Graphics Processing Unit)
	  − Xabre 200 AGP8X 256-bit GPU clock runs from 200MHz
	• DISPLAY MEMORY
	  − Built-in 64MB DDR onboard runs from 400MHz (DDR400)
	• 3D ENGINE FEATURES
	  − Supports Direct 3D version 8.1; pixel shader version 1.3
	  − Supports AGP 8X for texture/vertex fetch
	  − Built-in 32-bit floating point VLIW Geometry Transform/Lighting (T/L) and triangle setup engine
	  − Built-in 4 pixel programmable rendering pipelines and 8 texture units (4P8T)
	  − Supports up to 2048x2048 texture size
	  − Built-in hardware stereo auto rendering engine
	  − Supports 2X/4X full scene anti-aliasing
	• 2D ENGINE FEATURES
	  − Built-in Direct Draw Accelerator
	  − MPEG-2 MP @ ML standards compliant
	  − Built-in motion compensation logig
	  − Supports up to 20Mbit/sec bit rate decoding
	  − Direct DVD to TV playback

	− Supports single video windows with overlay function − Supports graphics and video overlay function − Supports DVD sub-picture playback overlay − Built-in independent Gamma correction RAM • RESOLUTION − Supports VESA standards super high resolution graphics modes, up to 2048x1536x32 bpp
AC97 Audio Codec	• 6-CH hardware architecture allows multi-channel south bridge to playback 6CH audio • Intel® AC'97 (REV. 2.2) compatible, meeting Microsoft® PC2001 requirements • Built-in earphone buffer and internal PLL, the latter saving additionsl crystal • Line-in/rear out share the same jack; Center/bass share the MIC jack • Digital S/PDIF OUT Support • CRL® 3D: HRTF based BS3D compatible audio engine
Onboard I/O Ports	The mainboard has a full set of I/O ports and connectors: • Two PS/2 ports for mouse and keyboard • One serial port • One VGA port • One parallel port • IEEE1 port • Six USB ports (four back-panel ports, onboard USB headers providing two extra ports)— **USB2.0** • Audio jacks for microphone, line-in and line-out
Hardware Monitoring	Built-in hardware monitoring for CPU & System temperatures, fan speeds and mainboard voltages.
Onboard Flash ROM	Supports Plug and Play configuration of peripheral devices and expansion cards.
Built-in Ethernet LAN (optional)	• 10Base-TX/100Base-T Physical Layer Solution • Dual Speed – 100/10 Mbps • MII Interface to Ethernet Controller/Configuration & Status • Auto Negotiation: 10/100, Full/Half Duplex • Meet All Applicable IEEE802.3, 10Base-T and 100Base-TX Standards
USB 2.0	• Compliant with Universal Serial Bus Specification Revision 2.0 • Compliant with Intel's Enhanced Host Controller Interface Specification Revision 0.95 • Compliant with Universal Host Controller Interface Specification Revision 1.1 • PCI multi-function device consists of two UHCI Host Controller cores for full-/low-speed signaling and one EHCI Host Controller core for high-speed signaling • Root hub consists 4 downstream facing ports with integrated physical layer transceivers shared by UHCI and EHCI Host Controller • Support PCI-Bus Power Management Interface Specification release 1.1 • Legacy support for all downstream facing ports

IEEE 1394a (optional)	• Fully supports provisions of IEEE1394-1995 for high-performance serial bus and the P1394a draft 2.0 standard • Provides two fully compliant cables ports at 100/200/400 Mbits/s and available with one or two ports • Supports optional 1394 Annex J electrical isolation barrier at PHY-link interface • Supports power-down feature to conserve energy in battery powered application • Node power-class information signaling for system power management
BIOS Firmware	This mainboard uses AMI BIOS that enables users to configure many system features including the following: • Power management • Wake-up alarms • CPU parameters • CPU and memory timing The firmware can also be used to set parameters for different processor clock speeds.

Note: *Some hardware specifications and software items are subject to change without prior notice.*

Choosing a Computer Case

There are many types of computer cases on the market. The mainboard complies with the specifications for the ATX system case. Some features on the mainboard are implemented by cabling connectors on the mainboard to indicators and switches on the system case. Ensure that your case supports all the features required. The mainboard can support one or two floppy diskette drives and four enhanced IDE drives. Ensure that your case has sufficient power and space for all the drives that you intend to install.

Most cases have a choice of I/O templates in the rear panel. Make sure that the I/O template in the case matches the I/O ports installed on the rear edge of the mainboard.

This mainboard has an ATX form factor of 305 x 220 mm. Choose a case that accommodates this form factor.

Mainboard Components

RETENTION MODULE

CPUPW1

DDR1 DDR2

CPU SOCKET

CPU_FAN

ATXPW1

IEEE1394

WOL1

CD1
AUDIO2   CD2

J1
SPDIFO   VGAFAN1

USB3

IDE2   IDE1

PCI1
PCI2

IR1   PCI3

SPK1
JP5   PANEL1

CNR1   BAT1

SYSFAN   FLOPPY
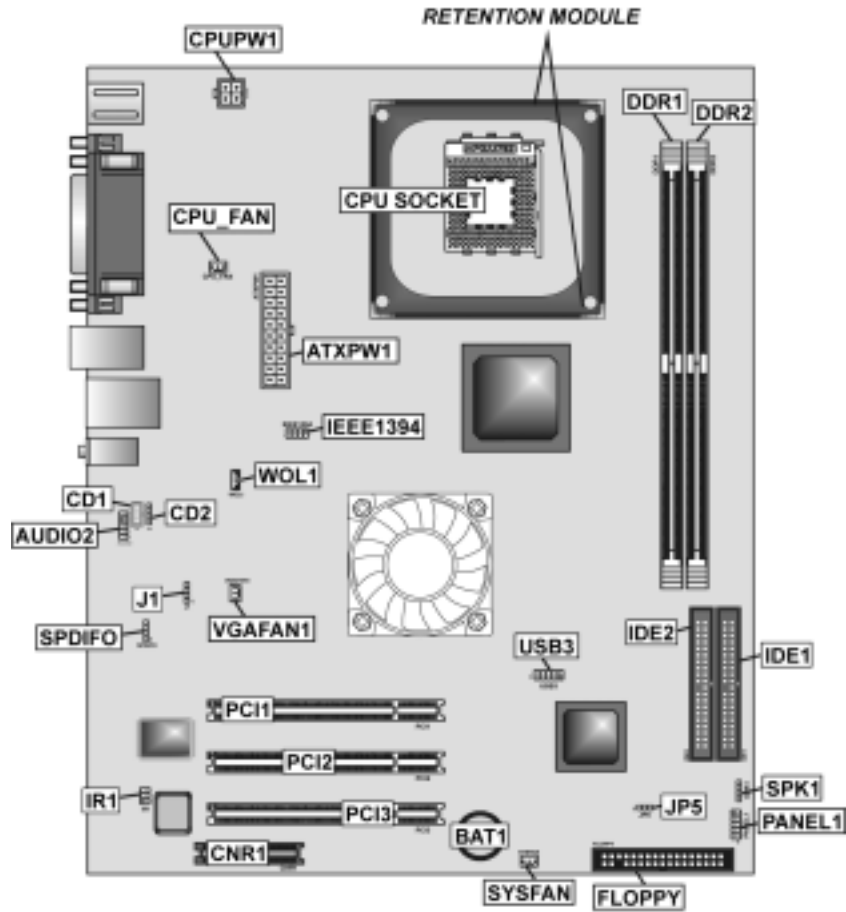
Table of Mainboard Components

Label	Component
ATXPW1	Standard power connector
AUDIO2	Front audio connector
BAT1	Three volt realtime clock battery
CD1	Primary CD-in connector
CD2	Secondary CD-in connector
CNR1	Communications Networking Riser slot
CPU SOCKET	Micro PGA 478-pin socket for Pentium 4 CPUs
CPU_FAN	Cooling fan for CPU
CPUPW1	Auxiliary power connector for Pentium 4 CPUs
DDR1~ DDR2	Two 184-pin DDR SDRAM
FLOPPY	Floppy disk drive connector
IDE 1	Primary IDE channel
IDE 2	Secondary IDE channel
IEEE1394	IEEE 1394 header
IR1	Infrared cable header
J1	Onboard LAN LED connector
JP5	Clear CMOS jumper
PANEL1	Connector for case front panel switches and LED indicators
PCI1 ~ PCI3	Three 32-bit add-on card slots
SPDIFO	SPDIF out header
SPK1	Internal speaker connector
SYSFAN1	System fan connector
USB3	Front Panel USB headers
VGAFAN1	VGA cooling fan
WOL1	Wake On LAN header

This concludes Chapter 1. The next chapter explains how to install the mainboard.

Installing the Mainboard

Safety Precautions

Follow these safety precautions when installing the mainboard:

- Wear a grounding strap attached to a grounded device to avoid damage from static electricity.
- Discharge static electricity by touching the metal case of a safely grounded object before working on the mainboard.
- Leave components in the static-proof bags they came in.
- Hold all circuit boards by the edges. Do not bend circuit boards.

Quick Guide

This Quick Guide suggests the steps you can take to assemble your system with the mainboards.

The following table provides a reference for installing specific components:

Installing the Mainboard in a Case

Refer to the following illustration and instructions for installing the mainboard in a case:

This illustration shows an example of a mainboard being installed in a tower-type case: **Note:** Do not overtighten the screws as this can stress the mainboard. Most system cases have mounting brackets installed in the case, which correspond to the holes in the mainboard. Place the mainboard over the mounting brackets and secure the mainboard onto the mounting brackets with screws.	2. Secure the mainboard with screws where appropriate. 1. Place the mainboard over the mounting brackets.
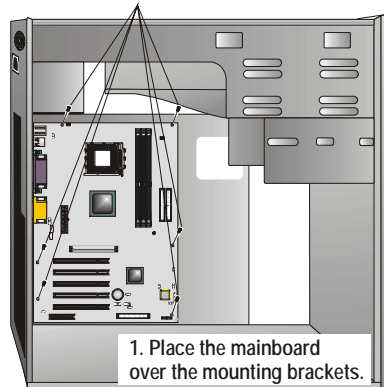
Ensure that your case has an I/O template that supports the I/O ports and expansion slots on your mainboard.

Checking Jumper Settings

This section explains how to set jumpers for correct configuration of the mainboard.

Setting Jumpers

Use the mainboard jumpers to set system configuration options. Jumpers with more than one pin are numbered. When setting the jumpers, ensure that the jumper caps are placed on the correct pins.

The illustrations below show a 2-pin jumper. When the jumper cap is placed on both pins, the jumper is SHORT. If you remove the jumper cap, or place the jumper cap on just one pin, the jumper is OPEN.

This illustration shows a 3-pin jumper. Pins 1 and 2 are SHORT.

Short　　　　**Open**

8
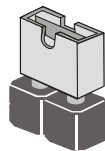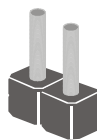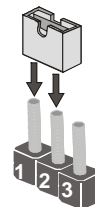
Checking Jumper Settings

The following illustration shows the location of the mainboard jumpers. Pin 1 is labeled.
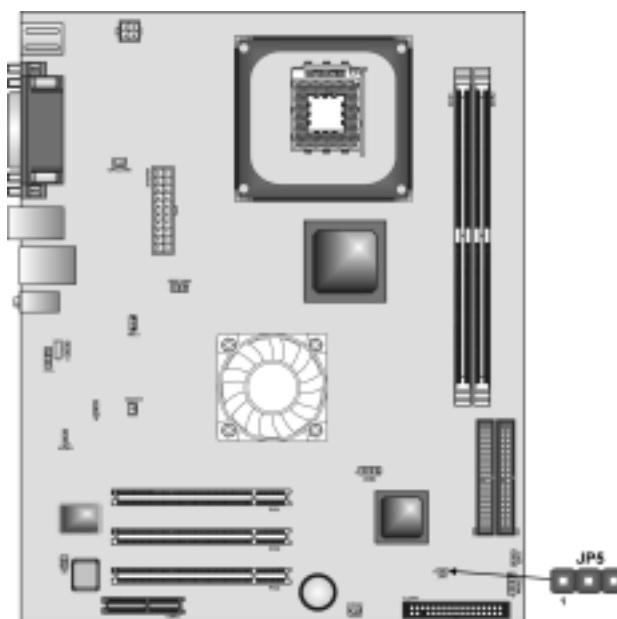
Jumper Settings

Jumper	Type	Description	Setting (*default*)	
JP5	3-pin	Clear CMOS	1-2: Clear CMOS *2-3: Normal*	**JP5** ■■□ 1

Jumper 5 – Use this jumper to clear the contents of the CMOS memory. You may need to clear the CMOS memory if the settings in the Setup Utility are incorrect and prevent your mainboard from operating. To clear the CMOS memory, disconnect all the power cables from the mainboard and then move the jumper cap into the CLEAR setting for a few seconds.

Connecting Case Components

After you have installed the mainboard into a case, you can begin connecting the mainboard components. Refer to the following:

1. Connect the Pentium 4 processor auxiliary case power supply connector to **CPUPW1**.
2. Connect the standard power supply connector to **ATXPW1**.
3. Connect the CPU cooling fan cable to **CPUFAN**.
4. Connect the system cooling fan connector to **SYSFAN**.
5. The VGA cooling fan cable is already connected to **VGAFAN1**.
6. Connect the external speaker cable to **SPK1**.

7. Connect the case LAN LED cable to **J16**.
8. Connect the case switches and indicator to **PANEL1**.

CPUPW1: ATX 12V Power Connector

Pin	Signal Name
1	+12V
2	+12V
3	Ground
4	Ground

ATXPW1: ATX 20-pin Power Connector

Pin	Signal Name	Pin	Signal Name
1	+3.3V	11	+3.3V
2	+3.3V	12	-12V
3	Ground	13	Ground
4	+5V	14	PS ON#
5	Ground	15	Ground
6	+5V	16	Ground
7	Ground	17	Ground
8	PWRGD	18	+5V
9	+5VSB	19	+5V
10	+12V	20	+5V

CPUFAN/SYSFAN: FAN Power Connectors

Pin	Signal Name	Function
1	GND	System Ground
2	+12V	Power +12V
3	Sense	Sensor

SPK1: Internal speaker header

Pin	Signal Name
1	SPKR
2	NC
3	Ground
4	+5V

J16: LAN LED Indicator

This connector is attached to LAN device that needs a LED indicator.

Device	Pins
Link LED	1, +2
ACT LED	+3, 4
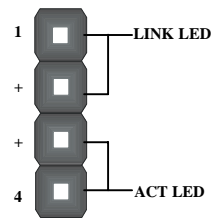
Note: The plus sign (+) indicates a pin which must be connected to a positive voltage.

Front Panel Connector

The front panel connector (PANEL1) provides a standard set of switch and LED connectors commonly found on ATX or micro-ATX cases. Refer to the table below for information:

PANEL1

Pin	Signal	Function	Pin	Signal	Function
1	HD_LED_P	Hard disk LED (positive)	2	FP PWR/SLP	MSG LED [dual color or single color (+)]
3	HD_LED_N	Hard disk active LED (negative)	4	FP PWR/SLP	MSG LED [dual color or single color (-)]
5	RST_SW_N	Reset Switch	6	PWR_SW_P	Power Switch
7	RST_SW_P	Reset Switch	8	PWR_SW_N	Power Switch
9	RSVD	Reserved	10	NC	No pin

Hard Drive Activity LED

Connecting pins 1 and 3 to a front panel mounted LED provides visual indication that data is being read from or written to the hard drive. For the LED to function properly, an IDE drive should be connected to the onboard IDE interface. The LED will also show activity for devices connected to the SCSI (hard drive activity LED) connector.

Power / Sleep / Message Waiting LED

Connecting pins 2 and 4 to a single- or dual-color, front panel mounted LED provides power on/off, sleep, and message waiting indication.

Reset Switch

Supporting the reset function requires connecting pins 5 and 7 to a momentary-contact switch that is normally open. When the switch is closed, the board resets and runs POST.

Power Switch

Supporting the power on/off function requires connecting pins 6 and 8 to a momentary-contact switch that is normally open. The switch should maintain contact for at least 50 ms to signal the power supply to switch on or off. The time requirement is due to internal debounce circuitry. After receiving a power on/off signal, at least two seconds elapses before the power supply recognizes another on/off signal.

Installing Hardware

Installing the Processor

> **Caution: When installing a CPU heatsink and cooling fan make sure that you DO NOT scratch the mainboard or any of the surface-mount resistors with the clip of the cooling fan. If the clip of the cooling fan scrapes across the mainboard, you may cause serious damage to the mainboard or its components.**
>
> **On most mainboards, there are small surface-mount resistors near the processor socket, which may be damaged if the cooling fan is carelessly installed.**
>
> **Avoid using cooling fans with sharp edges on the fan casing and the clips. Also, install the cooling fan in a well-lit work area so that you can clearly see the mainboard and processor socket.**

Before installing the Processor

This mainboard automatically determines the CPU clock frequency and system bus frequency for the processor. You may be able to change these settings by making changes to jumpers on the mainboard, or changing the settings in the system Setup Utility. We strongly recommend that you do not overclock processors or other components to run faster than their rated speed.

> **Warning: Overclocking components can adversely affect the reliability of the system and introduce errors into your system. Overclocking can permanently damage the mainboard by generating excess heat in components that are run beyond the rated limits.**

This mainboard has a Socket 478 processor socket. When choosing a processor, consider the performance requirements of the system. Performance is based on the processor design, the clock speed and system bus frequency of the processor, and the quantity of internal cache memory and external cache memory.

The following processor is currently supported by this mainboard.

Intel P4 478: 1.4GHz ~ 2.8GHz and up, FSB: 533MHz

CPU Installation Procedure

The following illustration shows CPU installation components:
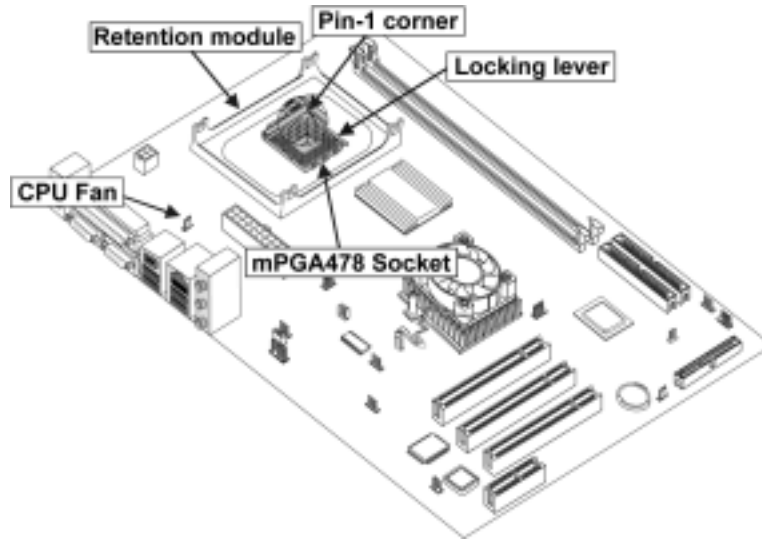
Note: The pin-1 corner is marked with an arrow ▶

Follow these instructions to install the Retention Module and CPU:

1. Remove the existing retention module (if applicable).

2. Position the backplate against the underside of the mainboard, secure the 4 screws firmly on the retention module.

   Note: Do not over tighten the screws.
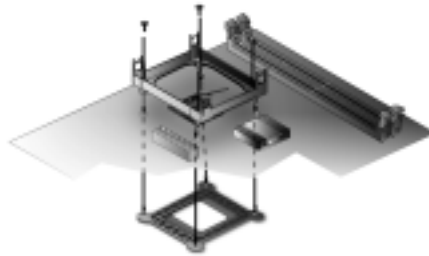
3. Install your CPU. Pull up the lever away from the socket and lift up to 90-degree angle.
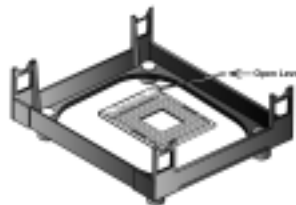
4. Locate the CPU cut edge (the corner with the pinhole noticeably missing). Align and insert the CPU correctly.
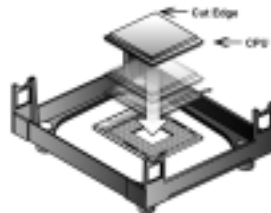
5. Press the lever down.
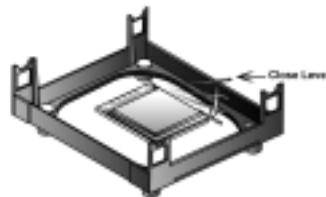
6. Apply thermal grease on top of the CPU.

7. Put the CPU Fan down on the retention module and snap the four retention legs of the cooling fan into place.

8. Flip the levers over to lock the heat sink in place.

9. Connect the CPU Cooling Fan power cable to the CPUFAN1 connector. This completes the installation.

Notes:
- To achieve better airflow rates and heat dissipation, we suggest that you use a high quality fan with 4800 rpm at least.
- CPU fan and heatsink installation procedures may vary with the type of CPU fan/heatsink supplied. The form and size of fan/heatsink may also vary.

Installing Memory Modules

This mainboard accommodates two 184-pin 2.5V unbuffered Double Data Rate (DDR) SDRAM DIMM sockets. When you install DDR266/DDR333/DDR400 memory modules, the memory bus can run up to 133/166/200 MHz.

The DDR SDRAM DIMMs can synchronously work with 100 MHz or operates over a 400 MHz (overclock) system bus. You must install at least one memory module in order to use the mainboard. Each module can install up to 1GB; total maximum memory capacity is 2GB.

> Do not remove any memory module from its antistatic packaging until you are ready to install it on the mainboard. Handle the modules only by their edges. Do not touch the components or metal parts. Always wear a grounding strap when you handle the modules.

Installation Procedure

Refer to the following to install the memory modules.

1. This mainboard supports unbuffered DDR SDRAM only. Do not attempt to insert any other type of DDR SDRAM into the slots.

2. Push the latches on each side of the DIMM slot down.

3. Align the memory module with the slot. The DIMM slots are keyed with notches and the DIMMs are keyed with cutouts so that they can only be installed correctly.
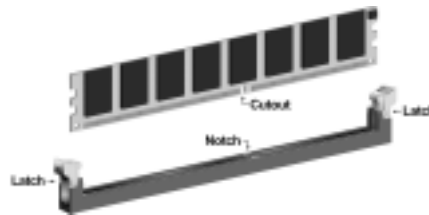
4. Check that the cutouts on the DIMM module edge connector match the notches in the DIMM slot.
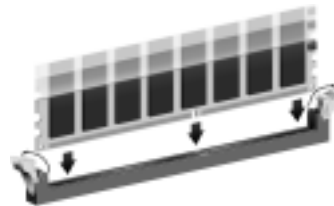
5. Install the DIMM module into the slot and press it firmly down until it seats correctly. The slot latches are levered upwards and latch on to the edges of the DIMM.
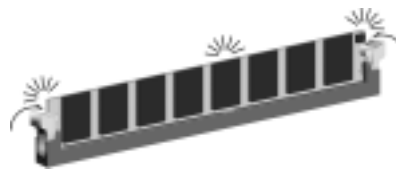
6. Install any remaining DIMM modules.

Installing a Hard Disk Drive/CD-ROM

This section describes how to install IDE devices such as a hard disk drive and a CD-ROM drive.

About IDE Devices

Your mainboard has a primary and secondary IDE channel interface (IDE1 and IDE2). An IDE ribbon cable supporting two IDE devices is bundled with the mainboard.
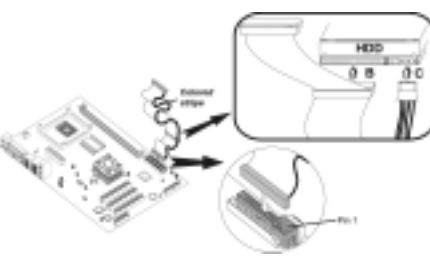
If you want to install more than two IDE devices, get a second IDE cable and you can add two more devices to the secondary IDE channel.

IDE devices have jumpers or switches that are used to set the IDE device as MASTER or SLAVE. Refer to the IDE device user's manual. When installing two IDE devices on one cable, ensure that one device is set to MASTER and the other device is set to SLAVE. The documentation of your IDE device explains how to do this.

About UltraDMA

This mainboard supports UltraDMA 66/100/133. UDMA is a technology that accelerates the performance of devices in the IDE channel. To maximize performance, install IDE devices that support UDMA and use 80-pin IDE cables that support UDMA 66/100/133.

Installing a Hard Disk Drive

1. Install the hard disk drive into the drive cage in your system case.	
2. Plug the IDE cable into IDE1 (**A**): **Note:** Ribbon cable connectors are usually keyed so that they can only be installed correctly on the device connector. If the connector is not keyed, make sure that you match the pin-1 side of the cable connector with the pin-1 side of the device connector. Each connector has the pin-1 side clearly marked. The pin-1 side of each ribbon cable is always marked with a colored stripe on the cable.	
3. Plug an IDE cable connector into the hard disk drive IDE connector (**B**). It doesn't matter which connector on the cable you use.	
4. Plug a power cable from the case power supply into the power connector on the hard disk drive (**C**).	

When you first start up your system, the BIOS should automatically detect your hard disk drive. If it doesn't, enter the Setup Utility and use the IDE Hard Disk Auto Detect feature to configure the hard disk drive that you have installed.

Installing a CD-ROM/DVD Drive

1.	Install the CD-ROM/DVD drive into the drive cage in your system case.

2.	Plug the IDE cable into IDE1 (**A**). If you have already installed an HDD, use the other connector on the IDE cable. **Note:** Ribbon cable connectors are usually keyed so that they can only be installed correctly on the device connector. If the connector is not keyed, make sure that you match the pin-1 side of the cable connector with the pin-1 side of the device connector. Each connector has the pin-1 side clearly marked. The pin-1 side of each ribbon cable is always marked with a colored stripe on the cable.	

3.	Plug an IDE cable connector into the CD-ROM/DVD drive IDE connector (**B**). It doesn't matter which connector on the cable you use.
4.	Plug a power cable from the case power supply into the power connector on the CD-ROM/DVD drive (**C**).
5.	Use the audio cable provided with the CD-ROM/DVD drive to connect to the mainboard CD-in connector CD1 or CD (**D**).

When you first start up your system, the BIOS should automatically detect your CD-ROM/DVD drive. If it doesn't, enter the Setup Utility and configure the CD-ROM/DVD drive that you have installed.

CD1
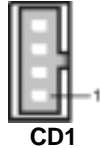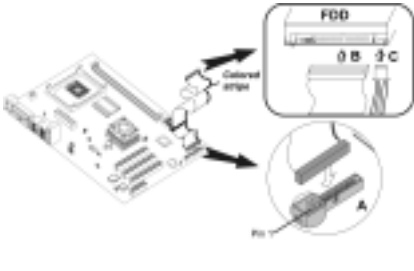
Pin	Signal Name
1	GND
2	CD IN R
3	GND
4	CD IN L

CD2

Pin	Signal Name
1	CD IN L
2	GND
3	GND
4	CD IN R

Installing a Floppy Diskette Drive

The mainboard has a floppy diskette drive (FDD) interface and ships with a diskette drive ribbon cable that supports one or two floppy diskette drives. You can install a 5.25-inch drive and a 3.5-inch drive with various capacities. The floppy diskette drive cable has one type of connector for a 5.25-inch drive and another type of connector for a 3.5-inch drive.

1. Install the FDD into the drive cage in your system case.	
2. Plug the FDD cable into FLOPPY1 (**A**): **Note:** Ribbon cable connectors are usually keyed so that they can only be installed correctly on the device connector. If the connector is not keyed, make sure that you match the pin-1 side of the cable connector with the pin-1 side of the device connector. Each connector has the pin-1 side clearly marked. The pin-1 side of each ribbon cable is always marked with a colored stripe on the cable.	
3. Plug the correct connector on the FDD cable for the 5.25-inch or 3.5-inch drive into the FDD connector (**B**).	
4. Plug a power cable from the case power supply into the power connector on the FDD (**C**).	

When you first start up your system, go immediately to the Setup Utility to configure the floppy diskette drives that you have installed.

Installing Add-on Cards

The slots in this mainboard are designed to hold expansion cards and connect them to the system bus. Expansion slots are a means of adding or enhancing the mainboard's features and capabilities. With these efficient facilities, you can increase the mainboard's capabilities by adding hardware which performs tasks that are not part of the basic system.
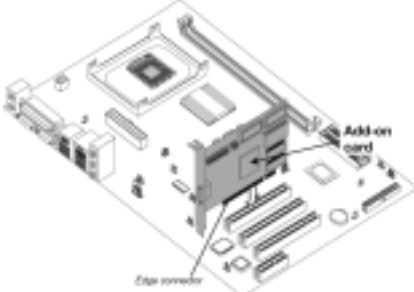
PCI Slots	PCI slots are used to install expansion cards that have the 32-bit PCI interface.	
CNR Slot	This slot is used to insert CNR cards with Modem and Audio functionality.	
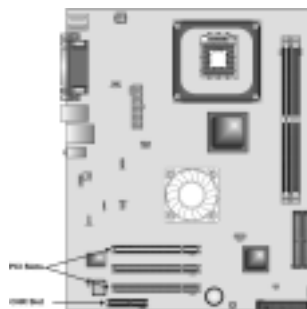
Note: Before installing an add-on card, check the documentation for the card carefully. If the card is not Plug and Play, you may have to manually configure the card before installation.

Follow these instructions to install an add-on card:

1.	Remove a blanking plate from the system case corresponding to the slot you are going to use.
2.	Install the edge connector of the add-on card into the expansion slot. Ensure that the edge connector is correctly seated in the slot.
3.	Secure the metal bracket of the card to the system case with a screw.

Note: For some add-on cards, for example graphics adapters and network adapters, you have to install drivers and software before you can begin using the add-on card.

Connecting Optional Devices

Refer to the following for information on connecting the mainboard's optional devices:
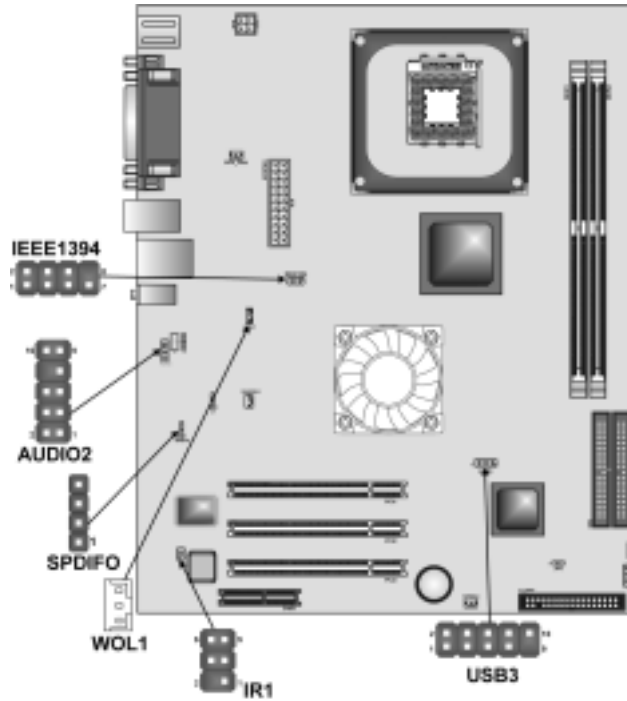
AUDIO2: Front Panel Audio header

This header allows the user to install auxiliary front-oriented microphone and line-out ports for easier access.

Pin	Signal Name	Function
1	AUD_MIC	Front Panel Microphone input signal
2	AUD_GND	Ground used by Analog Audio Circuits
3	AUD_MIC_BIAS	Microphone Power
4	AUD_VCC	Filtered +5 V used by Analog Audio Circuits
5	AUD_FPOUT_R	Right Channel Audio signal to Front Panel
6	AUD_RET_R	Right Channel Audio signal to Return from Front Panel
7	HP_ON	Reserved for future use to control Head-phone Amplifier
8	KEY	No Pin
9	AUD_FPOUT_L	Left Channel Audio signal to Front Panel
10	AUD_RET_L	Left Channel Audio signal Return from Front Panel

USB3: Front panel USB ports

The mainboard has four USB ports installed on the rear edge I/O port array. Additionally, some computer cases have USB ports at the front of the case. If you have this kind of case, use auxiliary USB connectors USB3 and USB4 to connect the front-mounted ports to the mainboard.

Pin	Signal Name	Function
1	VREG_FP_USBPWR0	Front Panel USB Power
2	VREG_FP_USBPWR0	Front Panel USB Power
3	USB_FP_P0-	USB Port 0 Negative Signal
4	USB_FP_P1-	USB Port 1 Negative Signal
5	USB_FP_P0+	USB Port 0 Positive Signal
6	USB_FP_P1+	USB Port 1 Positive Signal
7	GND	Ground
8	GND	Ground
9	KEY	No pin
10	USB_FP_OC0	Overcurrent signal

Note: Please make sure that the USB cable has the same pin assignment as indicated above. A different pin assignment may cause damage or system hang-up.

IEEE1394: IEEE 1394A header

Use this header to connect to any IEEE 1394A interface.

Pin	Signal Name	Pin	Signal Name
1	Cable-power	2	GND
3	TPB+	4	TPB+
5	TPA-	6	TPA+
7	Chassis GND	8	NC

IR1: Infrared port

The mainboard supports an Infrared (IR1) data port. Infrared ports allow the wireless exchange of information between your computer and similarly equipped devices such as printers, laptops, Personal Digital Assistants (PDAs), and other computers.

Pin	Signal Name	Function
1	Not assigned	Not assigned
2	KEY	No pin
3	+5V	IR Power
4	GND	Ground
5	IRTX	IrDA serial output
6	IRRX	IrDA serial input

SPDIFO1: SPDIF out header

You can purchase an optional 24-bit digital audio extension bracket from a third-party vendor. You can use the audio RCA jacks to connect to digital audio devices. If your CD-ROM/DVD drive has digital audio output, you can connect it to the input pins of the SPDIF connector.

Pin	Signal Name	Function
1	SPDIF	SPDIF digital output
2	+5VA	5V analog power
3	NC	Not connected
4	GND	Ground

WOL1: Wake On LAN

If you have installed a LAN card, use the cable provided with the card to plug into the mainboard WOL1 connector. This enables the Wake On LAN (WOL) feature. When your system is in a power-saving mode, any LAN signal automatically resumes the system. You must enable this item using the Power Management page of the Setup Utility.

Pin	Signal Name	Function
1	5VSB	+5V stand by power
2	GND	Ground
3	Ring#	Wake up signal (high active)

Connecting I/O Devices

The backplane of the mainboard has the following I/O ports:

PS/2 Mouse	Use the upper PS/2 port to connect a PS/2 pointing device.
PS/2 Keyboard	Use the lower PS/2 port to connect a PS/2 keyboard.
LPT1	Use LPT1 to connect printers or other parallel communications devices.
COM1	Use the COM port to connect serial devices such as mice or fax/modems. COM1 is identified by the system as COM1.
VGA	Use the VGA port to connect VGA devices.
1394a Port	Use the 1394a port to connect any Firewire devices.
LAN Port	Connect an RJ-45 jack to the LAN port to connect your computer to the Network.
USB Ports	Use the USB ports to connect USB devices.

Audio Ports	Use the three audio ports to connect audio devices. The first jack is for stereo Line-In signal. The second jack is for stereo Line-Out signal. The third jack is for Microphone.
	
	Here are the configurations of 2-channel,
	4-channel and 6-channel speaker-out for the onboard audio system applications:
	
	2-CH system: Line-In
	                   Line-Out➔ two Front Speakers
	                   Microphone
	4-CH system: Line-In➔ two Front Speakers
	                   Line-Out➔ two Rear Speakers
	                   Microphone
	6-CH system: Line-In➔ two Rear Speakers
	                   Line-Out➔ two Front Speakers
	                   Microphone➔ Subwoofer Center

External Connector Color Coding

Many connectors now use standard colors as shown in the table below.

Connector	Color
Audio line-in	Light blue
Audio line-out	Lime
Digital monitor/flat panel	White
IEEE 1394	Grey
Microphone	Pink
MIDI/game	Gold
Parallel	Burgundy
PS/2-compatible keyboard	Purple
PS/2-compatible mouse	Green
Serial	Teal or Turquoise
Speaker out/subwoofer	Orange
Right-to-left speaker	Brown
USB	Black
Video out	Yellow
SCSI, network, telephone, modem	None

This concludes Chapter 2. The next chapter covers the BIOS.

About the Setup Utility

The computer uses the latest AMI BIOS with support for Windows Plug and Play. The CMOS chip on the mainboard contains the ROM setup instructions for configuring the mainboard BIOS.

The BIOS (Basic Input and Output System) Setup Utility displays the system's configuration status and provides you with options to set system parameters. The parameters are stored in battery-backed-up CMOS RAM that saves this information when the power is turned off. When the system is turned back on, the system is configured with the values you stored in CMOS.

The BIOS Setup Utility enables you to configure:

- Hard drives, diskette drives, and peripherals
- Video display type and display options
- Password protection from unauthorized use
- Power management features

The settings made in the Setup Utility affect how the computer performs. Before using the Setup Utility, ensure that you understand the Setup Utility options.

This chapter provides explanations for Setup Utility options.

The Standard Configuration

A standard configuration has already been set in the Setup Utility. However, we recommend that you read this chapter in case you need to make any changes in the future.

This Setup Utility should be used:

- when changing the system configuration
- when a configuration error is detected and you are prompted to make changes to the Setup Utility
- when trying to resolve IRQ conflicts
- when making changes to the Power Management configuration
- when changing the password or making other changes to the Security Setup

Running the Setup Utility

Each time your computer starts, before the operating system loads, a message appears on the screen that prompts you to "*Hit <DEL> if you want to run SETUP*". When you see this message, press the **Delete** key and the Main menu page of the Setup Utility appears on your monitor.

```
          AMIBIOS SIMPLE SETUP UTILITY – VERSION 1.21.10
           (C) 2000 American Megatrends, Inc. All Rights Reserved
┌──────────────────────────────────┬──────────────────────────────────┐
│ Standard CMOS Setup              │ Features Setup                    │
│ Advanced Setup                   │ CPU PnP Setup                     │
│ Power Management Setup           │ Hardware Monitor                  │
│ PCI / Plug and Play Setup        │ Change Password                   │
│ Load Optimal Settings            │ Exit                              │
│ Load Best Performance Settings   │                                   │
├──────────────────────────────────┴──────────────────────────────────┤
│ Esc :  Quit    ↑ ↓ ← →: Select Item  (Shift)F2 : Change Color  F5 : Old Values │
│ F6  :  Optimal values           F7 : Best  performance values  F10 : Save&Exit │
├──────────────────────────────────────────────────────────────────────┤
│        Standard CMOS setup for changing time, date, hard disk type, etc. │
└──────────────────────────────────────────────────────────────────────┘
```

BIOS Navigation Keys

You can use the cursor arrow keys to highlight any of the options on the main menu page. Press **Enter** to select the highlighted option. To exit the setup utility, press the **Escape** key. To cycle through the Setup Utility's optional color schemes press down the **F2/F3**.

Some of the options on the main menu page lead to tables of items with installed values. In these pages, use the cursor arrow keys to highlight the items, and then use the **PgUp** and **PgDn** keys to cycle through the alternate values for each item. Other options on the main menu page lead to dialog boxes that require you to answer Yes or No by hitting the Y or N keys.

If you have already made changes to the setup utility, press **F10** to save those changes and exit the utility. Press **F5** to reset the changes to the original values. Press **F6** to install the setup utility with a set of high-performance values.

Using BIOS

When you start the Setup Utility, the main menu appears. The main menu of the Setup Utility displays a list of the options that are available. A highlight indicates which option is currently selected. Use the cursor arrow keys to move the highlight to other options. When an option is highlighted, execute the option by pressing <Enter>.

Some options lead to pop-up dialog boxes that prompt you to verify that you wish to execute that option. Other options lead to dialog boxes that prompt you for information.

Some options (marked with a triangle ▶) lead to submenus that enable you

to change the values for the option. Use the cursor arrow keys to scroll through the items in the submenu.

In this manual, default values are enclosed in parenthesis. Submenu items are denoted by a triangle ▶.

Standard CMOS Setup Page

This page sets up basic information such as the date, the time, the IDE devices, and the diskette drives. If you press the F3 key, the system will automatically detect and configure the hard disks on the IDE channels.

```
          AMIBIOS SETUP – STANDARD CMOS SETUP
        (C) 2000 American Megatrends, Inc. All Rights Reserved

Date  (mm/dd/yy) : Thu Oct 24, 2002
Time  (hh/mm/ss) : 16:33:18
                                            LBA   Blk   PIO   32Bit
            Type        Size Cyln Head WPcom Sec Mode  Mode  Mode  Mode
Pri Master  : Auto                                                 On
Pri Slave   : Auto                                                 On
Sec Master : Auto                                                  On
Sec Slave  : Auto                                                  On

Floppy Drive A : 1.44 MB 3 1/2
Floppy Drive B : Not Installed


Month : Jan – Dec                            ESC  : Exit
  Day : 01 – 31                              ↑↓   : Select Item
  Year : 1901 – 2099                         PU/PD/+/- : Modify
                                             (Shift)F2 : Color
                                             F3 : Detect All HDD
```

Date & Time

Use these items to set the system date and time

Pri Master/Pri Slave/Sec Master/Sec Slave

Use these items to configure devices connected to the Primary and Secondary IDE channels. To configure an IDE hard disk drive, choose *Auto*. If the *Auto* setting fails to find a hard disk drive, set it to *User*, and then fill in the hard disk characteristics (Size, Cyls, etc.) manually. If you have a CD-ROM drive, select the setting *CDROM*. If you have an ATAPI device with removable media (e.g. a ZIP drive or an LS-120) select *Floptical*.

Floppy Drive A/Floppy Drive B

Use these items to set the size and capacity of the floppy diskette drive(s) installed in the system.

Advanced Setup Page

Use this page to set more advanced information about your system. Take some care with this page. Making changes can affect the operation of your computer.

```
┌──────────────────────────────────────────────────────────────────────┐
│             AMIBIOS SETUP – ADVANCED SETUP                             │
│        (C) 2000 American Megatrends, Inc. All Rights Reserved          │
├────────────────────────────────────┬─────────────────────────────────┤
│ Quick Boot              Enabled     │ CLK Gen Spread Spectrum  Disabled│
│ 1st Boot Device         IDE-0       │ Auto detect DIMM/PCI Clk Enabled │
│ 2nd Boot Device         Floppy      │                                  │
│ 3rd Boot Device         CDROM       │                                  │
│ Try Other Boot Devices  Yes         │                                  │
│ S.M.A.R.T. for Hard Disks Disabled  │                                  │
│ BootUp Num-Lock         On          │                                  │
│ Floppy Drive Swap       Disabled    │                                  │
│ Floppy Drive Seek       Disabled    │                                  │
│ Password Check          Setup       │                                  │
│ Boot To OS/2 > 64MB     No          ├─────────────────────────────────┤
│ L2 Cache                WriteBack   │                                  │
│ System BIOS Cacheable   Disabled    │ ESC : Quit      ↑↓←→ : Select Item│
│ Graphic Win Size        4M          │                                  │
│ DRAM CAS# Latency       3T          │ F1  : Help     PU/PD/+/- : Modify│
│ Timing Setting Mode     Normal      │ F5  : Old Values (Shift)F2 : Color│
│ MA 1T/2T Select         MA 2T       │                                  │
│ Auto Detect DIMM/PCI Clk Enabled    │ F6  : Load BIOS Defaults          │
│ Spread Spectrum         Disabled    │ F7  : Load Setup Defaults         │
│ DOS Flat Mode           Disabled    │                                  │
└────────────────────────────────────┴─────────────────────────────────┘
```

Quick Boot

If you enable this item, the system starts up more quickly be elimination some of the power on test routines.

1st Boot Device/2nd Boot Device/3rd Boot Device

Use these items to determine the device order the computer uses to look for an operating system to load at start-up time.

Try Other Boot Device

If you enable this item, the system will also search for other boot devices if it fails to find an operating system from the first two locations.

S.M.A.R.T. for Hard Disks

Enable this item if any IDE hard disks support the S.M.A.R.T. (Self-Monitoring, Analysis and Reporting Technology) feature.

BootUp Num-Lock

This item determines if the Num Lock key is active or inactive at system start-up time.

Floppy Drive Swap

If you have two diskette drives installed and you enable this item, drive A becomes drive B and drive B becomes drive A.

Floppy Drive Seek

If you enable this item, your system will check all floppy disk drives at start up. Disable this item unless you are using an old 360KB drive.

Password Check

If you have entered a password for the system, use this item to determine, if the password is required to enter the Setup Utility (*Setup*) or required both at start-up and to enter the Setup Utility (*Always*).

Boot to OS/2 > 64MB

Enable this item if you are booting the OS/2 operating system and you have more than 64MB of system memory installed.

L2 Cache

Leave these items enabled since all the processors that can be installed on this board have internal L2 cache memory.

System BIOS Cacheable

If you enable this item, a segment of the system BIOS will be copied to main memory for faster execution.

Graphic Win Size

This item defines the size of aperture if you use a graphic adapter.

DRAM CAS# Latency

This item determines the operation of DRAM memory CAS (column address strobe). It is recommended that you leave this item at the default value. The 3T setting requires faster memory that specifically supports this mode.

Timing Setting Mode

This item determines the timing setting mode of the memory. We recommend you leave this item at the default value.

MA 1T/2T Select

This item adjusts timing 1T/2T latency. We recommend you to leave this item at the default value.

Auto detect DIMM/PCI Clk

When this item is enabled, BIOS will disable the clock signal of free DIMM/PCI slots.

Spread Spectrum

If you enable spread spectrum, it can significantly reduce the EMI (Electro-Magnetic Interference) generated by the system.

DOS Flat Mode

This item enables BIOS to enter the DOS protected mode without other software supporting under the DOS operating system. We recommend you leave this item at the default value.

Power Management Setup Page

This page sets some of the parameters for system power management operation.

```
┌─────────────────────────────────────────────────────────────────────────┐
│                AMIBIOS SETUP – POWER MANAGEMENT SETUP                     │
│           (C) 2000 American Megatrends, Inc. All Rights Reserved          │
├─────────────────────────────────────┬───────────────────────────────────┤
│ ACPI Aware O/S              Yes      │                                   │
│ Power Management            Enabled  │                                   │
│ Suspend Time out            Disabled │                                   │
│ Hard Disk Time out          Disabled │                                   │
│ Resume On RTC Alarm         Disabled │ ESC : Quit      ↑↓←→ : Select Item │
│ RTC Alarm Date              15       │ F1  : Help      PU/PD/+/- : Modify │
│ RTC Alarm Hour              12       │ F5  : Old Values (Shift)F2 : Color │
│ RTC Alarm Minute            30       │                                   │
│ RTC Alarm Second            30       │ F6  : Load Optimal values         │
│ LAN/Ring Power On           Disabled │                                   │
│ Keyboard Power On           Disabled │ F7  : Load Best performance values │
└─────────────────────────────────────┴───────────────────────────────────┘
```

ACPI Aware O/S

Enable this item if you are using an O/S that supports ACPI function such as Windows 98/ME /2000.

Power Management

Use this item to select a power management scheme. Both APM and ACPI are supported.

Suspend Time Out

This sets the timeout for Suspend mode in minutes. If the time selected passes without any system activity, the computer will enter power-saving Suspend mode.

Hard Disk Time Out

This sets the timeout to power down the hard disk drive, if the time selected passes without any hard disk activity.

Resume On RTC Alarm Date / Hour / Minute / Second

The system can be turned off with a software command. If you enable this item, the system can automatically resume at a fixed time based on the system's RTC (realtime clock). Use the items below this one to set the date and time of the wake-up alarm. You must use an ATX power supply in order to use this feature.

LAN/Ring Power On

The system can be turned off with a software command. If you enable this item, the system can automatically resume if there is an incoming call on the Modem. You must use an ATX power supply in order to use this feature.

KeyBoard Power On

If you enable this item, you can turn the system on and off by pressing hot keys on the keyboard. You must enable the Keyboard Power On jumper and use an ATX power supply in order to use this feature.

PCI / Plug and Play Setup

This page sets some of the parameters for devices installed on the PCI bus and devices that use the system plug and play capability.

```
┌─────────────────────────────────────────────────────────────────────┐
│           AMIBIOS SETUP – PCI / PLUG AND PLAY SETUP                  │
│        (C) 2000 American Megatrends, Inc. All Rights Reserved        │
├──────────────────────────────────┬──────────────────────────────────┤
│ Plug and Play Aware O/S      Yes  │                                  │
│ Primary Graphics Adapter     PCI  │                                  │
│ Allocate IRQ for PCI VGA     Yes  │                                  │
│ PCI IDE BusMaster       Disabled  │                                  │
│                                   ├──────────────────────────────────┤
│                                   │ ESC : Quit      ↑↓←→ : Select Item│
│                                   │ F1  : Help    PU/PD/+/- : Modify  │
│                                   │ F5  : Old Values  (Shift)F2 : Color│
│                                   │ F6  : Load BIOS Defaults          │
│                                   │ F7  : Load Setup Defaults         │
└──────────────────────────────────┴──────────────────────────────────┘
```

Plug and Play Aware O/S

Enable this item if you are using an O/S that supports Plug and Play such as Windows 95/98/ME.

Primary Graphics Adapter

This item indicates if the primary graphics adapter uses the PCI or the AGP bus. The default PCI setting still lets the onboard display work and allows the use of a second display card installed in a PCI slot.

Allocate IRQ to PCI VGA

If this item is enabled, an IRQ will be assigned to the PCI VGA graphics system. You set this value to No to free up an IRQ.

PCI IDE BusMaster

This item enables or disables the DMA under DOS mode. We recommend you to leave this item at the default value.

Load Optimal Settings

If you select this item and press **Enter** a dialog box appears. If you press **Y**, and then **Enter**, the Setup Utility loads a set of fail-safe default values. These default values are not very demanding and they should allow your system to function with most kinds of hardware and memory chips.

Note: It is highly recommended that users enter this option to load optimal values for accessing the best performance.

Load Best Performance Settings

If you select this item and press **Enter** a dialog box appears. If you press **Y**, and then **Enter**, the Setup Utility loads a set of best-performance default values. These default values are quite demanding and your system might not function properly if you are using slower memory chips or other low-performance components.

Features Setup Page

This page sets some of the parameters for peripheral devices connected to the system.

```
                     AMIBIOS SETUP – FEATURES SETUP
            (C) 2000 American Megatrends, Inc. All Rights Reserved

OnBoard FDC               Enabled
OnBoard Serial Port       3F8h/COM1
OnBoard IR Port           Disabled
OnBoard Parallel Port     378h
  Parallel Port Mode      ECP
  Parallel Port IRQ       7
  Parallel Port DMA       3
OnBoard MIDI Port         300h        ESC : Quit      ↑↓←→ : Select Item
  MIDI Port IRQ           10          F1  : Help    PU/PD/+/- : Modify
OnBoard PCI IDE           Both
Audio Device              Enabled     F5  : Old Values  (Shift)F2  : Color
Modem Device              Enabled
Ethernet Device           Enabled     F6  : Load BIOS Defaults
IEEE1394 Device           Enabled     F7  : Load Setup Defaults
Onboard USB Function      Enabled
USB Function for DOS      Disabled
ThumbDrive for DOS        Disabled
```

OnBoard FDC

Use this item to enable or disable the onboard floppy disk drive interface.

OnBoard Serial Port

Use these items to enable or disable the onboard COM1 serial port, and to assign a port address.

OnBoard IR Port

Use this item to enable or disable the onboard infrared port, and to assign a port address.

Onboard Parallel Port

Use this item to enable or disable the onboard LPT1 parallel port, and to assign a port address. The Auto setting will detect and available address.

Parallel Port Mode

Use this item to set the parallel port mode. You can select SPP (Standard Parallel Port), ECP (Extended Capabilities Port), EPP (Enhanced Parallel Port), or ECP + EPP.

Parallel Port IRQ

Use this item to assign either IRQ 5 or 7 to the parallel port.

Parallel Port DMA

Use this item to assign a DMA channel to the parallel port. The options are 0, 1 and 3.

OnBoard MIDI Port

Use this item to enable or disable the onboard MIDI port, and to assign a port address.

MIDI Port IRQ

Use this item to assign an IRQ to the MIDI port.

Onboard PCI IDE

Use this item to enable or disable either or both of the onboard Primary and Secondary IDE channels.

Audio Device

This item enables or disables the onboard AC'97 audio chip.

Modem Device

This item enables or disables the onboard AC'97 modem chip.

Ethernet Device

This item enables or disables the onboard Ethernet LAN.

IEEE1394 Device

This item enables or disables the onboard IEEE1394 chip.

Onboard USB Function

Enable this item if you plan to use the USB ports on this mainboard.

USB Function for DOS

Enable this item if you plan to use the USB ports on this mainboard in a DOS environment.

ThumbDrive for DOS

Enable this item to make a small portion of memory storage device for the USB ports.

CPU PnP Setup Page

This page lets you manually configure the mainboard for the CPU. The system will automatically detect the kind of CPU that you have installed and make the appropriate adjustments to the items on this page.

```
                    AMIBIOS SETUP – CPU PnP SETUP
          (C) 2000 American Megatrends, Inc. All Rights Reserved

CPU Type                      Intel P4
Auto Detect CPU/DRAM Freq     Enabled
CPU Frequency                 100 MHz
CPU Over-Clocking Freq.       100 MHz
CPU/DRAM Frequency Ratio      [ 1 : 1 ]
DRAM Frequency                100 MHz
CPU Ratio                     H/W Trap     ESC : Quit        ↑↓←→ : Select Item
Post Shutdown for CPU Fan     Disabled
                                           F1   : Help       PU/PD/+/- : Modify

                                           F5   : Old Values  (Shift)F2  : Color

                                           F6   : Load Optimal values

                                           F7   : Load Best performance values
```

CPU Type/ Frequency Ratio

These items show the type, frequency and ratio the installed CPU in your system.

CPU/DRAM Frequency/Ratio

These items decide CPU/DRAM frequency/ratio installed in your system.

CPU Over-Clocking Frequency

This item decides CPU over-clocking frequency installed in your system. If the over-clocking fails, please shut down the system power. And then, hold the PageUp key and start the power again; the BIOS will recover the safe default.

Auto Detect CPU/DRAM Freq

When this item is enabled, BIOS will decide the CPU/DRAM frequency in your system.

Post Shutdown for CPU Fan

When this item is set to Enabled, the system will automatically shut down if the CPU fan is disconnected with the power.

Hardware Monitor Page

This page sets some of the parameters for the hardware monitoring function of this mainboard.

```
AMIBIOS SETUP – HARDWARE MONITOR
(C) 2000 American Megatrends, Inc. All Rights Reserved

*** System  Hardware ***
Vcore                  1.632V
Vcc 1.8V               2.496V
Vcc 3.3V               3.392V
Vcc 5V                 4.972V
+12V                   11.968V
SB3V                   3.472V          ESC : Quit        ↑↓←→ : Select Item
-12V                   -11.721V
SB5V                   5.026V          F1   : Help       PU/PD/+/- : Modify
VBAT                   3.472V
VGA Fan Speed          4218 RPM        F5   : Old Values  (Shift)F2  : Color
SYSTEM Fan Speed       0 RPM
CPU Fan Speed          5443 RPM        F6   : Load Optimal values
SYSTEM Temperature     31°C/87°F       F7   : Load Best performance values
CPU Temperature        37°C/98°F
```

CPU / System Temperature

These items display CPU and system temperature measurement.

FANs & Voltage Measurements

These items indicate cooling fan speeds in RPM and the various system voltage measurements.

Change Password

If you highlight this item and press **Enter**, a dialog box appears which lets you enter a Supervisor password. You can enter no more than six letters or numbers. Press **Enter** after you have typed in the password. A second dialog box asks you to retype the password for confirmation. Press **Enter** after you have retyped it correctly. The password is then required to access the Setup Utility or for that and at start-up, depending on the setting of the Password Check item in Advanced Setup.

Change or Remove the Password

Highlight this item, press Enter and type in the current password. At the next dialog box, type in the new password, or just press Enter to disable password protection.

Exit

Highlight this item and press **Enter** to save the changes that you have made in the Setup Utility configuration and exit the program. When the Save and Exit dialog box appears, press **Y** to save and exit, or press **N** to exit without saving.

This concludes Chapter 3. Refer to the next chapter for information on the software supplied with the mainboard.

Using the Mainboard Software

About the Software CD-ROM

The support software CD-ROM that is included in the mainboard package contains all the drivers and utility programs needed to properly run the bundled products. Below you can find a brief description of each software program, and the location for your mainboard version. More information on some programs is available in a README file, located in the same directory as the software.

Note: Never try to install software from a folder that is not specified for use with your mainboard.

Before installing any software, always inspect the folder for files named README.TXT, INSTALL.TXT, or something similar. These files may contain important information that is not included in this manual.

Auto-installing under Windows 98/ME/2000/XP

The Auto-install CD-ROM makes it easy for you to install the drivers and software for your mainboard.

Note: If the Auto-install CD-ROM does not work on your system, you can still install drivers through the file manager for your OS (for example, Windows Explorer). Refer to Utility Folder Installation Notes later in this chapter.

The support software CD-ROM disc loads automatically under Windows 98/ME/2000/XP. When you insert the CD-ROM disc in the CD-ROM drive, the autorun feature will automatically bring up the install screen. The screen has three buttons on it, Setup, Browse CD and Exit.

Note: If the opening screen doesn't appear, double-click the file "setup.exe" in the root directory.

Setup Tab

Setup	Click the **Setup** button to run the software installation program. Select from the menu which software you want to install.
Browse CD	The **Browse CD** button is the standard Windows command that allows you to open Windows Explorer and show the contents of the support CD.
	Before installing the software from Windows Explorer, look for a file named README.TXT, INSTALL.TXT or something similar. This file may contain important information to help you install the software correctly.
	Some software is installed in separate folders for different operating systems, such as DOS, WIN NT, or WIN98/95. Always go to the correct folder for the kind of OS you are using.
	To install the software, execute a file named SETUP.EXE or INSTALL.EXE by double-clicking the file and then following the instructions on the screen.
Exit	The **Exit** button closes the Auto Setup window.

Application Tab

Lists the software utilities that are available on the CD.

Read Me Tab

Displays the path for all software and drivers available on the CD.

Running Setup

Follow these instructions to install device drivers and software for the mainboard:

1. Click **Setup**. The installation program begins:
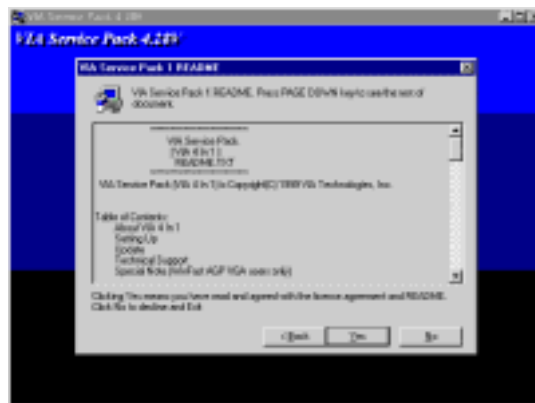
The mainboard identification is located in the upper left-hand corner.

2.   Click **Next**. The following screen appears:
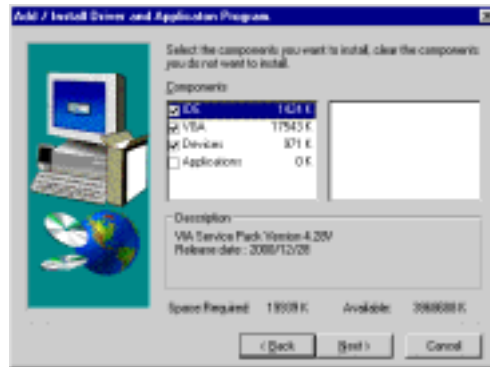
3.   Check the box next to the items you want to install. The default options are recommended.

4.   Click **Next** run the Installation Wizard. An item installation screen appears:

5.   Follow the instructions on the screen to install the items.

Drivers and software are automatically installed in sequence. Follow the on-screen instructions, confirm commands and allow the computer to restart a few times to complete the installation.

Manual Installation

Insert the CD in the CD-ROM drive and locate the PATH.DOC file in the root directory. This file contains the information needed to locate the drivers for your mainboard.

Look for the chipset and mainboard model; then browse to the directory and path to begin installing the drivers. Most drivers have a setup program (SETUP.EXE) that automatically detects your operating system before installation. Other drivers have the setup program located in the operating system subfolder.

If the driver you want to install does not have a setup program, browse to the operating system subfolder and locate the readme text file (README.TXT or README.DOC) for information on installing the driver or software for your operating system.

Bundled Software Installation

All bundled software available on the CD-ROM is for users' convenience. You can install bundled software as follows:

1. Click the **Application** button while the Auto Setup screen pops out after inserting the support CD-ROM.
2. A software menu appears. Click the software you want to install.
3. Follow onscreen instructions to install the software program step by step until finished.

Note: The software(s) are subject to change at anytime without prior notice. Please refer to the support CD for available software.

Set Up the Audio System

Set up the Audio configuration of 2-channel, 4-channel and 6-channel speaker-out system through the audio driver. It also provides users with **Xear Technology**, the virtual rear sound effect compensation for any multi-channel audio systems simply by using a pair of open-aired headphones.

- An ear/headphone-like device, capable of delivering the rear audio in a multi-channel audio system.
- Structurally comprising two housing units for receiving the rear signal, wherein the housings are opposite each other. Both housing units may be joined by a headband or other unification device.
- Open-aired design, allowing the listener to perceive the front signal at the same time.
- Rear output adjustable in position, height, and width via C-Media's user friendly API, capable of offering a freely defined cyberspace to the listener.
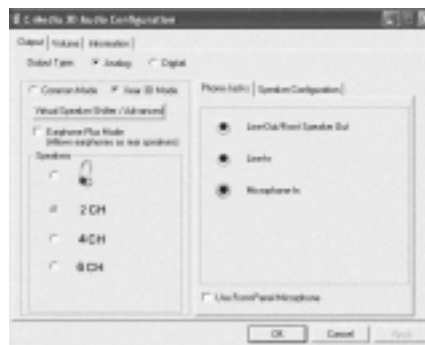
Xear 3D Mode

In Xear 3D Mode, there are Virtual Speaker Shifter/Advance and Earphone Plus Mode options and channel selections. Each channel has a corresponding position of phone jacks and description.

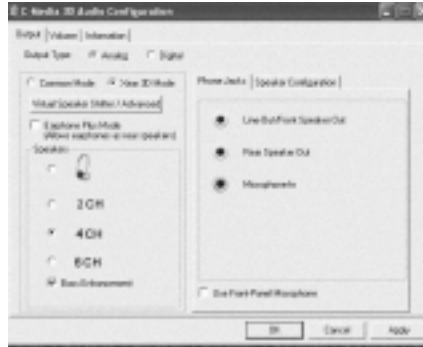(Three audio jacks on the screen show these colors: top-- lime, middle-- light blue, bottom-- pink)
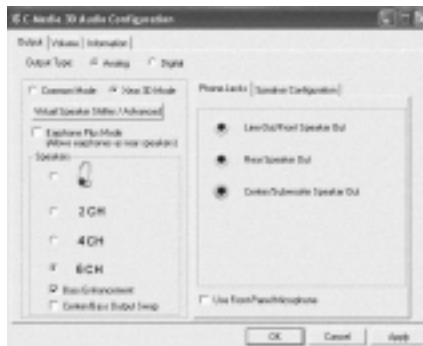
EARPHONE
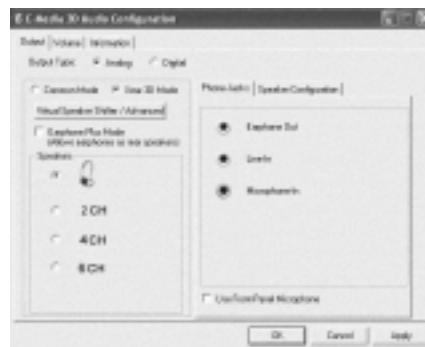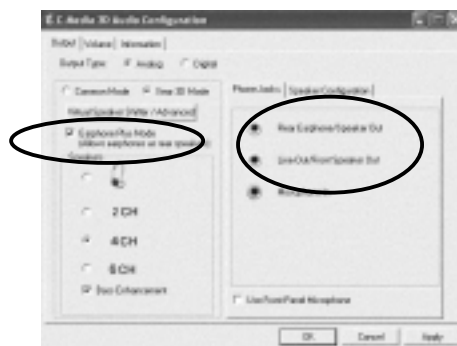

2-CHANNEL

FOUR-CHANNEL

SIX-CHANNEL

Earphone Plus Mode

While enabling Earphone Plus Mode, it activates the Xear function; moreover, original Front Out and Rear Out positions will be exchanged in Multi-Channel mode. EARPHONE and 2-CHANNEL don't support Xear function.

(Three audio jacks on the screen show these colors: top-- lime, middle-- light blue, bottom-- pink)
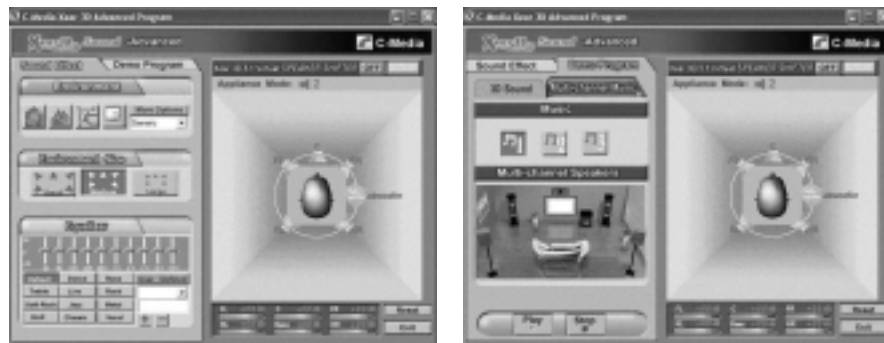
FOUR-CHANNEL

Virtual Speaker Shift/Advance

Click the Virtual Speaker Shift/Advance button, it provides some 3D Sound Effect and DEMO program for testing.

This concludes Chapter 4.