Preface

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Version 5.0

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

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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:

Chapter 1 **Introducing the Mainboard**	Describes features of the mainboard, and provides a shipping checklist. Go to ⟹ page 1
Chapter 2 **Installing the Mainboard**	Describes installation of mainboard components. Go to ⟹ page 5
Chapter 3 **Using BIOS**	Provides information on using the BIOS Setup Utility. Go to ⟹ page 23
Chapter 4 **Using the Mainboard Software**	Describes the mainboard software. Go to ⟹ page 35

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Introducing the Mainboard

Introduction

Congratulations on purchasing the P4S5MG mainboard. This mainboard has a **Socket-478** processor socket for **Intel Pentium 4** type of processors supporting front side bus (FSB) speeds up to **400 MHz**.

This mainboard has the **SiS650** chipset that supports built-in **AC97 Codec**, **2 DDR + 2 SDR** modules up to 2GB system memory, and provides **Ultra DMA** 33/**66/100** function. This mainboard integrates a **256-bit 3D/2D Graphics Engine**, Video Accelerator and Advanced Hardware Acceleration **MPEGI/MPEGII Video Decoder** for the Intel Pentium 4 series based PC systems. It has the external AGP slot with **AGP 4X 266 MHz** capability, one **AMR** (Audio Modem Riser) slot to support Audio and Modem application, and built-in **10BaseT/100BaseTX Network Interface**. In addition, this mainboard has a full set of I/O ports including two PS/2 ports for mouse and keyboard, two serial ports, one parallel port, one MIDI/game port and four USB ports (two backpanel ports, onboard USB headers providing two extra ports). By means of the Extended USB Module connected to the mainboard, you can make two extra USB ports.

This mainboard is **Micro ATX size** and has power connectors for an **ATX** power supply and measures 244 x 244mm.

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
- Software support CD
- One VGA extension bracket
- The User's Manual

Features

Processor	• The mPGA Socket 478 • Supports **Intel Pentium 4 series** CPUs • Supports up to 400 MHz system bus
Memory	• Two 168-pin DIMM slots for SDRAM memory modules • Two 184-pin DIMM slots for DDR memory modules • Support SDRAM up to 133 MHz /DDR up to 266 MHz memory bus • Maximum installed memory is 2GB **Note:** You cannot use SDRAM and DDR simultaneously.
Expansion Slots	• One AMR slot for a special audio/modem riser card • One 2x/4xAGP slot for AGP 2.0-compliant interface • Two 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 33/**66**/**100** modes
Power Supply and 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
AC' 97 Audio Codec	• Compliant AC97 2.2 specification • Supports 18-bit ADC (Analog Digital Converter) and DAC (Digital Analog Converter) as well as 18-bit stereo full-duplex codec
Onboard VGA	• Supports AGP V2.0 Compliant • Supports **AGP 4X/2X** interface and Fast Write Transaction • Supports high performance & high quality 3D Accelerator—A built-in 256-bit 3D engine, up to 143 MHz 3D engine clock speed • Supports high performance 128-bit 2D Accelerator—Ultra-AGPII^{TM} 2GB/s data read for all 2D engine functions • Maximum Share Memory size is 64MB
Built-in Ethernet LAN (optional)	• Built-in 10BaseT/100BaseTX Ethernet LAN • SiS961 Embedded Fast Ethernet MAC and onboard Realtek RTL8201 LAN PHY compliant with IEEE802.3u 100BASE-TX, 10BASE-T and ANSI X3.263 TP-PMD standards • Compliant with ACPI 1.0 and the Network Device Class Power Management 1.0 • High Performance provided by 100Mbps clock generator and data recovery circuit for 100Mbps receiver
Onboard I/O Ports	• Two PS/2 ports for mouse and keyboard • Two serial ports • One parallel port • One MIDI/game port • Four USB ports (two backpanel ports, onboard USB

	headers providing two extra ports)
	• 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
Dimensions	Micro ATX form factor 244 x 244mm

Choosing a Computer Case

There are many types of computer cases on the market. The mainboard complies with the specifications for the micro-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 floppy diskette drive 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 a micro-ATX form factor of 244 x 244 mm. Choose a case that accommodates this form factor.

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

Mainboard Components
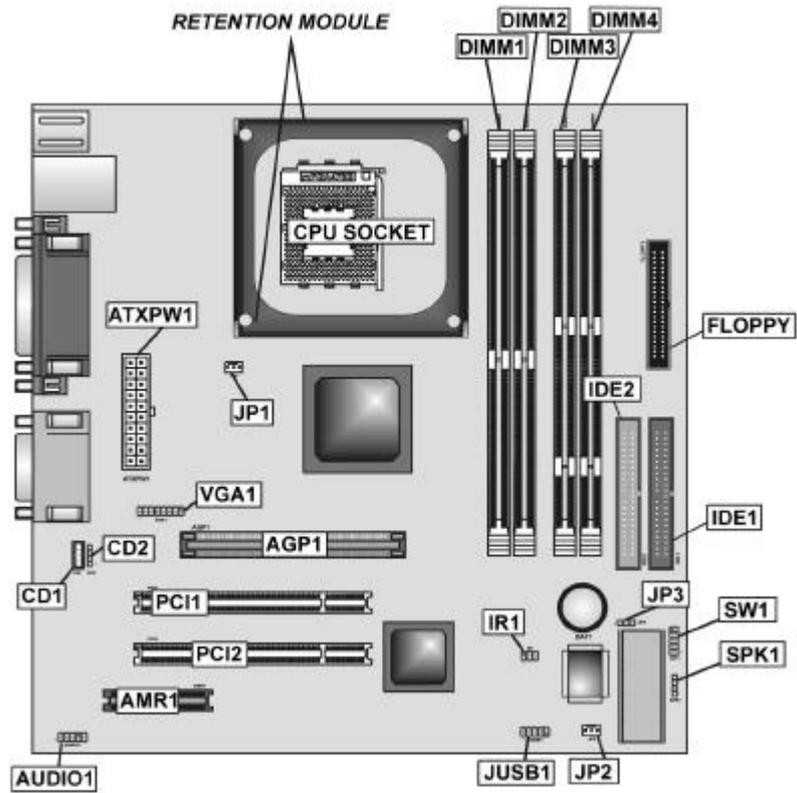
Safety Precautions

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.
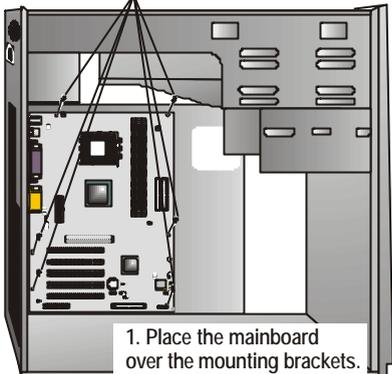
1. Place the mainboard over the mounting brackets.

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**
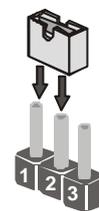
Checking Jumper Settings

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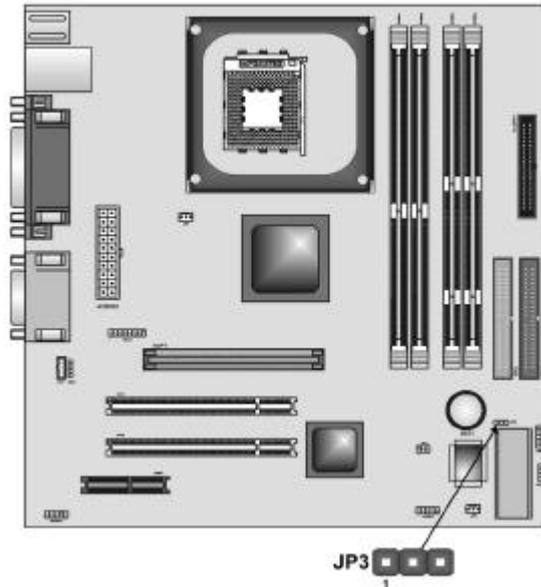
Jumper Settings

Jumper	Type	Description	Setting (*default*)	
JP3	3-pin	Clear CMOS jumper	*1-2: Clear CMOS* 2-3: Normal	JP3

JP3: Clear CMOS Jumper

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 power connector from the power supply to the **ATX_PW1** connector on the mainboard. 2. Connect the CPU cooling fan cable to JP1. 3. If there is a cooling fan installed in the system chassis, connect the cable from the cooling fan to the JP2 fan power connector on the mainboard.	
4. Connect the case switches and indicator LEDs to the **SW1** header.	
5. Connect the case speaker cable to SPK1.	
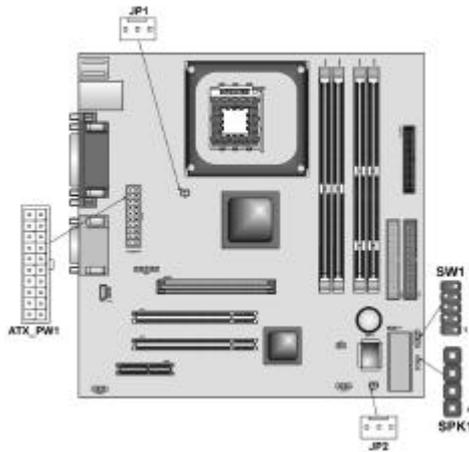
SPK1: Speaker Connector

Connect the cable from the PC speaker to the SPK1 header on the mainboard.

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

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The SW1 Connector

This panel connector provides a set of switch and LED connectors found on ATX case. Refer to the table below for information.

Device	Pins
HDDLED_P	1
FP ACPI LED	2, 4
HDDLED_N	3
RST_SW_N	5
PW_BT_P	6
RST_SW_P	7
PW_BT_N	8
RSVD_DNU	9
KEY	10
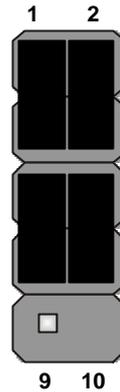
Note: The plus sign (+) indicates a pin which must be connected to a positive voltage.

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 ~ 2.2GHz, FSB: 400MHz

CPU Installation Procedure

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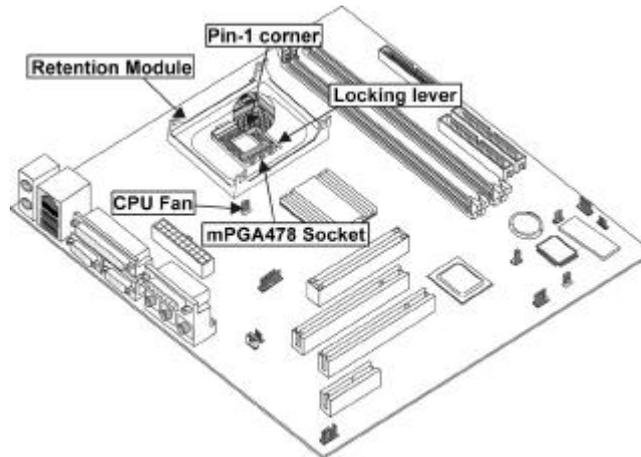
Note: The pin-1 corner is marked with an arrow ▶

Follow these instructions to install the CPU:

1.	Install and secure the Retention Module on the mainboard.
2.	Pull the CPU socket locking lever away from the socket to unhook it and raise the locking lever to the upright position.
3.	Match the corner on the CPU marked with an arrow with pin-1 on the CPU socket (the corner with the pinhole noticeably missing). Insert the processor into the socket. Do not use force.
4.	Lower the heatsink over the CPU.
5.	Lower the CPU cooling fan onto the heatsink.
6.	Apply thermal grease to the top of the CPU.

7. Swing the locking lever down and hook it under the latch on the edge of the socket.	
8. Snap the four retention legs of the cooling fan into place.	
9. Swing both lock levers on top of the cooling fan to their opposite sides to secure the cooling fan on top of the heatsink.	
10. Connect the CPU Cooling Fan power cable to the CPUFAN1 connector.	
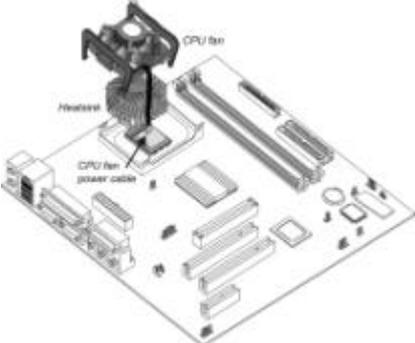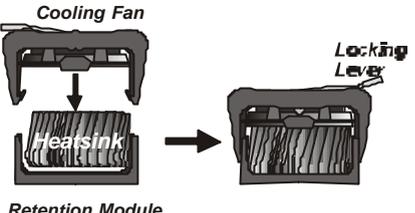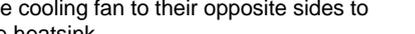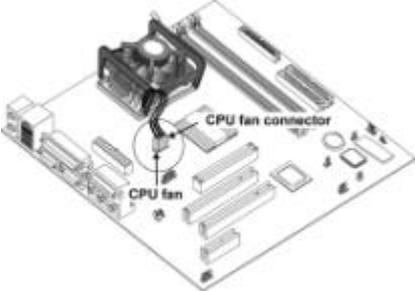
Note: CPU fan and heatsink installation procedures may vary with the type of CPU fan/heatsink supplied. The form and size of fan/heatsink may also vary.

Installing Memory Modules

The mainboard has two 168-pin/184-pin DIMM sockets for SDRAM/DDR (Double Data Rate) SDRAM system memory modules.

The CPU supports 400MHz system bus. The SDRAM DIMMs and DDRs can synchronously work with 100 MHz or operates over a 266 MHz system bus.

SDRAM provides 800 MB/s or 1 GB/s data transfer rate corresponding with the bus 100 MHz or 133 MHz. It doubles the rate to 1.6 GB/s and 2.1 GB/s by transferring data on both the rising and falling edges of the clock. DDR SDRAM uses additional power and ground lines and requires 184-pin 2.5V unbuffered DIMM module rather than the 168-pin 3.3V unbuffered DIMMs used by SDRAM.

Installation Procedure

You must install at least one memory module in order to use the main-board. **Note**: You cannot use DDR SDRAM and SDRAM simultaneously.	
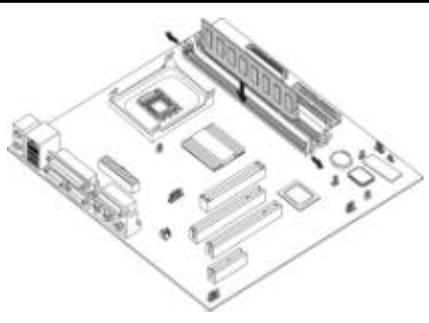
Refer to the following to install the memory modules.

1. Push the latches on each side of the DIMM slot down.
2. 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.
3. Check that the cutouts on the DIMM module edge connector match the notches in the DIMM slot:
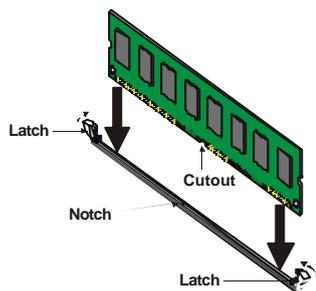
DDR SDRAM Module   **SDRAM Module**

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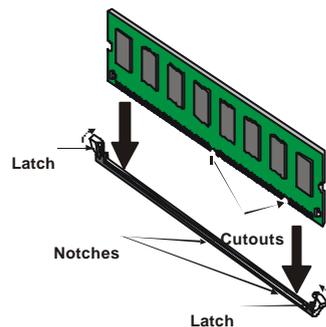
4. Install the DIMM module into the slot and press it firmly down until it seats correctly. The slot latches are levered upwards and latch on to the edges of the DIMM.

5. 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. 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.

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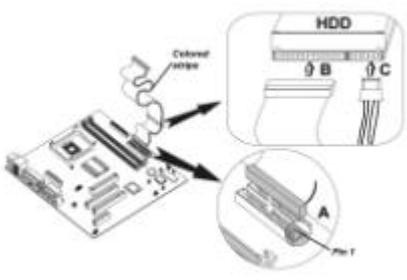
When you first start up your system, the BIOS should automatically detect your hard disk drive. If it doesn't, enter the Setup Utility and use the IDE Hard Disk Auto Detect feature to configure the hard disk drive that you have installed.

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 CDIN1 or CDIN2 (**D**).
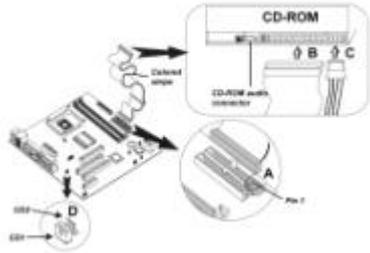
When you first start up your system, the BIOS should automatically detect your CD-ROM/DVD drive. If it doesn't, enter the Setup Utility and configure the CD-ROM/DVD drive that you have installed.

Installing a Floppy Diskette Drive

The mainboard has a floppy diskette drive (FLOPPY) 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**).	
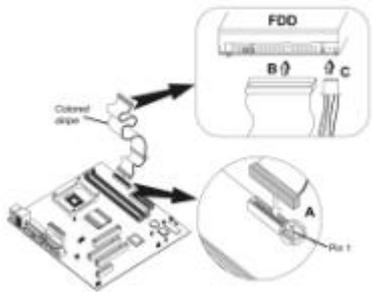
When you first start up your system, go immediately to the Setup Utility to configure the floppy diskette drives that you have installed.

Installing Add-on Cards

This mainboard has two 32-bit PCI (Peripheral Components Interconnect) expansion slots, one 4xAGP slot, and one AMR (Audio Modem Riser) slot.
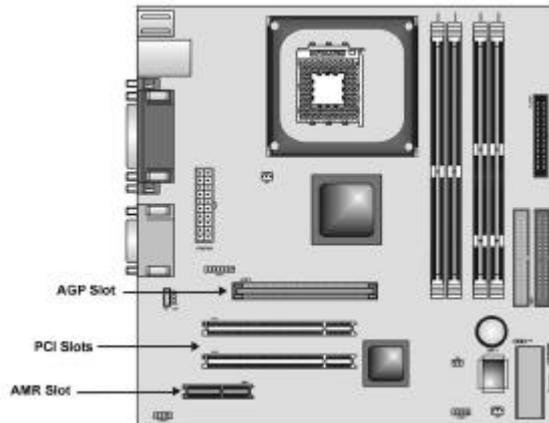
AGP Slot	The 4xAGP slot is used to install a graphics adapter that supports the 4xAGP specification and has a 4xAGP edge connector.
PCI Slots	PCI slots are used to install expansion cards that have the 32-bit PCI interface.
AMR Slot	The AMR (Audio Modem Riser) slot is an industry standard slot that allows for the installation of a special audio/modem riser card. Different territories have different regulations regarding the specifications of a modem card. You can purchase an AMR card that is approved in your area and install it directly into the AMR slot.

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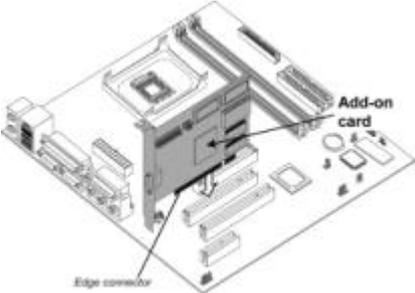
Note: For some add-on cards, for example graphics adapters and network adapters, you have to install drivers and software before you can begin using the add-on card.

Connecting Optional Devices

Refer to the following for information on connecting the mainboard' s optional devices:

VGA Extension Bracket
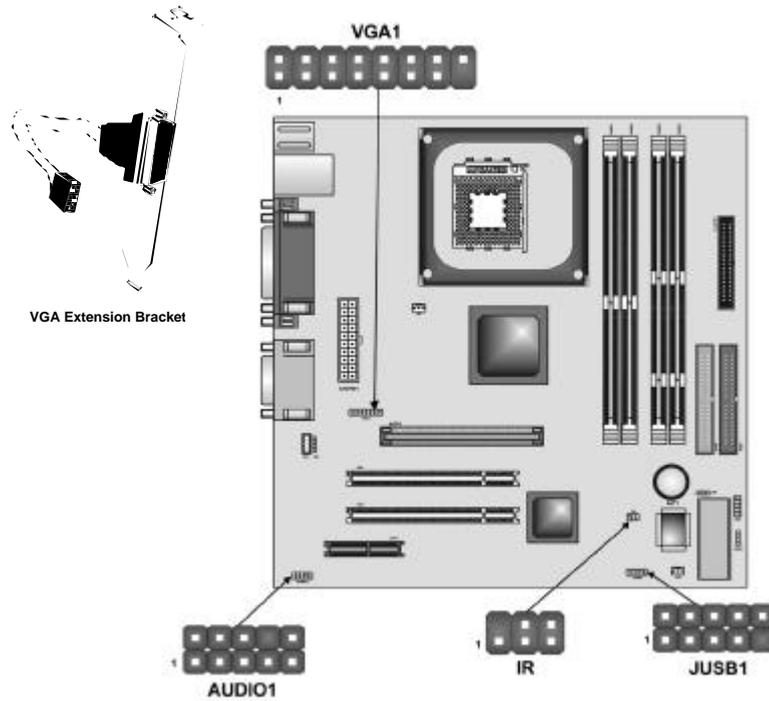
AUD1O1: Front panel MIC/Speaker Out header

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

Pin	Signal Name	Pin	Signal Name
1	AUD_MIC	2	AUD_GND
3	AUD_MIC_BIAS	4	AUD_VCC
5	AUD_FPOUT_R	6	AUD_RET_R
7	HP_ON	8	KEY
9	AUD_FPOUT_L	10	AUD_RET_L

JUSB1: Extended USB module

The mainboard has USB ports installed on the rear edge I/O port array. Some computer cases have a special module that mounts USB ports at the front of the case. If you have this kind of case, use auxiliary USB connectors JUSB1 to connect the front-mounted ports to the mainboard.

Pin	Signal Name	Pin	Signal Name
1	VCC	2	VCC
3	DATA1-	4	DATA2-
5	DATA1+	6	DATA2+
7	GROUND	8	GROUND
9	KEY	10	KEY

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	Pin	Signal Name
1	FIR	4	Ground
2	Key	5	IRTX
3	+5V	6	IRRX

VGA1: VGA extension bracket

The VGA extension bracket has a 15-pin connector for an external monitor cable.

Note: All the ribbon cables used on the extension brackets have a red stripe on the Pin-1 side of the cable.

Connecting I/O Devices

The backplane of the mainboard has the following I/O ports:
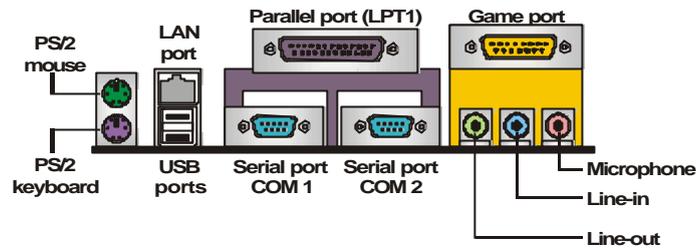
PS/2 Mouse	Use the upper PS/2 port to connect a PS/2 point-ing device.
PS/2 Keyboard	Use the lower PS/2 port to connect a PS/2 key-board.
LAN Port (optional)	Use the LAN port to connect to the network.
USB Ports	Use the USB ports to connect USB devices.
LPT1	Use LPT1 to connect printers or other parallel communications devices.
COM1/2	Use the COM ports to connect serial devices such as mice or fax/modems. COM1 is identified by the system as COM1/3. COM2 is identified by the system as COM2/4.
Game Port	Use the game port to connect a joystick or a MIDI device.
Audio Ports	Use the three audio ports to connect audio de-vices. The left side jack is for a stereo line-out signal. The middle jack is for a stereo line-in signal. The right side jack is for a microphone.

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 mes-sage 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 1.21.06
                (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

The BIOS navigation keys are listed below:

Key	Function
Esc	Exits the current menu
←↑↓→	Scrolls through the items on a menu
+/–/PU/PD	Modifies the selected field's values
F10	Saves the current configuration and exits setup
F1	Displays a screen that describes all key functions
F5	Loads previously saved values to CMOS
F6	Loads a minimum configuration for troubleshooting.
F7	Loads an optimum set of values for peak performance

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

Use this page to set 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 Nov 15, 2001                                   │
│ Time  (hh/mm/ss) :  17:24:25                                          │
│                                            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
1st Boot Device             IDE-0
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                    Enabled      ESC : Quit        -  ¯ ¬  ® : Select Item
System BIOS Cacheable       Disabled
Share Memory Size           64 MB        F1  : Help        PU/PD/+/- : Modify
Graphic Win Size            64M
DRAM CAS#  Latency          3T           F5  : Old Values  (Shift)F2  : Color
Timing Setting Mode         Normal
MA 1T/2T Select             Auto         F6  : Load BIOS Defaults
Advanced Read Prefetch      Enabled      F7  : Load Setup Defaults
Auto Detect DIMM/PCI Clk    Enabled
```

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.

Share Memory Size

This item lets you allocate a portion of the main memory for the onboard VGA display application with five options of 4 / 8 / 16 / 32 / 64 MB.

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.

Advanced Read Prefetch

This item enables prefetching for reading data. 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 entering the DOS protected mode without other software supporting under the DOS operating system. We recommend you to 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
RTC Alarm Date           15        ESC : Quit        - ¯ ¬ ® : Select Item
RTC Alarm Hour              12      F1   : Help         PU/PD/+/- : Modify
RTC Alarm Minute         30
RTC Alarm Second         30         F5   : Old Values  (Shift)F2  : Color
LAN/Ring Power On        Disabled   F6   : Load Optimal values
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    │                                  │
│                                    ├──────────────────────────────────┤
│                                    │ 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.

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 PortA     3F8h/COM1
OnBoard Serial PortB     2F8h/COM2
  Serial Port2 Mode      Normal
OnBoard Parallel Port    378h
  Parallel Port Mode     ECP
  Parallel Port IRQ      7
  Parallel Port DMA      3          ESC : Quit        -‾¬® : Select Item
OnBoard Game Port        201h
OnBoard MIDI Port        300h       F1   : Help         PU/PD/+/- : Modify
  MIDI Port IRQ          10
OnBoard PCI IDE          Both       F5   : Old Values  (Shift)F2  : Color
Audio Device             Enabled
Modem Device             Enabled    F6   : Load BIOS Defaults
Ethernet Device          Enabled
Onboard USB Function     Enabled    F7   : Load Setup Defaults
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 PortA/B

Use these items to enable or disable the onboard COM1/2 serial port, and to assign a port address.

Serial Port2 Mode

Use this item to allocate the resources of the second serial port. Under Normal, the resources are allocated to the onboard serial port. Under ASKIR or

IrDA, the resources are allocated to the onboard IR port.

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 Game Port

Use this item to enable or disable the onboard Game port.

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.

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.

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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
CPU/DRAM Speed        100/133 MHz
CPU Core Voltage      1.696V
CPU Ratio             H/W TRAP
CPU Frequency         100 MHz
DRAM Frequency        133 MHz




                                ESC : Quit        - ‾ ¬ ® : Select Item
                                F1  : Help        PU/PD/+/- : Modify
                                F5  : Old Values  (Shift)F2  : Color
                                F6  : Load Optimal values
                                F7  : Load Best performance values
```

CPU Type/Core Voltage/Ratio/ Frequency

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

CPU/DRAM Speed/Frequency

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

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                  1.696V
Vcc 1.8V               1.792V
Vcc 3.3V               3.328V
Vcc                    4.972V
+12V                   12.032V
SB3V                   11.968V
-12V                   -11.885V
SB5V                   4.892V
VBAT                   3.328V        ESC  : Quit         - ¯ ¬ ® : Select Item
SYSTEM Fan Speed       0 RPM         F1   : Help       PU/PD/+/- : Modify
CPU Fan Speed          5273 RPM
SYSTEM Temperature     34°C/93°F     F5   : Old Values  (Shift)F2  : Color
CPU Temperature        41°C/104°F    F6   : Load Optimal values
                                     F7   : Load Best Performance Values
```

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

Chapter 4
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 RE-ADME.TXT, INSTALL.TXT, or something similar. These files may contain important information that is not included in this manual

Auto-installing under Windows 98

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. 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.

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:

Note: The following screens are examples only. The screens and driver lists will be different according to the mainboard you are installing.

The mainboard identification is located in the upper left-hand corner.

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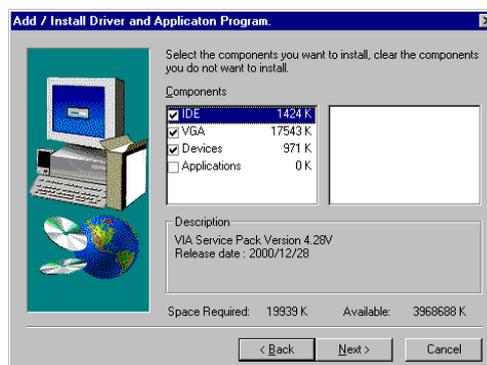
3. Check the box next to the items you want to install. The default options are recommended.

4. Click **Next** run the Installation Wizard. An item installation screen appears:
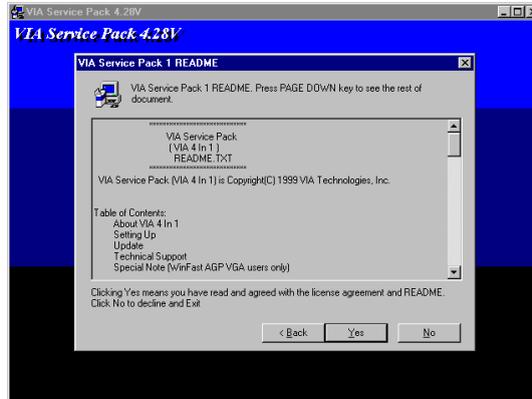
5. Follow the instructions on the screen to install the items.

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.

Utility Software Reference

All the utility software available from this page is Windows compliant. They are provided only for the convenience of the customer. The following software is furnished under license and may only be used or copied in accordance with the terms of the license.

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

AMI Flash Memory Utility

This utility lets you erase the system BIOS stored on a Flash Memory chip on the mainboard, and lets you copy an updated version of the BIOS to the chip. Proceed with caution when using this program. If you erase the current BIOS and fail to write a new BIOS, or write a new BIOS that is incorrect, your system will malfunction. Refer to Chapter 3, *Using BIOS* for more information.

WinFlash Utility

The Award WinFlash utility is a Windows version of the DOS Award BIOS flash writer utility. The utility enables you to flash the system BIOS stored on a Flash Memory chip on the mainboard while in a Windows environment. This utility is currently available for WINXP\ME\2000\98SE. To install the WinFlash utility, run WINFLASH.EXE from the following directory:

\UTILITY\WINFLASH 1.51

PC-CILLIN

The PC-CILLIN software program provides anti-virus protection for your system. This program is available for Windows 2000/ME/98SE and Windows NT. Be sure to check the readme.txt and install the appropriate anti-virus software for your operating system.

We strongly recommend users to install this free anti-virus software to help protect your system against viruses.

MediaRing Talk – Telephony Software

To install the MediaRing Talk voice modem software for the built-in modem, go to the directory \UTILITY\MEDIARING TALK, then run MRTALK-SETUP72.EXE to install the application software.

Super Voice – Fax/Modem Software

To install the Super Voice voice, fax, data communication application for use with the built-in fax/modem, go the directory \UTILITY\SUPER_VOICE, then run PICSHELL.EXE to install the application software.

CD Ghost

The CD Ghost software enables you to create a virtual cabinet of CD-ROM drives on your system to help you categorize and organize your CD collection. A user-friendly interface assists you in quickly creating images of both CDs and DVDs onto your system. To install the software, run SETUP.EXE from the following directory:

\UTILITY\CDGHOST\ENG\CDGHOST

Recovery Genius

The Recovery Genius software program is an innovative windows application system that protects your Hard Disk Drive from virus intrusion, accidental deletions and from system corruption. To install the Recovery Genius software program run SETUP.EXE from the following directory:

\UTILITY\RECOVERY GENIUS\ENG\RECOVERYGENIUS

Language Genius

The Language Genius is a software –based product that helps you to learn new languages. To install the Language Genius software program run SETUP.EXE from the following directory:

\UTILITY\LANGUAGE GENIUS\ENG\LANGUAGEGENIUS

PageABC

The PageABC application software enables you to create your very own home page. To install the PageABC, go to the directory \UTILITYPageABC, and then run SETUP.EXE to install the application software.

This concludes Chapter 4.