Preface

Copyright

Version 3.1

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 disclaims 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:

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 24

Chapter 4
Using the Mainboard Software

Describes the mainboard software.

Go to ⇒ page 36

TABLE OF CONTENTS

Chapter 1

Introducing the Mainboard

Introduction

Thank you for choosing the KOB P4M266 NDSUMx mainboard. This mainboard has a **Socket 478** for the **Intel Pentium 4** type of processors supporting front side bus (FSB) speeds up to **400 MHz**.

This mainboard has the **VIA VT8751 (P4M266)** Northbridge and VT8235 Southbridge chipsets that support **AC 97 audio codec**, and provide **Ultra DMA 33/66/100/133** function. It supports built-in **USB 2.0** providing higher bandwidth. It implements **Universal Serial Bus Specification Revision 2.0** and is compliant with **UHCI 1.1** and **EHCI 0.95**. This mainboard has two 32-bit **PCI** slots, one 4**xAGP** slot, one **CNR** (Communications and Networking Riser) slot, and an onboard **10BaseT/100BaseTX Network** interface (optional). In addition, this mainboard has a full set of I/O ports including two PS/2 ports for mouse and keyboard, one serial port, one VGA port, one parallel port, one MIDI/game port and maximum six USB ports **(USB 2.0)** --two back-panel ports and onboard USB headers make four extra USB ports by connecting the Extended USB Module to the mainboard.

This mainboard is a **Micro ATX size** mainboard and has power connectors for an ATX power supply.

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
- Retention Module Clamp
- Software support CD
- This user's manual

Features

Processor	The KOB P4M266 NDSUMx mainboard uses a mPGA478 Socket that has the following features: • Accommodates Intel Pentium 4 478-pins CPU • Supports a front-side bus (FSB) of 400 MHz
Chipset	There are VT8751 (P4M266) Northbridge and VT8235 Southbridge in this chipset in accordance with an innovative and scalable architecture with proven reliability and performance. A few of the chipset's advanced features are: • An advanced V-Link memory controller architecture that provides the bandwidth up to 533 MB/s and performance necessary for even the most demanding Internet and 3D graphics • Support for an 4xAGP interface providing vivid 3D graphics and video performance • An ATA 133 interface on the chipset, which helps boost system performance by providing a high-speed connection to ATA 133 Hard Disk Drives, delivering maximum sustained data transfer rates of 100 MB/sec Additional key features include support for six USB ports, an AC 97 link for audio and modem, hardware monitoring, and ACPI/OnNow power management.
Memory	The mainboard accommodates 2 DDR + 2 SDR 168 pin, 3.3V DIMM sockets with a total capacity of 2 GB system memory.
Built-in Graphics System	• P4M266 integrates S3®'s Savag4™ graphics accelerator into a single chip. P4M266 brings mainstream graphics performance to the Value PC with leading-edge 2D, 3D and DVD video acceleration into a cost effective package. Based on its capabilities, P4M266 is an ideal solution for the consumer, corporate mobile users and entry-level professionals. • Maximum-shared memory size is 32 MB.
VGA	This mainboard includes a 4xAGP slot that provides four times the bandwidth of the original AGP specification. AGP technology provides a direct connection between the graphics subsystem and memory so that the graphics do not have to compete for processor time with other devices on the PCI bus.
AC'97 Audio Codec: VT1612A	• Compliant with AC'97 2.1 specification • Three Audio Jacks – Line-Out, Line-In and Microphone-In • Sound Blaster, Sound Blaster Pro Compatible • Digital I/O compatible with consumer mode S/PDIF • Advanced power management support
Expansion Options	The mainboard comes with the following expansion options: • Two 32-bit PCI slots capable of Ultra DMA bus mastering with transfer rates of 33/66/100 MB/sec • An 4xAGP slot • A CNR (Communications and Networking Riser) slot
Integrated I/O	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

	• One MIDI/game port • Six USB ports (two back-panel ports, onboard USB headers providing four extra ports: header USB1 and USB2) — all support **USB 2.0** • Audio jacks for microphone, line-in and line-out
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
Built-in Ethernet LAN (optional)	• Built-in 10BaseT/100BaseTX Ethernet LAN • VT8233 integrates Fast Ethernet MAC and VT6103 LAN PHY in compliance with IEEE802.3u 100BASE-TX, 10BASE-T and ANSI X3.263 TP-PMD standards • In compliance with ACPI 1.0 and the Network Device Class Power Management 1.0 • High Performance achieved by 100Mbps clock generator and data recovery circuit for 100Mbps receiver
BIOS Firmware	This mainboard uses Award BIOS that enables users to configure many system features including the following: • Power management • Wake-up alarms • CPU parameters and memory timing • CPU and memory timing The firmware can also be used to set parameters for different processor clock speeds.

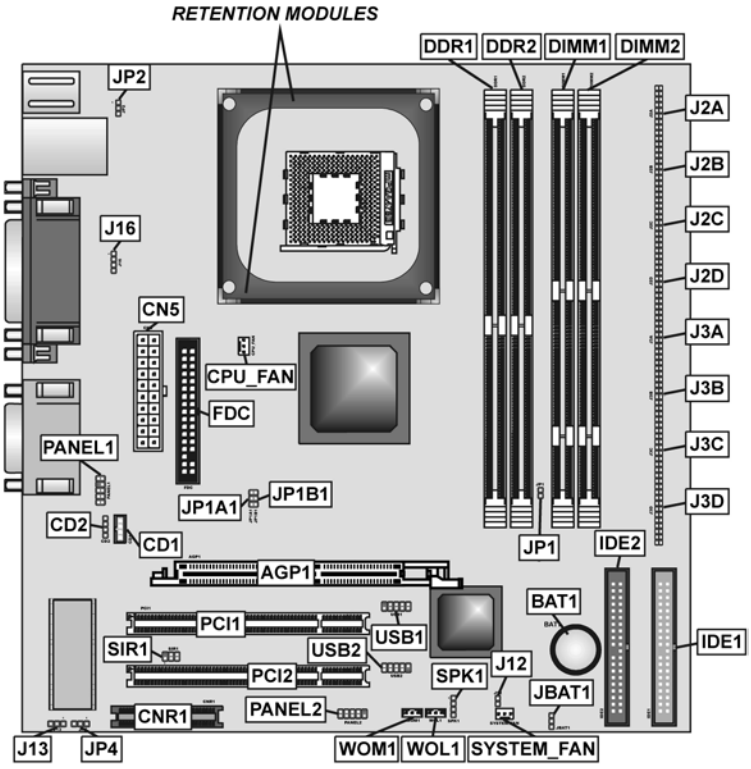
Choosing a Computer Case

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 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 a Micro-ATX form factor of 244 mm x 244 mm. Choose a case that accommodates this form factor.

Mainboard Components



Chapter 2

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:

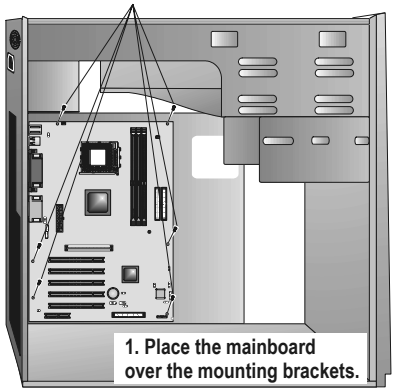
Installing the Mainboard in a Case

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.



Ensure that your case has an I/O template that supports the I/O ports and expansion slots on your mainboard.

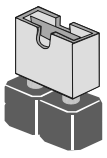
Checking Jumper Settings

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

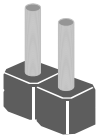
Setting Jumpers

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.

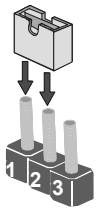


Short



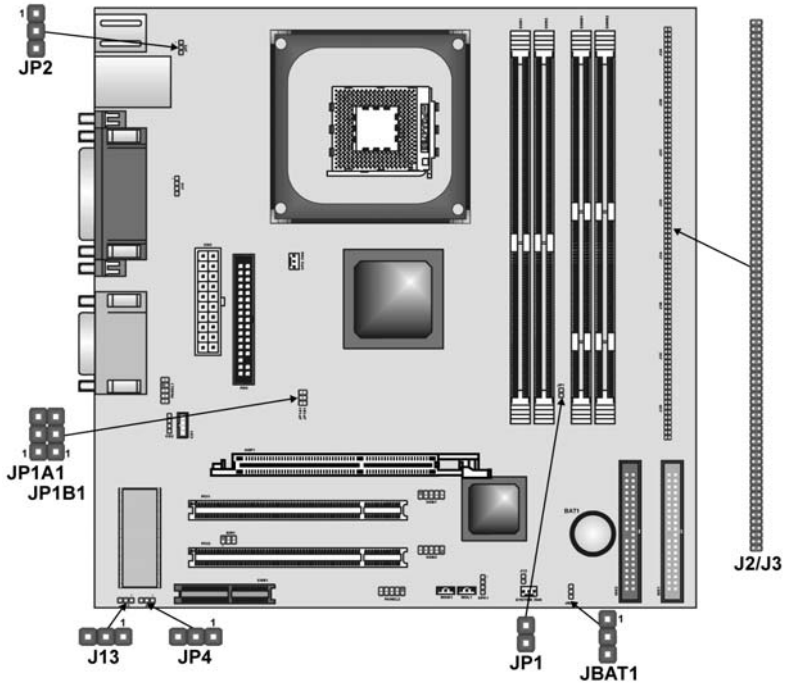
Open

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



Checking Jumper Settings

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



Jumper Settings

Jumper	Type	Description	Setting (*default*)
JBAT1	3-pin	Clear CMOS	*1-2: Normal* 2-3: Clear **JBAT1** 
JP1A1	3-pin	CPU Clock	100M: Short Pins 1-2 133M: Short Pins 2-3 **JP1A1** 
JP1B1	3-pin	CPU Clock	100M: Short Pins 2-3 133M: Short Pins 1-2 **JP1B1** 

JP1	2-pin	DRAM Voltage (VCC)	2.5V (DDR): Open Pins 1-2 3V (SDR): Short Pins 1-2	**JP1** 
J2A/B/C/D J3A/B/C/D	20-pin	DDR/SDR DRAM Type Selector	DDR1, DDR2: Short all J2A/B/C/D and J3A/B/C/D pins DIMM1, DIMM2: Open all J2A/B/C/D and J3A/B/C/D pins	**J2A/B/C/D** **J3A/B/C/D** 
JP2	3-pin	Keyboard Power On	5V: Short Pins 1-2 5VSB: Short Pins 2-3	**JP2**  **1**
J13	3-pin	Flash ROM Voltage (VCC)	5V: Short Pins 1-2 3V: Short Pins 2-3	**J13**  **1**
JP4	3-pin	Flash ROM Size	2M: Short Pins 1-2 4M: Short Pins 2-3	**JP4**  **1**

JBAT1
This jumper is to clear the contents of CMOS memory. You may need to clear the CMOS memory if the settings in the Setup Utility are incorrect that prevents 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. This jumper enables you to reset BIOS.

JP1A1/ JP1B
This jumper enables to select CPU frequency.

JP1: DRAM Voltage (VCC)
This jumper enables to select voltage of DRAM.

J2A/B/C/D, J3A/B/C/D: DDR/SDR DRAM Type Selector
This jumper enables to select the type of DDR or SDR DRAM.

JP2: Keyboard Power On
This jumper enables any keyboard activity to power up a system previously in a standby or sleep state.

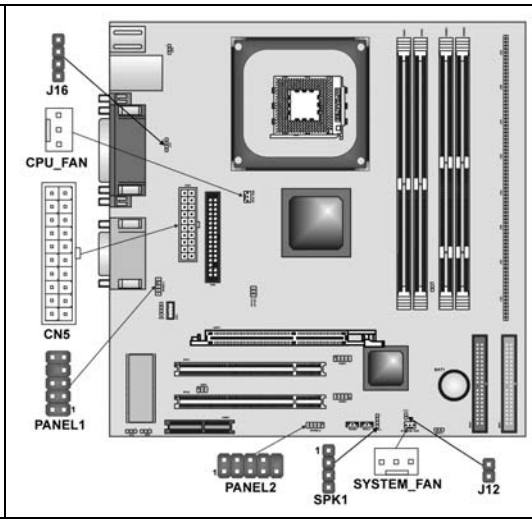
J13: Flash ROM Voltage (VCC)
This jumper enables to select voltage of flash ROM.

JP4: Flash ROM Size
This jumper enables to select size of flash ROM.

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 case power supply connector to **CN5**.
2. Connect the CPU cooling fan cable to **CPU_FAN**.
3. Connect the case cooling fan connector to **SYSTEM_FAN**.
4. Connect the case speaker cable to **SPEAKER1**.
5. Connect the case switches and indicator to **PANEL1/ PANEL2**.



CN5: 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

CPU_FAN1/SYSTEM_FAN: FAN Power Connectors

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

SPEAKER1: Internal speaker

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

J12: Sleep Switch

This header is connected to the sleep button for suspending the computer's activity if pushing the button. Or, the computer is automatically suspended after passing a period of time.

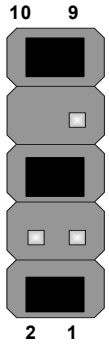
Pin	Signal Name
1	-EXTSMI
2	GND

The Panel Connectors

PANEL1

If there is a headphone jack or a microphone jack on the front panel, connect the cables to the PANEL1 on the mainboard.

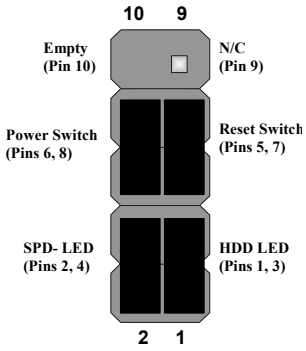
Pin	Signal Name	Pin	Signal Name
1	MIC IN	2	GND
3	VCCM	4	+5V AUDIO
5	LINE OUT (R)	6	LINE OUT (R)
7	NC	8	EMPTY
9	LINE OUT (L)	10	LINE OUT (L)



PANEL2

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

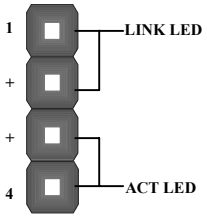
Pin	Signal Name	Pin	Signal Name
1	HDD	2	SPD-LED
3	HDD	4	SPD-LED
5	RESET	6	POWER ON/OFF
7	RESET	8	POWER ON/OFF
9	NC	10	EMPTY



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.

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

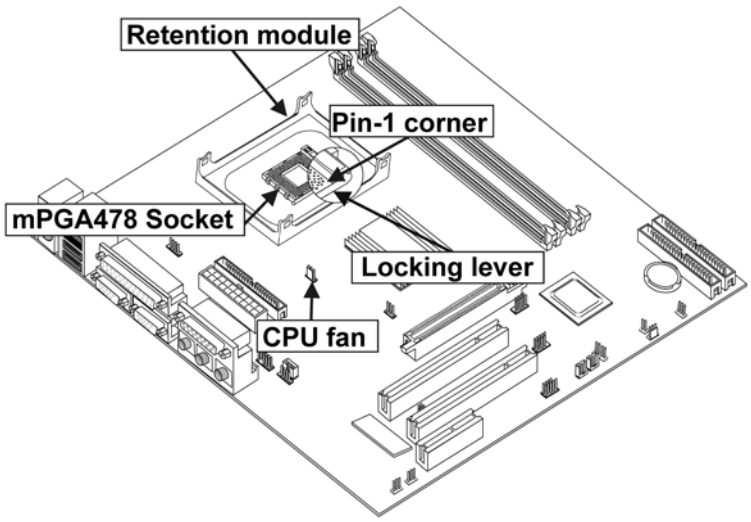
This mainboard automatically determines the CPU clock frequency and system bus frequency for the processor. You may be able to change these settings by making changes to jumpers on the mainboard, or changing the settings in the system Setup Utility. We strongly recommend that you do not overclock processors 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 mPGA478 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.

CPU Installation Procedure

The following illustration shows CPU installation components:

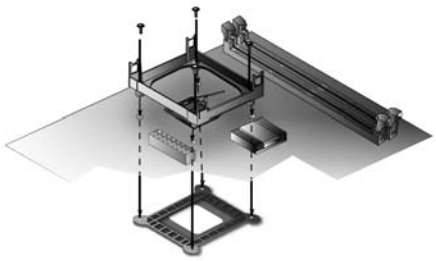


Note: The pin-1 corner is marked with an arrow ◤

Follow these instructions to install the Retention Module and CPU:

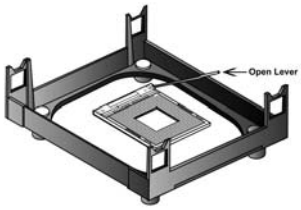
1. Remove the existing retention module (if applicable).

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

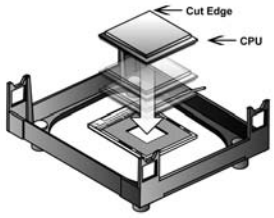


Note: Do not over tighten the screws.

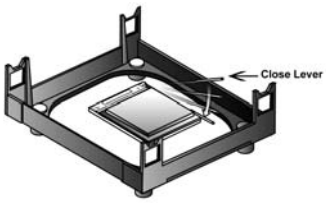
3. Install your CPU. Pull up the lever away from the socket and lift up to 90-degree angle.



4. Locate the CPU cut edge (the corner with the pinhole noticeably missing). Align and insert the CPU correctly.

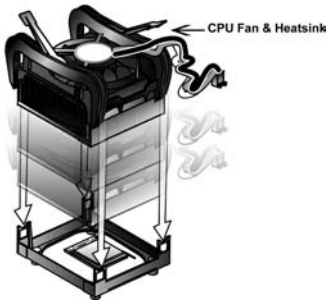


5. Press the lever down.



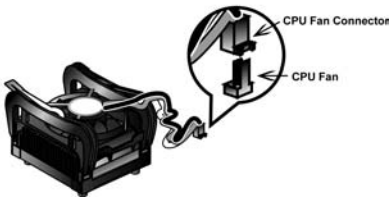
6. Apply thermal grease on top of the CPU.

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.



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.

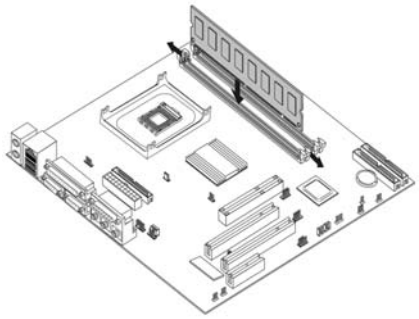
Installing Memory Modules

This mainboard accommodates 168-pin 3.3V/184-pin 2.5V unbuffered SDRAM memory modules. The memory chips must be standard or registered SDRAM (Synchronous Dynamic Random Access Memory).

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

DDR SDRAM provides 800 MBps or 1 GBps data transfer depending on whether the bus is 100 MHz or 266 MHz. It doubles the rate to 1.0 GBps and 2.1 GBps 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.

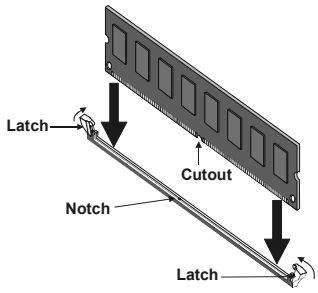
Do not remove any memory module from its antistatic packaging until you are ready to install it on the mainboard. Handle the modules only by their edges. Do not touch the components or metal parts. Always wear a grounding strap when you handle the modules.



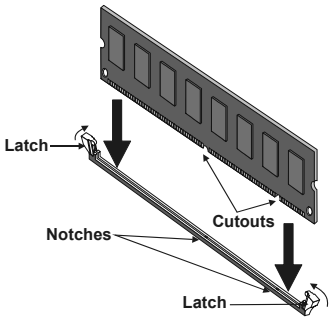
Note: You must install at least one memory module in order to work out this mainboard, **either SDRAM or DDR SDRAM, but you can't use them simultaneously.**

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

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.

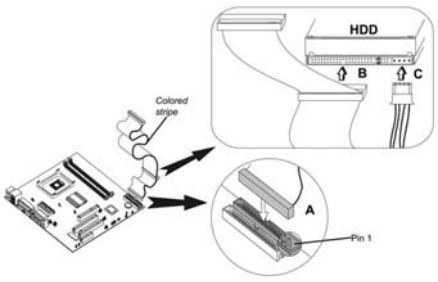
If you want to install more than two IDE devices, get a second IDE cable and you can add two more devices to the secondary IDE channel.

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

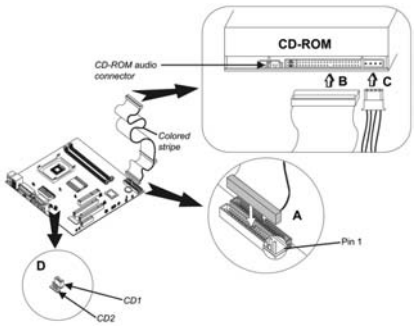
This mainboard supports UltraDMA 66/100/133. UDMA is a technology that accelerates the performance of devices in the IDE channel. To maximize performance, install IDE devices that support UDMA and use 80-pin IDE cables that support UDMA 66/100133.

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.

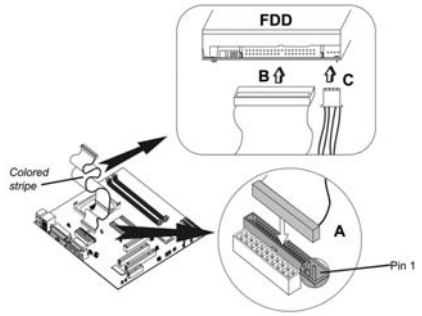
Installing a CD-ROM/DVD Drive

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

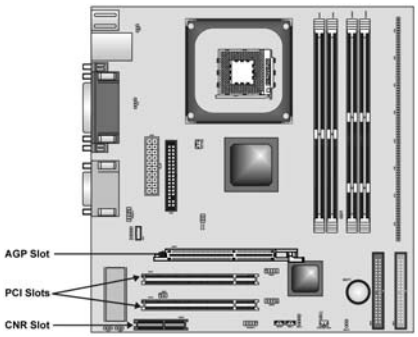
The mainboard has a floppy diskette drive (FDD) interface and ships with a diskette drive ribbon cable that supports one or two floppy diskette drives. You can install a 5.25-inch drive and a 3.5-inch drive with various capacities. The floppy diskette drive cable has one type of connector for a 5.25-inch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

This mainboard has two 32-bit PCI (Peripheral Components Interconnect) expansion slots, one 4xAGP slot, and one Communications and Networking Riser (CNR) slot.



PCI Slots PCI slots are used to install expansion cards that have the 32-bit PCI interface.

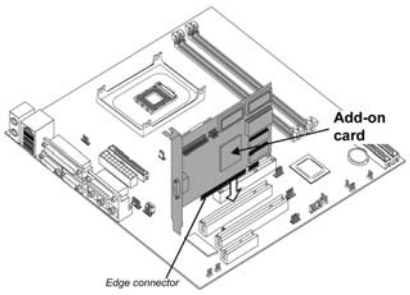
4xAGP Slot The 4xAGP slot is used to install a graphics adapter that supports the 4xAGP specification and has a 4xAGP edge connector.

> **Note:** The above layout is for reference only. The AGP slot may be different from your mainboard. Please refer to actual shipment.

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.

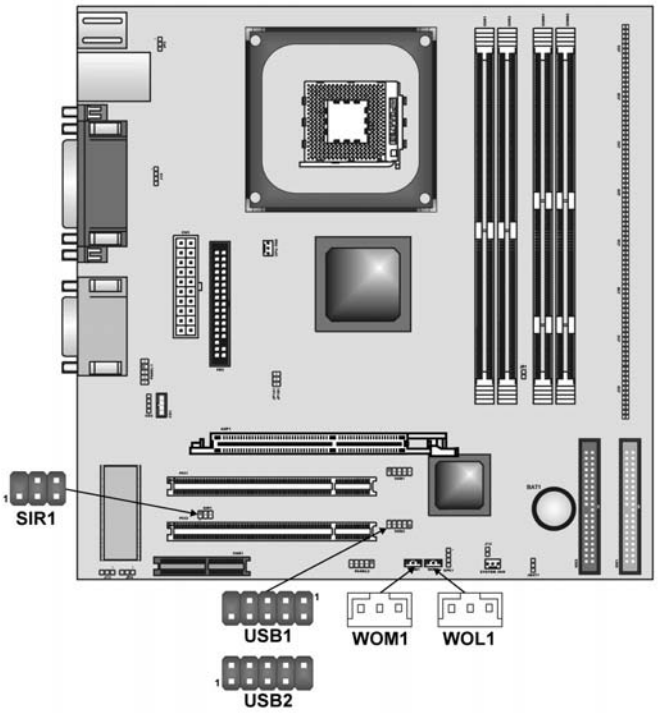
Follow these instructions to install an add-on card:

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:



USB1/USB2: Front panel USB ports

The mainboard has two 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 USB1 and USB2 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.

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)

WOM1: Wake On Modem

If you have installed a modem, use the cable provided with the modem to plug into the mainboard WOM1 connector. This enables the Wake On Modem (WOM1 feature. When your system is in a power-saving mode, any modem signal automatically resumes the system. You must enable this item using the Power Management page of the Setup Utility. See Chapter 3 for more information.

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

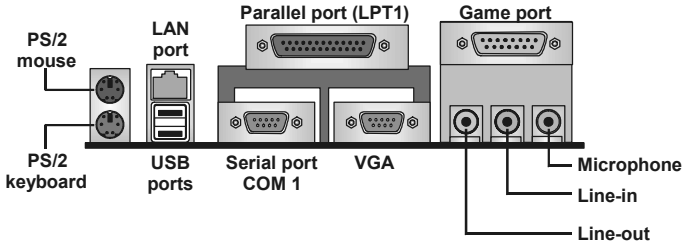
SIR1: Serial infrared port

The mainboard supports a 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

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.
USB Ports	Use the USB ports to connect USB devices.
LAN Port (optional)	Use the LAN port to connect to the network.
LPT1	Use LPT1 to connect printers or other parallel communications devices.
COM1	Use the COM ports to connect serial devices such as mice or fax/modems. COM1 is identified by the system as COM1/3.
Game Port	Use the game port to connect a joystick or a MIDI device.
Audio Ports	Use the three audio ports to connect audio devices. 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.
VGA Port	Use the VGA port to connect graphic display devices.
PS/2 Mouse	Use the upper PS/2 port to connect a PS/2 pointing device.

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
SCSI, network, telephone, modem	None

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

Chapter 3

Using 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

Entering the Setup Utility

When you power on the system, BIOS enters the Power-On Self Test (POST) routines. POST is a series of built-in diagnostics performed by the BIOS. After the POST routines are completed, the following message appears:

Press DEL to enter SETUP

Pressing the delete key accesses the BIOS Setup Utility:

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

Standards COMOS 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>.

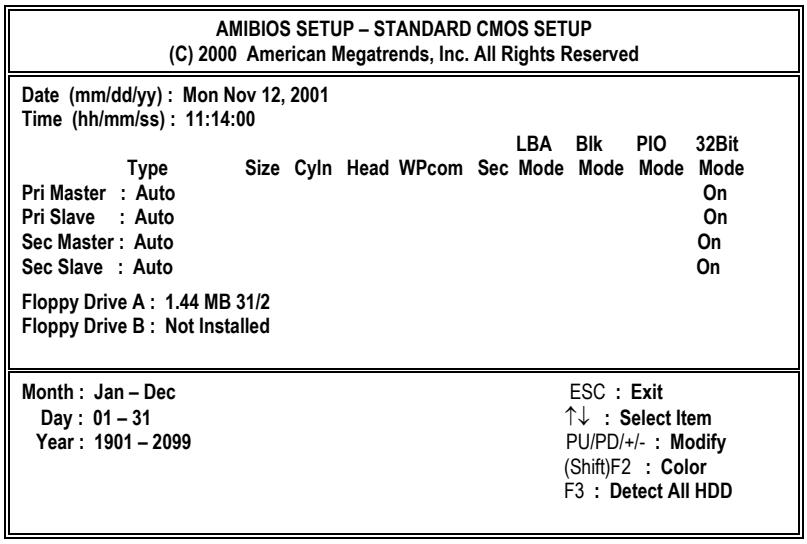
Some options lead to pop-up dialog boxes that prompt you to verify that you wish to execute that option. Other options lead to dialog boxes that prompt you for information.

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 Features

This option displays basic information about your system.



Date and Time

The Date and Time items show the current date and time on the computer. If you are running a Windows OS, these items are automatically updated whenever you make changes to the Windows Date and Time Properties utility.

IDE 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 up size and capacity of the floppy diskette drive(s) installed in the system.

Advanced Setup Page

This option defines advanced information about your system.

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

Quick Boot	Enabled	AGP Comp. Driving	Auto
1st Boot Device	IDE-0	Manual AGP Comp. Driving	CB
2nd Boot Device	Floppy	AGP Aperture Size	64MB
3rd Boot Device	CDROM	Auto detect DIMM/PCI Clk	Disabled
Try Other Boot Devices	Yes	CLK Gen Spread Spectrum	Disabled
S.M.A.R.T. for Hard Disks	Disabled		
BootUp Num-Lock	On		
Floppy Drive Swap	Disabled		
Floppy Drive Seek	Disabled		
PS/2 Mouse Support	Disabled		
Password Check	Setup	ESC : Quit	↑↓←→ : Select Item
Boot To OS/2 > 64MB	No	F1 : Help	PU/PD/+/- : Modify
L1 Cache	Reserved	F5 : Old Values	(Shift)F2 : Color
L2 Cache	Enabled	F6 : Load BIOS Defaults	
System BIOS Cacheable	Enabled	F7 : Load Setup Defaults	
SDRAM Timing by SPD	Disables		
SDRAM Frequency	100MHz		
SDRAM CAS# Latency	2.5		
SDRAM Bank Interleave	Disabled		
AGP Mode	4X		

Quick Boot

If you enable this item, the system starts up more quickly be elimination some of the power on test routines.Quick Power On Self Test (Enabled)

First/Second/Third 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.Boot Up

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.

PS/2 Mouse Support

Enable this item if you plan to use a PS/2 mouse.

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.

L1/L2 Cache

Leave these items enabled since all the processors that can be installed on this board have internal L1/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.

SDRAM Timing By SPD

This item allows you to enable or disable the SDRAM timing defined by the Serial Presence Detect electrical.

SDRAM Frequency

This item determines frequency of SDRAM memory.

SDRAM CAS# Latency

This item determines the operation of SDRAM memory CAS (column address strobe). It is recommended that you leave this item at the default value. The 2T setting requires faster memory that specifically supports this mode.

SDRAM Bank Interleave

Enable this item to increase SDRAM memory speed. When enabled, separate memory banks are set for odd and even addresses and the next byte of memory can be accessed while the current byte is being refreshed.

AGP Comp. Driving

Use this item to signal driving current on AGP cards to auto or manual. Some AGP cards need stronger than normal driving current in order to operate. We recommend that you set this item to the default.

Manual AGP Comp. Driving

When AGP Driving is set to Manual, use this item to set the AGP current driving value.

AGP Mode

This item provides the OnBoard VGA mode with three options of 1,2, 4 multiplied frequency.

AGP Aperture Size

This item defines an AGP for the graphics. Leave this item at the default value 64MB.

Auto detect DIMM/PCI Clock

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

CLK Spread Spectrum

Use this item to set the system bus spread spectrum for the installed processor.

Power Management Setup Page

This page sets up some parameters of system power management operation.

AMIBIOS SETUP – POWER MANAGEMENT SETUP
(C) 2000 American Megatrends, Inc. All Rights Reserved

ACPI Aware O/S	Yes
Power Management/APM	Disabled
Video Power Down Mode	Suspend
Hard Disk Power Down Mode	Standby
Standby Time Out(Minute)	Disabled
Suspend Time Out(Minute)	Disabled
PowerOn by LAN/Ring	Disabled
PowerOn by Onchip LAN	Disabled
PowerOn by KBC	Disabled
Wake up key	Any key
Wake up password	N/A
PowerOn by RTC Alarm	Disabled
RTC Alarm Date	15
RTC Alarm Hour	12
RTC Alarm Minute	30
RTC Alarm Second	30

ESC : Quit ↑↓←→ : Select Item
F1 : Help PU/PD/+/- : Modify
F5 : Old Values (Shift)F2 : Color
F6 : Load BIOS Defaults
F7 : Load Setup Defaults

ACPI Aware O/S

This item supports ACPI (Advanced Configuration and Power management Interface). Use this item to enable or disable the ACPI feature.

Power Management

Use this item to enable or disable a power management scheme. If you enable power management, you can use the items below to set the power management operation. Both APM and ACPI are supported.

Video Power Down Mode

Use this item to determine which power-saving mode is required to power down the graphics sub-system. You can force the graphics to power down in Stand By or Suspend modes, or you can disable the powerdown.

Hard Disk Power Down Mode

Use this item to determine which power-saving mode is required to power down the hard disk drive(s). You can force the hard disk to power down in Stand By or Suspend modes, or you can disable the powerdown.

Standby Time Out (Minute)

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

Suspend Time Out (Minute)

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.

PowerOn by LAN/Ring

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.

PowerOn by OnChip LAN

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

PowerOn by KBC/ Wake up key/Wake up password

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

PowerOn by 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.

PCI / Plug and Play Setup Page

This page sets up some parameters for devices installed on the PCI bus and those utilizing 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	
Share Memory Size	32MB	
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 or 98.

Share Memory Size

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

Primary Graphics Adapter

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

Allocate IRQ for 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 up some parameters for those peripheral devices connected to the system.

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

OnBoard FDC	Disabled
OnBoard Serial PortA	3F8h/COM1
OnBoard IR Port	Disabled
OnBoard Parallel Port	378h
Parallel Port Mode	SPP
Parallel Port IRQ	7
Parallel Port DMA	N/A
OnBoard Game Port	201h
OnBoard MIDI Port	300h
MIDI Port IRQ	10
OnBoard IDE	Both
OnChip LAN	Disabled
OnBoard AC'97 Audio	Disabled
OnBoard MC'97 Modem	Auto
USB Controller	All USB Port
USB Device Legacy Support	Disabled

ESC : Quit ↑↓←→ : Select Item
F1 : Help PU/PD/+/- : Modify
F5 : Old Values (Shift)F2 : Color
F6 : Load BIOS Defaults
F7 : Load Setup Defaults

OnBoard FDC

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

OnBoard Serial PortA

Use this item 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.

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 IRQ to the parallel port.

Parallel Port DMA

Use this item to assign a DMA channel to the parallel port.

OnBoard Game Port

This item enables or disables the I/O address for the 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 IRQ 7 to the parallel port.

OnBoard IDE

Use this item to enable or disable the onboard IDE channel.

OnChip LAN

Use this item to enable or disable the OnChip LAN.

OnBoard AC'97 Audio

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

OnBoard MC'97 Modem

This item enables or disables the MC'97 modem chip.

USB Controller

Use this item to select the USB ports or disabled.

USB Device Legacy Support

This item allows you to enable the USB device, if you have installed a USB device on the system board.

CPU PnP Setup Page

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

AMIBIOS SETUP – CPU PnP SETUP

©2000 American Megatrends, Inc. All Rights Reserved

CPU BRAND	INTEL
CPU Type	Pentium 4
CPU Speed	800 MHz
CPU Ratio Selection	8.0x
CPU Frequency	100 MHz

ESC : Quit	↑↓←→ : Select Item
F1 : Help	PU/PD/+/- : Modify
F5 : Old Values	(Shift)F2 : Color
F6 : Load BIOS Defaults	
F7 : Load Setup Defaults	

CPU BRAND/Type/ Core Voltage/Ratio /Frequency

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

CPU Speed

This item decides CPU speed installed in your system.

Hardware Monitor Page

On mainboards that support hardware monitoring, this item lets you monitor the parameters for critical voltages, critical temperatures, and fan speeds:

AMIBIOS SETUP – HARDWARE MONITOR

©2000 American Megatrends, Inc. All Rights Reserved

*** System Hardware ***	
Vcore	1.632V
Vcc 2.5V	2.496V
Vcc 3.3V	3.392V
Vcc 5V	4.972V
+12V	11.968V
-12V	-0.907V
SB5V	5.053V
VBAT	3.488V
SYSTEM Fan Speed	0 RPM
CPU Fan Speed	1350 RPM
Power Temperature	33°C/91°F
SYSTEM Temperature	39°C/102°F
CPU Temperature	55°C/131°F

ESC : Quit	↑↓←→ : Select Item
F1 : Help	PU/PD/+/- : Modify
F5 : Old Values	(Shift)F2 : Color
F6 : Load BIOS Defaults	
F7 : Load Setup Defaults	

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 that you can enter a Supervisor password. You can enter no more than six letters or numbers. Press Enter after you have typed in the password. There will be the second dialog box asking you to retype the password for confirmation. Press Enter after you have retyped it correctly. Then, the password is required for the access to the Setup Utility or for it at start-up, depending on the setting of the Password Check item in Advanced Setup.

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.

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.

Drivers and Software Installation

Insert the CD in the CD-ROM drive and click “Browse the CD title”. This contains the mainboard model and information needed to locate the drivers for your mainboard.

Look for the mainboard model; then locate the drivers you want to install. The subfolders contain the README file giving directions to alternate folders for the appropriate software.

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.

AWARD 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 2002

The PC-CILLIN 2002 software program provides anti-virus protection for your system. This program is available for Windows 2000/ME/98SE/XP 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.