

# Preface

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Version 1.0a

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## 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 Règlement sur le matériel brouilleur du Canada.

## About the Manual

The manual consists of the following:

<b>Chapter 1</b> <b>Introducing the Mainboard</b>	Describes features of the mainboard, and provides a shipping checklist.  Go to ⇒ page 1
<b>Chapter 2</b> <b>Installing the Mainboard</b>	Describes installation of mainboard components.  Go to ⇒ page 5
<b>Chapter 3</b> <b>Using BIOS</b>	Provides information on using the BIOS Setup Utility.  Go to ⇒ page 21
<b>Chapter 4</b> <b>Using the Mainboard Software</b>	Describes the mainboard software.  Go to ⇒ page 33

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## *Chapter 1*

# Introducing the Mainboard

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## Introduction

Congratulations on purchasing the P4VXASD2 mainboard. The P4VXASD2 mainboard is an ATX mainboard that uses a 4-layer printed circuit board and measures 305 mm x 244 mm. The mainboard features a Socket 478 that accommodates Intel Pentium 4 processors supporting system bus (FSB) speeds of 400 MHz.

This mainboard has the **VIA VT8753 (V845PRO)** Northbridge and VT8233 Southbridge chipsets that support **AC'97 audio codec**, and provide **Ultra DMA 33/66/100** function. This mainboard has four 32-bit PCI slots, one **4xAGP** 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, two serial ports, one parallel port, one MIDI/game port and six USB ports (two backpanel ports, onboard USB headers providing four extra ports).

By means of the Extended USB Module connected to the mainboard, you can make four extra USB ports.

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## Checklist

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

### Standard Items

- One mainboard
- The User's Manual
- One diskette drive ribbon cable
- One IDE drive ribbon cable
- Software support CD
- One Retention Module

## Features

<b>Processor</b>	<p>The P4VXASD2 mainboard includes a Socket 478 that has the following features:</p> <ul style="list-style-type: none"> <li>• Supports up to a 400 MHz system bus (FSB)</li> <li>• Accommodates Intel Pentium 4 processors.</li> </ul>
<b>Chipset</b>	<p>There are VT8753 Northbridge and VT8233 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:</p> <ul style="list-style-type: none"> <li>• An advanced V-Link memory controller architecture that provides the bandwidth up to 266 MB/s and performance necessary for even the most demanding Internet and 3D graphics</li> <li>• Support for an 4xAGP interface providing vivid 3D graphics and video performance</li> <li>• An ATA 100 interface on the chipset, which helps boost system performance by providing a high-speed connection to ATA 100 Hard Disk Drives, delivering maximum sustained data transfer rates of 100 MB/sec</li> </ul> <p>Additional key features include support for six USB ports, an AC'97 link for audio and modem, hardware monitoring, and ACPI/OnNow power management.</p>
<b>Memory</b>	<p>The mainboard accommodates 2 DDR + 2 SDR 168 pin, 3.3V DIMM sockets with a total capacity of 2 GB system memory.</p>
<b>VGA</b>	<p>This mainboard includes a 4xAGP slot that provides eight times the bandwidth of the original AGP specification. AGP technology provides a direct connection between the graphics sub-system and memory so that the graphics do not have to compete for processor time with other devices on the PCI bus.</p>
<b>AC'97 Audio Codec</b>	<p>The AC'97 Audio codec is compliant with the AC'97 2.1 specification, and supports 18-bit ADC (Analog Digital Converter) and DAC (Digital Analog Converter) resolution as well as 18-bit stereo full-duplex codec with independent and variable sampling rates. Further features include support for four analog line-level stereo inputs.</p>
<b>Expansion Options</b>	<p>P4VXASD2 has four 32-bit PCI slots, an AGP slot, a CNR (Communications and Networking Riser) slot, and an onboard PCI LAN interface (optional).</p> <p>The P4VXASD2 PCI slots are capable of Ultra DMA bus mastering with transfer rates of 33/66/100 MB/sec.</p>
<b>Integrated I/O</b>	<p>The mainboard has a full set of I/O ports and connectors:</p> <ul style="list-style-type: none"> <li>• Two PS/2 ports for mouse and keyboard</li> <li>• Two serial ports</li> <li>• One parallel port</li> <li>• One MIDI/game port</li> <li>• Six USB ports (two backpanel ports, onboard)</li> <li>• USB headers providing four extra ports)</li> <li>• Audio jacks for microphone, line-in and line-out</li> </ul>

<b>BIOS Firmware</b>	<p>This mainboard uses AMI BIOS that enables users to configure many system features including the following:</p> <ul style="list-style-type: none"> <li>• Power management</li> <li>• Wake-up alarms</li> <li>• CPU parameters and memory timing</li> <li>• CPU and memory timing</li> </ul> <p>The firmware can also be used to set parameters for different processor clock speeds.</p>
<b>Built-in Ethernet LAN (optional)</b>	<ul style="list-style-type: none"> <li>• Built-in <b>10BaseT/100BaseTX Ethernet LAN</b></li> <li>• VT8233 integrates Fast Ethernet MAC and VT6013 LAN PHY in compliance with IEEE802.3u 100BASE-TX, 10BASE-T and ANSI X3.263 TP-PMD standards</li> <li>• In compliance with ACPI 1.0 and the Network Device Class Power Management 1.0</li> <li>• High Performance achieved by 100Mbps clock generator and data recovery circuit for 100Mbps receiver</li> </ul>

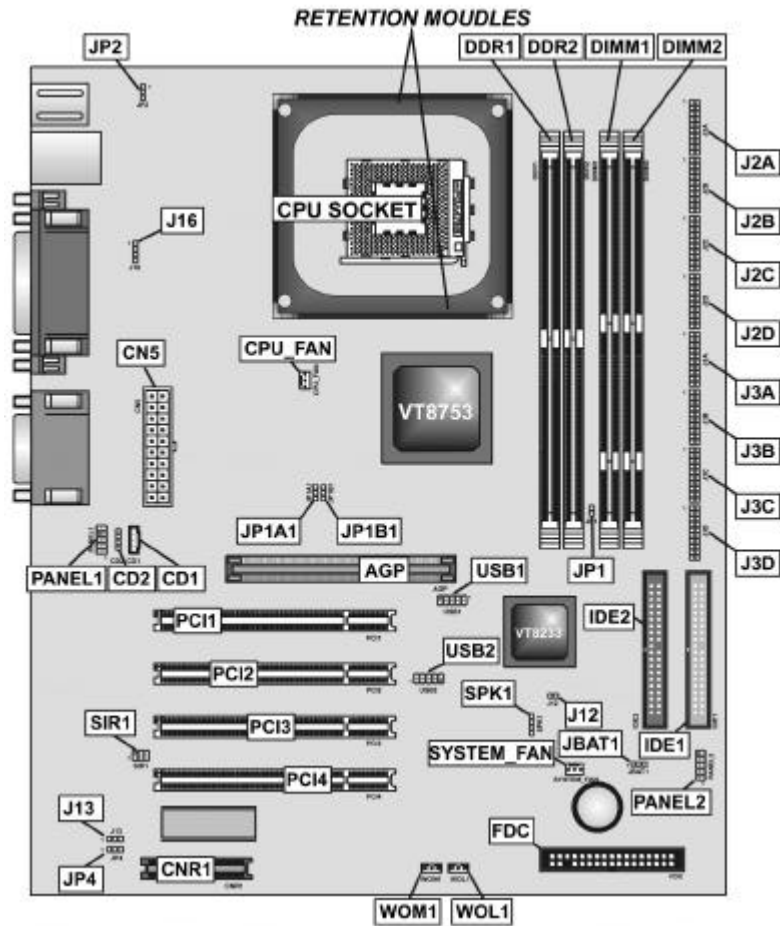
## Choosing a Computer Case

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

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

This mainboard has an ATX form factor of 305 x 244 mm. Choose a case that accommodates this form factor.

## Mainboard Components



## *Chapter 2*

# Installing the Mainboard

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### 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.

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### Quick Guide

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

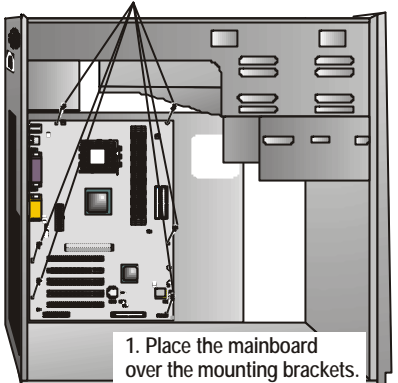
The following table provides a reference for installing specific components:

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## Installing the Mainboard in a Case

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

<p>This illustration shows an example of a mainboard being installed in a tower-type case:</p> <p><b>Note:</b> Do not overtighten the screws as this can stress the mainboard.</p> <p>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.</p>	<p>2. Secure the mainboard with screws where appropriate.</p>  <p>1. Place the mainboard over the mounting brackets.</p>
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Ensure that your case has an I/O template that supports the I/O ports and expansion slots on your mainboard.

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## Checking Jumper Settings

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

### Setting Jumpers

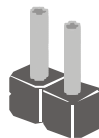
Use the mainboard jumpers to set system configuration options. Jumpers with more than one pin are numbered. When setting the jumpers, ensure that the jumper caps are placed on the correct pins.

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.

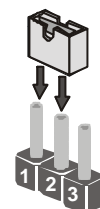
This illustration shows a 3-pin jumper. Pins 1 and 2 are SHORT.



Short

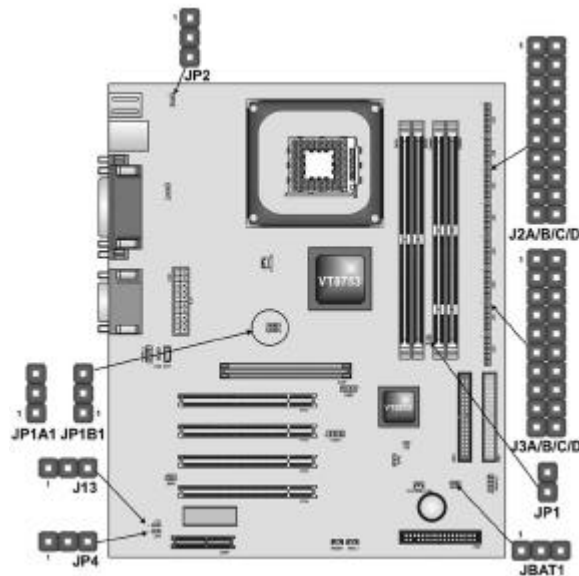


Open












## Checking Jumper Settings

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



## Jumper Settings

Jumper	Description	Setting (default)
JBAT1	Clear CMOS jumper	1-2: Normal 2-3: Clear CMOS <b>JBAT1</b> 1 
JP1A1	CPU Clock	Short 1-2: 100M Open 2-3: 133M <b>JP1A1</b> 1 
JP1B1	CPU Clock	Short 2-3: 100M Open 1-2: 133M <b>JP1B1</b> 1 
JP1	DRAM Voltage	Short 1-2: 3.3V Open 1-2: 2.5V <b>JP1</b> 

J2A J2B J2C J2D	DDR/SDR DRAM Type Selector	<i>Short all</i> <i>J2A/B/C/D:</i> <i>DDR1, DDR2</i>  <i>Open all</i> <i>J2A/B/C/D:</i> <i>DIMM1, DIMM2</i>	<b>J2A/B/C/D</b> 
J3A J3B J3C J4D	DDR/SDR DRAM Type Selector	<i>Short all</i> <i>J3A/B/C/D:</i> <i>DDR1, DDR2</i>  <i>Open all</i> <i>J3A/B/C/D:</i> <i>DIMM1, DIMM2</i>	<b>J3A/B/C/D</b> 
JP2	Wake on Keyboard/ USB activity	1-2: 5V 2-3: 5VSB	<b>JP2</b> 
J13	Flash ROM Volt- age (VCC)	1-2: 5V 2-3: 3.3V	<b>J13</b> 
JP4	Flash ROM Size	1-2: 2M 2-3: 4M	<b>JP4</b> 

#### **JBAT1: 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.

#### **JP1: DRAM Voltage (VCC)**

This jumper enables to select voltage of DRAM.

#### **JP1A1: CPU Clock**

This jumper enables to select CPU frequency.

#### **JP1B1: CPU Clock**

This jumper enables to select CPU frequency.

#### **J2A/J2B/J2C/J2D: DDR/SDR DRAM Type Selector**

This jumper enables to select the type of DDR or SDR DRAM.

**J3A/J3B/J3C/J3D: DDR/SDR DRAM Type Selector**

This jumper enables to select the type of DDR or SDR DRAM.

**JP2: Wake on Keyboard/USB activity**

This jumper enables any USB 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 for Flash ROM.

**JP4: Flash ROM Size**

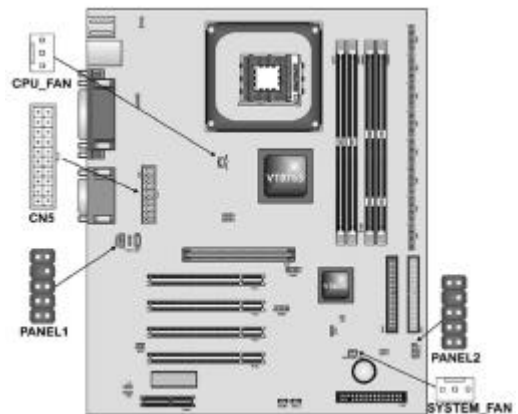
This jumper enables to select size for Flash ROM.

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## 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.

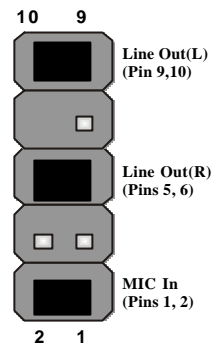


## The Panel Connectors

The panel connector (PANEL1 and PANEL2) provides a standard set of switch and LED connectors commonly found on ATX or micro-ATX cases. Refer to the table below for information:

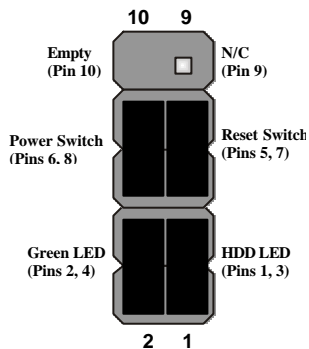
### PANEL1

Device	Pins
Line Out (L)	9,10
Line Out (R)	5, 6
MIC In	1, 2



### PANEL2

Device	Pins
Empty	10
N/C	9
Power ON/OFF	6, 8
Reset Switch	5, 7
Green LED Indicator	2, 4
HDD LED	+1, -3



**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

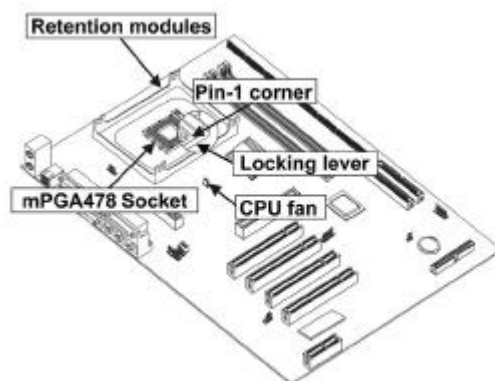
This mainboard automatically determines the CPU clock frequency and system bus frequency for the processor. You may be able to change these settings by making changes to jumpers on the mainboard, or changing the settings in the system Setup Utility. We strongly recommend that you do not overclock processors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

## CPU Installation Procedure

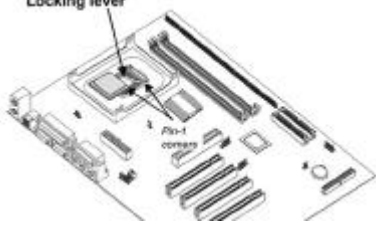
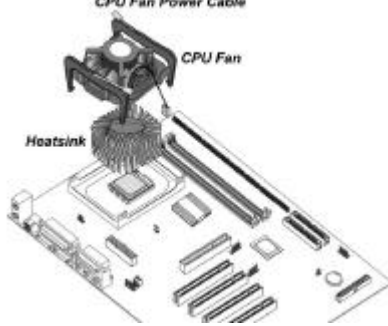
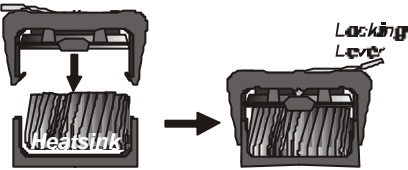
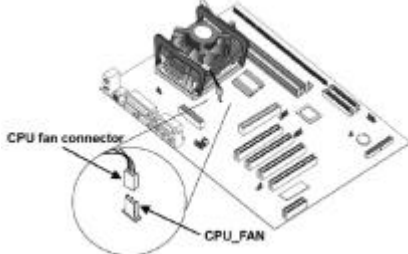
The following illustration shows CPU installation components:



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

Follow these instructions to install the CPU:

1. Pull the CPU socket locking lever away from the socket to unhook it and raise the locking lever to the upright position.

<p>2. 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.</p>	
<p>3. Lower the heatsink over the CPU.</p>	
<p>4. Lower the CPU cooling fan onto the heatsink.</p>	
<p>5. Apply thermal grease to the top of the CPU.</p>	
<p>6. Swing the locking lever down and hook it under the latch on the edge of the socket.</p>	
<p>7. Snap the four retention legs of the cooling fan into place (see diagram below).</p>	
<p>8. Swing both lock levers on top of the cooling fan to their opposite sides to secure the cooling fan on top of the heatsink.</p>	
<p>9. Connect the CPU Cooling Fan power cable to the CPUFAN1 connector.</p>	

**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

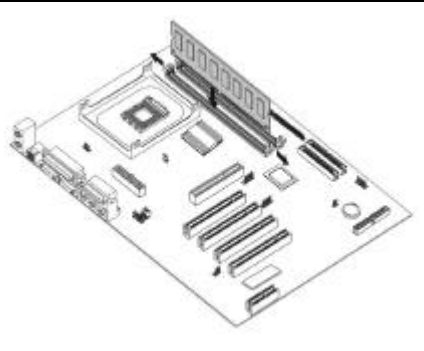
This mainboard accommodates 168-pin 3.3V/184-pin 2.5V unbuffered SDRAM memory modules. The memory chips must be standard or registered SDRAM (Synchronous Dynamic Random Access Memory).

The CPU supports 100MHz system bus. The SDRAM DIMMs and DDRs can synchronously work with 100 MHz or operates over a 133 MHz system bus.

DDR SDRAM provides 800 MBps or 1 GBps data transfer depending on whether the bus is 100 MHz or 133 MHz. It doubles the rate to 1.6 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.

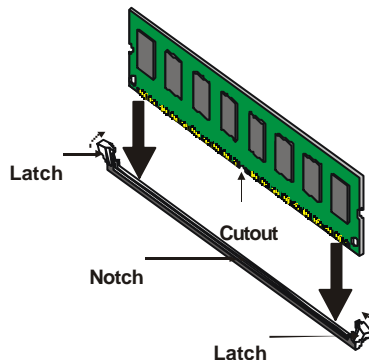
## Installation Procedure

You must install at least one memory module in order to use the mainboard, and **you can only use one of the both SDRAM and DDR SDRAM at the same time.**



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:
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.

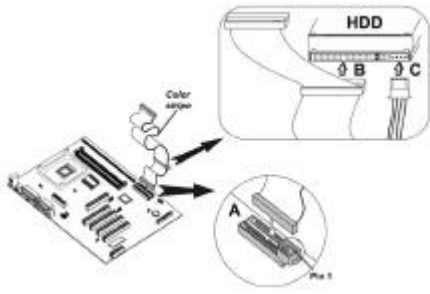
If you want to install more than two IDE devices, get a second IDE cable and you can add two more devices to the secondary IDE channel.

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

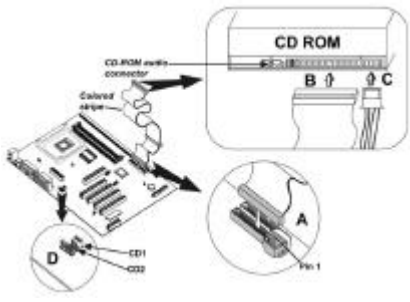
This mainboard supports UltraDMA 66/100. UDMA is a technology that accelerates the performance of devices in the IDE channel. To maximize performance, install IDE devices that support UDMA and use 80-pin IDE cables that support UDMA 66/100.

## 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): <b>Note:</b> 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.

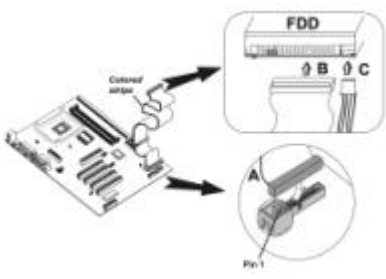
## Installing a CD-ROM/DVD Drive

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. <b>Note:</b> 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): <b>Note:</b> 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).	

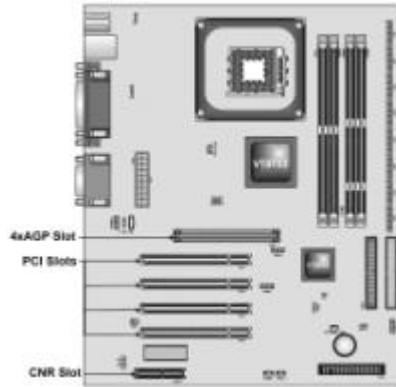
When you first start up your system, go immediately to the Setup Utility to

configure the floppy diskette drives that you have installed.

## Installing Add-on Cards

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

- |                   |  |
|-------------------|--|
| <b>PCI Slots</b>  | PCI slots are used to install expansion cards that have the 32-bit PCI interface.  |
| <b>4xAGP Slot</b> | The 4xAGP slot is used to install a graphics adapter that supports the 4xAGP specification and has a 4xAGP edge connector. |
| <b>CNR Slot</b>   | This slot is used to insert CNR cards with Modem and Audio functionality.  |



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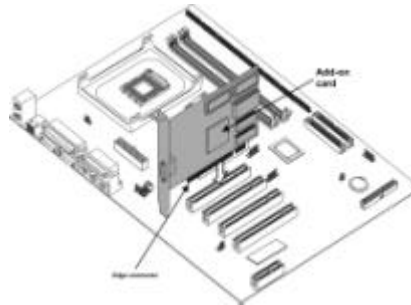
**Note:** Before installing an add-on card, check the documentation for the card carefully. If the card is not Plug and Play, you may have to manually configure the card before installation.

---

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. |
|--|

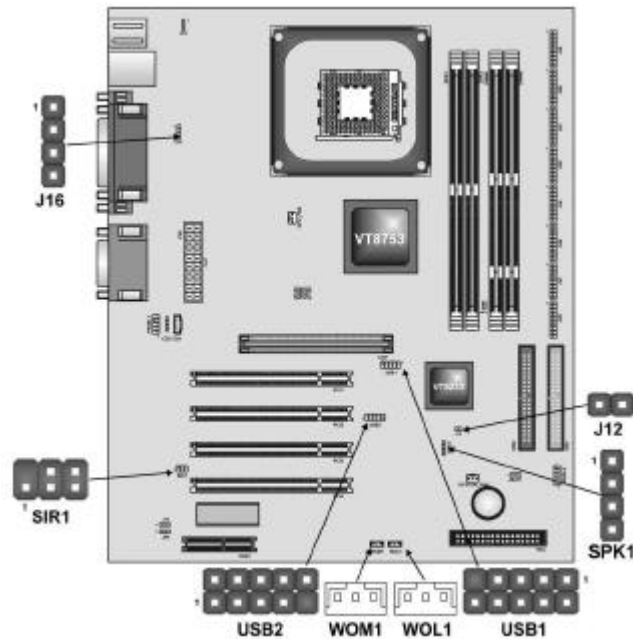
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**Note:** For some add-on cards, for example graphics adapters and network adapters, you have to install drivers and software before you can begin using the add-on card.

---

## Connecting Optional Devices

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



### 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.

### SPK1: Speaker Connector

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

Pin	Signal Name
1	External speaker
2	Onboard buzzer
3	NC
4	VCC

### USB1/USB2: Front panel USB headers

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 USB1 and USB2 to connect the front-mounted ports to the mainboard.

Pin	Signal Name	Pin	Signal Name
1	VCC	2	VCC
3	DATA0-	4	DATA1-
5	DATA0+	6	DATA1+
7	GND	8	GND
9	KEY	10	OC# (over current detect)

### WOL1/WOM: Wake On LAN/Wake On Modem

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
1	5VSB
2	Ground
3	SENSE

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 (WOM) 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.

### J16: LAN LED Indicator

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

Pin	Signal Name
1, +2	Link LED
+3, 4	ACT LED

### SIR1: Serial infrared port

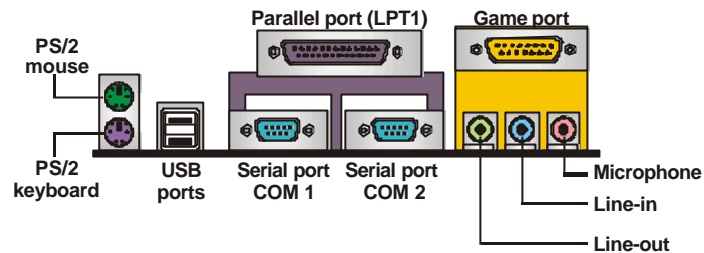
The mainboard supports a Serial Infrared (SIR1) data port. Infrared ports allow the wireless exchange of information between your computer and similarly equipped devices such as printers, laptops, Personal Digital Assistants (PDAs), and other computers.

Pin	Signal Name	Pin	Signal Name
1	NC	2	Key
3	+5VDC	4	Ground
5	IR transmit	6	IR receive

---

## Connecting I/O Devices

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



<b>PS/2 Mouse</b>	Use the upper PS/2 port to connect a PS/2 pointing device.
<b>PS/2 Keyboard</b>	Use the lower PS/2 port to connect a PS/2 keyboard.
<b>USB Ports</b>	Use the USB ports to connect USB devices.
<b>LPT1</b>	Use LPT1 to connect printers or other parallel communications devices.
<b>COM1/2</b>	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.
<b>Game Port</b>	Use the game port to connect a joystick or a MIDI device.
<b>Audio Ports</b>	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.
<b>PS/2 Mouse</b>	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
Analog VGA	Blue
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.

## *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

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:

Pressing the delete key  accesses the BIOS Setup Utility:

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	
F10 : Save & Exit Setup	
Time, Date, Hard Disk Type . . .	

The BIOS navigation keys are listed below:

22

## 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.

AMIBIOS SETUP – STANDARD CMOS SETUP									
(C) 2000 American Megatrends, Inc. All Rights Reserved									
Date (mm/dd/yy) : Tue Sep.04, 2001									
Time (hh/mm/ss) : 15:28:57									
	Type	Size	Cyln	Head	WPcom	Sec Mode	LBA Mode	Blk Mode	PIO 32Bit Mode
Pri Master	: Auto								
Pri Slave	: Auto								
Sec Master	: Auto								
Sec Slave	: Auto								
Floppy Drive A : Not Installed									
Floppy Drive B : Not Installed									
Month : Jan – Dec							ESC : Exit		
Day : 01 – 31							↑↓ : Select Item		
Year : 1901 – 2099							PUPD/+/- : Modify		
							(Shift)F2 : Color		
							F3 : Detect All HDD		

### 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/Slave and IDE Sec Master/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 and 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 page sets up more advanced information about your system. Be more careful to this page. Any changes can affect the operation of your computer.

AMIBIOS SETUP – ADVANCED SETUP (C) 2000 American Megatrends, Inc. All Rights Reserved			
Quick Boot	Enabled	AGP Comp. Driving	Auto
1 <sup>st</sup> Boot Device	IDE-0	Manual AGP Comp. Driving	CB
2 <sup>nd</sup> Boot Device	Floppy	AGP Aperture Size	64MB
3 <sup>rd</sup> 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	Enabled		
Password Check	Setup	ESC : Quit	- - - ® : Select Item
Boot To OS/2 > 64MB	No	F1 : Help	PU/PD/+/- : Modify
L1 Cache	Enabled	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	200MHz		
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 by elimination some of the power on test routines.

### 1<sup>st</sup> Boot Device/ 2<sup>nd</sup> Boot Device/ 3<sup>rd</sup> 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 NumLock

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 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	<div>ESC : Quit      - F7 : Select Item</div> <div>F1 : Help      PU/PD/+/- : Modify</div> <div>F5 : Old Values (Shift)F2 : Color</div> <div>F6 : Load BIOS Defaults</div> <div>F7 : Load Setup Defaults</div>
Power Management/APM	Enabled	
Video Power Down Mode	Suspend	
Hard Disk Power Down Mode	Standby	
Standby Time Out(Minute)	Disabled	
Suspend Time Out(Minute)	Disabled	
Resume Up on Ring	Disabled	
Resume Up on LAN	Disabled	
Resume Up on PME#	Disabled	
Resume on KBC	Disabled	
Wake up key	Any key	
Wake up password	N/A	
Resume on RTC Alarm	Disabled	
RTC Alarm Date	15	
RTC Alarm Hour	12	
RTC Alarm Minute	30	
RTC Alarm Second	30	

### 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 power down.

#### **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.

#### **Resume on 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.

#### **Resume on LAN**

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

#### **Resume on PME#**

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. Use this item to do wake-up action if inserting the PCI card.

#### **Resume on KCB 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.

#### **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.

## PCI/Plug and Play Setup Page

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	
PCI Latency Timer	32	
Primary Graphics Adapter	AGP	
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.

### PCI Latency Timer

This item sets the latency timer for the PCI bus. Leave this item at the default value.

### 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.

## 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	<div>ESC : Quit      - → ® : Select Item</div> <div>F1 : Help      PU/PD/+/- : Modify</div> <div>F5 : Old Values (Shift)F2 : Color</div> <div>F6 : Load BIOS Defaults</div> <div>F7 : Load Setup Defaults</div>
OnBoard Serial PortA	3F8h/COM1	
OnBoard Serial PortB	2F8h/COM2	
Serial Port2 Mode	Normal	
OnBoard Parallel Port	378h	
Parallel Port Mode	SPP	
Parallel Port IRQ	7	
Parallel Port DMA	N/A	
OnBoard Game Port	201h	
OnBoard MIDI Port	300	
MIDI Port IRQ	10	
OnBoard IDE	Both	
OnBoard LAN	Enabled	
OnBoard LAN P.M.E.	Enabled	
OnBoard AC' 97 Audio	Enabled	
OnBoard MC' 97 Modem	Auto	
USB Controller	All USB Port	
USB Device Legacy Support	Disabled	

### OnBoard FDC

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

### OnBoard Serial Port A/B

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

### OnBoard Parallel Port

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

**Parallel Port Mode**

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

**Parallel Port IRQ**

Use this item to assign 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.

**OnBoard LAN/P.M.E**

Use this item to enable or disable the onboard LAN/P.M.E.

**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 (C) 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 Optimal values
		F7 : Load Best performance values

#### 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

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 – HARDWARE MONITOR (C) 2000 American Megatrends, Inc. All Rights Reserved		
*** System Hardware ***		
Vocore	1.632V	
Vcc 2.5V	2.496V	
Vcc 3.3V	3.392V	
Vcc 5V	4.972V	
+12V	11.968V	
-12V	-0.907V	ESC : Quit      - - - ® : Select Item
SB5V	5.053V	F1 : Help      PU/PD/+/- : Modify
VBAT	3.488V	F5 : Old Values (Shift)F2 : Color
SYSTEM Fan Speed	0 RPM	F6 : Load BIOS Defaults
CPU Fan Speed	5400 RPM	F7 : Load Setup Defaults
Power Temperature	33° C/91° F	
SYSTEM Temperature	40° C/104° F	
CPU Temperature	35° C/95° F	

#### CPU/System Temperature

These items display CPU and system temperature measurement.

#### **FANs & Voltage Measurements**

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

### **Change Password**

If you highlight this item and press Enter, a dialog box appears 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.

## Chapter 4

# Using the Mainboard Software

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### 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.

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

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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

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### Auto-installing under Windows 98

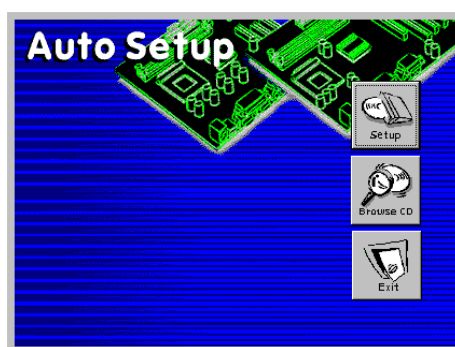
The Auto-install CD-ROM makes it easy for you to install the drivers and software for your mainboard.

---

**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.



---

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

---

## 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.

## Running Setup

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

1. Click **Setup**. The installation program begins:



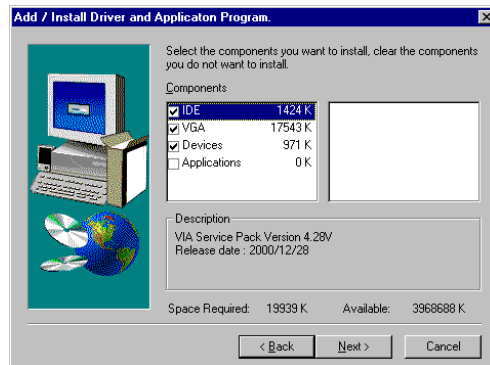
---

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

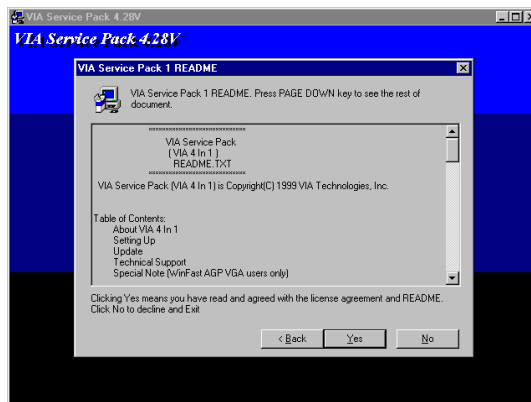
---

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

2. Click **Next**. The following screen appears:



3. Check the items you want to install. The default options are recommended.
4. Click **Next** to 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 after each 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 on the CD-ROM is Windows compliant. It is provided only for the convenience of customers. The following software is furnished under license and may only be used or copied in accordance with the terms of the license.

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**Note:** The software in these folders is subject to change at anytime without prior notice. Please refer to the support CD for available software.

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### AMI Flash Memory Utility

This utility enables you to 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.

### 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.

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**Note:** Update your virus software regularly to protect against new viruses.

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## **MediaRing Talk – Telephony Software**

To install the MediaRing Talk voice modem software for the built-in modem, run MRTALK-SETUP72.EXE from the following directory:

UTILITY\MEDIARING TALK

## **Super Voice – Fax/Modem Software**

To install the Super Voice voice, fax, data communication application for use with the built-in fax/modem, run PICSHELL.EXE from the following directory:

UTILITY\SUPER VOICE

## **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 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 own home page. To install the PageABC, run SETUP.EXE from the following directory:

UTILITY\PageABC

This concludes Chapter 4.