Preface

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Version 1.0c

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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 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 6
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 45

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Introducing the Mainboard

Introduction

Congratulations on purchasing the L4S5MG/GL mainboard. The L4S5MG/GL mainboard is a Micro ATX mainboard that uses a 4-layer printed circuit board and measures 244 mm x 220 mm. The mainboard features a mPGA Socket 478 that accommodates Pentium 4 processors supporting data transfers up to 400 MHz.

The L4S5MG/GL incorporates the XP4GL chipset which combines support for the new high-bandwidth Double Data Rate (DDR) 266/333 SDRAM, Integrated VGA and the AC 97 audio codec.

> **Note:** SDRAM provides 800 MBps or 1 GBps data transfer depending on whether the bus is 100 MHz or 133 MHz. Double Data Rate SDRAM (DDR SDRAM) doubles the rate to 1.6 GBps or 2.7 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 DIMM modules rather than the 168-pin DIMMs used by SDRAM.

Checklist

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

Standard Items

- One mainboard
- One diskette drive ribbon cable
- One IDE drive ribbon cable
- One auto-install software support CD
- One jumper cap for JP2
- One rear panel I/O shield
- One retention module
- This user's manual

Features

Processor	The L4S5MG/GL mainboard uses a micro PGA 478 socket that has the following features: • Supports 100 MHz frontside bus (FSB) • Accommodates Pentium 4 processors
Chipset	The XP4GL chipset is based on an innovative and scalable architecture with proven reliability and performance. A few of the chipset's advanced features are: • A low 2.5-volt DDR333 SDRAM power consumption which makes it an excellent solution for notebooks and desktops with a small footprint • Supports an Integrated GUI featuring high-performance 3D accelerator and a 128-bit 2D accelerator. Other features include a video accelerator and advanced hardware acceleration logic that delivers high-quality DVD playback • Support for a 4xAGP interface providing vivid 3D graphics and video performance • 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 • Built-in multithreaded I/O link used to enhance performance, providing enough I/O bandwidth for throughput up to 1.2 GB/s 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 supports DDR 266/333 SDRAM. It accommodates two unbuffered 2.5V 184-pin slots. Each slot supports up to 1 GB with a total maximum capacity of 2 GB.
AC 97 Audio Codec	The AC 97 Audio codec is compliant with the AC 97 2.2 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.
Expansion Options	The mainboard comes with the following expansion options: • Three 32-bit PCI slots • A Communications and Network Riser (CNR) slot (AC97 interface only) • Two IDE channels and a floppy disk drive interface The L4S5MG/GL supports Ultra DMA bus mastering with transfer rates of 33/66/100 MB/sec.

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
	• Two USB ports
	• One LAN port
	• Audio jacks for microphone, line-in and line-out
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
	• 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 x 220 mm. Choose a case that accommodates this form factor.

Mainboard Components

RETENTION MODULE

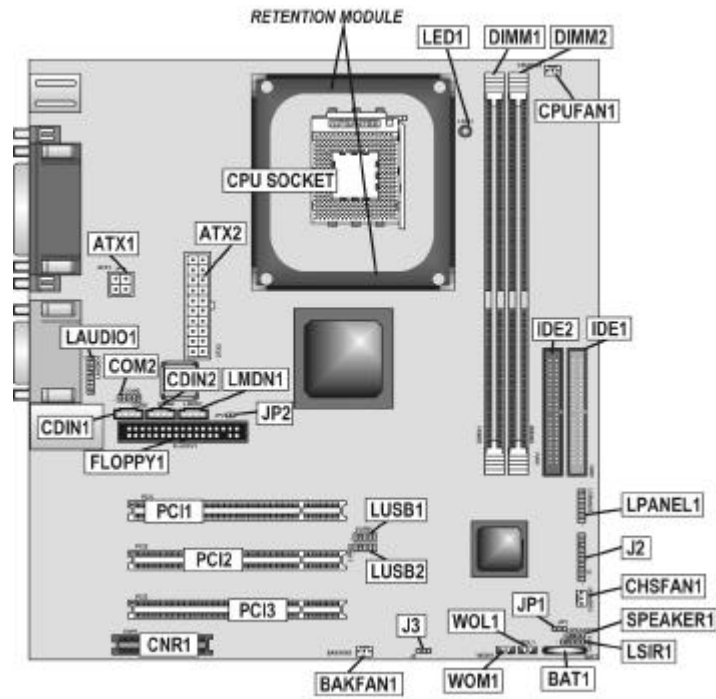LED1 · DIMM1 · DIMM2 · CPUFAN1 · CPU SOCKET · ATX1 · ATX2 · LAUDIO1 · COM2 · CDIN2 · LMDN1 · CDIN1 · JP2 · FLOPPY1 · IDE2 · IDE1 · PCI1 · LUSB1 · LPANEL1 · PCI2 · LUSB2 · J2 · PCI3 · CHSFAN1 · J3 · WOL1 · JP1 · SPEAKER1 · CNR1 · LSIR1 · BAKFAN1 · WOM1 · BAT1

Table of Mainboard Components

Label	Component
ATX1	Auxiliary power connector for Pentium 4 CPUs
ATX2	Power connector
BAKFAN1	Case fan connector 2
BAT1	Three volt realtime clock battery
CDIN1	Primary CD-in connector
CDIN2	Secondary CD-in connector
CHSFAN1	Case fan connector 1
CNR1	Communications Networking Riser slot
COM2	Onboard serial port header COM2
CPU SOCKET	Micro PGA 478-pin socket for Pentium 4 CPUs
CPUFAN1	Cooling fan for CPU
DIMM1, DIMM2	Two 184-pin DDR SDRAM
FLOPPY1	Floppy disk drive connector
IDE 1	Primary IDE channel
IDE 2	Secondary IDE channel
J2	Smart I/O interface header
J3	Power switch header
JP1	Clear CMOS jumper
JP2	BIOS protection jumper
LAUDIO1	Front audio connector
LED1[1]	Memory module LED
LMDN1	Modem-in header
LPANEL1	Connector for case front panel switches and LED indicators
LSIR1	Infrared cable header
LUSB1	Front panel USB headers
LUSB2	Front panel USB headers
PCI1 ~ PCI3	Three 32-bit add-on card slots
SPEAKER1	Speaker connector
WOL1	Wake On LAN wakeup connector
WOM1	Wake On Modem wakeup connector

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

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[1] The red indicator LED1 turns on if your system is still powered, at which time memory modules cannot be installed or uninstalled.

Installing the Mainboard

Safety Precautions

Follow these safety precautions when installing the mainboard:

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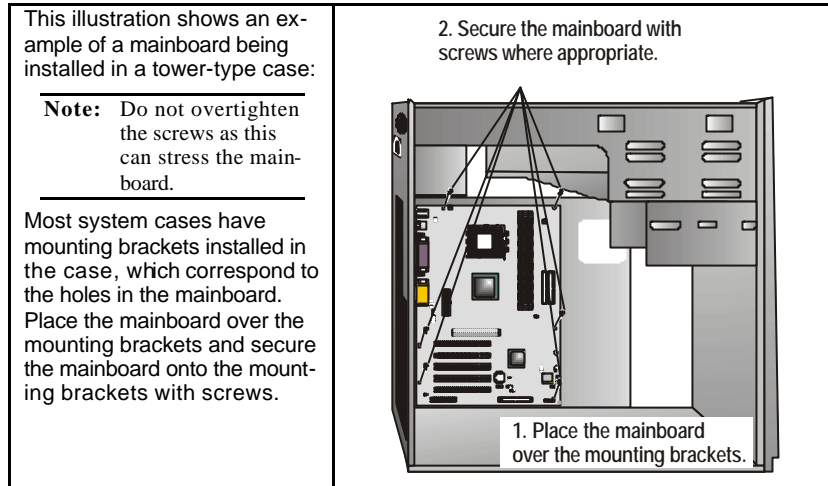
Quick Guide

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

The following table provides a reference for installing specific components:

Installing the Mainboard in a Case

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

This illustration shows an example of a mainboard being installed in a tower-type case: **Note:** Do not overtighten the screws as this can stress the mainboard. Most system cases have mounting brackets installed in the case, which correspond to the holes in the mainboard. Place the mainboard over the mounting brackets and secure the mainboard onto the mounting brackets with screws.	2. Secure the mainboard with screws where appropriate. 1. Place the mainboard over the mounting brackets.

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

Checking Jumper Settings

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

Setting Jumpers

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

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

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

Short   **Open**

7
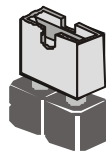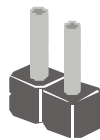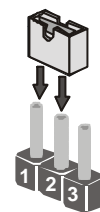
Checking Jumper Settings

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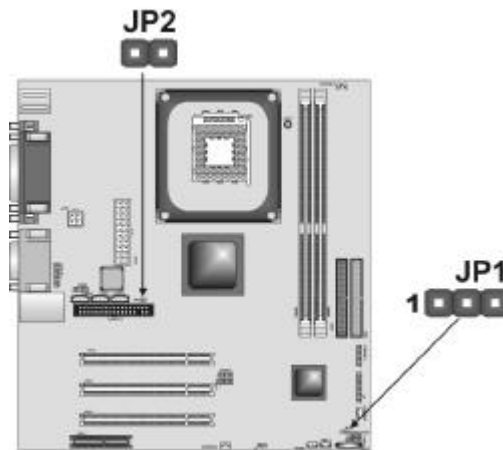
Jumper Settings

Jumper	Type	Description	Setting (*default*)	
JP1	3-pin	Clear CMOS	1-2: Clear *2-3: Normal*	**JP1** 1
JP2	2-pin	BIOS protect	*Short: Enable* Open: Disable	**JP2**

Jumper 1 – Enables you to clear the BIOS. Follow these instructions:

1. Turn the system off.
2. Short pins 1 and 2 on jumper 1.
3. Return the jumper to the normal setting.
4. Turn the system on. The BIOS is returned to the default settings.

Jumper 2 – Enables you to prevent the BIOS from being updated (flashed). Open the jumper if you are going to update your BIOS. After updating the BIOS, short the jumper to protect the BIOS from being flashed. For instructions on updating the BIOS refer to Chapter 3.

Connecting Case Components

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

1. Connect the Pentium 4 processor auxiliary case power supply connector to **ATX1**.
2. Connect the standard power supply connector to **ATX2**.
3. Connect the CPU cooling fan cable to **CPUFAN1**.
4. Connect the case cooling fan connector to either **BAKFAN1** or **CHSFAN1**.
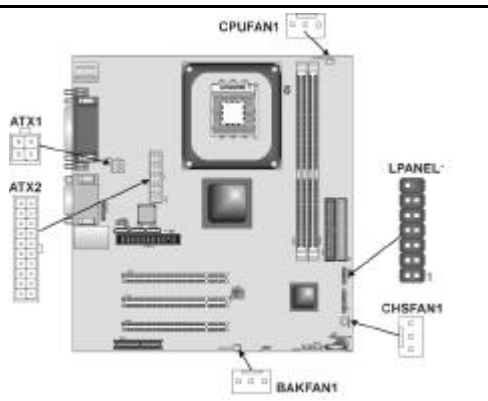
ATX1: ATX 12V Power Connector

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

ATX2: 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

CPUFAN1/BAKFAN1/CASFAN1: FAN Power Connectors

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

The Panel Connector

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

Device	Pins
Reset Switch	13, 14
Case Speaker	+9 ~ 12
Power Switch	5, 6
Power LED	+4
Green Power LED	-3
Yellow Power LED	-2
HDD LED	+1, -8

Reset Switch (Pins 13, 14)

Case Speaker (Pins 9 ~ 12)

Empty (Pin 7)

Power Switch (Pin 5, 6)

Power LED (Pin 4)

Green Power LED (Pin 3)

Yellow Power LED (Pin 2)

HDD LED (Pins 1, 8)
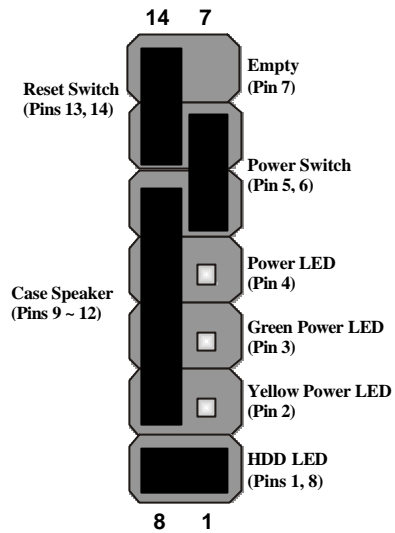
Note: The plus sign (+) indicates a pin which must be connected to a positive voltage.

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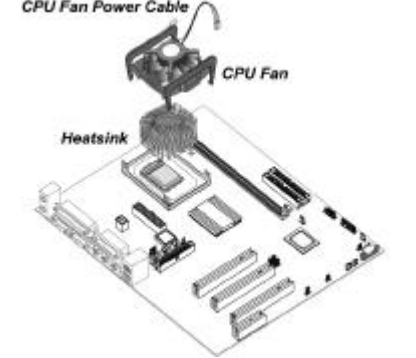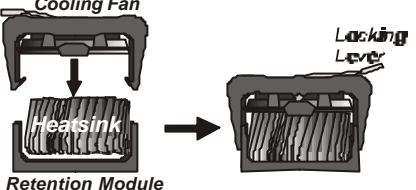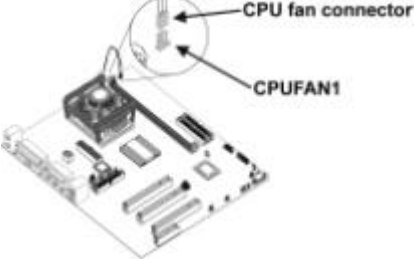
The following illustration shows CPU installation components:
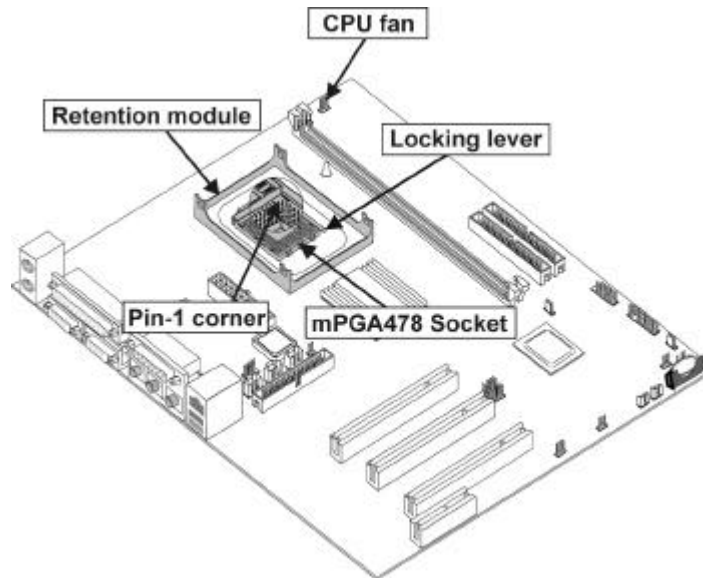
Note: The pin-1 corner is marked with an arrow ▶

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.
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.
3.	Lower the heatsink over the CPU.
4.	Lower the CPU cooling fan onto the heatsink.
5.	Apply thermal grease to the top of the CPU.

6.	Swing the locking lever down and hook it under the latch on the edge of the socket.	
7.	Snap the four retention legs of the cooling fan into place (see diagram below).	
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.	
9.	Connect the CPU Cooling Fan power cable to the CPUFAN1 connector.	

Note: CPU fan and heatsink installation procedures may vary with the type of CPU fan/heatsink supplied. The form and size of fan/heatsink may also vary.

Installing Memory Modules

This mainboard accommodates 184-pin 2.5V unbuffered Double Data Rate (DDR) SDRAM memory modules. The memory chips must be standard or registered SDRAM (Synchronous Dynamic Random Access Memory). The memory bus runs at 166 MHz.

The mainboard accommodates two memory modules. You must install at least one module in any of the two slots. Each module can be installed with 32 MB to 1 GB of memory; total memory capacity is 2 GB.

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

Installation Procedure

Refer to the following to install the memory modules.

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

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

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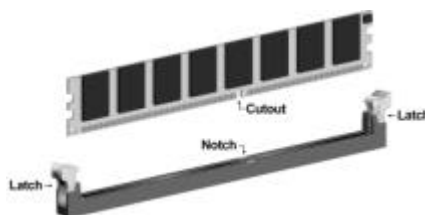
4. Check that the cutouts on the DIMM module edge connector match the notches in the DIMM slot.
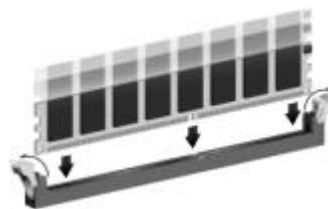
5. Install the DIMM module into the slot and press it firmly down until it seats correctly. The slot latches are levered upwards and latch on to the edges of the DIMM.
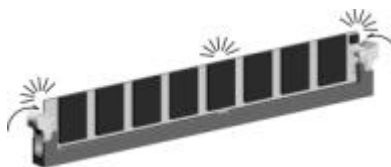
6. Install any remaining DIMM modules.

Installing a Hard Disk Drive/CD-ROM

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

About IDE Devices

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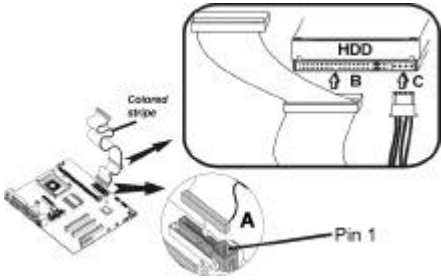
If you want to install more than two IDE devices, get a second IDE cable and you can add two more devices to the secondary IDE channel.

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

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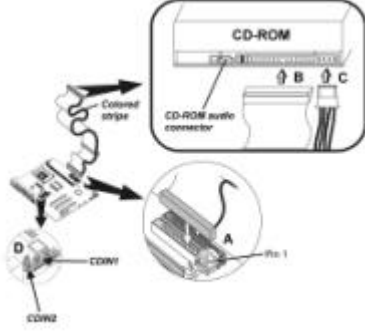
This mainboard supports UltraDMA 66/100. UDMA is a technology that accelerates the performance of devices in the IDE channel. To maximize performance, install IDE devices that support UDMA and use 80-pin IDE cables that support UDMA 66/100.

Installing a Hard Disk Drive

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

When you first start up your system, the BIOS should automatically detect your hard disk drive. If it doesn't, enter the Setup Utility and use the IDE Hard Disk Auto Detect feature to configure the hard disk drive that you have installed. See IDE HDD Auto-Detection on page 28 for more information.
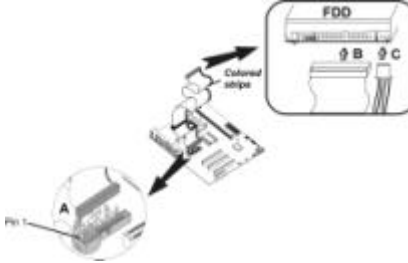
Installing a CD-ROM/DVD Drive

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. See IDE Primary/Secondary Master/Slave (Auto) on page 28 for more information.

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. See Standard CMOS Features on page 27 for more information.

Installing Add-on Cards

This mainboard has three 32-bit PCI (Peripheral Components Interconnect) expansion slots 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.	
CNR Slot	This slot is used to insert CNR cards with Modem and Audio functionality.	
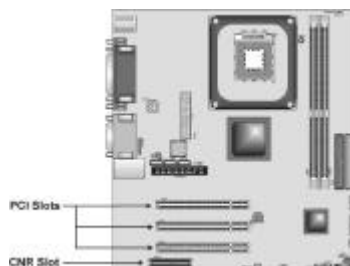
Note: Before installing an add-on card, check the documentation for the card carefully. If the card is not Plug and Play, you may have to manually configure the card before installation.

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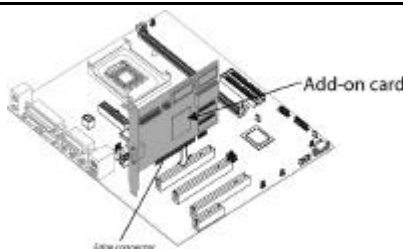
Note: For some add-on cards, for example graphics adapters and network adapters, you have to install drivers and software before you can begin using the add-on card.

Connecting Optional Devices

Refer to the following for information on connecting the mainboard's optional devices:
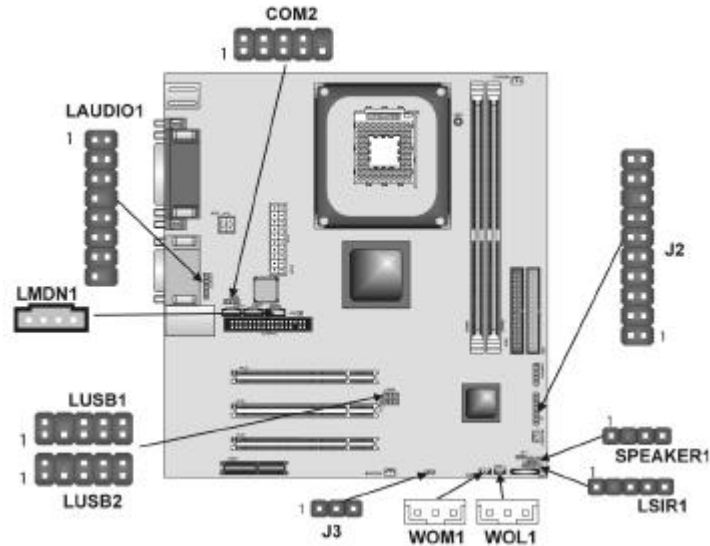
COM2: Onboard serial port connector

Connect a serial port extension bracket to this header to add a second serial port to your system.

Pin	Signal Name
1	DCD
2	RxD
3	TxD
4	DTR
5	GROUND
6	DSR
7	RTS
8	CTS
9	RI

LAUDIO1: Front Audio Connector

This connector is used to attach to Audio equipment embedded into or attached to the case.

Pin	Signal Name	Pin	Signal Name
1	ALOR	2	ALOL
3	AGND	4	AGND
5	AGND	6	AGND
7	+12V	8	KEY
9	MIC	10	AGND
11	FLOR	12	LNR
13	FLOL	14	LNL
15	AGND	16	KEY

LMDN1: Modem-in header

Connect a modem add-on card to this header. The cable is bundled with the add-on card.

Pin	Signal Name
1	MONO-OUT
2	GROUND
3	GROUND
4	PHONE-IN

LUSB2/LUSB3: Internal USB connectors

The mainboard has two USB ports installed on the rear edge I/O port array. However, 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 the auxiliary USB connectors USB2 and USB3 to connect the front-mounted ports to the mainboard.

Pin	Signal Name	Pin	Signal Name
1	USBPWR0	2	GROUND
3	-DATA0	4	KEY
5	+DATA0	6	+DATA1
7	GROUND	8	-DATA1
9	GROUND	10	USBPWR1

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.

J3: Power switch

This power switch is an alternative connector used for specially designed power connectors.

Pin	Signal Name
1	+5VSB
2	GROUND
3	POWERON

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.

LSIR1: Infrared port

The mainboard supports an Infrared (IR) 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
1	VCC
2	KEY
3	IRRX
4	GROUND
5	IRTX

SPEAKER1: Internal speaker

Connect the internal speaker connector to this header.

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

J2: Smart I/O interface header

The Smart I/O connector is for use with media storage devices using the LPC interface.

Pin	Signal Name	Pin	Signal Name
1	PCICLK	11	VCC3
2	SERIRQ	12	VCC3
3	LFRAME#	13	GROUND
4	LDRQ#	14	GROUND
5	LAD0	15	5VSB
6	LAD1	16	GROUND
7	LAD2	17	GROUND
8	LAD3	18	KEY
9	PCIRST#	19	VCC
10	PME#	20	VCC

Connecting I/O Devices

The backplane of the mainboard has the following I/O ports:
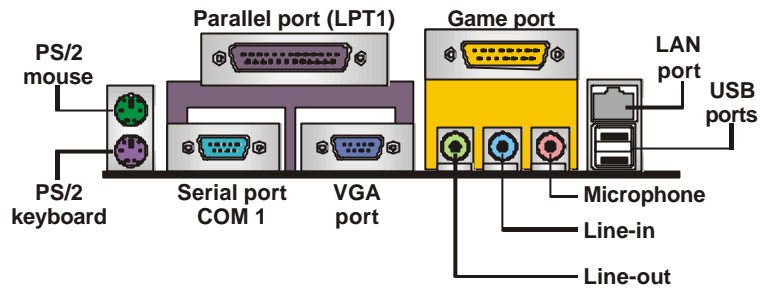
PS/2 Mouse	Use the upper PS/2 port to connect a PS/2 pointing device.
PS/2 Keyboard	Use the lower PS/2 port to connect a PS/2 keyboard.
LPT1	Use LPT1 to connect printers or other parallel communications devices.
COM1	Use the COM port to connect serial devices such as mice or fax/modems. COM1 is identified by the system as COM1/3.
VGA Port	Use the VGA port to connect an external monitor.
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.
LAN Port	Connect an RJ-45 jack to this port to connect your PC to the LAN.
USB Ports	Use the USB ports to connect USB devices.

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.

About the Setup Utility

The computer uses the latest Award 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:

CMOS Setup Utility – Copyright (C) 1984 – 2001 Award Software

►Standard CMOS Features	►Frequency/Voltage Control
►Advanced BIOS Features	Load Fail-Safe Defaults
►Advanced Chipset Features	Load Optimized Defaults
►Integrated Peripherals	Set Supervisor Password
►Power Management Setup	Set User Password
►PnP/PCI Configurations	Save & Exit Setup
►PC Health Status	Exit Without Saving

Esc : Quit F10 : Save & Exit Setup	- ¯ ® ¬ : Select Item

Time, Date, Hard Disk Type . . .

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

Updating the BIOS

You can download and install updated BIOS for this mainboard from the manufacturer's Web site. New BIOS provides support for new peripherals, improvements in performance, or fixes for known bugs. Install new BIOS as follows:

1.   If your mainboard has a BIOS protection jumper, change the setting to allow BIOS flashing. Refer to Chapter 2 for jumper settings.

2.   If your mainboard has an item called Firmware Write Protect in Advanced BIOS features, disable it. (Firmware Write Protect prevents BIOS from being overwritten.)

3.   Create a bootable system disk. (Refer to Windows online help for information on creating a bootable system disk.)

4.   Download the Flash Utility and new BIOS file from the manufacturer's Web site. Copy these files to the system diskette you created in Step 3.

5.   Turn off your computer and insert the system diskette in your computer's diskette drive. (You might need to run the Setup Utility and change the boot priority items on the Advanced BIOS Features Setup page, to force your computer to boot from the floppy diskette drive first.)

6.   At the A:\ prompt, type the Flash Utility program name and press <Enter>. You see a screen similar to the following:

```
            FLASH MEMORY WRITER V7.33
      (C) Award Software 1999 All Rights Reserved

For (MAINBOARD NAME)              DATE: 10/26/2000
Flash Type
File Name to Program :████████████████



Error Message
```
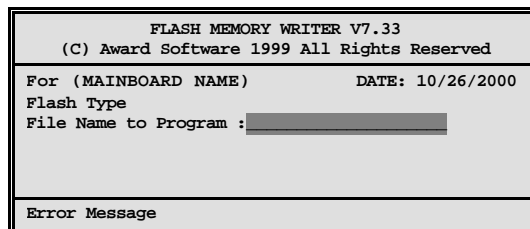
7.   Type the filename of the new BIOS in the "File Name to Program" text box. Follow the onscreen directions to update the mainboard BIOS.

8.   When the installation is complete, remove the floppy diskette from the diskette drive and restart your computer. If your mainboard has a Flash BIOS jumper, reset the jumper to protect the newly installed BIOS from being overwritten.

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.

CMOS Setup Utility – Copyright (C) 1984 – 2001 Award Software
Standard CMOS Features

		Item Help
Date (mm:dd:yy)	Tue, July 11 2001	
Time (hh:mm:ss)	12 : 8 : 59	Menu Level ►
► IDE Primary Master		Change the day, month,
► IDE Primary Slave		year and century.
► IDE Secondary Master		
► IDE Secondary Slave		
Drive A	[1.44M, 3.5 in.]	
Drive B	[None]	
Floppy 3 Mode Support	[Disabled]	
Video	[EGA/VGA]	
Halt On	[All Errors]	
Base Memory	640K	
Extended Memory	31744K	
Total Memory	32768K	

- ¯ ® ¬ : Move Enter : Select   +/-/PU/PD:Value: F10: Save ESC: Exit   F1:General Help
     F5:Previous Values   F6:Fail-Safe Defaults   F7:Optimized Defaults

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 Devices (None)

Your computer has two IDE channels (Primary and Secondary) and each channel can be installed with one or two devices (Master and Slave). Use these items to configure each device on the IDE channel.

Press <Enter> to display the IDE submenu:

CMOS Setup Utility – Copyright © 1984 – 2001 Award Software
IDE Primary Master

		Item Help
IDE HDD Auto-Detection	[Press Enter]	
IDE Primary Master	[Auto]	Menu Level ►►
Access Mode	[Auto]	To auto-detect the
Capacity	0 MB	HDD's size, head . . . on
Cylinder	0	this channel
Head	0	
Precomp	0	
Landing Zone	0	
Sector	0	

- ¯ ® ¬ : Move Enter : Select   +/-/PU/PD:Value: F10: Save ESC: Exit   F1:General Help
     F5:Previous Values   F6:Fail-Safe Defaults   F7:Optimized Defaults

IDE HDD Auto-Detection

Press <Enter> while this item is highlighted to prompt the Setup Utility to automatically detect and configure an IDE device on the IDE channel.

> **Note:** If you are setting up a new hard disk drive that supports LBA mode, more than one line will appear in the parameter box. Choose the line that lists LBA for an LBA drive.

IDE Primary/Secondary Master/Slave (Auto)

Leave this item at Auto to enable the system to automatically detect and configure IDE devices on the channel. If it fails to find a device, change the value to Manual and then manually configure the drive by entering the characteristics of the drive in the items described below.

Refer to your drive's documentation or look on the drive casing if you need to obtain this information. If no device is installed, change the value to None.

> **Note:** Before attempting to configure a hard disk drive, ensure that you have the configuration information supplied by the manufacturer of your hard drive. Incorrect settings can result in your system not recognizing the installed hard disk.

Access Mode

This item defines ways that can be used to access IDE hard disks such as LBA (Large Block Addressing). Leave this value at Auto and the system will automatically decide the fastest way to access the hard disk drive.

Press <Esc> to return to the Standard CMOS Features page.

Drive A/Drive B (1.44M, 3.5 in./None)

These items define the characteristics of any diskette drive attached to the system. You can connect one or two diskette drives.

Floppy 3 Mode Support (Disabled)

Floppy 3 mode refers to a 3.5-inch diskette with a capacity of 1.2 MB. Floppy 3 mode is sometimes used in Japan.

Video (EGA/VGA)

This item defines the video mode of the system. This mainboard has a built-in VGA graphics system; you must leave this item at the default value.

Halt On (All Errors)

This item defines the operation of the system POST (Power On Self Test) routine. You can use this item to select which types of errors in the POST are sufficient to halt the system.
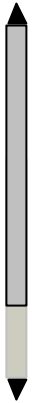
Base Memory, Extended Memory, and Total Memory

These items are automatically detected by the system at start up time. These are display-only fields. You cannot make changes to these fields.

Advanced BIOS Setup Option

This option displays advanced information about your system.

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Advanced BIOS Features

		Item Help
Anti-Virus Protection	[Disabled]	
CPU L1 & L2 Cache	[Enabled]	Menu Level ►
Quick Power On Self Test	[Enabled]	
First Boot Device	[Floppy]	Allows you to choose
Second Boot Device	[HDD-0]	the VIRUS warning
Third Boot Device	[CDROM]	feature for IDE Hard
Boot Other Device	[Enabled]	Disk boot sector
Swap Floppy Drive	[Disabled]	protection. If this
Boot Up Floppy Seek	[Disabled]	function is enabled
Boot Up NumLock Status	[On]	and someone attempts
Gate A20 Option	[Fast]	to write data into this
Typematic Rate Setting	[Disabled]	area, BIOS will show a
x Typematic Rate (Chars/Sec)	6	warning message on
x Typematic Delay (Msec)	250	screen and alarm beep
Security Option	[Setup]	
OS Select For DRAM > 64MB	[Non-OS2]	

- ¯ ® ¬ : Move   Enter : Select   +/-/PU/PD:Value: F10: Save   ESC: Exit   F1:General Help
F5:Previous Values   F6:Fail-Safe Defaults   F7:Optimized Defaults

Anti-Virus Protection (Disabled)

When enabled, this item provides protection against viruses that try to write to the boot sector and partition table of your hard disk drive. You need to disable this item when installing an operating system. We recommend that you enable this item as soon as you have installed an operating system.

> **Note:** For complete protection against viruses, install virus software in your operating system and update the virus definitions regularly.

CPU L1 and L2 Cache (Enabled)

All processors that can be installed in this mainboard use internal level 1 (L1) and external level 2 (L2) cache memory to improve performance. Leave this item at the default value for better performance.

Quick Power On Self Test (Enabled)

Enable this item to shorten the power on testing (POST) and have your system start up faster. You might like to enable this item after you are confident that your system hardware is operating smoothly.

First/Second/Third Boot Device (Floppy/HDD-0/CD-ROM)

Use these three items to select the priority and order of the devices that your system searches for an operating system at start-up time.

Boot Other Device (Enabled)

When enabled, the system searches all other possible locations for an operating system if it fails to find one in the devices specified under the First, Second, and Third boot devices.

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Swap Floppy Drive (Disabled)

If you have two floppy diskette drives in your system, this item allows you to swap the assigned drive letters so that drive A becomes drive B, and drive B becomes drive A.

Boot Up Floppy Seek (Disabled)

If this item is enabled, it checks the size of the floppy disk drives at start-up time. You don't need to enable this item unless you have a legacy diskette drive with 360K capacity.

Boot Up NumLock Status (On)

This item defines if the keyboard Num Lock key is active when your system is started.

Gate A20 Option (Fast)

This item defines how the system handles legacy software that was written for an earlier generation of processors. Leave this item at the default value.

Typematic Rate Setting (Disabled)

If this item is enabled, you can use the following two items to set the typematic rate and the typematic delay settings for your keyboard.

- **Typematic Rate (Chars/Sec):** Use this item to define how many characters per second are generated by a held-down key.
- **Typematic Delay (Msec):** Use this item to define how many milli-seconds must elapse before a held-down key begins generating repeat characters.

Security Option (Setup)

If you have installed password protection, this item defines if the password is required at system start up, or if it is only required when a user tries to enter the Setup Utility.

OS Select For DRAM > 64 MB (Non-OS2)

This item is only required if you have installed more than 64 MB of memory and you are running the OS/2 operating system. Otherwise, leave this item at the default.

HDD S.M.A.R.T Capability (Disabled)

The S.M.A.R.T. (Self-Monitoring, Analysis, and Reporting Technology) system is a diagnostics technology that monitors and predicts device performance. S.M.A.R.T. software resides on both the disk drive and the host computer.

The disk drive software monitors the internal performance of the motors, me-dia, heads, and electronics of the drive. The host software monitors the overall reliability status of the drive. If a device failure is predicted, the host software, through the Client WORKS S.M.A.R.T applet, warns the user of the impending condition and advises appropriate action to protect the data.

Report No FDD For WIN95 (Yes)

If you are running a system with no floppy drive and using Windows 95, select Yes for this item to ensure compatibility with the Windows 95 logo certification. Otherwise, select No.

Small Logo (EPA) Show (Disabled)

Enables or disables the display of the EPA logo during boot.

Advanced Chipset Features Option

These items define critical timing parameters of the mainboard. You should leave the items on this page at their default values unless you are very familiar with the technical specifications of your system hardware. If you change the values incorrectly, you may introduce fatal errors or recurring instability into your system.

CMOS Setup Utility – Copyright (C) 1984 – 2001 Award Software
Advanced Chipset Features

	Item Help
► Advanced DRAM Control 1 [Press Enter]	
Prefetch Caching [Disabled]	Menu Level ►
Memory Hole at 15M-16M [Disabled]	
AGP Aperture Size [64MB]	
Graphic Window WR Combin [Enabled]	
LeadOff Dram R/W Command [Delay 1T]	
LeadOff Dram B/G Command [Delay 1T]	

- ¯ ® ¬ : Move   Enter : Select   +/-/PU/PD:Value: F10: Save   ESC: Exit   F1:General Help
F5:Previous Values   F6:Fail-Safe Defaults   F7:Optimized Defaults

►Advanced DRAM Control 1

Scroll to this item and press <Enter> to view the following screen:

CMOS Setup Utility – Copyright (C) 1984 – 2001 Award Software
Advanced DRAM Control 1

	Item Help
System Performance [Normal Mode]	
CAS Latency Setting [2.5T]	Menu Level ►

- ¯ ® ¬ : Move   Enter : Select   +/-/PU/PD:Value: F10: Save   ESC: Exit   F1:General Help
F5:Previous Values   F6:Fail-Safe Defaults   F7:Optimized Defaults

System Performance (Normal Mode)

This is the DRAM auto configuration option, which can be set to Safe Mode, Normal Mode, Fast Mode or Ultra Mode.

CAS Latency Setting (2.5T)

Enables you to select the CAS latency time in HCLKs of 2, 2.5, or 3. The value is set at the factory depending on the DRAM installed. Do not change the values in this field unless you change specifications of the installed DRAM or the installed CPU.

Prefetch Caching (Disabled)

Enables PCI slave prefetch caching. Enabling this increased performance.

Memory Hole at 15M-16M (Disabled)

This item is used to reserve memory space for ISA expansion cards that require it.

AGP Aperture Size (64MB)

This item defines the size of the aperture if you use an AGP graphics adapter. It refers to a section of the PCI memory address range used for graphics memory. We recommend that you leave this item at the default value.

Graphic Window WR Combin (Enabled)

This item determines whether the graphic windows base address is valid or not.

LeadOff Dram R/W Command (Delay 1T)

This option allows you to set the lead off DRAM read and write cycles. When set to Delay 1T, memory read/write commands are sent one clock cycle behind the memory address. When set to Normal, read/write and memory address commands are sent simultaneously.

LeadOff Dram B/G Command (Delay 1T)

This option allows you to set the lead off DRAM background commands. When set to Delay 1T, the memory background commands are sent one clock cycle behind the memory address. When set to Normal, background commands are sent simultaneously.

Integrated Peripherals Option

These options display items that define the operation of peripheral components on the system's input/output ports.

Integrated Peripherals

```
┌─────────────────────────────────────────────────────────┬──────────────────────┐
│  ► SIS OnChip IDE Device      [Press Enter]               │    Item Help         │
│  ► SIS OnChip PCI Device      [Press Enter]               │                      │
│  ► Onboard SuperI/O Device    [Press Enter]               │  Menu Level    ►     │
│    USB Controller             [Enabled]                   │                      │
│    USB Keyboard Support       [Disabled]                  │                      │
│    Onboard LAN                [Enabled]                   │                      │
│    IDE HDD Block Mode         [Enabled]                   │                      │
│    SC Port Address            [Disabled]                  │                      │
│  x SC Port IRQ                11                          │                      │
│    MS/SD Port Address         [Disabled]                  │                      │
│  x MS/SD Port IRQ             5                           │                      │
│    Init Display First         [PCI Slot]                  │                      │
│    AGP Auto Calibration       [Enabled]                   │                      │
│    IDE Access Interface       [Auto]                      │                      │
│    USB1 Access Interface      [Embedded Bus]              │                      │
│    USB2 Access Interface      [Embedded Bus]              │                      │
│    Audio Access Interface     [Embedded Bus]              │                      │
└─────────────────────────────────────────────────────────┴──────────────────────┘
```

- ¯ ® ¬ : Move   Enter : Select   +/-/PU/PD:Value: F10: Save   ESC: Exit   F1:General Help
      F5:Previous Values   F6:Fail-Safe Defaults   F7:Optimized Defaults

► SIS OnChip IDE Device

Scroll to this item and press <Enter> to view the following screen:

SIS OnChip IDE Device

```
┌─────────────────────────────────────────────────────────┬──────────────────────┐
│    Internal PCI/IDE              [Both]                   │    Item Help         │
│    IDE Primary Master PIO        [Auto]                   │                      │
│    IDE Primary Slave  PIO        [Auto]                   │  Menu Level    ►►    │
│    IDE Secondary Master  PIO     [Auto]                   │                      │
│    IDE Secondary Slave   PIO     [Auto]                   │                      │
│    Primary Master     UltraDMA   [Auto]                   │                      │
│    Primary Slave      UltraDMA   [Auto]                   │                      │
│    Secondary Master   UltraDMA   [Auto]                   │                      │
│    Secondary Slave    UltraDMA   [Auto]                   │                      │
│    IDE Burst Mode                [Enabled]                │                      │
│                                                           │                      │
│                                                           │                      │
│                                                           │                      │
│                                                           │                      │
└─────────────────────────────────────────────────────────┴──────────────────────┘
```

- ¯ ® ¬ : Move   Enter : Select   +/-/PU/PD:Value: F10: Save   ESC: Exit   F1:General Help
      F5:Previous Values   F6:Fail-Safe Defaults   F7:Optimized Defaults

Internal PCI/IDE (Both)

Use these items to enable or disable the internal PCI IDE channels that are integrated on the mainboard.

IDE Primary/Secondary Master/Slave PIO (Auto)

Each IDE channel supports a master device and a slave device. These four items let you assign which kind of PIO (Programmed Input/Output) is used by IDE devices. Choose Auto to let the system auto detect which PIO mode is best, or select a PIO mode from 0-4.

IDE Primary/Secondary Master/Slave UltraDMA (Auto)

Each IDE channel supports a master device and a slave device. This mainboard supports UltraDMA technology, which provides faster access to IDE devices.

If you install a device that supports UltraDMA, change the appropriate item on this list to Auto. You may have to install the UltraDMA driver supplied with this mainboard in order to use an UltraDMA device.

IDE Burst Mode (Enabled)

This option, when enabled will instruct the system to send every write transaction to the write buffer. Burstable transactions then burst onto the PCI bus and nonburstable transactions do not.

Press <Esc> to return to the Integrated Peripherals screen.

► SIS OnChip PCI Device

Scroll to this item and press <Enter> to view the following screen:

```
        CMOS Setup Utility – Copyright (C) 1984 – 2001 Award Software
                          SIS OnChip PCI Device

┌──────────────────────────────────────────────────┬──────────────────────┐
│                                                    │      Item Help       │
│   SIS-7012 AC97Audio        [Enabled]              │                      │
│   SIS-7013 S/W Modem        [Enabled]              │ Menu Level    ►►     │
│   System Memory Size        [32MB]                 │                      │
│                                                    │                      │
│                                                    │                      │
│                                                    │                      │
│                                                    │                      │
│                                                    │                      │
│                                                    │                      │
│                                                    │                      │
│                                                    │                      │
│                                                    │                      │
│                                                    │                      │
│                                                    │                      │
└──────────────────────────────────────────────────┴──────────────────────┘
  -  ¯  ®  ¬  : Move   Enter : Select    +/-/PU/PD:Value:   F10: Save   ESC: Exit   F1:General Help
                       F5:Previous Values    F6:Fail-Safe Defaults    F7:Optimized Defaults
```

SIS-7012 AC97 AUDIO (Enabled)

Enables and disables the onboard audio chip. Disable this item if you are going to install a PCI audio add-on card.

SIS-7013 S/W Modem (Auto)

Enables and disables the onboard modem. Disable this item if you are going to install an external modem.

System Share Memory Size (32MB)

Enables you to allow the system AGP to share the main memory capacity.

Press <Esc> to return to the Integrated Peripherals screen.

▶ **Onboard SuperIO Device**

Scroll to this item and press <Enter> to view the following screen:

```
          CMOS Setup Utility – Copyright (C) 1984 – 2001 Award Software
                             Onboard SuperIO Device
```

Onboard FDC Controller	[Enabled]	Item Help
Onboard Serial Port 1	[3F8/IRQ4]	
Onboard Serial Port 2	[2F8/IRQ3]	Menu Level ▶▶
UART Mode Select	[Normal]	
UR2 Duplex Mode	[Half]	
Onboard Parallel Port	[378/IRQ7]	
Parallel Port Mode	[ECP]	
ECP Mode Use DMA	[3]	
Game Port Address	[201]	
Midi Port Address	[330]	
Midi Port IRQ	[10]	

```
- ¯ ® ¬ : Move   Enter : Select      +/-/PU/PD:Value:   F10: Save  ESC: Exit   F1:General Help
              F5:Previous Values          F6:Fail-Safe Defaults      F7:Optimized Defaults
```

Onboard FDC Controller (Enabled)

This option enables the onboard floppy disk drive controller.

Onboard Serial Port 1 (3F8/IRQ4)

This option is used to assign the I/O address and interrupt request (IRQ) for onboard serial port 1 (COM1).

Onboard Serial Port 2 (2F8/IRQ3)

This option is used to assign the I/O address and interrupt request (IRQ) for onboard serial port 2 (COM2).

UART Mode Select (Normal)

This field is available if the Onboard Serial Port 2 field is set to any option but Disabled. UART Mode Select enables you to select the infrared communication protocol-Normal (default), IrDA, or ASKIR. IrDA is an infrared communication protocol with a maximum baud rate up to 115.2K bps. ASKIR is Sharp's infrared communication protocol with a maximum baud rate up to 57.6K bps.

UR2 Duplex Mode (Half)

This field is available when UART 2 Mode is set to either ASKIR or IrDA. This item enables you to determine the infrared function of the onboard infrared chip. The options are Full and Half (default).

Full-duplex means that you can transmit and send information simultaneously. Half-duplex is the transmission of data in both directions, but only one direction at a time.

Onboard Parallel Port (378/IRQ7)

This option is used to assign the I/O address and interrupt request (IRQ) for the onboard parallel port.

Parallel Port Mode (ECP)

Enables you to set the data transfer protocol for your parallel port. There are four options: SPP (Standard Parallel Port), EPP (Enhanced Parallel Port), ECP (Extended Capabilities Port) and ECP+EPP.

SPP allows data output only. Extended Capabilities Port (ECP) and Enhanced Parallel Port (EPP) are bi-directional modes, allowing both data input and output. ECP and EPP modes are only supported with EPP- and ECP-aware peripherals.

ECP Mode Use DMA (3)

When the onboard parallel port is set to ECP mode, the parallel port can use DMA 3 or DMA 1.

Game Port Address (201)

This item sets the I/O address for the game port.

Midi Port Address (330)

This item sets the I/O address for the Midi function.

Midi Port IRQ (10)

This item sets the interrupt request for the Midi function.

Press <Esc> to return to the Integrated Peripherals screen.

USB Controller (Enabled)

Enable this item if you plan to use the Universal Serial Bus ports on this mainboard.

USB Keyboard Support (Disabled)

Enable this item if you plan to use a keyboard connected through the USB port in a legacy operating system (such as DOS) that does not support Plug and Play.

Onboard LAN (Enabled)

Use this item to enable and disable the onboard LAN function.

IDE HDD Block Mode (Enabled)

Enable this field if your IDE hard drive supports block mode. Block mode enables BIOS to automatically detect the optimal number of block read and writes per sector that the drive can support. It also improves the speed of access to IDE devices.

SC Port Address (Disabled)

The smart card reader needs a 16-byte fixed I/O address to access data. You may need an optional module to be able to use this function. When this item is set, the following item becomes available:

- **SC Port IRQ:** Enables you to set the smart card IRQ.

MS/SD Port Address (Disabled)

The memory stick/secure digital device needs a 16-byte fixed I/O address to access data. You may need an optional module to use this function. . When this item is set, the following item becomes available:

- **MS/SD Port IRQ:** Enables you to set the Memory stick/secure digital device IRQ.

Init Display First (PCI Slot)

Use this item to specify whether your graphics adapter is installed in one of the PCI slots or is integrated on the mainboard.

AGP Auto Calibration (Enabled)

This item allows you to enable or disable the AGP buffer strength auto calibration through the chipset.

IDE ACCESS INTERFACE (Embedded Bus)

This item determines whether the IDE access interface is the PCI bus or the embedded bus.

USB1 ACCESS INTERFACE (Embedded BUS)

This option determines whether the USB1 access interface is the embedded bus or the PCI bus.

USB2 ACCESS INTERFACE (Embedded BUS)

This option determines whether the USB0 access interface is the embedded bus or a PCI bus.

Audio ACCESS INTERFACE (Embedded BUS)

This option determines whether the audio access interface is the embedded bus or a PCI bus.

Power Management Setup Option

This option lets you control system power management. The system has various power-saving modes including powering down the hard disk, turning off the video, suspending to RAM, and software power down that allows the system to be automatically resumed by certain events.

Power Management Timeouts

The power-saving modes can be controlled by timeouts. If the system is inactive for a time, the timeouts begin counting. If the inactivity continues so that the timeout period elapses, the system enters a power-saving mode. If any item in the list of Reload Global Timer Events is Enabled, then any activity on that item will reset the timeout counters to zero.

Wake Up Calls

If the system is suspended, or has been powered down by software, it can be resumed by a wake up call that is generated by incoming traffic to a modem, a LAN card, a PCI card, or a fixed alarm on the system realtime clock.

ACPI function	[Enabled]	Item Help
ACPI Suspend Type	[S1(POS)]	
Video Off Option	[Suspend --> Off]	Menu Level ►
Video Off Method	[DPMS Supported]	
MODEM Use IRQ	[Auto]	
Hot Key Function as	[Power Off]	
Hot Key Power On Function	[Disabled]	
USB S3 WakeUp Function	[Disabled]	
HDD Off After	[Disable]	
Power Button Override	[Instant-Off]	
Power State Resume Control	[Always Off]	
► PM Wake Up Events	[Press Enter]	

‾ ® ¬ : Move Enter : Select   +/-/PU/PD:Value: F10: Save ESC: Exit F1:General
Help   F5:Previous Values   F6:Fail-Safe Defaults   F7:Optimized Defaults

ACPI Function (Enabled)

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

> **Note:** ACPI is a power management specification that makes hardware status information available to the operating system. ACPI enables a PC to turn its peripherals on and off for improved power management. It also allows the PC to be turned on and off by external devices, so that mouse or keyboard activity wakes up the computer.

ACPI Suspend Type (S1(POS))

Use this item to define how your system suspends. In the default, S1(POS), the suspend mode is equivalent to a software power down. If you select S3 (STR), the suspend mode is a suspend to RAM, i.e., the system shuts down with the exception of a refresh current to the system memory.

Video Off Option (Susp, Stby --> Off)

This option defines if the video is powered down when the system is put into suspend mode.

Video Off Method (DPMS Supported)

This item defines how the video is powered down to save power. This item is set to DPMS (Display Power Management Software) by default.

MODEM Use IRQ (Auto)

If you want an incoming call on a modem to automatically resume the system from a power-saving mode, use this item to specify the interrupt request line (IRQ) that is used by the modem. You might have to connect the fax/modem to the mainboard Wake On Modem connector for this feature to work.

Hot Key Function As (Power Off)

This option allows you to set the Hot Key functionality to one of the following states: Disable (turn off Hot Key functionality), Power Off, Suspend.

Hot Key Power On Function (Disabled)

When enabled, allows you to power on the system using hot keys.

USB S3 WakeUp Function (Disabled)

This option enables USB device activity to wake the system from S3

HDD Off After (Disable)

The IDE hard drive will spin down if it is not accessed within a specified length of time. Options are from 1 Min to 15 Min and Disable.

Power Button Override (Instant Off)

Under ACPI (Advanced Configuration and Power management Interface) you can create a software power down. In a software power down, the system can be resumed by Wake Up Alarms. This item lets you install a software power down that is controlled by the power button on your system. If the item is set to Instant-Off, then the power button causes a software power down. If the item is set to Delay 4 Sec. then you have to hold the power button down for four seconds to cause a software power down.

Power State Resume Control (Always Off)

This sets the power state after a shutdown due to an unexpected interrupt of AC power.

▶ **PM Wake Up Events**

Scroll to this item and press <Enter> to view the following screen:

CMOS Setup Utility – Copyright (C) 1984 – 2000 Award Software
PM Wake Up Events

		Item Help
IRQ [3-7, 9-15], NMI	[Enabled]	
IRQ 8 Break suspend	[Disabled]	Menu Level ▶▶
Ring/WOL/WOM PowerUp Contl	[Disabled]	
PCIPME Power Up Control	[Enabled]	
Power Up by Alarm	[Disabled]	
x Month Alarm	NA	
x Date (of Month)	0	
x Time (hh:mm:ss)	0 0 0	

- ¯ ® ¬ : Move   Enter : Select   +/-/PU/PD:Value: F10: Save   ESC: Exit   F1:General Help
F5:Previous Values   F6:Fail-Safe Defaults   F7:Optimized Defaults

This item opens a submenu that enables you to set events that will resume the system from a power saving mode.

IRQ [3-7, 9-15], NMI (Enabled)

This option determines whether any activity for IRQ 3-7/9-15 will cause the system to wake from a power saving mode.

IRQ 8 Break Suspend

Determines whether the system will monitor IRQ 8 activity and wake the system from a power saving mode when IRQ 8 is activated.

Ring/WOL/WOM PowerUp Contl (Disabled)

Use this item to enable LAN or modem activity to wakeup the system from a power saving mode.

PCIPME Power Up Control (Enabled)

Use this item to enable PCI activity to wakeup the system from a power saving mode.

Power Up by Alarm (Disabled)

When set to Enabled, the following three fields become available: Month Alarm, Day of Month Alarm, and Time Alarm Upon arrival of the alarm time, it will instruct the system to wake up. When set to 0 (zero) for the day of the month, the alarm will power on your system every day at the specified time.

PNP/PCI Configuration Option

These options configure how PnP (Plug and Play) and PCI expansion cards operate in your system. Both the ISA and PCI buses on the Mainboard use system IRQs (Interrupt ReQuests) and DMAs (Direct Memory Access). You must set up the IRQ and DMA assignments correctly through the PnP/PCI Configurations Setup utility for the mainboard to work properly. Selecting PnP/PCI Configurations on the main program screen displays this menu:

CMOS Setup Utility – Copyright (C) 1984 – 2001 Award Software
PnP/PCI Configurations

		Item Help
Reset Configuration Data	[Disabled]	
Resources Controlled by	[Auto(ESCD)]	Menu Level ►
x IRQ Resources	Press Enter	Default is Disabled. Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup if you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the OS cannot boot
PCI/VGA Palette Snoop	[Disabled]	
INT Pin 1 Assignment	[Auto]	
INT Pin 2 Assignment	[Auto]	
INT Pin 3 Assignment	[Auto]	
INT Pin 4 Assignment	[Auto]	
INT Pin 5 Assignment	[Auto]	
INT Pin 6 Assignment	[Auto]	
INT Pin 7 Assignment	[Auto]	
INT Pin 8 Assignment	[Auto]	

- ¯ ® ¬ : Move   Enter : Select   +/-/PU/PD:Value: F10: Save   ESC: Exit   F1:General Help
F5:Previous Values   F6:Fail-Safe Defaults   F7:Optimized Defaults

Reset Configuration Data (Disabled)

If you enable this item and restart the system, any Plug and Play configuration data stored in the BIOS Setup is cleared from memory.

Resources Controlled By (Auto(ESCD))

You should leave this item at the default Auto(ESCD). Under this setting, the system dynamically allocates resources to Plug and Play devices as they are required.

If you cannot get a legacy ISA (Industry Standard Architecture) expansion card to work properly, you might be able to solve the problem by changing this item to Manual, and then opening up the IRQ Resources submenu.

In the IRQ Resources submenu, if you assign an IRQ to Legacy ISA, then that Interrupt Request Line is reserved for a legacy ISA expansion card. Press <Esc> to close the IRQ Resources submenu.

PCI/VGA Palette Snoop (Disabled)

This item is designed to overcome problems that can be caused by some non-standard VGA cards. This board includes a built-in VGA system that does not require palette snooping so you must leave this item disabled.

INT Pin 1-8 Assignment (Auto)

Identifies the interrupt request (IRQ) line assigned to a device connected to the PCI interface of your system.

PC Health Status Option

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

CMOS Setup Utility – Copyright (C) 1984 – 2001 Award Software
PC Health Status

Shutdown Temperature	[Disabled]	Item Help
CPU Core Voltage		
Vcc 1.8V		Menu Level ►
Vcc 3.3V		
Vcc 5.0V		
+12V		
StandBy 3.3V		
StandBy 5.0V		
Voltage Battery		
CPU Temperature		
System Temperature		
CPU Fan Speed		
CHS Fan1 Speed		
BAK Fan1 Speed		

- ¯ ® ¬ : MoveEnter : Select   +/-/PU/PD:Value: F10: Save ESC: Exit F1:General Help
      F5:Previous Values   F6:Fail-Safe Defaults   F7:Optimized Defaults

Shutdown Temperature

Enables you to set the maximum temperature the system can reach before powering down.

System Component Characteristics

These fields provide you with information about the systems current operating status. You cannot make changes to these fields.

Frequency/Voltage Control

This item enables you to set the clock speed and system bus for your system. The clock speed and system bus are determined by the kind of processor you have installed in your system.

CMOS Setup Utility – Copyright (C) 1984 – 2001 Award Software
Frequency/Voltage Control

CPU Clock Ratio	[Auto]	Item Help
Auto Detect DIMM/PCI Clk	[Enabled]	
Spread Spectrum	[Enabled]	Menu Level ►
CPU Host/SDRAM/PCI Clock	[Default]	

- ¯ ® ¬ : Move   Enter : Select   +/-/PU/PD:Value: F10: Save   ESC: Exit   F1:General Help
　　　　F5:Previous Values   F6:Fail-Safe Defaults   F7:Optimized Defaults

CPU Clock Ratio (Auto)

Use the CPU Host/SDRAM/PCI Clock to set the frontside bus frequency for the installed processor (usually 133 MHz, 100 MHz or 66 MHz). Then use *CPU Clock Ratio Jumpless* to set a multiple. The multiple times the frontside bus must equal the core speed of the installed processor e.g., **3.5 (multiple) x 100 MHz (frontside bus) = 350 MHz (installed processor clock speed)**.

Auto Detect DIMM/PCI Clk (Enabled)

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

Spread Spectrum (Enabled)

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

CPU Host/SDRAM/PCI Clock (Default)

Use the CPU Host Clock to set the frontside bus frequency for the installed processor (usually 133 MHz, 100 MHz or 66 MHz).

Load Fail-Safe Defaults Option

This option opens a dialog box that lets you install fail-safe defaults for all appropriate items in the Setup Utility:

Press <Y> and then <Enter> to install the defaults. Press <N> and then <Enter> to not install the defaults. The fail-safe defaults place no great demands on the system and are generally stable. If your system is not functioning correctly, try installing the fail-safe defaults as a first step in getting your system working properly again. If you only want to install fail-safe defaults for a specific option, select and display that option, and then press <F6>.

Load Optimized Defaults Option

This option opens a dialog box that lets you install optimized defaults for all appropriate items in the Setup Utility. Press <Y> and then <Enter> to install the defaults. Press <N> and then <Enter> to not install the defaults. The optimized defaults place demands on the system that may be greater than the performance level of the components, such as the CPU and the memory. You can cause fatal errors or instability if you install the optimized defaults when your hardware does not support them. If you only want to install setup defaults for a specific option, select and display that option, and then press <F7>.

Set Supervisor/User Password

When this function is selected, the following message appears at the center of the screen to assist you in creating a password.

ENTER PASSWORD

Type the password, up to eight characters, and press <Enter>. The password typed now will clear any previously entered password from CMOS memory. You will be asked to confirm the password. Type the password again and press <Enter>. You may also press <Esc> to abort the selection.

To disable password, just press <Enter> when you are prompted to enter password. A message will confirm the password being disabled. Once the password is disabled, the system will boot and you can enter BIOS Setup freely.

PASSWORD DISABLED

If you have selected "**System**" in "Security Option" of "BIOS Features Setup" menu, you will be prompted for the password every time the system reboots or any time you try to enter BIOS Setup.

If you have selected "**Setup**" at "Security Option" from "BIOS Features Setup" menu, you will be prompted for the password only when you enter BIOS Setup.

Supervisor Password has higher priority than User Password. You can use Supervisor Password when booting the system or entering BIOS Setup to modify all settings. Also you can use User Password when booting the system or entering BIOS Setup but can not modify any setting if Supervisor Password is enabled.

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Save & Exit Setup Option

Highlight this item and press <Enter> to save the changes that you have made in the Setup Utility and exit the Setup Utility. When the Save and Exit dialog box appears, press <Y> to save and exit, or press <N> to return to the main menu:

Exit Without Saving

Highlight this item and press <Enter> to discard any changes that you have made in the Setup Utility and exit the Setup Utility. When the Exit Without Saving dialog box appears, press <Y> to discard changes and exit, or press <N> to return to the main menu.

> **Note:** If you have made settings that you do not want to save, use the "Exit Without Saving" item and press <Y> to discard any changes you have made.

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

Using the Mainboard Software

About the Software CD-ROM

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

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

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

Auto-installing under Windows 98

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

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

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

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

Setup Tab

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

Application Tab

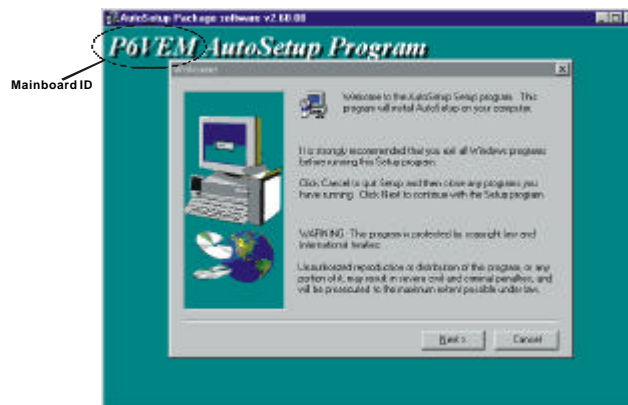Lists the software utilities that are available on the CD.

Read Me Tab

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

Running Setup

Follow these instructions to install device drivers and software for the mainboard:
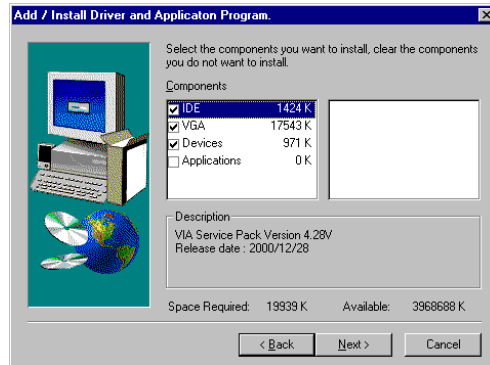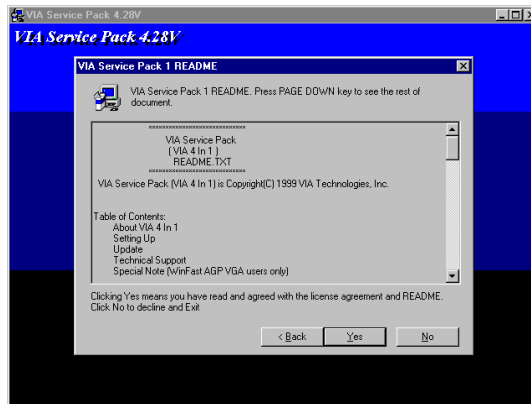
1.   Click **Setup**. The installation program begins:

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

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

3. Check the box next to the items you want to install. The default options are recommended.

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

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

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

Manual Installation

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

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

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

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

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

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

MediaRing Talk – Telephony Software

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

Super Voice – Fax/Modem Software

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

CD Ghost

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

\UTILITY\CDGHOST\ENG\CDGHOST

Recovery Genius

The Recovery Genius software program is an innovative windows application system that protects your Hard Disk Drive from virus intrusion, accidental de-letions 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.