Preface

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Version 3.2a

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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 8
Chapter 3 **Using BIOS**	Provides information on using the BIOS Setup Utility. Go to ⟹ page 27
Chapter 4 **Using the Mainboard Software**	Describes the mainboard software. Go to ⟹ page 49

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Introducing the Mainboard

Introduction

This is a micro-ATX mainboard that uses a 4-layer printed circuit board and measures 244 mm x 244 mm. The mainboard features an mPGA Socket 478 that accommodates Pentium 4 processors supporting frontside bus (FSB) speeds up to 400/533 MHz.

The mainboard utilizes one of the series of SiS650 chipset; **SiS650** or **SiS650GX** or **SiS650GL** or **SiS651** Northbridge and **SiS962** Southbridge chipsets and supports high-speed Double Data Rate (DDR) memory, providing maximum performance for memory-intensive applications.

This micro-ATX mainboard is equipped with three PCI, one CNR, and one 4X AGP connector for high-end 3D Graphics Adapters. It supports also six USB Ports, H/W Monitor, Integrated VGA and AC'97 audio codec.

Designed for the latest Socket 478-pin Pentium 4 processors, this mainboard offers the ideal platform for building powerful and professional desktop platform solution.

> **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 I/O panel
- One cooling fan retention module
- This user's manual

Notice to user:

This manual is provided to accommodate the L4S5MG+, L4S5MG/GX+, L4S5MG/GL+ and L4S5MG/651+ mainboards. To identify the type of mainboard you have, please refer below:

- **L4S5MG+** mainboard incorporates the SiS650 Northbridge and SiS962 Southbridge chipset.
- **L4S5MG/GX+** mainboard incorporates the SiS650GX Northbridge and SiS962 Southbridge chipset.
- **L4S5MG/GL+** mainboard incorporates the SiS650GL Northbridge and SiS962 Southbridge chipset.
- **L4S5MG/651+** mainboard incorporates the SiS651 Northbridge and SiS962 Southbridge chipset.

Features

Processor	The mainboard uses a micro PGA 478-pin socket that has the following features: • Supports 533 MHz frontside bus (FSB) • Accommodates Pentium 4 processors
Chipset	The **SiS650/SiS650GX/SiS650GL/SiS651** Northbridge and **SiS962** Southbridge chipsets are based on an innovative and scalable architecture with proven reliability and performance. The mainboard may support either of the Northbridge and Southbridge chipset mentioned above. Refer below for the combination and respective details: • **SiS650** Northbridge and **SiS962** Southbridge – Support up to 400 MHz system bus, ATA 133 interface, DDR 266, onboard USB 2.0 and IEEE1394A. • **SiS650GX** Northbridge and **SiS962** Southbridge – Support up to 400 MHz system bus, ATA 133 interface, DDR 266, onboard USB 2.0 and IEEE1394A. • **SiS650GL** Northbridge and **SiS962** Southbridge – Support up to 400 MHz system bus, ATA 133 interface, DDR 266, onboard USB 2.0 and IEEE1394A. • **SiS651** Northbridge and **SiS962** Southbridge – Support up to 533 MHz system bus, ATA 133 interface, DDR 333, onboard USB 2.0 and IEEE1394A. Additional key features of the mainboard 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.
USB	The USB 2.0 Controller is compliant with Universal Serial Bus Specification Revision 2.0. The USB 2.0 supports data transfer rates up to 480MB/sec for high-speed devices and specifies a microframe that will be $1/8^{th}$ of a 1msec frame. This allows the USB 2.0 devices to have small buffers even at high data rates. The USB 1.1 connectors and other full speed cables can support the higher speed of USB 2.0 without any changes. The chipset has the following advanced USB features: • Compliant with Enhanced Host Controller Interface (EHCI) Specification Revision 0.95 and Universal Host Controller Interface (UHCI) Specification Revision 1.1 • PCI multi-function device consists of two UHCI Host Controllers for full/low-speed signaling and one EHCI Host Controller core for high-speed signaling • Supports PCI-Bus Power Management Interface Specification release 1.1 • Legacy support for all downstream facing ports
VGA	The mainboard includes a 4xAGP slot that provides four times the bandwidth of the original AGP specification. AGP technology provides a direct connection between the graphics subsystem and the processor so that the graphics do not have to

	compete for processor time with other devices on the PCI bus.
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.
Onboard LAN (optional)	The Realtek RTL8100B LAN chip is incorporated in the chipset providing the mainboard with integrated Ethernet PCI LAN capabilities.
Expansion Options	The mainboard comes with the following expansion options: • Three 32-bit PCI slots • One 4xAGP slot • A Communications and Network Riser (CNR) slot (AC97 interface only) • Two IDE channels and a floppy disk drive interface The mainboard supports Ultra DMA bus mastering with transfer rates of 33/66/100/133 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 244 mm. Choose a case that accommodates this form factor.

Mainboard Components

RETENTION MODULE

DIM1 DIM2 CPUFAN1

CPU SOCKET

LED1

CDIN2

AUDIO1

CDIN1

ATX2

IDE2

IDE1

J5

1394_J1

1394_J2 AGP1

PCI1

USB3

USB2

IR1

SJ1

JP1

PCI2

JP3

PANEL1

BAT1

SPEAKER1

PCI3

CNR1

WOM1 WOL1 PWRFAN1 FDD1 CASFAN1
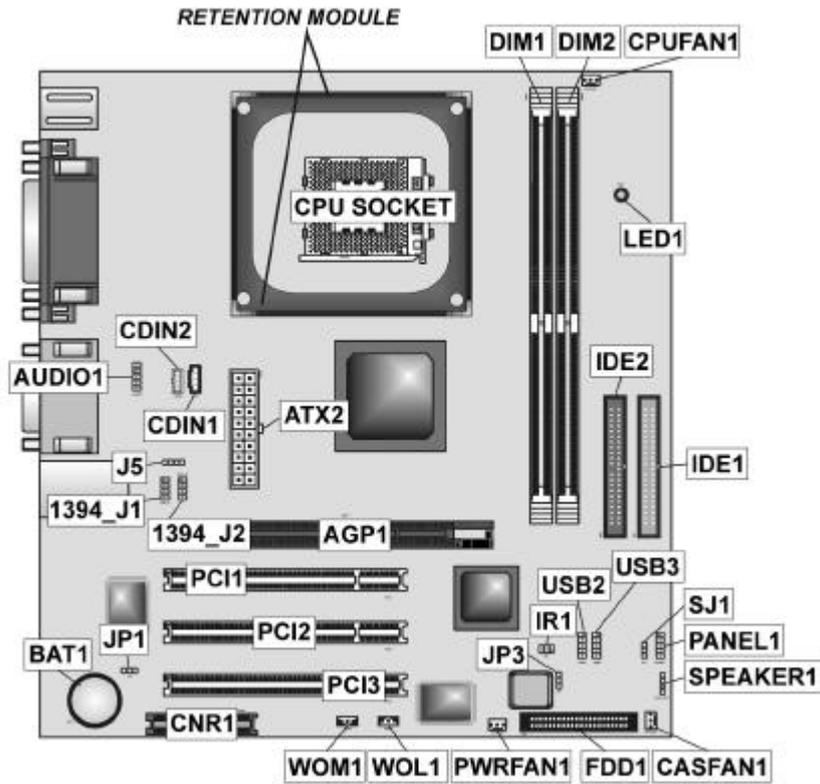
Table of Mainboard Components

Label	Component
1394_J1	IEEE 1394 header
1394_J2	IEEE 1394 header
AGP1	Accelerated Graphics Port
ATX2	Power connector
AUDIO1	Front audio connector
BAT1	Three volt realtime clock battery
CASFAN1	Case fan connector 1
CDIN1	Primary CD-in connector
CDIN2	Secondary CD-in connector
CNR1	Communications Networking Riser slot
CPU SOCKET	Micro PGA 478-pin socket for Pentium 4 CPUs
CPUFAN1	Cooling fan for CPU
DIM1, DIM2	Two 184-pin DDR SDRAM
FDD1	Floppy disk drive connector
IDE 1	Primary IDE channel
IDE 2	Secondary IDE channel
IR1	Infrared cable header
J5	SPIDF-out header
JP1	Clear CMOS jumper
JP3	BIOS protection jumper
LED1[1]	Memory module LED
PANEL1	Connector for case front panel switches and LED indicators
PCI1 ~ PCI3	Three 32-bit add-on card slots
PWRFAN1	Case fan connector 2
SPEAKER1	Speaker connector
USB2	Front panel USB headers
USB3	Front panel USB headers
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.

---

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

Safety Precautions

Follow these safety precautions when installing the mainboard:

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

Quick Guide

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

The following table provides a reference for installing specific components:

Installing the Mainboard in a Case

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

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

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

Checking Jumper Settings

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

Setting Jumpers

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

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

This illustration shows a 3-pin jumper. Pins 1 and 2 are SHORT.
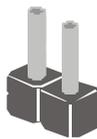
Short   **Open**
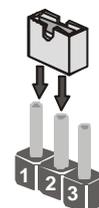
Checking Jumper Settings

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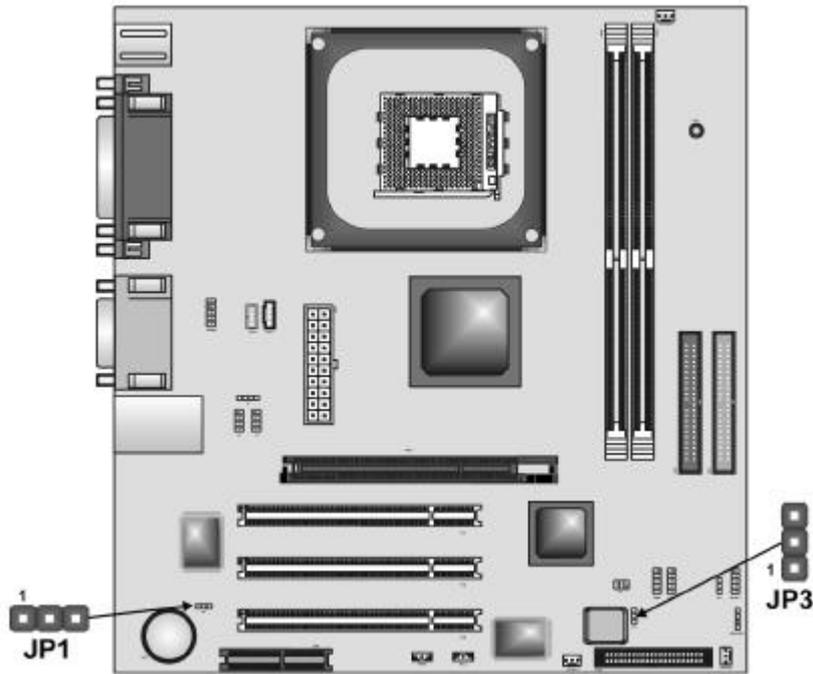
Jumper Settings

Jumper	Type	Description	Setting (*default*)	
JP1	3-pin	Clear CMOS	1-2: Normal *2-3: Clear*	**JP1** 1 ▨
JP3	3-pin	BIOS protect	1-2: Write Protect Disabled *2-3: Write Protect Enabled*	**JP3** 1 ▨

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

1. Turn the system off.
2. Short pins 2 and 3 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 3 – Enables you to prevent the BIOS from being updated (flashed). Set the jumper to disabled if you are going to update your BIOS. After updating the BIOS, return it to the default setting (Enabled).

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 standard power supply connector to **ATX2**.
2. Connect the CPU cooling fan cable to **CPUFAN1**.
3. Connect the case cooling fan connector to either PWRFAN1 or **CASFAN1**.
4. Connect the case speaker cable to **SPEAKER1**.
5. Connect the case LED cable to **SJ1**.
6. Connect the case switches and indicator to **PANEL1**.

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/CASFAN1/PWRFAN1: FAN Power Connectors

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

SPEAKER1: Internal speaker

Pin	Signal Name
1	Signal
2	Key
3	Ground
4	VCC

SJ1: Single color LED header

Pin	Signal Name	Function
1	ACPI LED	MSG LED (-) green
2	ACPI LED	MSG LED (-) green
3	SB5V	Power LED (+)

ACPI LED function:

SJ1	S0	S1	S3	S4/S5
1	Light	Blinking	Blinking	Dark

Front Panel Connector

The front panel connector (PANEL1) provides a standard set of switch and LED connectors commonly found on ATX or micro-ATX cases. Refer to the table below for information:
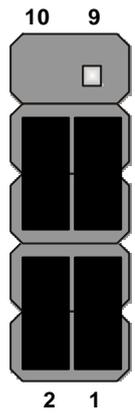
Pin	Signal Name	Function
1	HD_LED_P	Hard disk LED pull up (330 ohm) to +5V
2	FP PWR/SLP	MSG LED pull up (330 ohm) to +5V
3	HD_LED_N	Hard disk active LED
4	GND	Ground
5	RST_SW_N	Reset Switch low reference pull down (100 ohm) to GND
6	PWR_SW_P	Power Switch high reference pull up (10000 ohm) to +5V
7	RST_SW_P	Reset Switch high reference pull up (1000 ohm) to +5V
8	PWR_SW_N	Power Switch high reference pull down (100 ohm) to GND
9	RSVD	Reserved (do not use)
10	NC	No pin

10   9

2   1

PANEL1

Hard Drive Activity LED

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

Power / Sleep / Message Waiting LED

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

Reset Switch

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

Power Switch

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

Installing Hardware

Installing the Processor

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

Before installing the Processor

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

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

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

CPU Installation Procedure

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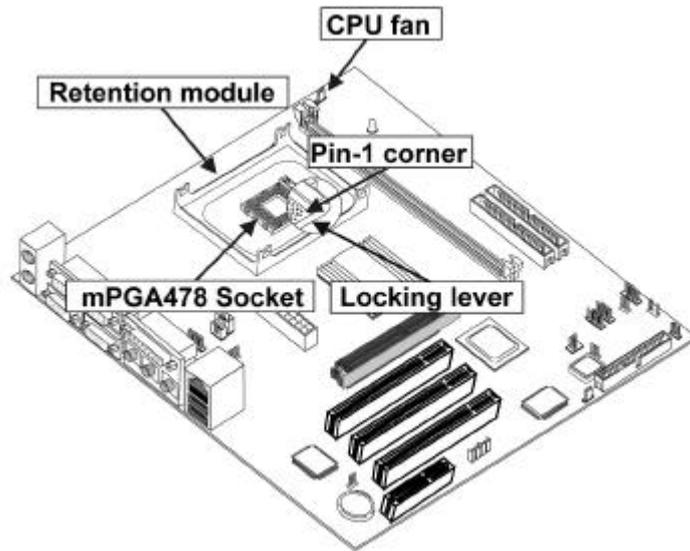
Note: The pin-1 corner is marked with an arrow ▶

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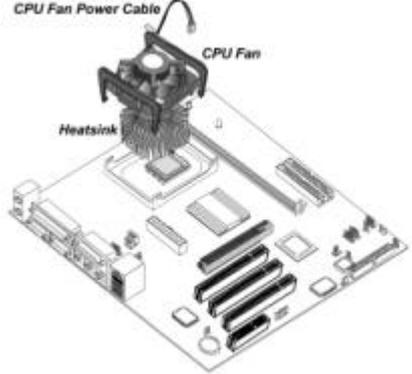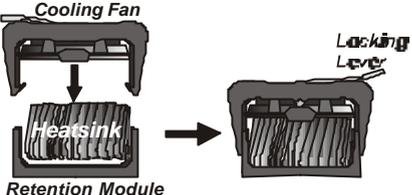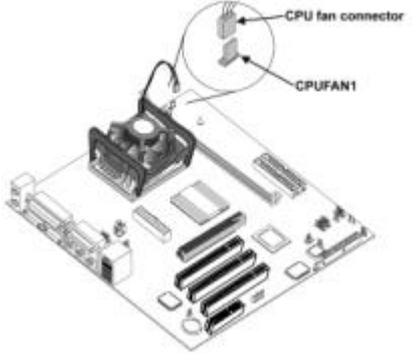
Note: CPU fan and heatsink installation procedures may vary with the type of CPU fan/heatsink supplied. The form and size of fan/heatsink may also vary.

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.

> **Note:** SDRAM provides 800 MBps or 1 GBps data transfer depending on whether the bus is 100MHz or 133MHz. Double Data Rate SDRAM (DDR SDRAM) doubles the rate to 1.6 GBps and 2.1 GBps. DDR SDRAM uses additional power and ground lines and requires 184-pin DIMM modules rather than the 168-pin DIMMs used by SDRAM.

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.
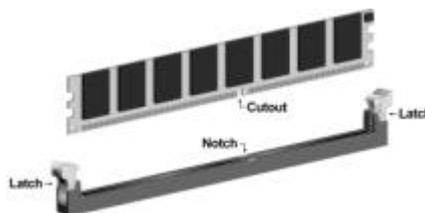
4. Check that the cutouts on the DIMM module edge connector match the notches in the DIMM slot.
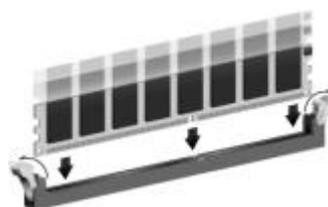
5. Install the DIMM module into the slot and press it firmly down until it seats correctly. The slot latches are levered upwards and latch on to the edges of the DIMM.
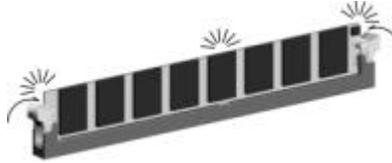
6. Install any remaining DIMM modules.

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

Installing a Hard Disk Drive

1.	Install the hard disk drive into the drive cage in your system case.
2.	Plug the IDE cable into IDE1 (**A**): **Note:** Ribbon cable connectors are usually keyed so that they can only be installed correctly on the device connector. If the connector is not keyed, make sure that you match the pin-1 side of the cable connector with the pin-1 side of the device connector. Each connector has the pin-1 side clearly marked. The pin-1 side of each ribbon cable is always marked with a colored stripe on the cable.
3.	Plug an IDE cable connector into the hard disk drive IDE connector (**B**). It doesn't matter which connector on the cable you use.
4.	Plug a power cable from the case power supply into the power connector on the hard disk drive (**C**).
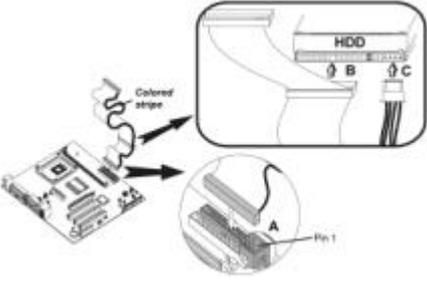
When you first start up your system, the BIOS should automatically detect your hard disk drive. If it doesn' t, enter the Setup Utility and use the IDE Hard Disk Auto Detect feature to configure the hard disk drive that you have installed. See IDE HDD Auto-Detection on page 31 for more information.

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**).
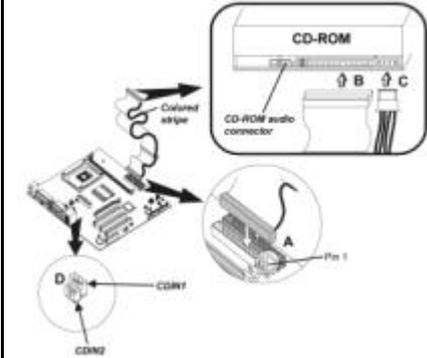
When you first start up your system, the BIOS should automatically detect your CD-ROM/DVD drive. If it doesn' t, enter the Setup Utility and configure the CD-ROM/DVD drive that you have installed. See IDE Primary/Secondary Master/Slave (Auto) on page 31 for more information.

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**).	
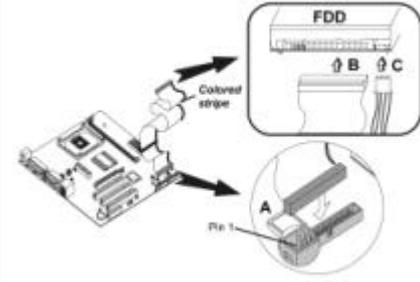
When you first start up your system, go immediately to the Setup Utility to configure the floppy diskette drives that you have installed. See Standard CMOS Features on page 30 for more information.

Installing Add-on Cards

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

PCI Slots	PCI slots are used to install expansion cards that have the 32-bit PCI interface.	
4xAGP Slot	The 4xAGP slot is used to install a graphics adapter that supports the 4xAGP specification and has a 4xAGP edge connector.	
CNR Slot	This slot is used to insert CNR cards with Modem and Audio functionality.	
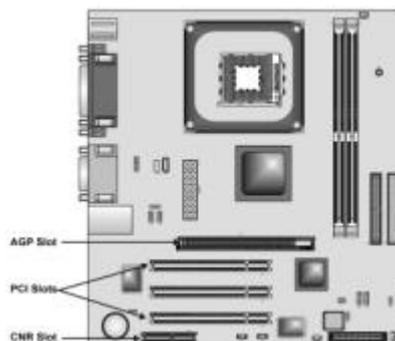
Note: Before installing an add-on card, check the documentation for the card carefully. If the card is not Plug and Play, you may have to manually configure the card before installation.

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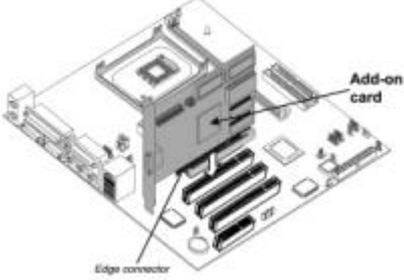
Note: For some add-on cards, for example graphics adapters and network adapters, you have to install drivers and software before you can begin using the add-on card.

How to use the AGP slot:

To lock the graphics card into place, simply insert the AGP card into the AGP slot as you normally would and then slide the lock to the left.
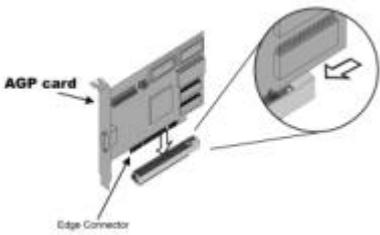
Note: Don't force the card. If you meet a lot of resistance, pull the card out. Check the connector and the slot for damage or obstruction, and then try inserting the card again.

21

Connecting Optional Devices

Refer to the following for information on connecting the mainboard' s optional devices:
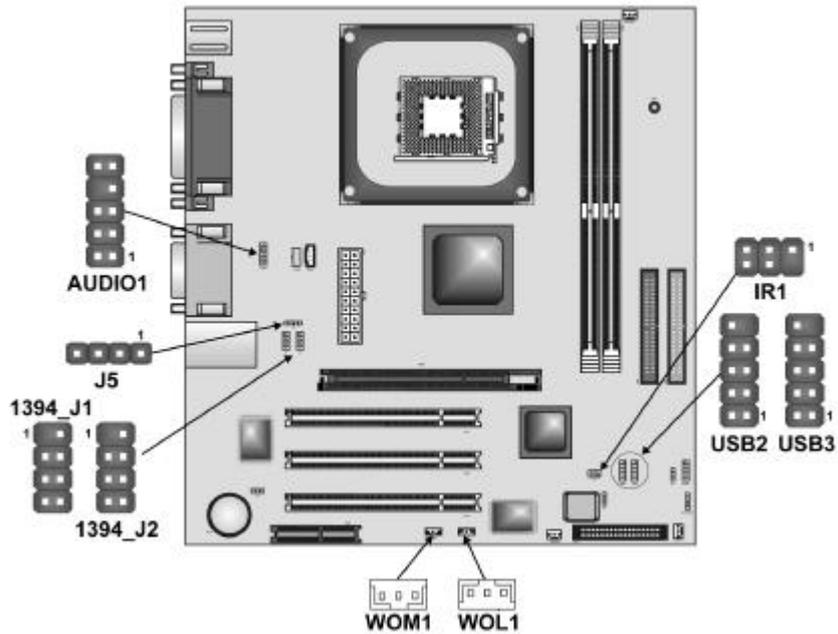
AUDIO1: Front Panel Audio header

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

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

USB2/USB3: Front panel USB ports

The mainboard has two USB ports installed on the rear edge I/O port array. Additionally, some computer cases have USB ports at the front of the case. If you have this kind of case, use auxiliary USB connectors USB2 and USB3 to connect the front-mounted ports to the mainboard.

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

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

WOL1: Wake On LAN

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

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

WOM1: Wake On Modem

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

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

IR1: Serial 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	Function
1	Not assigned	Not assigned
2	KEY	No pin
3	+5V	IR Power
4	GND	Ground
5	IRTX	IrDA serial output
6	IRRX	IrDA serial input

J5: SPDIF out header

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

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

1394_J1/1394_J2: IEEE 1394A header

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

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

Connecting I/O Devices

The backplane of the mainboard has the following I/O ports:
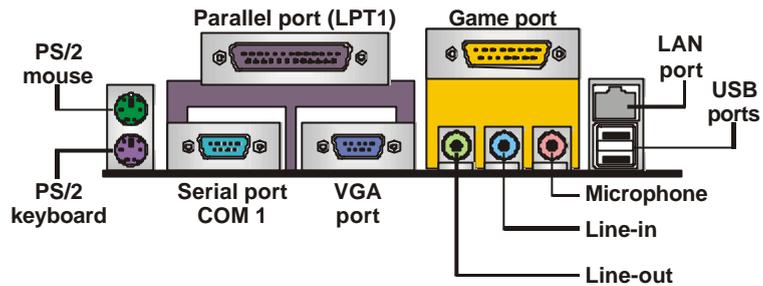
PS/2 Mouse	Use the upper PS/2 port to connect a PS/2 pointing device.
PS/2 Keyboard	Use the lower PS/2 port to connect a PS/2 keyboard.
LPT1	Use LPT1 to connect printers or other parallel communications devices.
COM1	Use the COM port to connect serial devices such as mice or fax/modems. COM1 is identified 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
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:

Phoenix – AwardBIOS CMOS Setup Utility

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

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.

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
```
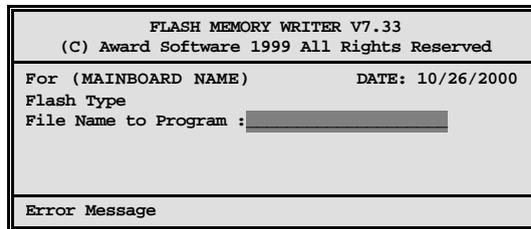
7. Type the filename of the new BIOS in the "File Name to Program" text box. Follow the onscreen directions to update the mainboard BIOS.
8. When the installation is complete, remove the floppy diskette from the diskette drive and restart your computer. If your mainboard has a Flash BIOS jumper, reset 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.

```
                    Phoenix – AwardBIOS CMOS Setup Utility
                           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                             │                     │
│ ► IDE Primary Slave                              │ Change the day, month,│
│ ► IDE Secondary Master                           │ year and century.   │
│ ► 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:

```
                    Phoenix – AwardBIOS CMOS Setup Utility
                              IDE Primary Master
┌─────────────────────────────────────────────────┬─────────────────────┐
│   IDE HDD Auto-Detection      [Press Enter]      │     Item Help       │
│                                                  │                     │
│   IDE Primary Master          [Auto]             ├─────────────────────┤
│   Access Mode                 [Auto]             │ Menu Level    ►►    │
│                                                  │                     │
│   Capacity                    0  MB              │ To auto-detect the  │
│                                                  │ 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 Features

This option defines advanced information about your system.

```
┌─────────────────────────────────────────────────┬──────────────────────┐
│  Virus Warning                    [Disabled]  ▲  │     Item Help        │
│  CPU L1 & L2 Cache                [Enabled]      │                      │
│  Quick Power On Self Test         [Enabled]      │  Menu Level    ►     │
│  First Boot Device                [Floppy]       │                      │
│  Second Boot Device               [HDD-0]        │  Allows you to choose│
│  Third Boot Device                [CDROM]        │  the VIRUS warning   │
│  Boot Other Device                [Enabled]      │  feature for IDE Hard│
│  Swap Floppy Drive                [Disabled]     │  Disk boot sector    │
│  Boot Up Floppy Seek              [Disabled]     │  protection. If this │
│  Boot Up NumLock Status           [On]           │  function is enabled │
│  Gate A20 Option                  [Fast]         │  and someone attempts│
│  ATA 66/100 Cable MSG             [Disabled]     │  to write data into  │
│  Typematic Rate Setting           [Disabled]     │  this                │
│ x Typematic Rate (Chars/Sec)      6              │  area, BIOS will show│
│ x Typematic Delay (Msec)          250            │  a                   │
│  Security Option                  [Setup]        │  warning message on  │
│  APIC Mode                        [Enabled]      │  screen and alarm    │
│  OS Select For DRAM > 64MB        [Non-OS2]      │  beep                │
│  HDD S.M.A.R.T Capability         [Disabled]  ▼  │                      │
└─────────────────────────────────────────────────┴──────────────────────┘
```

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

Virus Warning (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/CDROM)

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 operat-

ing system if it fails to find one in the devices specified under the First, Second, and Third boot devices.

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.

ATA 66/100 Cable MSG (Disabled)

This item enables or disables the display of the ATA 66/100 Cable MSG.

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.

APIC Mode (Enable)

This option is use to enabled or disabled APIC (Advanced Programmable Interrupt Controller) functionality. The APIC is an Intel chip that provides sym-metric multiprocessing (SMP) for its Pentium systems.

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

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 famil-iar 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.

Phoenix – AwardBIOS CMOS Setup Utility
Advanced Chipset Features

► Advanced DRAM Control 1 [Press Enter]	Item Help
Prefetch Caching [Disabled]	
Memory Hole at 15M-16M [Disabled]	Menu Level ►
AGP Aperture Size [128MB]	
Graphic Window WR Combin [Enabled]	

- ¯ ® ¬ : 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:

		Item Help
System Performance	[Normal Mode]	
CAS Latency Setting	[2.5T]	Menu Level ►
DRAM Addr/Cmd Rate	[Auto Mode]	

- ¯ ® ¬ : 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.

DRAM Addr/Cmd Rate (Auto Mode)

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.

Press <Esc> to return to the Advanced Chipset Features screen.

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 (128MB)

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.

Integrated Peripherals

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

Phoenix – AwardBIOS CMOS Setup Utility
Integrated Peripherals

		Item Help
► SIS OnChip IDE Device	[Press Enter]	
► SIS OnChip PCI Device	[Press Enter]	Menu Level ►
► Onboard SuperIO Device	[Press Enter]	
USB Controller	[Enabled]	
USB Ports Number	[16 Ports]	
USB 2.0 Supports	[Enabled]	
USB Keyboard Support	[Disabled]	
Onboard LAN	[Enabled]	
Onboard LAN Boot ROM	[Disabled]	
Onboard RAID	[Enabled]	
IDE HDD Block Mode	[Enabled]	
Init Display First	[PCI Slot]	
AGP Auto Calibration	[Enabled]	
IDECHO Access Interface	[EDB Bus]	
IDECH1 Access Interface	[EDB Bus]	
USB0 Access Interface	[EDB Bus]	
USB1 Access Interface	[EDB Bus]	
USB2 Access Interface	[EDB Bus]	
USB2.0 Access Interface	[EDB Bus]	
Audio Access Interface	[EDB 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:

Phoenix – AwardBIOS CMOS Setup Utility
SIS OnChip IDE Device

		Item Help
Internal PCI/IDE	[Both]	
IDE Primary Master PIO	[Auto]	Menu Level ►►
IDE Primary Slave PIO	[Auto]	
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 DMA Transfer Access	[Enabled]	
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 DMA Transfer Access (Enabled)

This item allows you to enabled the transfer access of the IDE DMA.

IDE Burst Mode (Enabled)

This option, when enabled will instruct the sys tem 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:

Phoenix – AwardBIOS CMOS Setup Utility
SIS OnChip PCI Device

		Item Help
SIS-7012 AC97Audio	[Enabled]	
SIS-7013 S/W Modem	[Enabled]	Menu Level ►►
SIS 1394 Controller	[Disabled]	
System Share Memory Size	[32 MB]	

- ¯ ® ¬ : 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 AC 97 audio function. Disable this item if

you are going to install a PCI audio add-on card.

SIS-7013 S/W Modem (Enabled)

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

SIS-1394 Controller (Disabled)

Enables and disables the onboard 1394 controller.

System Share Memory Size (32MB)

This motherboard has a built-in graphics system that uses UMA (Unified Memory Architecture) so that the graphics reserves a part of main memory for video memory. Use this item to determine how much of the main memory can be used as video memory.

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

▶ **Onboard SuperIO Device**

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

Phoenix – AwardBIOS CMOS Setup Utility
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 communica-

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tion 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.

Onboard LAN Boot ROM (Disabled)

Use this item to enable and disable the booting from the onboard LAN or a network add-in card with a remote boot ROM installed.

Onboard LAN RAID (Enabled)

Use this item to enable and disable the onboard RAID chip.

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.

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.

IDECHO/IDECH1 ACCESS INTERFACE (EDB Bus)

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

USB0/USB1/USB2 ACCESS INTERFACE (EDB Bus)

This option determines whether the USB0/USB1/USB2 access interface is the embedded bus or the PCI bus.

USB2.0 ACCESS INTERFACE (Embedded BUS)

This option determines whether the USB2.0 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

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,

Phoenix – AwardBIOS CMOS Setup Utility
Power Management Setup

ACPI function	[Enabled]	Item Help
ACPI Suspend Type	[S1(POS)]	
Video Off Option	[Susp, Stby --> Off]	Menu Level ►
Video Off Method	[DPMS Supported]	
MODEM Use IRQ	[Auto]	
Hot Key Function as	[Power Off]	
PS2KB Wakeup from S3	[Hot key]	
USB S3 Wakeup Function	[Disabled]	
HDD Off After	[Disabled]	
Power Button Override	[Instant-Off]	
Power State Resume Control	[Always Off]	
► PM Wake Up Events	[Press Enter]	
Delay Prior to Thermal	[None]	

- ¯ ® ¬ : MoveEnter : 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.

PS2 KB Wakeup from S3 (Hot key)

Enables you to allow keyboard activity to awaken the system from power saving mode using hot keys.

USB S3 Wakeup Function (Disabled)

This option allows you to specify whether the system will be awakened from power saving modes when activity or input signal of the specified hardware peripheral or component is detected.

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 resume 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.

Delay Prior to Thermal (None)

This sets the delay time before the CPU enters auto thermal mode.

► **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
┌─────────────────────────────────────────────────────────┬──────────────────────┐
│    IRQ [3-7, 9-15], NMI              [Enabled]            │      Item Help        │
│    IRQ 8 Break suspend               [Disabled]          │                       │
│    Ring/WOL/WOM PowerUp Contl        [Disabled]          │ Menu Level    ►►      │
│    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             │                       │
│                                                          │                       │
│    ** Reload Global Timer Events **                      │                       │
│                                                          │                       │
│                                                          │                       │
└─────────────────────────────────────────────────────────┴──────────────────────┘
  - ¯ ® ¬ : 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.

** Reload Global Timer Events **

Global Timer (power management) events are I/O events whose occurrence can prevent the system from entering a power saving mode or can awaken the system from such a mode. In effect, the system remains alert for anything

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that occurs to a device that is configured as Enabled, even when the system is in a power-down mode.

Primary/Secondary IDE 1/0 (Disabled)

When these items are enabled, the system will restart the power-saving time-out counters when any activity is detected on any of the drives or devices on the primary or secondary IDE channels.

FDD, COM, LPT Port (Disabled)

When this item is enabled, the system will restart the power-saving timeout counters when any activity is detected on the floppy disk drive, serial ports, or the parallel port.

PCI PIRQ[A-D]# (Disabled)

When disabled, any PCI device set as the Master will not power on the system.

PWRON After PWR-Fail (Off)

This item enables your computer to automatically restart or return to its last operating status after power returns from a power failure.

Press <Esc> to return to the Power Management screen.

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PNP/PCI Configurations

These options configure how PnP (Plug and Play) and PCI expansion cards oper-
ate 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:

Phoenix – AwardBIOS CMOS Setup Utility
PnP/PCI Configurations

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

- ¯ ® ¬ : 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

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

Phoenix – AwardBIOS CMOS Setup Utility
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		
CPUFAN Speed		
CASFAN1 Speed		
BAKFAN1 Speed		

↑ ↓ → ← : Move Enter : 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.

Phoenix – AwardBIOS CMOS Setup Utility
Frequency/Voltage Control

CPU Clock Ratio	[0 X]	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 (0 X)

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.

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 README.TXT, INSTALL.TXT, or something similar. These files may contain important information that is not included in this manual

Auto-installing under Windows 98

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

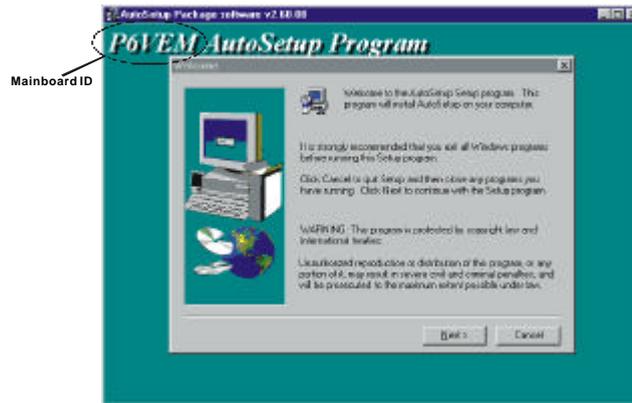Lists the software utilities that are available on the CD.

Read Me Tab

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

Running Setup

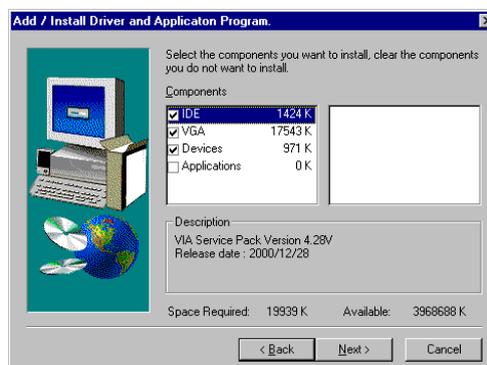Follow these instructions to install device drivers and software for the mainboard:

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:

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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 deletions and from system corruption. To install the Recovery Genius software program run SETUP.EXE from the following directory:

\UTILITY\RECOVERY GENIUS\ENG\RECOVERYGENIUS

Language Genius

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

\UTILITY\LANGUAGE GENIUS\ENG\LANGUAGEGENIUS

PageABC

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

This concludes Chapter 4.