

Preface

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Version 1.0

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Federal Communications Commission (FCC)

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment onto an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Shielded interconnect cables and a shielded AC power cable must be employed with this equipment to ensure compliance with the pertinent RF emission limits governing this device. Changes or modifications not expressly approved by the system's manufacturer could void the user's authority to operate the equipment.

Declaration of Conformity

This device complies with part 15 of the FCC rules. Operation is subject to the following conditions:

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

Canadian Department of Communications

This class B digital apparatus meets all requirements of the Canadian Interference-causing Equipment Regulations.

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

About the Manual

The manual consists of the following:

Chapter 1 Introducing the Motherboard	Describes features of the mainboard, and provides a shipping checklist. Go to ⇒ page 1
Chapter 2 Installing the Motherboard	Describes installation of mainboard components. Go to ⇒ page 9
Chapter 3 Using BIOS	Provides information on using the BIOS Setup Utility. Go to ⇒ page 27
Chapter 4 Using the Motherboard Software	Describes the mainboard software. Go to ⇒ page 53

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Chapter 1

Introducing the Motherboard

Introduction

Thank you for choosing 661FX-M motherboard of great performance and with enhanced function. 661FX-M motherboard carries a micro-ATX form factor of 244 x 230 mm. 661FX-M supports Socket 478 Pentium 4 processors with system data transfer rate up to 800 MHz and "Hyper-Threading" technology for high-end business or personal desktop markets.

661FX-M incorporates chipset of SiS661FX Northbridge and SiS964 / 964L Southbridge.

SiS661FX contains a DRAM controller that supports up to two un-buffered DIMM DDR400 and 32Mb, 64Mb, 128Mb, 256Mb, 512Mb, 1Gb SDRAM technology with page size from 2 KB up to 32 KB. Its AGP controller is AGP 3.0 compliant and supports AGP 8X / 4X interface with fast write transaction. It accommodates high throughput SiS MuTIOL 1G interconnecting to SiS964 / SiS964L MuTIOL 1G media I/O with bi-directional 16 bit data bus to perform 1GB/s bandwidth in 133 MHz x 4 mode. Its high quality 3D accelerator supports Ultra-AGP II™ up to 2.7GB/s bandwidth.

SiS964 / 964L supports Hi-Precision Event Timer (HPET) for Microsoft Windows with multiple DMA bus architecture that supports isochronous request and continuous packet transmission. It implements an EHCI compliant interface that provides 480Mb/s bandwidth for eight USB 2.0 ports, integrates AC'97 v2.3 compliant audio controller that features a 6-channels of audio speaker out and HSP v.90 modem support. The Southbridge integrates a Serial ATA host controller that is SATA v1.0 compliant, supporting Ultra DMA 150 (SiS964 only). SiS964/964L provide dual independent IDE channels and each of them support PIO mode 0,1,2,3,4 and multiword DMA mode 0,1,2 and Ultra DMA 33 / 66 / 100 / 133.

There is an advanced full set of I/O ports in the rear panel, including PS/2 mouse and keyboard connectors, COM1, LPT1, VGA1, and four USB ports, one optional LAN port, and audio jacks for microphone, line-in, and line-out. Additional I/O ports include two rear USB connectors and one rear RJ45 connector W/O two status LED.

Featuring good stability and performance, and the advanced SiS chipset, the 661FX-M is an excellent Pentium 4 DDR motherboard for the ideal solution for any home or workstation PC.

Checklist

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

Standard Items

- One motherboard
- One diskette drive ribbon cable
- One IDE drive ribbon cable
- One auto-install software support CD
- One I/O shield
- One SATA cable (optional)
- This user's manual

Features

Processor	<p>661FX-M uses a 478-pin socket type of Pentium 4 that carries the following features:</p> <ul style="list-style-type: none"> • Intel Pentium 4 Willamete: FSB400,512K L2 cache • Intel Pentium 4 Northwood: FSB 400/533,512K L2 cache • Intel Pentium 4 Northwood: FSB 533, 512K L2 cache, HT supported • Intel Pentium 4 Northwood: FSB 800, 512K L2 cache, HT supported <p>“Hyper-Threading” technology enables the operating system into thinking it’s hooked up to two processors, allowing two threads to be run in parallel, both on separate ‘logical’ processors within the same physical processor.</p>						
Chipset	<p>The SiS661FX Northbridge (NB) and SiS964 / 964L Southbridge (SB) chipset is based on an innovative and scalable architecture with proven reliability and performance.</p> <table border="1" data-bbox="598 891 1200 1680"> <thead> <tr> <th data-bbox="598 891 726 929">Chipset</th> <th data-bbox="726 891 1200 929">Features</th> </tr> </thead> <tbody> <tr> <td data-bbox="598 929 726 1332">SiS661FX NB</td> <td data-bbox="726 929 1200 1332"> <p>Supports 12 outstanding transactions and out-of-order completion.</p> <p>Accommodates high throughput SiS MuTIOL 1G interconnecting to SiS964 MuTIOL 1G media I/O with bi-directional 16 bit data bus to perform 1GB/s bandwidth in 133 MHz x 4 mode.</p> <p>Accommodates high quality 3D accelerator that supports Ultra-AGP II™ up to 2.7 GB/s bandwidth.</p> <p>Built-in CRT FIFOs to support ultra high resolution graphics modes and reduce CPU wait-state.</p> <p>Supports auto clock throttling for 2D engine, 3D engine.</p> </td> </tr> <tr> <td data-bbox="598 1332 726 1680">SiS964/964L SB</td> <td data-bbox="726 1332 1200 1680"> <p>Concurrent servicing of all DMA Devices: Dual IDE Controllers, SATA controller (<i>except for SiS964L</i>), three USB 2.0 HC, USB 1.1 HC, LAN MAC Controller and Audio/Modem DMA Controller.</p> <p>Compliant with PCI 2.3 specification.</p> <p>Compliant with Serial ATA 1.0 specification, supports power saving mode (SiS964 only).</p> <p>Compliant with AC’97 v2.3 supporting 6 Channels of audio outputs and V.90 HSP-Modem.</p> <p>Integrated USB 2.0 Controller with four root hubs and eight function ports.</p> </td> </tr> </tbody> </table>	Chipset	Features	SiS661FX NB	<p>Supports 12 outstanding transactions and out-of-order completion.</p> <p>Accommodates high throughput SiS MuTIOL 1G interconnecting to SiS964 MuTIOL 1G media I/O with bi-directional 16 bit data bus to perform 1GB/s bandwidth in 133 MHz x 4 mode.</p> <p>Accommodates high quality 3D accelerator that supports Ultra-AGP II™ up to 2.7 GB/s bandwidth.</p> <p>Built-in CRT FIFOs to support ultra high resolution graphics modes and reduce CPU wait-state.</p> <p>Supports auto clock throttling for 2D engine, 3D engine.</p>	SiS964/964L SB	<p>Concurrent servicing of all DMA Devices: Dual IDE Controllers, SATA controller (<i>except for SiS964L</i>), three USB 2.0 HC, USB 1.1 HC, LAN MAC Controller and Audio/Modem DMA Controller.</p> <p>Compliant with PCI 2.3 specification.</p> <p>Compliant with Serial ATA 1.0 specification, supports power saving mode (SiS964 only).</p> <p>Compliant with AC’97 v2.3 supporting 6 Channels of audio outputs and V.90 HSP-Modem.</p> <p>Integrated USB 2.0 Controller with four root hubs and eight function ports.</p>
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Memory	<ul style="list-style-type: none"> • Supports DDR400/333/266 MHz DDR SDRAM memory module • Accommodates two DDR 184-pin un-buffered DIMM slots • Each slot supports up to 1 GB with a total maximum capacity of 2 GB
Graphics	<ul style="list-style-type: none"> • 661FX-M includes an AGP 3.0 slot that provides AGP 8X, eight times the bandwidth of the original AGP specification. • The AGP offers a significant increase in performance along with feature enhancements. • The interface represents the natural evolution from the existing AGP to meet the ever-increasing demands placed on the graphic interfaces within the workstation and desktop environments.
Audio	<ul style="list-style-type: none"> • 661FX-M supports 18-bit stereo full-duplex AC'97 audio CODEC that is compliant with AC'97 v2.3 specification. • It comes with independent and variable sampling rate and advanced power management. • It is incorporated with proprietary converter technology • The digital interface circuitry operates from a 3.3V power supply and supports an AC'97 2.3 compliant SPDIF out function that allows easy connection from the PC to other electronic products. • It supports four analog line-level stereo inputs.
Expansion Options	<p>The motherboard comes with the following expansion options:</p> <ul style="list-style-type: none"> • One AGP 3.0 compliant slot with 8x/4x speed • Three 32-bit PCI v2.3 compliant slots • Two 40-pin IDE low profile headers that support four IDE channels • One floppy disk drive interface • Two 7-pin SATA connector • A Communications Networking Riser (CNR) slot <p>The 661FX-M motherboard supports Ultra DMA bus mastering with transfer rates of 133 / 100 / 66 / 33 MB/sec.</p>
Onboard LAN (optional)	<p>The onboard LAN provides the following features:</p> <ul style="list-style-type: none"> • Supports 10/100 Mbps operation • Supports half/full duplex operation • Supports Wake-On-LAN (WOL) function and remote wake-up • Supports power down mode
Integrated I/O	<p>The motherboard has a full set of I/O ports and connectors:</p> <ul style="list-style-type: none"> • Two PS/2 ports for mouse and keyboard • One serial port • One parallel port • Four USB ports • One LAN port (optional) • One VGA port • Audio jacks for microphone, line-in and line-out

BIOS Firmware	This motherboard uses Award BIOS that enables users to configure many system features including the following: <ul style="list-style-type: none">• 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.
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Some hardware specifications and software items are subject to change without prior notice.

Choosing a Computer Case

There are many types of computer cases on the market. The motherboard complies with the specifications for the micro-ATX system case. First, some features on the motherboard are implemented by cabling connectors on the motherboard to indicators and switches on the system case. Make sure that your case supports all the features required. Secondly, 661FX-M supports one or two floppy diskette drives and four enhanced IDE drives. Make sure 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 motherboard.

This motherboard carries a micro-ATX form factor of 244 x 230 mm. Choose a case that accommodates this form factor.

Motherboard Components

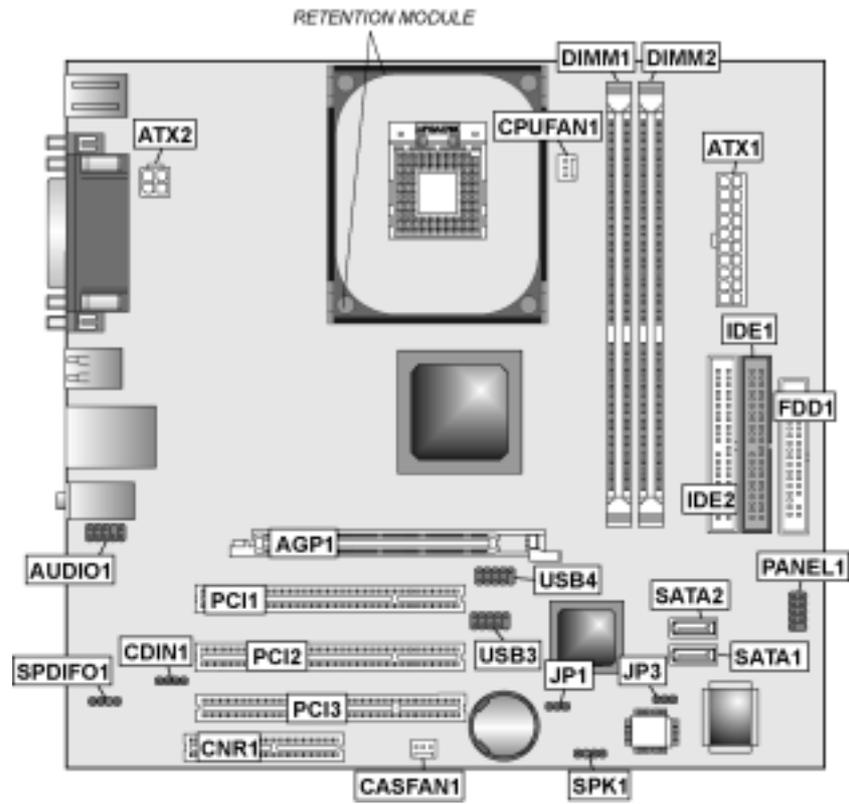


Table of Motherboard Components

Label	Component
AGP1	Accelerated Graphics Port slot
ATX1	Standard 20-pin ATX power connector
ATX2	Auxiliary 4-pin power connector
AUDIO1	Front panel audio header
CASFAN1	Case fan connector
CDIN1	CD-in connector
CNR1	Communications Networking Riser slot
CPUFAN1	CPU cooling fan connector
CPU Socket	mPGA478 socket for Pentium 4 CPUs
DIMM1 ~ DIMM2	184-pin DDR SDRAM slots
FDD1	Floppy diskette drive connector
IDE1	Primary IDE channel
IDE2	Secondary IDE channel
JP1	Clear CMOS jumper
JP3	BIOS Protect jumper
PANEL1	Connector for case front panel switches and LED indicators
PCI1 ~ PCI3	32-bit add-on card slots
RETENTION MODULE	Module to hold the CPU fan and heatsink
SATA1 ~ SATA2	Serial ATA connectors
SPK1	Speaker header
SPDIFO1	SPDIF out header
USB3 ~ USB4	Front Panel USB headers

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

Chapter 2

Installing the Motherboard

Safety Precautions

Follow these safety precautions when installing the motherboard:

- 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 motherboard.
- 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 motherboards.

The following table provides a reference for installing specific components:

Locating Motherboard Components	Go to page 7
Installing the Motherboard in a Case	Go to page 10
Setting Jumpers	Go to page 10
Installing Case Components	Go to page 12
Installing the Processor	Go to page 15
Installing Memory	Go to page 18
Installing an HDD/CD-ROM/SATA Hard Drive	Go to page 20
Installing an FDD	Go to page 22
Installing Add-on Cards	Go to page 23
Connecting Options	Go to page 24
Connecting Peripheral (I/O) Devices	Go to page 26

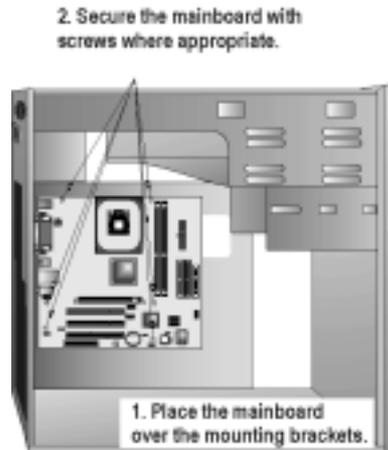
Installing the Motherboard in a Case

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

This illustration shows an example of a motherboard being installed in a tower-type case:

Note: Do not over-tighten the screws as this can stress the motherboard.

Most system cases have mounting brackets installed in the case, which correspond to the holes in the motherboard. Place the motherboard over the mounting brackets and secure the motherboard onto the mounting brackets with screws.



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

Checking Jumper Settings

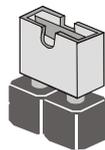
This section explains how to set jumpers for correct configuration of the motherboard.

Setting Jumpers

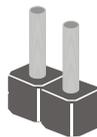
Use the motherboard jumpers to set system configuration options. Jumpers with more than one pin are numbered. When setting the jumpers, ensure that the jumper caps are placed on the correct pins.

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**.

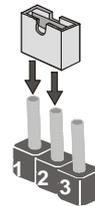
This illustration shows a 3-pin jumper. Pins 1 and 2 are **SHORT**.



Short

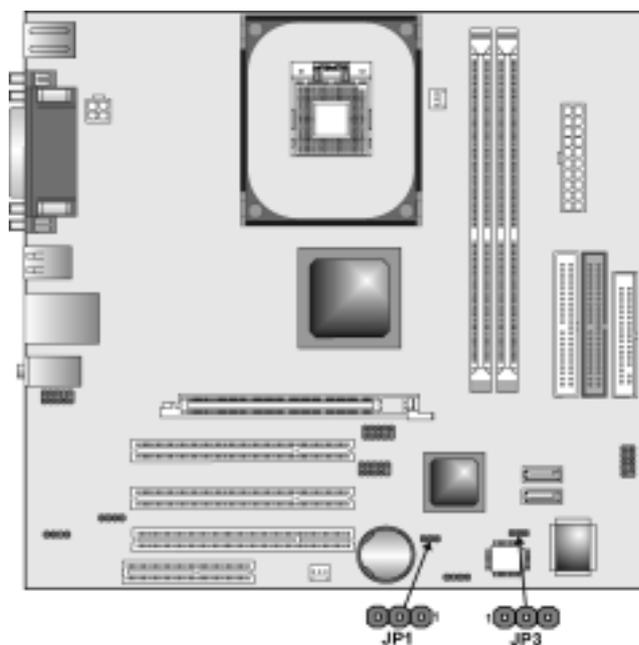


Open



Checking Jumper Settings

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



Jumper Settings

Jumper	Type	Description	Setting (default)	
JP1	3-pin	CLEAR CMOS	1-2: NORMAL 2-3: CLEAR	 JP1
JP3	3-pin	BIOS PROTECT	1-2: WRITE ENABLE 2-3: WRITE DISABLE	 JP3

JP1: Clear CMOS jumper

Use this jumper to clear the contents of the CMOS RAM. You may need to clear the CMOS RAM if the settings in the Setup Utility are incorrect and prevent your motherboard from operating. To clear the CMOS RAM, disconnect all the power cables from the motherboard and then move the jumper cap into the CLEAR setting for a few seconds. Before clearing the CMOS, the AC power of power supply should be removed.

JP3: BIOS Protect jumper

This jumper enables you to prevent the BIOS from being updated (flashed). Short pin 1-2 if you are going to update your BIOS. After updating the BIOS, short pin 2-3 to protect the BIOS from being flashed.

Connecting Case Components

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

<ol style="list-style-type: none"> 1. Connect the CPU cooling fan cable to CPUFAN1. 2. Connect the case cooling fan connector to CASFAN1. 3. Connect the case speaker cable to SPK1. 4. Connect the case switches and indicator LEDs to the PANEL1. 5. Connect the standard power supply connector to ATX1. 6. Connect the auxiliary case power supply connector to ATX2. 	<p>The diagram shows a top-down view of a motherboard with several connectors highlighted and labeled. At the top center is the CPUFAN1 connector. To its left is the CASFAN1 connector. At the bottom center is the SPK1 connector. On the right side, there are two ATX power connectors labeled ATX1 and ATX2. At the bottom right is the PANEL1 connector. Various other components like RAM slots, SATA ports, and the CPU socket are also visible.</p>
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CPUFAN1 / CASFAN1: FAN Power Connectors

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

SPK1: Internal speaker

Pin	Signal Name
1	VCC
2	Key
3	NC
4	Signal

ATX1: ATX 20-pin Power Connector

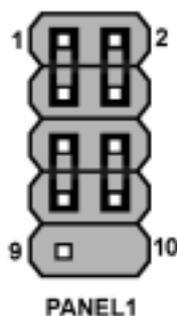
Pin	Signal Name	Pin	Signal Name
1	+3.3V	11	+3.3V
2	+3.3V	12	-12V
3	Ground	13	Ground
4	+5V	14	PS ON#
5	Ground	15	Ground
6	+5V	16	Ground
7	Ground	17	Ground
8	PWRGD	18	- 5V
9	+5VSB	19	+5V
10	+12V	20	+5V

ATX2: ATX 12V Power Connector

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

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	Function	Pin	Signal	Function
	HD_LED_P	Hard disk LED (positive)	2	FP PWR/SLP	MSG LED [dual color or single color (+)]
3	HD_LED_N	Hard disk active LED (negative)	4	FP PWR/SLP	MSG LED [dual color or single color (-)]
5	RST_SW_N	Reset Switch	6	PWR_SW_P	Power Switch
7	RST_SW_P	Reset Switch	8	PWR_SW_N	Power Switch
9	RSVD	Reserved	10	NC	No pin

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 de-bounce 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 motherboard or any of the surface-mount resistors with the clip of the cooling fan. If the clip of the cooling fan scrapes across the motherboard, you may cause serious damage to the motherboard or its components.

On most motherboards, 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 motherboard and processor socket.

Before installing the Processor

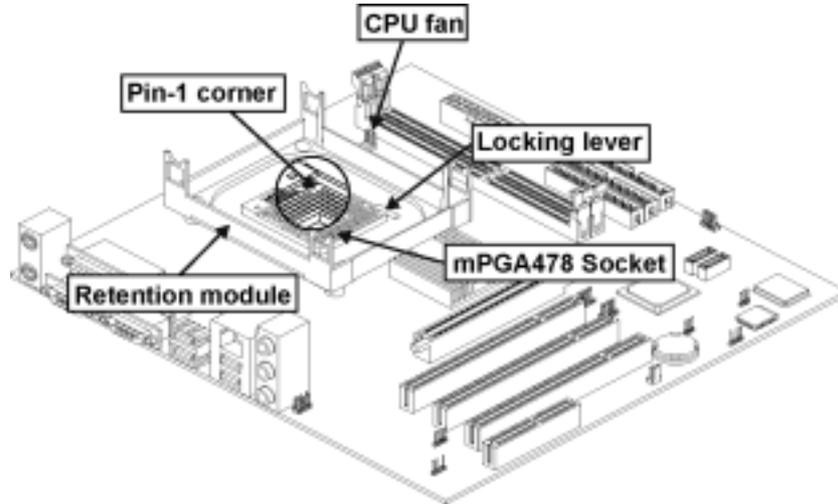
This motherboard automatically determines the CPU clock frequency and system bus frequency for the processor. You may be able to change these settings by making changes to jumpers on the motherboard, or changing the settings in the system Setup Utility. We strongly recommend that you do not over-clock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

Warning: Over-clocking components can adversely affect the reliability of the system and introduce errors into your system. Over-clocking can permanently damage the motherboard by generating excess heat in components that are run beyond the rated limits.

This motherboard 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

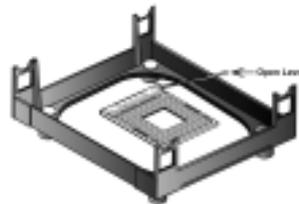
The following illustration shows CPU installation components:



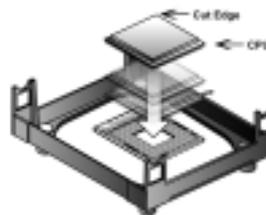
Note: The pin-1 corner is marked with an arrow ▼

Follow these instructions to install the Retention Module and CPU:

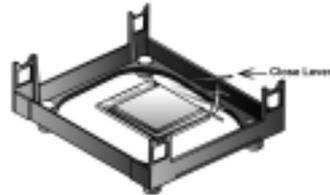
1. Install your CPU. Pull up the lever away from the socket and lift up to 90-degree angle.



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



3. Press the lever down.



4. Apply thermal grease on top of the CPU.

5. Put the CPU Fan down on the retention module and snap the four retention legs of the cooling fan into place.



6. Flip the levers over to lock the heat sink in place.

7. Connect the CPU Cooling Fan power cable to the CPUFAN1 connector. This completes the installation.



- Notes:**
- To achieve better airflow rates and heat dissipation, we suggest that you use a high quality fan with 4800 rpm at least.
 - 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

661FX-M accommodates two 184-pin 2.5V un-buffered Double Data Rate (DDR) SDRAM (Synchronous Dynamic Random Access Memory) memory modules. DDR SDRAM doubles the data transfer rate up to 3200/2700/2100/1600 MBps. 661FX-M can support DDR400 / DDR333 / DDR266 memory modules and allow to maximum memory size 2 GB.

DDR SDRAM memory module table:

Memory module	No. of DIMMs	Memory Bus
DDR266	2 DIMMS	133 MHz
DDR333	2 DIMMS	166 MHz
DDR400	2 DIMMS	200 MHz

The motherboard accommodates two memory modules. You must install at least one module in any of the two slots. Each module can be installed with 128 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 motherboard. 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

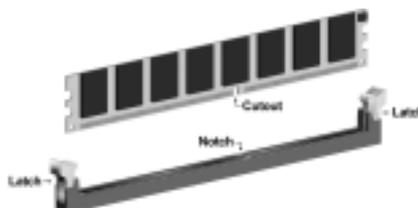
Refer to the following to install the memory modules.

1. This motherboard supports un-buffered DDR SDRAM only. Do not attempt to insert any other type of DDR SDRAM into the slots.

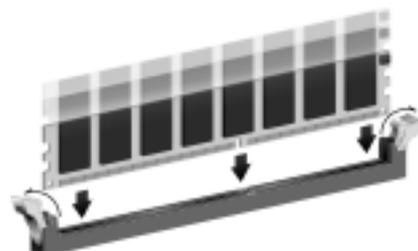


2. Push the latches on each side of the DIMM slot down.

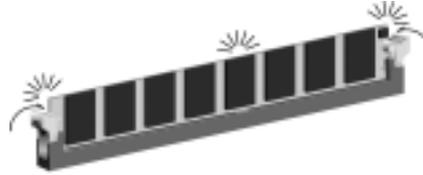
3. Align the memory module with the slot. The DIMM slots are keyed with notches and the DIMMs are keyed with cutouts so that they can only be installed correctly.



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.

Table A: DDR (memory module) QVL (Qualified Vendor List)

The following DDR400 memory modules have been tested and qualified for use with this motherboard.

Size	Vendor	Module Name
128MB	Samsung	M368L1713DTM-CC4
	Micron	MT8VDDT1664AG-403B2
	Nanya	NT128D64SH4B1G-5
	Infineon	HYS64D16301GU-5-B
	Nanya	NT128D64SH4B1G-5T
256MB	Samsung	M368L3223DTM-CC4
	Nanya	NT256D64S88B1G-5
	Micron	MT16VDDT3264AG-403B2
	Infineon	HYS64D32300GU-5-B
	Micron	MT8VDDT3264AG-40BC4
	Nanya	NT256D64S88B1G-5T
	Infineon	HYS64D32300HU-5-C
512MB	Samsung	M368L6423DTM-CC4
	Nanya	NT512D64S8HB1G-5
	Micron	MT16VDDT6464AG-40BC4
	Nanya	NT512D64S8HB1G-5T
	Apacer	Infineon
	Apacer	PSC
	Samsung	M368L6423ETM-CC4
	Infineon	HYS64D64320HU-5-C

Installing a Hard Disk Drive/CD-ROM/SATA Hard Drive

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

About IDE Devices

Your motherboard has a primary and secondary IDE channel interface (IDE1 and IDE2). An IDE ribbon cable supporting two IDE devices is bundled with the motherboard.

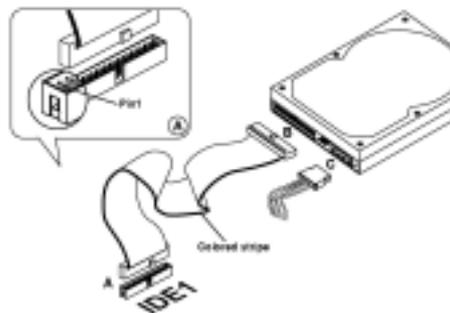
If you want to install more than two IDE devices, get a second IDE cable and you can add two more devices to the secondary IDE channel.



You must orient the cable connector so that the pin 1 (color) edge of the cable corresponds to the pin 1 of the I/O port connector.

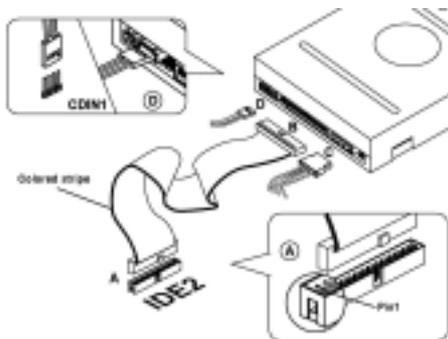
IDE1: Primary IDE Connector

The first hard drive should always be connected to IDE1.



IDE2: Secondary IDE

The second drive on this controller must be set to slave mode. The configuration is the same as IDE1.



IDE devices enclose jumpers or switches used to set the IDE device as MASTER or SLAVE. Refer to the IDE device user's manual. 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.

CDIN1

Pin	Function
1	Left CD-in signal
2	Ground
3	Ground
4	Right CD-in signal

About SATA Connectors

Your motherboard features two SATA connectors supporting a total of two drives. SATA refers to Serial ATA (Advanced Technology Attachment) is the standard interface for the IDE hard drives which are currently used in most PCs. These connectors are well designed and will only fit in one orientation. Locate the SATA connectors on the motherboard (see page 24) and follow the illustration below to install the SATA hard drives.

Installing Serial ATA Hard Drives

To install the Serial ATA (SATA) hard drives, use the SATA cable that supports the Serial ATA protocol. This SATA cable comes with an SATA power cable. You can connect either end of the SATA cable to the SATA hard drive or the connector on the motherboard.



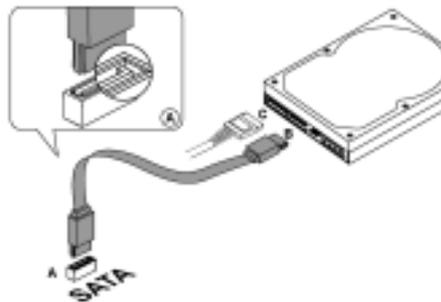
SATA cable (optional)



SATA power cable (optional)

Refer to the illustration below for proper installation:

1. Attach either cable end (**A**) to the connector on the motherboard.
2. Attach the other cable end (**B**) to the SATA hard drive.
3. Attach the SATA power cable to the SATA hard drive (**C**) and connect the other end to the power supply.



Note: This motherboard does not support the “Hot-Plug” function.

Installing a Floppy Diskette Drive

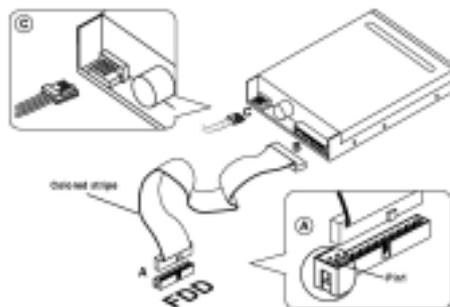
The motherboard has a floppy diskette drive (FDD) interface and ships with a diskette drive ribbon cable that supports one or two floppy diskette drives. You can install a 5.25-inch drive and a 3.5-inch drive with various capacities. The floppy diskette drive cable has one type of connector for a 5.25-inch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



You must orient the cable connector so that the pin 1 (color) edge of the cable corresponds to the pin 1 of the I/O port connector.

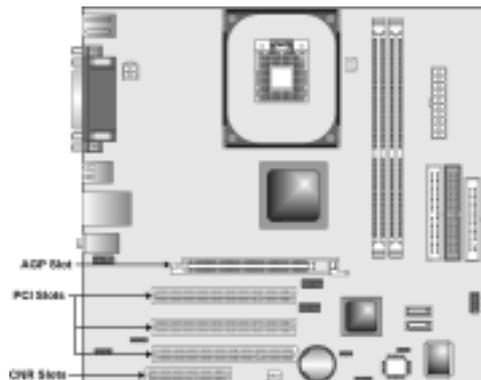
FDD1: Floppy Disk Connector

This connector supports the provided floppy drive ribbon cable. After connecting the single end to the onboard floppy connector, connect the remaining plugs on the other end to the floppy drives correspondingly.



Installing Add-on Cards

The slots on this motherboard are designed to hold expansion cards and connect them to the system bus. Expansion slots are a means of adding or enhancing the motherboard's features and capabilities. With these efficient facilities, you can increase the motherboard's capabilities by adding hardware that performs tasks that are not part of the basic system.



AGP Slot The AGP slot is used to install a graphics adapter that supports the 8x/4x AGP specification. It is AGP 3.0 compliant.

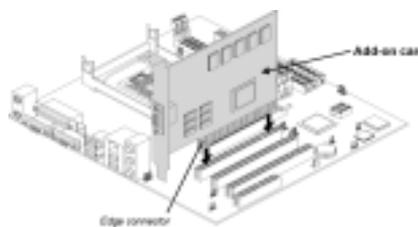
PCI Slots 661FX-M is equipped with three standard PCI slots. PCI stands for Peripheral Component Interconnect and is a bus standard for expansion cards, which for the most part, is a supplement of the older ISA bus standard. The PCI slots on this board are PCI v2.3 compliant.

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.

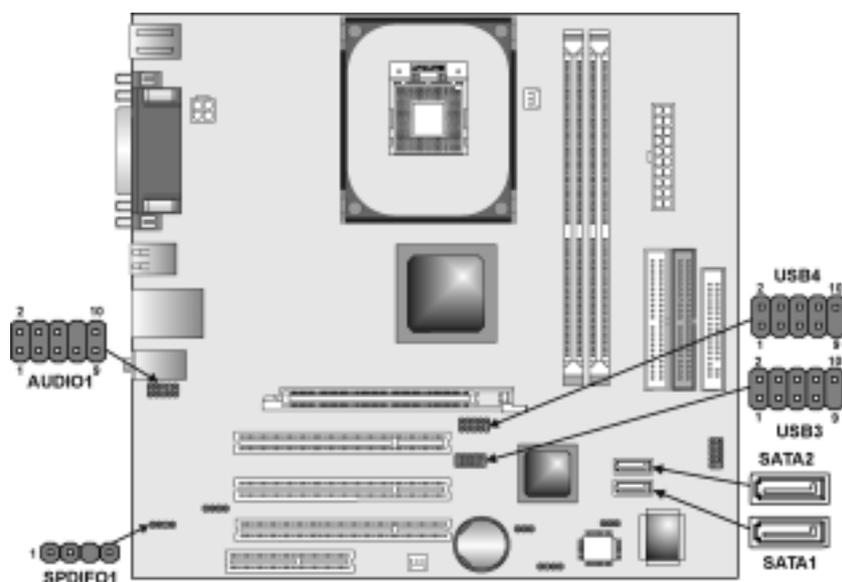


3. Secure the metal bracket of the card to the system case with a screw.

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 motherboard'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_F_R	Right Channel Audio signal to Front Panel
6	AUD_RET_R	Right Channel Audio signal to Return from Front Panel
7	REVD	Reserved for future use to control Head-phone Amplifier
8	KEY	No Pin
9	AUD_F_L	Left Channel Audio signal to Front Panel
10	AUD_RET_L	Left Channel Audio signal Return from Front Panel

SPDIF01: 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 the SPDIF connector.

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

SATA1 / SATA2: Serial ATA connectors

These connectors are use to support the new Serial ATA devices for the highest data transfer rates (150 MB/s), simpler disk drive cabling and easier PC assembly. It eliminates limitations of the current Parallel ATA interface. But maintains register compatibility and software compatibility with Parallel ATA.

Pin	Signal Name	Pin	Signal Name
1	GND	2	TX+
3	TX-	4	GND
5	RX-	6	RX+
7	GND	-	-

USB3 / USB4: Front Panel USB headers

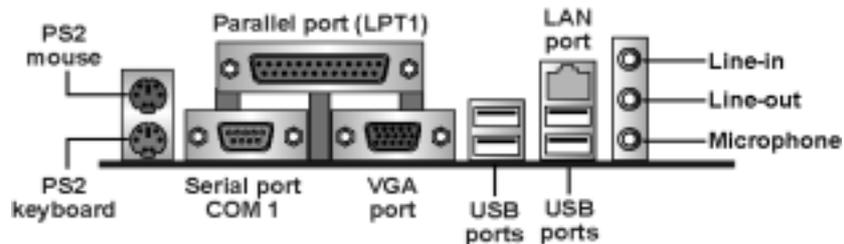
The motherboard has four USB ports installed on the rear edge I/O port array. Additionally, some computer cases have USB ports at the front of the case. If you have this kind of case, use auxiliary USB connector to connect the front-mounted ports to the motherboard.

Pin	Signal Name	Function
1	USBPWR0	Front Panel USB Power
2	USBPWR1	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	Over-current 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.

Connecting I/O Devices

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



PS2 Mouse	Use the upper PS/2 port to connect a PS/2 pointing device.
PS2 Keyboard	Use the lower PS/2 port to connect a PS/2 keyboard.
LPT1/Parallel Port	Use LPT1 to connect printers or other parallel communications devices.
COM1/Serial Port	Use the COM ports to connect serial devices such as mice or fax/modems. COM1 is identified by the system as COM1/3.
VGA Port	Connect your monitor to the VGA port.
LAN Port (optional)	Connect an RJ-45 jack to the LAN port to connect your computer to the Network.
USB Ports	Use the USB ports to connect USB devices.
Audio Ports	Use the three audio ports to connect audio devices. The first jack is for stereo line-in signal. The second jack is for stereo line-out signal. The third jack is for microphone.

External Connector Color Coding

Many connectors now use standard colors as shown in the table below.

Connector	Color
Audio line-in	Light blue
Audio line-out	Lime
Digital monitor/flat panel	White
Microphone	Pink
Parallel	Burgundy
PS2-compatible keyboard	Purple
PS2-compatible mouse	Green
Speaker out/subwoofer	Orange
Right-to-left speaker	Brown
USB	Black
Video out	Yellow
SCSI, network, telephone, modem	None

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

Chapter 3

Using BIOS

About the Setup Utility

The computer uses the latest Award BIOS with support for Windows Plug and Play. The CMOS chip on the motherboard contains the ROM setup instructions for configuring the motherboard 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:

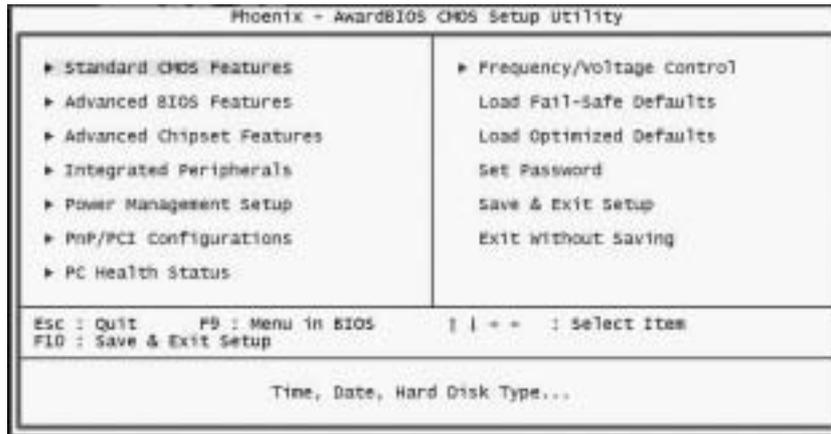
- when changing the system configuration
- when a configuration error is detected and you are prompted to make changes to the Setup Utility
- when trying to resolve IRQ conflicts
- when making changes to the Power Management configuration
- when changing the password or making other changes to the Security 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:



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 motherboard 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 motherboard has a BIOS protection jumper, change the setting to allow BIOS flashing.
2. If your motherboard 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>.
7. Type the filename of the new BIOS in the "File Name to Program" text box. Follow the onscreen directions to update the motherboard BIOS.
8. When the installation is complete, remove the floppy diskette from the diskette drive and restart your computer. If your motherboard 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>.

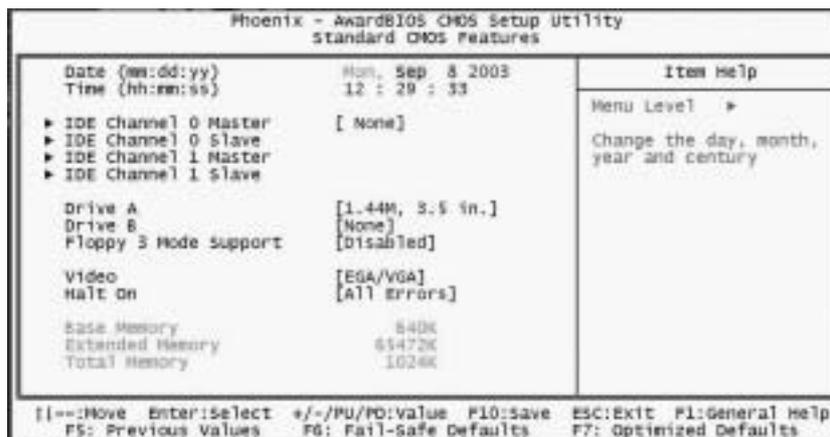
Some options lead to pop-up dialog boxes that prompt you to verify that you wish to execute that option. Other options lead to dialog boxes that prompt you for information.

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.



The screenshot shows the Phoenix - AwardBIOS CMOS Setup Utility Standard CMOS Features screen. The screen is divided into three columns: the first column lists various system settings, the second column shows their current values, and the third column provides help text for the selected 'Date' item. At the bottom, a legend explains the keyboard shortcuts used for navigation and selection.

Phoenix - AwardBIOS CMOS Setup Utility Standard CMOS Features		
Date (mm:dd:yy)	Mon, Sep 8 2003	Item Help
Time (hh:mm:ss)	12 : 29 : 33	Menu Level ►
► IDE Channel 0 Master	[None]	Change the day, month, year and century
► IDE Channel 0 Slave		
► IDE Channel 1 Master		
► IDE Channel 1 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	840K	
Extended Memory	65472K	
Total Memory	1024K	
[]=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:



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

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 motherboard 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.

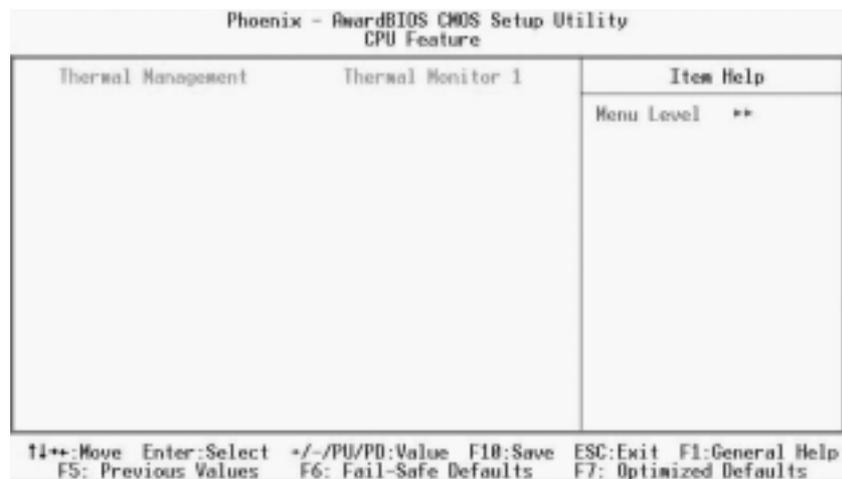
Advanced BIOS Features

This option defines advanced information about your system.



CPU Feature (Press Enter)

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

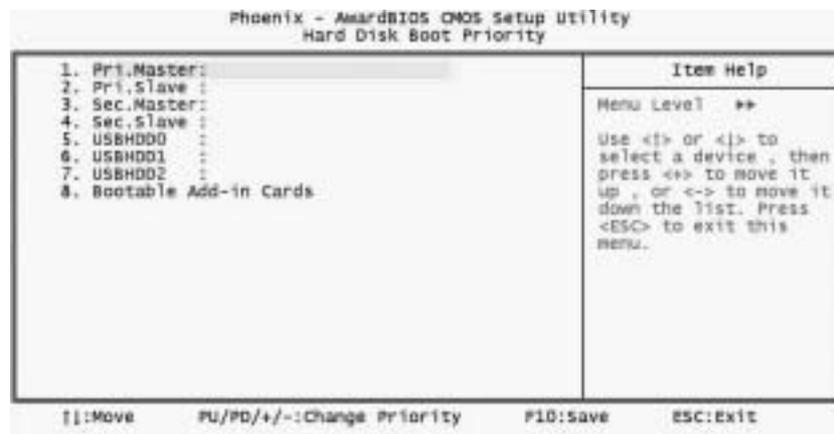


Thermal Management (Thermal Monitor 1)

This item displays CPU's temperature and enables you to set a safe temperature to Prescott CPU.

Hard Disk Boot Priority (Press Enter)

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



CPU L1 and L2 Cache (Enabled)

All processors that can be installed in this motherboard 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.

Hyper-Threading Technology (Enabled)

This item is only available when the chipset supports Hyper-Threading and you are using a Hyper-Threading CPU.

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/Hard Disk/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 operating 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 IDE Cable Msg. (Enabled)

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 milliseconds 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 (Enabled)

This item allows you to enable or disable the APIC (Advanced Programmable Interrupt Controller) mode. APIC provides symmetric multi-processing (SMP) for systems, allowing support for up to 60 processors.

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, media, 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.

Video BIOS Shadow (Enabled)

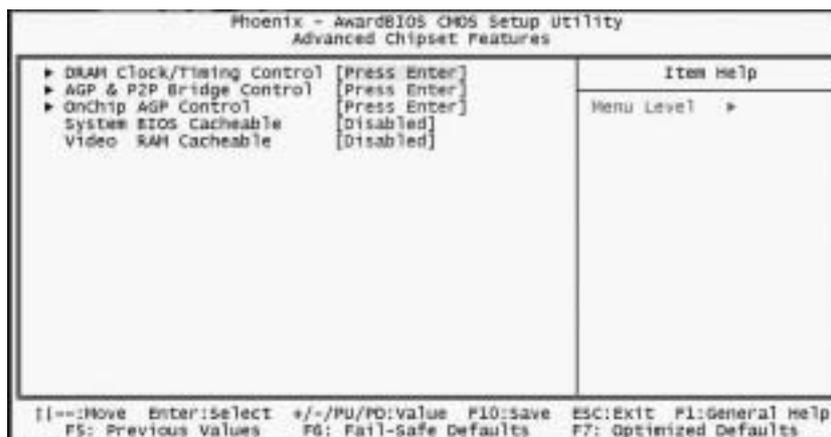
This item determines whether the BIOS will be copied to RAM for faster execution.

Small Logo (EPA) Show (Disabled)

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

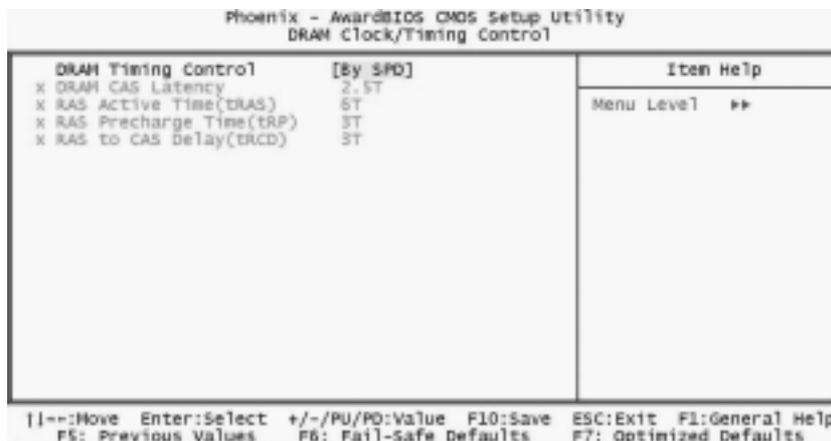
Advanced Chipset Features

These items define critical timing parameters of the motherboard. 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.



► DRAM Clock/Timing Control

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



DRAM Timing Control (By SPD)

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 CAS Latency (2.5T)

This item controls the timing delay (in clock cycles) before the DRAM starts a read command after receiving it.

RAS Active Time (tRAS) (6T)

This item allows you to set the amount of time a RAS can be kept open for multiple accesses. High figures will improve performance.

RAS Precharge Time (tRP) (3T)

This is the duration of the time interval during which the Row Address Strobe signal to a DRAM is held low during normal Read and Write Cycles. This is the minimum interval between completing one read or write and starting another from the same (non-page mode) DRAM. Techniques such as memory interleaving, or use of Page Mode DRAM are often used to avoid this delay. Some chipsets require this parameter in order to set up the memory configuration properly. The RAS Precharge value is typically about the same as the RAM Access (data read/write) time.

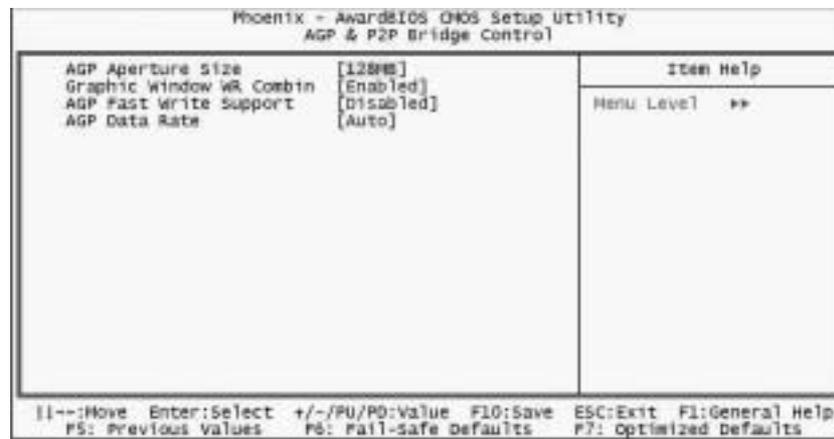
RAS to CAS Delay (tRCD) (3T)

This is the amount of time a CAS is performed after a RAS. The lower the better, but some DRAM does not support low figures.

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

► AGP & P2P Bridge Control

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



AGP Aperture Size (128MB)

This setting controls just how much system RAM can be allocated to AGP for video purposes. The aperture is a portion of the PCI memory address range dedicated to graphics memory address space. Host cycles that hit the aperture range are forwarded to the AGP without any translation.

Graphic Window WR Combin (Enabled)

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

AGP Fast Write Support (Disabled)

This item enables and disables AGP Fast Write Support.

AGP Data Rate (Auto)

This item allows you to control AGP card data transfer rate.

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

► OnChip AGP Control



VGA Share Memory Size (32 MB)

This item shows the VGA memory size borrowed from main memory capacity. In this case, 32MB is borrowed, which in the meanwhile the same the main memory loses.

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

System BIOS Cacheable (Disabled)

This item allows the system to be cached in memory for faster execution. Enable this item for better performance.

Video RAM Cacheable (Disabled)

These items allow the video BIOS and RAM to be cached in memory for faster execution. Enable these items for better performance.

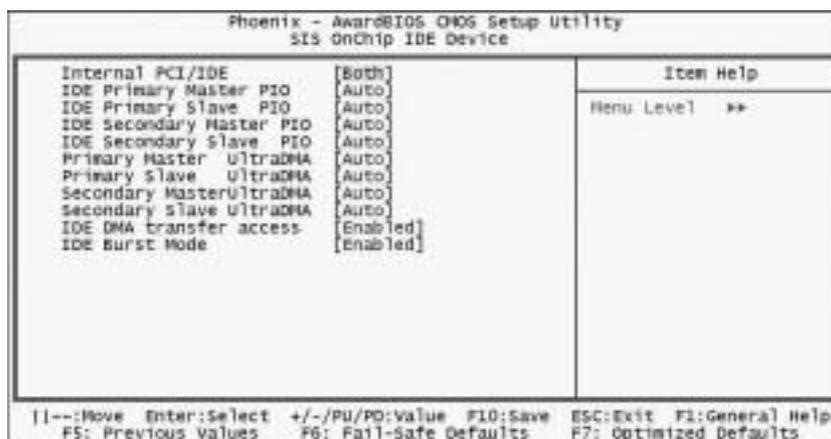
Integrated Peripherals

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



▶ SIS OnChip IDE Device

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



Internal PCI/IDE (Both)

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

IDE Primary/Secondary Master/Slave PIO (Auto)

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

IDE Master/Slave Drive PIO (Auto)

This option allows you to set the PIO (Programmed Input/Output) mode for the two IDE devices (Master and Slave drives) attached to a particular IDE channel. Normally you should leave it as Auto and let the BIOS auto-detect the IDE drive's PIO mode. You should only set it manually for the following reasons:

- If the BIOS cannot detect the correct PIO mode
- If you want to try to run the IDE device with a higher PIO mode that it was designed for
- If you have over-clocked the PCI bus and one or more of your IDE devices cannot function properly (you can correct the problem by using a slower PIO mode)

Note: Over-clocking the PIO transfer rate can cause loss of data.

Primary/Secondary Master/Slave Drive UltraDMA (Auto)

This option allows you to enable or disable UltraDMA support (if available) for the two IDE devices (Master and Slave drives) attached to that particular IDE channel. Normally, you should leave it as Auto and let the BIOS auto-detect if the drive supports UltraDMA. If it does, the proper UltraDMA transfer mode will be enabled for that drive, allowing it to burst data at up to 100MB/s. You should only disable it for troubleshooting purposes.

Note: Setting this to Auto does not enable the UltraDMA or any of the slower DMA mode for IDE devices that do not support UltraDMA. Also, in order for any of those DMA modes to work (including UltraDMA modes), you will have to enable DMA transfer via the OS.

IDE DMA Transfer Access (Enabled)

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

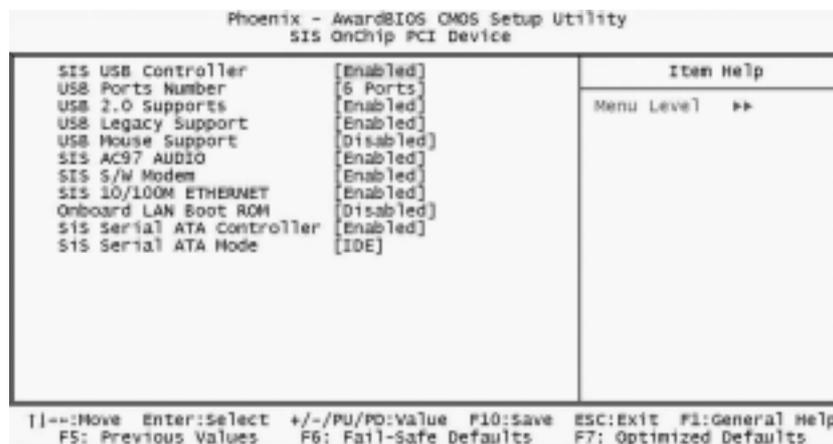
IDE Burst Mode (Enabled)

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:



SIS USB Controller (Enabled)

This item enables the USB controller. Leave this at the default "Enabled" if you want to connect USB devices to your computer.

USB Ports Number (6 Ports)

This item enables you to determine the number of USB ports.

USB 2.0 Support (Enabled)

Enable this item if your system supports USB 2.0

USB Legacy Support (Enabled)

This item allows the BIOS to interact with a USB keyboard or mouse to work with MS-DOS based utilities and non-Windows modes.

USB Mouse Support (Disabled)

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

SIS AC97 AUDIO (Enabled)

This option allows you to control the onboard AC97 audio. Disable this item if you are going to install a PCI audio add-on card.

SIS S/W Modem (Enabled)

This option allows you to control the onboard S/W modem. Disable this item if you are going to install an external modem.

SIS 10/100M ETHERNET (Enabled)

This option allows you to control the onboard LAN.

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.

SIS Serial ATA Controller (Enabled)

This item allows you to control the SiS Serial ATA controller.

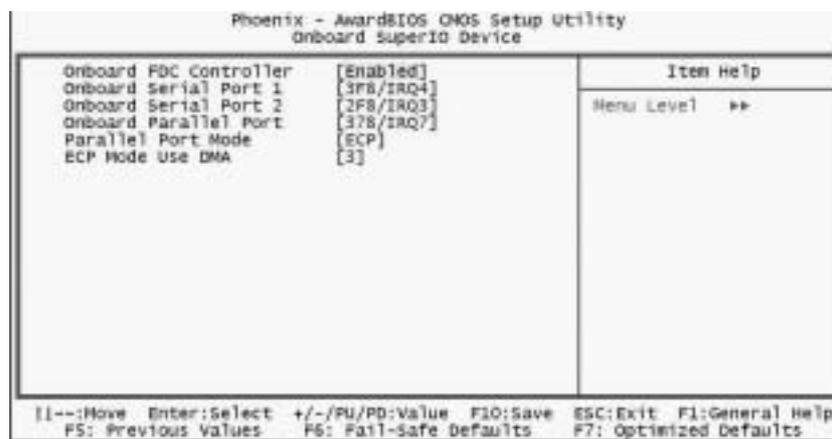
SIS Serial ATA Mode (IDE)

This item allows you to change SiS Serial ATA mode.

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

► **Onboard SuperIO Device**

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



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).

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.

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 motherboard.

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.

Phoenix - AwardBIOS CMOS Setup Utility		Item Help
Power Management Setup		
Suspend Mode	[Disabled]	
Video Off Option	[Susp,Stby -> Off]	
Video Off Method	[DPMs Supported]	
MODEM Use IRQ	[AUTO]	Menu Level →
HDD Off After	[Disabled]	
Power Button Override	[Instant Off]	
Power On After Power Fail	[Always Off]	
▶ PM Wake Up Events	[Press Enter]	
Delay Prior to Thermal	[None]	

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

Suspend Mode (Disabled)

The CPU clock will be stopped and the video signal will be suspended if no Power Management events occur for a specified length of time. Full power function will return when a Power Management event is detected. Options are from 1 Min to 1 Hour and Disable.

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 motherboard Wake On Modem connector for this feature to work.

HDD Off After (Disabled)

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 On After Power Fail (Always Off)

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

► PM Wake Up Events

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

Phoenix - AwardBIOS CMOS Setup Utility		Item Help
PM Wake Up Events		Menu Level >>
IRQ [3-7,9-15],NMI	[Enabled]	
IRQ 8 Break Suspend	[Disabled]	
Resume By RING	[Disabled]	
Resume By MACPME	[Enabled]	
Resume By PCI PME	[Enabled]	
Power Up by Alarm	[Disabled]	
x Month Alarm	NA	
x Day of Month Alarm	0	
x Time (hh:mm:ss) Alarm	0 : 0 : 0	
** Reload Global Timer Events **		
Primary IDE	[Disabled]	
Secondary IDE	[Disabled]	
FDD,CDN,LPT Port	[Disabled]	
PCI PIRQ[A-D]#	[Disabled]	

[]--: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 (Disabled)

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

Resume by RING (Disabled)

An input signal on the serial Ring Indicator (RI) line (in other words, an incoming call on the modem) awakens the system from a soft off state.

Resume by MACPME (Enabled)

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

Resume by PCI PME (Enabled)

This item specifies whether the system will be awakened from power saving modes when activity or input signal of the specified hardware peripheral or component is detected.

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 ****

These fields determine which events waken the system from power saving mode.

Primary/Secondary IDE (Disabled)

When this item is enabled, the system power will resume the system from a power saving mode if there is any activity on primary or secondary IDE channels 0 or 1.

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 this item is enabled, any activity from one of the listed devices wakes up the system.

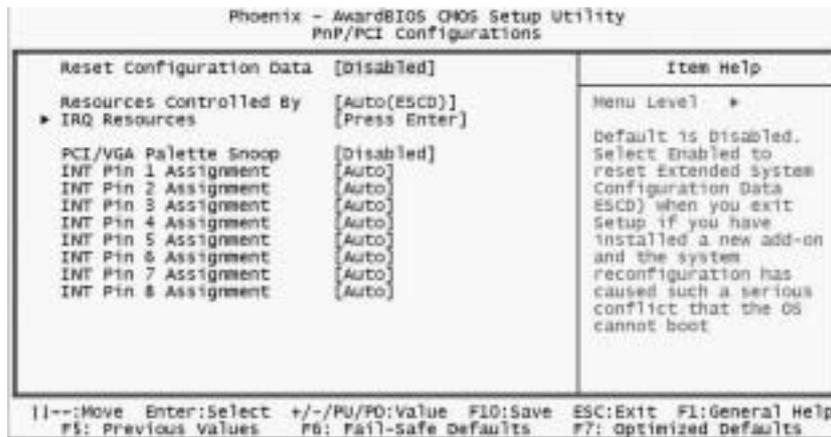
Press <Esc> to return to the Power Management Setup screen.

Delay Prior to Thermal (None)

Enables you to set the delay time before the CPU enters auto thermal mode.

PNP/PCI Configurations

These options configure how PnP (Plug and Play) and PCI expansion cards operate in your system. Both the ISA and PCI buses on the Motherboard 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 motherboard to work properly. Selecting PnP/PCI Configurations on the main program screen displays this menu:



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)

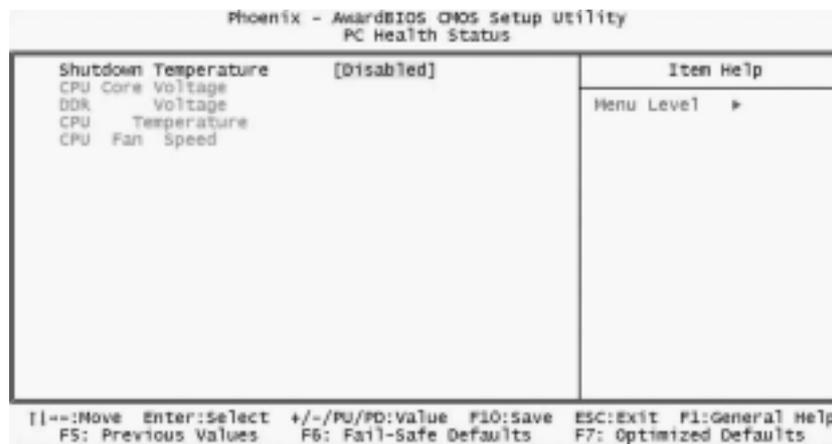
This item is designed to overcome problems that can be caused by some non-standard VGA cards. This board includes a built-in VGA system that does not require palette snooping so you must leave this item disabled.

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



Shutdown Temperature (Disabled)

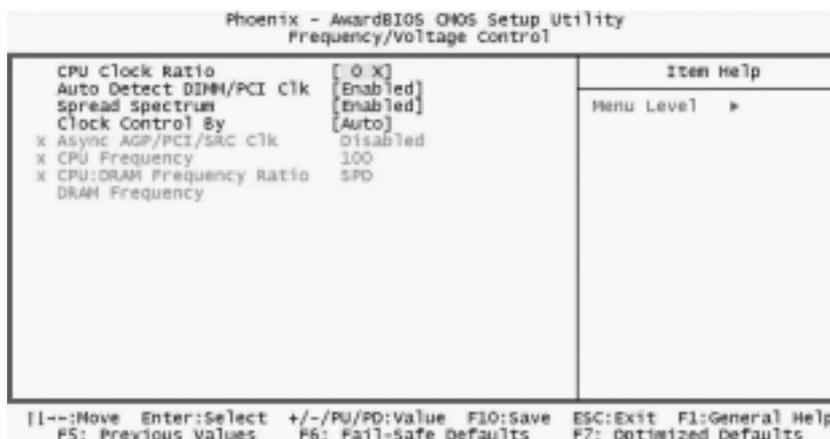
Enables you to set the maximum temperature the system can reach before powering down.

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.



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., $3.5 \text{ (multiple)} \times 100 \text{ MHz (frontside bus)} = 350 \text{ MHz (installed processor clock speed)}$.

Clock Control By (Auto)

This item allows you to set the CPU frequency.

Async AGP/PCI/SRC Clk Disabled

This item allows you to set the your AGP/PCI/SRC clock in asynchronous status.

CPU Frequency (100)

This item allows you to set the CPU frequency.

CPU: DRAM Frequency Ratio (SPD)

This item controls the ratio of the CPU FSB clock and DRAM Frequency to enable the CPU and DRAM to run at different frequency combination.

DRAM Frequency

This item displays the memory (DRAM) frequency. This is a display-only item.

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 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 motherboard.

Using the Motherboard Software

About the Software CD-ROM

The support software CD-ROM that is included in the motherboard 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 motherboard 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 motherboard.

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/ME/2000/XP

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

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/ME/2000/XP. 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	<p>The Browse CD button is the standard Windows command that allows you to open Windows Explorer and show the contents of the support CD.</p> <p>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.</p> <p>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.</p> <p>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.</p>
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 motherboard:

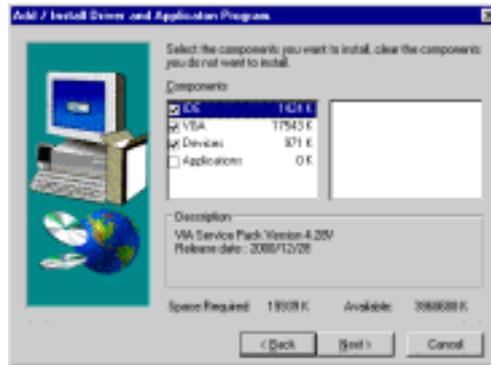
1. Click **Setup**. The installation program begins:



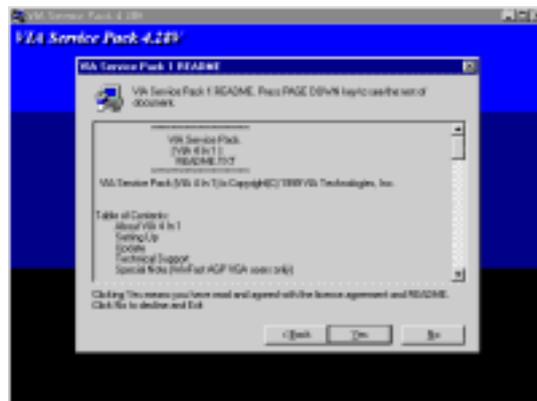
Note: The following screens are examples only. The screens and driver lists will be different according to the motherboard you are installing.

The motherboard 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 motherboard.

Look for the chipset and motherboard 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 motherboard, 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 motherboard while in a Windows environment. This utility is currently available for WINXP\ME\2000\98SE. To install the WinFlash utility, run WINFLASH.EXE from the following directory:

UTILITY\WINFLASH 1.51

PC-CILLIN 2002

The PC-CILLIN 2002 software program provides anti-virus protection for your system. This program is available for Windows 2000/ME/98SE/XP and Windows NT. Be sure to check the readme.txt and install the appropriate anti-virus software for your operating system.

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

This concludes Chapter 4.