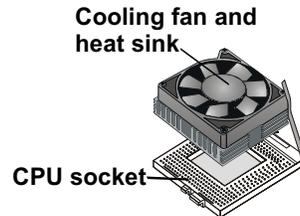


Caution!

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 mainboard, you may cause serious damage to both the mainboard and the processor.

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.



Important Information

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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 causes 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 chapters:

Introduction

Use the **Introduction** Chapter to learn about the features of the mainboard and view a checklist of items that are shipped with the package.

Installation

Use the **Installation** Chapter to learn how to install the mainboard and get your system up and running.

Setup

Use the **Setup** Chapter to configure the mainboard for optimum performance.

Software

Use the **Software** Chapter to learn how to use the software drivers and support programs that are provided with this mainboard.

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Chapter 1: Introduction

Welcome

Congratulations on purchasing the P6IPA mainboard. The mainboard is an ATX mainboard that uses a 4-layer printed circuit mainboard and measures 305 mm x 220 mm. The mainboard has a Socket 370 for FC-PGA Intel Celeron or FC-PGA Pentium III processors that support frontside bus (FSB) speeds up to 133 MHz. The mainboard is installed with the Intel 815EP chipset.

The mainboard delivers high-level performance with a 4xAGP (Accelerated Graphics Port) slot and two Bus Master Ultra DMA (UDMA) ports that support up to four ATAPI (AT Attachment Packet Interface) devices. The PCI IDE also supports PIO Mode 3 and 4, UDMA33/66/100 IDE, and an ATAPI CD-ROM. The mainboard accommodates PC 100 and PC 133 SDRAM (Synchronous DRAM) up to 768 MB using three 3.3V unbuffered DIMM modules.

The mainboard includes an AC 97 audio codec. There is a full set of I/O ports, such as dual channel IDE interfaces, a floppy interface, one FIFO serial port connector, one VGA port, an EPP/ECP-capable bi-directional parallel port connector, a dual USB (Universal Serial Bus) connector, and PS/2 keyboard and mouse connectors.

Two extra USB ports can be added using an extended USB module that connects to the mainboard. An extra COM port can be connected using an extension bracket.

One AGP slot, six PCI local bus slots, and a CNR (Communications Networking Riser) provide expandability for add-in expansion cards.

This chapter contains the following information:

- Checklist** comprises a list of the standard and optional components that are shipped with this mainboard
- Recommendations** lists some Do's and Don'ts from the manufacturer to help ensure reliability and performance from this product
- Features** highlights the functions and components that make this one of the best value mainboards on the market

Checklist

Compare the contents of your mainboard package with the standard checklist below. If any item is missing or appears damaged, please contact the vendor of your mainboard package.

Standard Items

- One mainboard
- One diskette drive ribbon cable and bracket
- One IDE drive ribbon cable and bracket
- This user's manual
- Software support CD-ROM disc

Recommendations

This mainboard automatically determines the CPU clock frequency and frontside bus frequency for the kind of processor that you install. You may be able to change these automatic settings by changing the settings in the system Setup Utility. We strongly recommend that you do not overclock the mainboard to run processors or other components 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.*

Components on this mainboard can be damaged by discharges of static electricity. Handle the mainboard carefully holding it by the edges. Do not flex or stress the circuit mainboard. Keep the mainboard in its static-proof packing until you are ready to install it. Follow the static guidelines given at the beginning of Chapter 2.

Features

The key features of this mainboard are the wide range of processors that can be installed, and the high level of integration, which includes built-in audio, video, and communications.

Processors

Functioning as a platform for a value PC, the P6IPA features a Socket 370 accommodating FC-PGA Celeron 533MHz (533A) and higher CPUs that support a 66 MHz FSB as well as FC-PGA Pentium III CPUs that support a 100 or 133 MHz FSB.

Intel's 815EP Chipset

This mainboard features the 815EP chipset from Intel. The 815EP chipset is designed for desktops and workstations and provides ATA-100, 4xAGP, and SDRAM support.

The 82801BA I/O controller hub makes a direct connection between the graphics system, the IDE controller, and the PCI bus. It uses accelerated hub architecture to effectively double the bandwidth between these components enabling more lifelike audio and video. The 82801BA I/O controller hub includes an integrated audio-codec controller that lets the processor more effectively decode sound generated by the integrated audio system.

The 82802 firmware hub allows the system and video BIOS to be stored (eliminating the need for non-volatile CMOS memory) for faster execution, and provides a random number generator to enable strong encryption routines.

Expansion Options

The mainboard is pre-installed with features such as an onboard AC 97 audio codec and an SIR connector. Six 32-bit PCI slots and one CNR slot provide expansion options.

Inexpensive Memory

The mainboard has three DIMM sockets for the installation of 168-pin, 3.3V non-buffered DIMM memory modules. The DIMM memory modules use SDRAM memory chips. The mainboard supports a memory bus of 100 MHz or 133 MHz.

Each socket can be installed with from 32 to 512 MB of memory. You must install at least one module, but it makes no difference which slot you use to install the module.

4xAGP Graphics Adapter Slot

The P6IPA includes a 4xAGP slot to support an AGP card that provides four times the bandwidth of the original AGP specification. The AGP design allows the graphics controller to use part of the main memory when it needs it, for example, in handling the very large texture maps required by virtual reality and 3D video games and applications.

Built-in AC 97 Audio Codec

This mainboard uses the AC 97 audio codec. This codec is a 16-bit, full duplex AC 97 2.1 compatible stereo audio codec designed for PC multimedia systems. The ALC200 incorporates Avance's proprietary codec technology to achieve a high DAC (digital to analog converter)/ADC (analog to digital converter) signal to noise ratio. The ALC200 supports multiple codec extensions with up to 48 kHz sampling rates and built-in 3D enhancement.

The codec supports such applications as 3D PC games, music synthesis programs, DVD-ROM playback applications, audio conferencing, and Voice Recognition (VR) utilities.

Integrated I/O

The mainboard has a full set of I/O ports and connectors. The I/O template on the backplane includes two PS/2 ports for a mouse and keyboard, one serial port, one VGA port, one parallel port, one MIDI/game port, two USB ports and audio jacks for microphone, line-in and line-out. The mainboard has headers for the optional installation of an IR port. An extra COM port can be connected using an extension bracket. The mainboard includes two IDE channels and a floppy disk drive interface.

Programmable Firmware

The mainboard includes BIOS that allows firmware setting of CPU parameters. The fully programmable firmware enhances the system features and allows users to set items such as power management, CPU and memory timing, and modem wake-up alarms. The firmware can also be used to set parameters for different processor clock speeds so that you don't need to change mainboard jumpers and switches.

This concludes Chapter 1. The next chapter covers installing and building a working system.

Chapter 2: Installation

Quick Installation Table

This chapter explains how to successfully install the mainboard into a computer case and build a working system. The installation procedure is as follows:

Before you Begin	Provides advice on choosing a case, avoiding static electricity damage, and setting jumpers.
Preparing the Mainboard	Provides a guide to the mainboard and I/O port locations, full details on the jumper settings, and advice on installing the mainboard in the system case.
Installing Other Hardware	Provides guidance on installing essential hardware: processor, memory, hard disk drive, CD-ROM, floppy disk drive, and expansion cards.
Making External Connections	Provides advice on using the external I/O ports to install peripheral devices such as a keyboard, a monitor, a mouse, a printer, and loudspeakers.
Appendix	The Appendix provides a quick reference for the jumper settings on this mainboard.

Before You Begin

During installation, avoid damaging the mainboard with static electricity. Ensure that you are installing the mainboard into a suitable case.

Static Electricity

In adverse conditions, static electricity can accumulate and discharge through the integrated circuits and silicon chips on this product. These circuits and chips are sensitive and can be permanently damaged by static discharge.

- If possible, wear a grounding wrist strap clipped to a safely grounded device during the installation.
- If you don't have a wrist strap, discharge any static by touching the metal case of a safely grounded device before beginning the installation.
- Leave all components inside their static-proof bags until they are required for the installation procedure.
- Handle all circuit mainboards and electronic components carefully. Hold mainboards by the edges only. Do not flex or stress circuit mainboards.

Choosing a Case

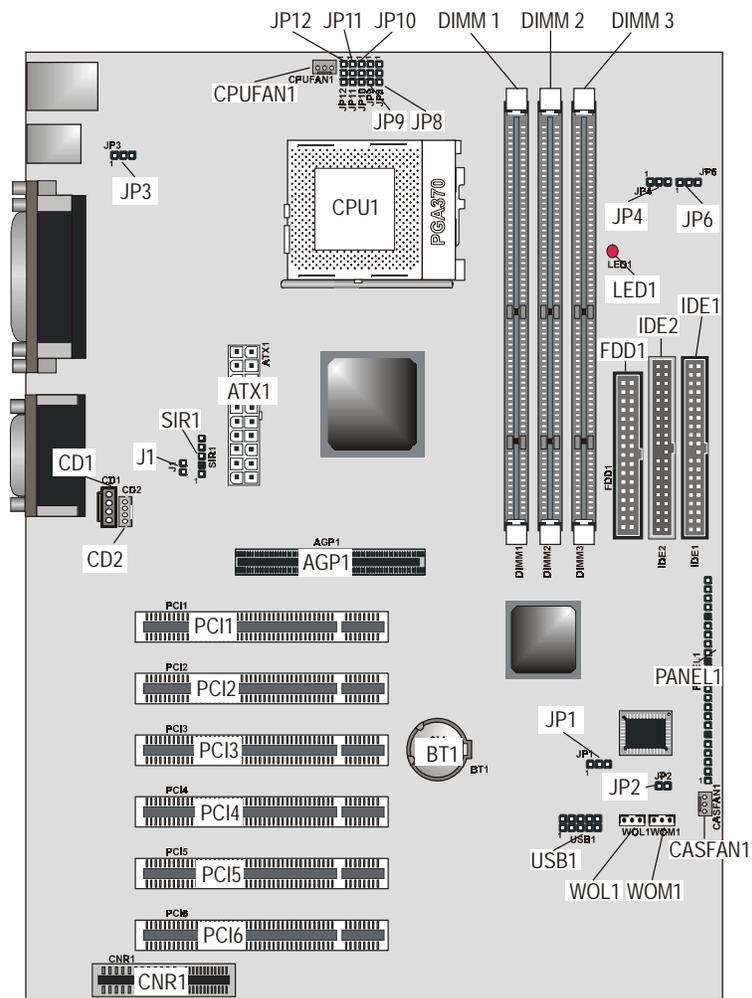
The mainboard complies with the specifications for the ATX system case. Some features on the mainboard are implemented by cabling connectors on the mainboard to indicators and switches on the system case. Ensure that your case supports all the features required. The mainboard can support one or two floppy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

The mainboard has a set of I/O ports on the rear edge. Ensure that your case has an I/O template that supports the I/O ports and expansion slots.

Preparing the Mainboard

Mainboard Guide

Use the following illustration and key to identify the components on your mainboard.



Key to Mainboard Components

Component	Description
ATX1	Connector for ATX power supply
CPUFAN1	Power connector for CPU cooling fan
DIMM1/2/3	Three slots for 168-pin SDRAM memory module
LED1	Red 3VSB LED for SDRAM
IDE1/2	Primary and secondary IDE channels
FDD1	Connector for floppy disk drives
J1	Chassis open detect jumper
SIR1	Connector for optional infrared port
CD1	Audio connector for CD-ROM/DVD drive
CD2	Auxiliary audio connector for CD-ROM/DVD drive
AGP1	Accelerated Graphics Port (AGP) slot
PCI1 ~ PCI6	Six 32-bit PCI slots
CNR1	Communications Networking Riser
BT1	3 volt battery for realtime clock
PANEL1	Panel connector for switches and indicators
USB1	Connector for front panel USB 3 and 4
WOL1	Connector for LAN wake up
WOM1	Connector for modem wake up
CASFAN1	Power connector for case cooling fan

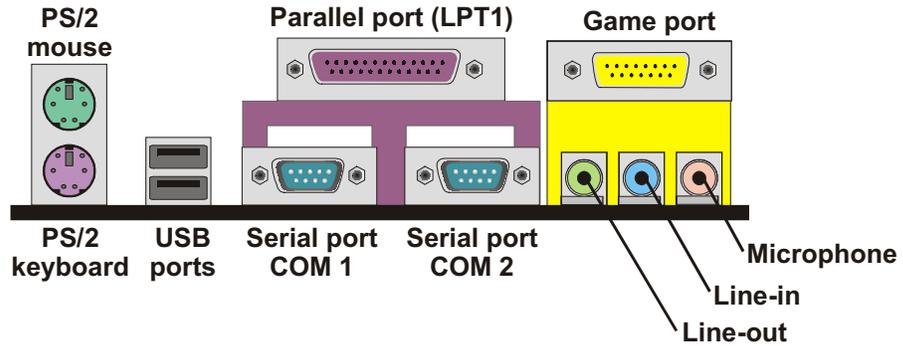
Notes:

- **LED1:** The red indicator LED1 turns on if your system is powered on. You should not install or uninstall memory modules when LED1 is lit.
- **J1:** This 2-pin jumper is the chassis open detection jumper. A cap on the chassis is released when the chassis is opened causing the jumper to be open, at which time you will receive a warning that the chassis is open at system startup.

Key to Jumpers

Jumper	Description
JP1	Clear BIOS jumper
JP2	BIOS flash protect jumper
JP3	Keyboard power on jumper
JP4	CPU frequency select jumper (66 ~ 100 MHz)
JP6	CPU frequency select jumper (100 ~ 133 MHz)
JP8 ~ JP12	CPU core voltage jumpers

I/O Ports Side View

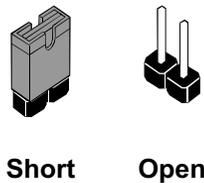


Key to I/O Ports

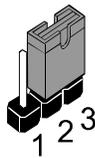
Component	Description
PS/2 mouse	PS/2 port for pointing device (upper port)
PS/2 keyboard	PS/2 port for keyboard (lower port)
USB ports	Two stacked Universal Serial Bus ports
LPT1	External parallel port
COM1	External serial port COM 1
COM2	External serial port COM 2
Game port	External MIDI/game port
Audio jacks	Line-out, line-in, microphone audio jacks

How to Set Jumpers

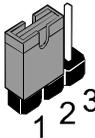
A jumper consists of two or more pins mounted on the mainboard. Some jumpers might be arranged in a series with each pair of pins numbered differently. Jumpers are used to change the electronic circuits on the mainboard. When a jumper cap (or shunt) is placed on two jumper pins, the pins are **SHORT**. If the jumper cap is removed (or placed on just a single pin), the pins are **OPEN**.



This illustration shows 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. The jumper cap is placed on pins 2 and 3, so this jumper setting is **SHORT PINS 2-3**.



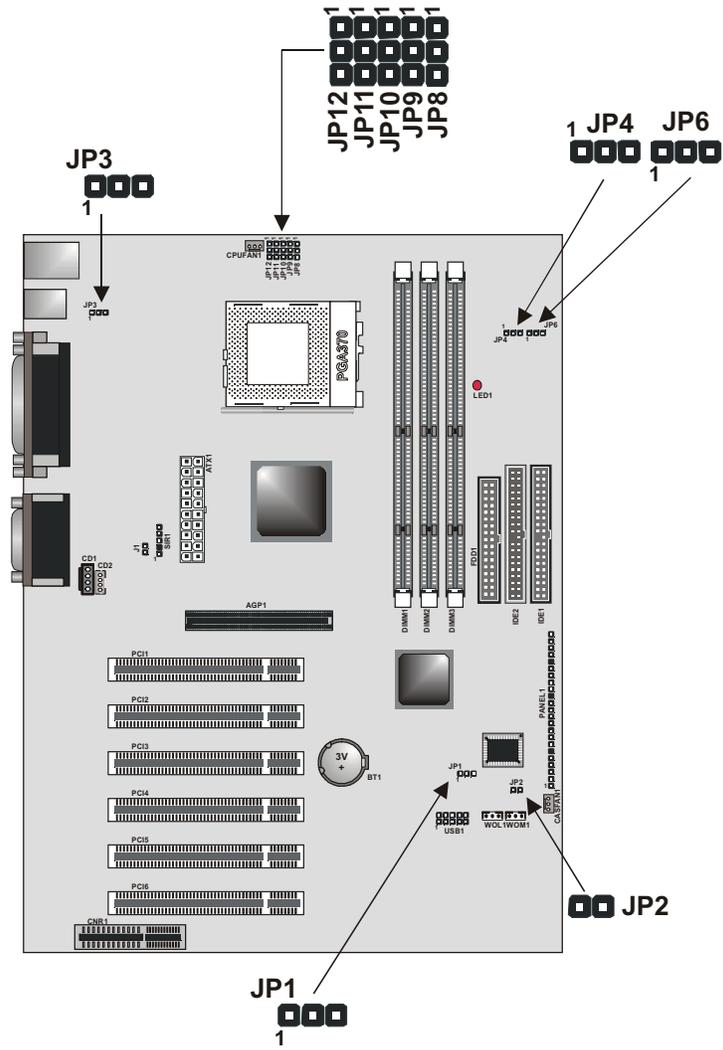
This illustration shows the same 3-pin jumper. The jumper cap is placed on pins 1 and 2, so this jumper setting is **SHORT PINS 1-2**.

In this manual, all the jumper illustrations clearly show the pin numbers. When you are setting the jumpers, make sure that the jumper caps are placed on the correct pins to select the function or feature that you want to enable or disable.

Check the Jumper Settings

Check all the mainboard jumpers to ensure that the mainboard is configured correctly.

Note: Pin 1 is indicated by a "1."



JP1: Clear BIOS jumper

This jumper lets you erase the BIOS Setup Utility settings that are stored in CMOS memory. You might need to erase this data if incorrect settings are preventing your system from operating. You must first set JP2 to open before you can flash the CMOS.

To clear the CMOS memory, turn off the system, disconnect the power cable from the mainboard, and short the appropriate pins for a few seconds. Then return the jumper to the Normal operation setting and power on the computer.

Function	Jumper Setting
Normal operation	Short pins 1-2
Clear BIOS	Short pins 2-3



JP2: BIOS flash protect jumper

Use this jumper to protect the system BIOS from being accidentally flashed (updated).

Function	Jumper Setting
Protect	Short
Unprotect	Open



JP3: Keyboard power on jumper

When set to enabled, pressing any key on the keyboard will power on the computer.

Function	Jumper Setting
Enable	Short pins 1-2
Disable	Short pins 2-3



JP4: CPU frequency select jumper

This jumper enables you to force the CPU to clock at a higher frequency than it is rated. Short pins 2 and 3 to force the CPU to run at a 100 MHz FSB instead of a 66 MHz FSB. We recommend that you leave the jumper on the normal operation setting.

Function	Jumper Setting
Auto	Short pins 1-2
Force 66 MHz FSB to run at 100 MHz FSB.	Short pins 2-3



JP6: CPU frequency select jumper

This jumper enables you to force the CPU to clock at a higher frequency than it is rated. Short pins 2 and 3 to force the CPU to run at a 133 MHz FSB instead of a 100 MHz FSB. We recommend that you leave the jumper on the normal operation setting.

Function	Jumper Setting
Auto	Short pins 1-2
Force 100 MHz FSB to run at 133 MHz FSB	Short pins 2-3



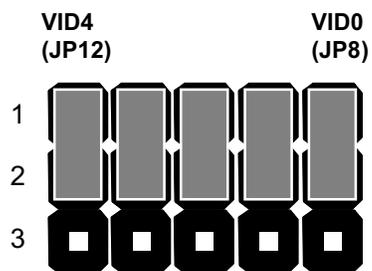
Note: The CPU speed is determined by the CPU Host/PCI Clock speed multiplied by the CPU Clock Ratio. Refer to the Frequency Control Option in Chapter 3 for more information.

Forcing the CPU to run at a higher clock speed than it was rated for is called overlocking and is not recommended.

JP8~JP12: CPU core voltage jumpers

Use these 3 x 5 pin jumpers set to manually set the CPU core voltage. See later in this chapter for information on the core voltage setting required for the processor that you have installed.

Refer to the following table for pin information.



Jumper 8 – 12 pin settings

Volt.	Pin Settings				
	VID0	VID1	VID2	VID3	VID4
Auto*	1-2	1-2	1-2	1-2	1-2
1.30V	Open	Open	Open	Open	2-3
1.35V	2-3	Open	Open	Open	2-3
1.40V	Open	2-3	Open	Open	2-3
1.45V	2-3	2-3	Open	Open	2-3
1.50V	Open	Open	2-3	Open	2-3
1.55V	2-3	Open	2-3	Open	2-3
1.60V	Open	2-3	2-3	Open	2-3
1.65V	2-3	2-3	2-3	Open	2-3
1.70V	Open	Open	Open	2-3	2-3
1.75V	2-3	Open	Open	2-3	2-3
1.80V	Open	2-3	Open	2-3	2-3
1.85V	2-3	2-3	Open	2-3	2-3
1.90V	Open	Open	2-3	2-3	2-3
1.95V	2-3	Open	2-3	2-3	2-3
2.00V	Open	2-3	2-3	2-3	2-3
2.05V	2-3	2-3	2-3	2-3	2-3
2.1V	2-3	Open	Open	Open	Open
2.2V	Open	2-3	Open	Open	Open
2.3V	2-3	2-3	Open	Open	Open
2.4V	Open	Open	2-3	Open	Open
2.5V	2-3	Open	2-3	Open	Open
2.6V	Open	2-3	2-3	Open	Open
2.7V	2-3	2-3	2-3	Open	Open
2.8V	Open	Open	Open	2-3	Open
2.9V	2-3	Open	Open	2-3	Open
3.0V	Open	2-3	Open	2-3	Open
3.1V	2-3	2-3	Open	2-3	Open
3.2V	Open	Open	2-3	2-3	Open
3.3V	2-3	Open	2-3	2-3	Open
3.4V	Open	2-3	2-3	2-3	Open
3.5V	2-3	2-3	2-3	2-3	Open

***Auto:** When all 1-2 pins are shorted, the core voltage will automatically be determined.

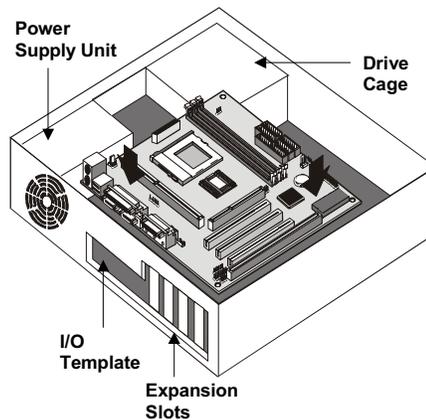
Note: These values are for reference only. It is not recommended to change the settings for jumper 8 ~ 12. Please notice that the CPU will burn out if the core voltage is higher than 2.1V.

Installing the Mainboard in a Case

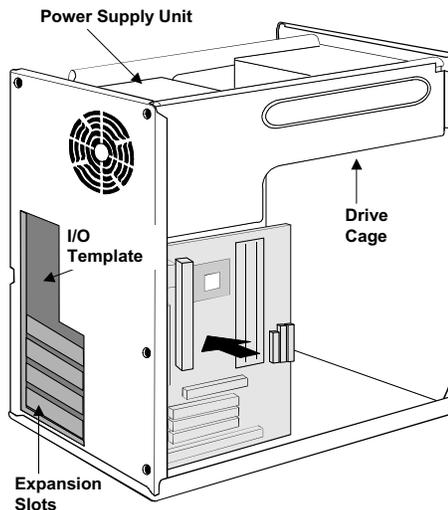
Most system cases have mounting brackets installed in the case, which correspond to the holes in the mainboard. Place the mainboard over the mounting brackets and secure the mainboard into the mounting brackets with screws. Most cases have a choice of I/O templates in the rear panel. Make sure that the I/O template in the case matches the I/O ports installed on the rear edge of the mainboard.

This illustration shows a mainboard installed in a standard desktop case.

Note: Do not overtighten the screws as this can stress the mainboard.

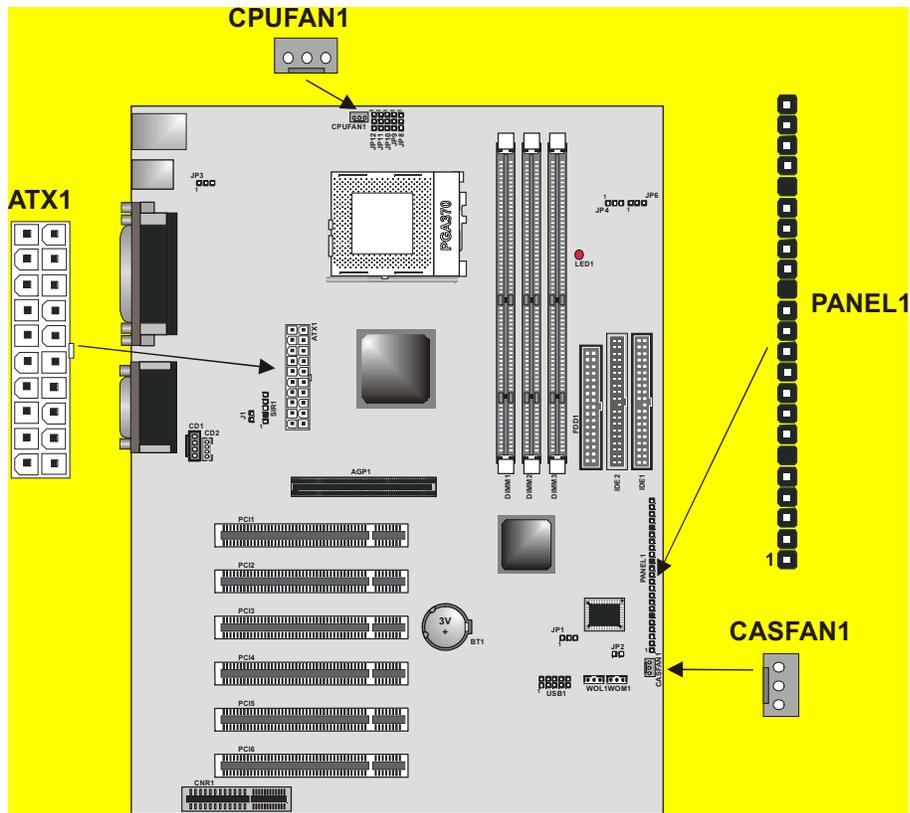


This illustration shows a mainboard installed in a tower-type case.



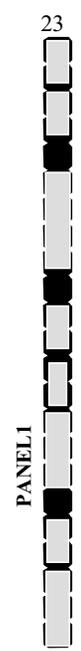
Connecting Internal Components

After you have installed the mainboard into the system case, connect the power cable from the case power supply unit to the mainboard power connector ATX1. Connect the CPU and case fans (if your case has them) to CPUFAN1 or CASFAN1 on the mainboard. Then connect the case switches and indicators to the PANEL1 connector.



Panel Connector

The mainboard PANEL connector has a standard set of switch and indicator connectors that are commonly found on system cases. Use the illustration below to make the correct connections to the case switches and indicators.

Function	Pins	PANEL1
Power switch	22, 23	23
Hard disk LED Indicator	+20, -21	 Power Switch 22-23
Empty pin	19	HDD LED 20-21
Speaker	+15, -16, 17, 18	Speaker 15-16-17-18
Empty pin	14	
Reset switch	12, -13	Reset Switch 12-13
Keyboard lock	10, -11	KeyLock 10-11
Green LED indicator	+7, +8, -9	Green LED 7-8-9
Empty pin	6	
Sleep switch	4, -5	Sleep Switch 4-5
Power LED indicator	+1, +2, -3	Power LED 1-2-3

Note: The plus sign (+) indicates a pin which must be connected to a positive voltage.

Installing Other Hardware

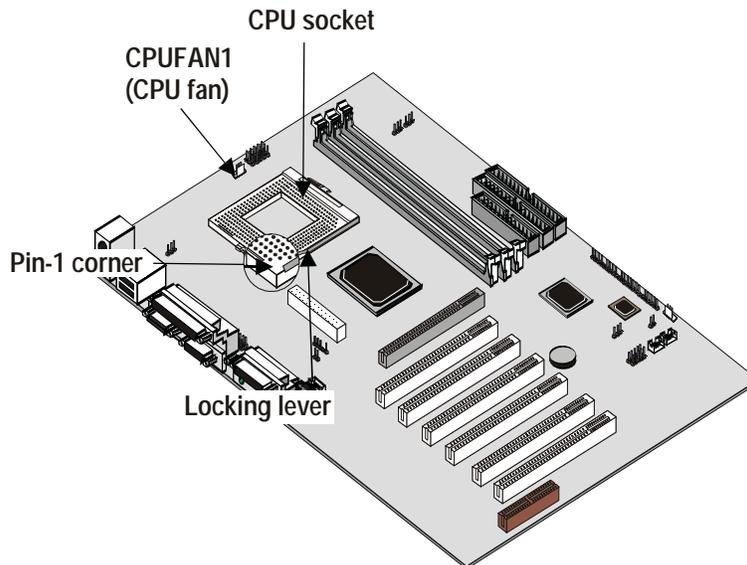
Start installing the essential hardware required to get your system started.

Installing the Processor

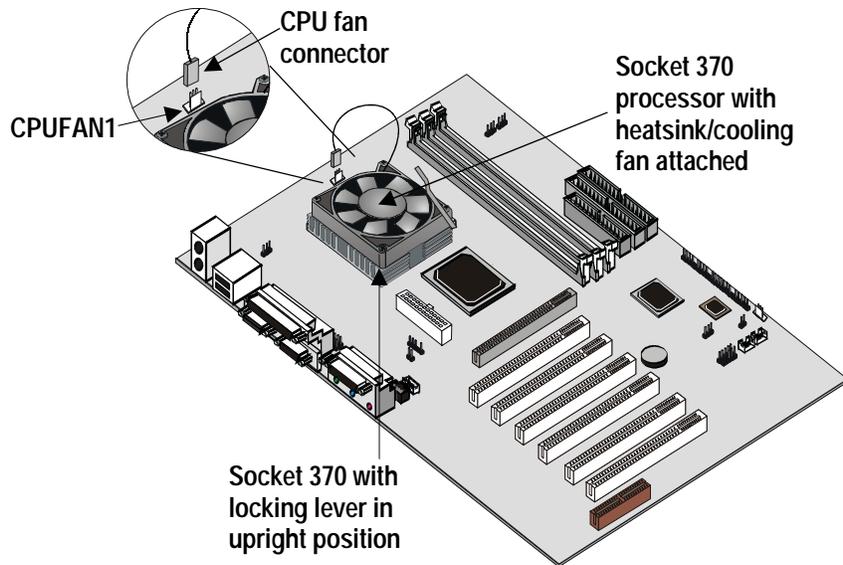
This mainboard has a Socket 370 processor socket. To choose a processor, you need to consider the performance requirements of the system and the price of the processor. Performance is based on the processor design, the clock speed and frontside bus frequency of the processor, and the quantity of internal cache memory and external cache memory. Higher clock speeds and larger amounts of cache memory deliver greater performance.

Installing a Processor

To install the mainboard with a processor, refer to the illustrations and follow the steps below.



1. Locate the Socket 370 and CPUFAN1.
2. Pull the Socket 370 locking lever away from the socket to unhook it and then raise the locking lever to the upright position.



3. Identify the pin-1 corner on the Socket 370 and the pin-1 corner on the processor. The processor pin-1 corner is beveled.
4. Matching the pin-1 corners, drop the processor into the socket. No force is required and the processor should seat into the socket easily.
5. Swing the locking lever down and hook it under the latch on the edge of the socket. This locks the processor in place.
6. Plug the heatsink/cooling fan power cable into the CPUFAN1 connector on the mainboard.

The mainboard must be configured to deliver the correct clock speed and the correct frontside bus frequency for the kind of processor that you have installed. You can do this by using the CMOS (BIOS) Setup Utility. The first time you start the system, immediately enter the Setup Utility and make the appropriate settings. See Chapter 3 for more information.

Install the Memory Modules

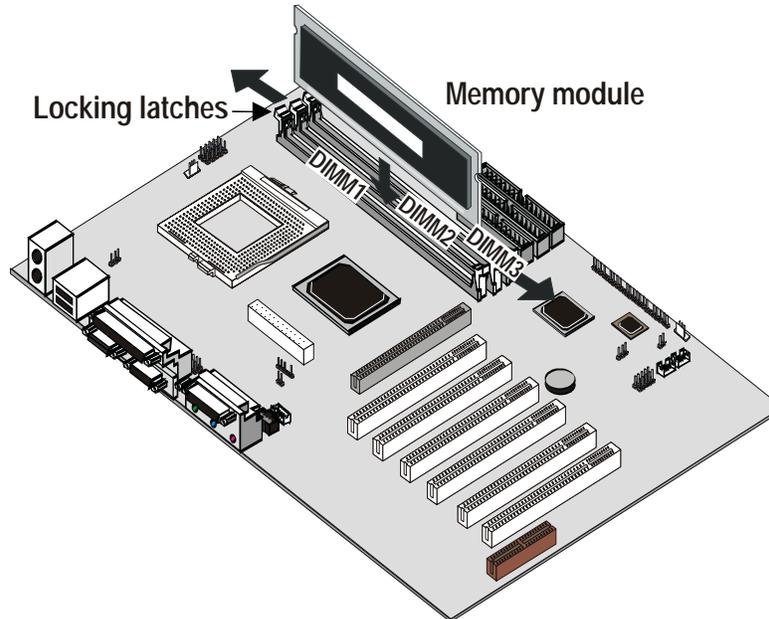
For this mainboard, you must use 168-pin 3.3V non-buffered Dual In-line Memory Modules (DIMMs). The memory chips are standard SDRAM (Synchronous Dynamic Random Access Memory). The table at the right shows the supported frequencies.	Front Side Bus (FSB) Frequency	System Memory Bus (SMB) Frequency
	66 MHz	100 MHz
	100 MHz	100 MHz
	133 MHz	100 MHz
	133 MHz	133 MHz

Note: The memory bus runs at either 100 MHz or 133 MHz independent of the system bus frequency.

Installation Procedure

There are three slots for memory modules. You must install at least one module, and it makes no difference which slot you use to install the module.

1. Locate the DIMM slots on the mainboard.



2. The DIMM slots are keyed with notches and the DIMMs are keyed with cutouts so that they can only be installed correctly. Check that the cutouts on the DIMM module edge connector match the notches in the DIMM slot.
3. Push the latches on each side of the DIMM slot down.
4. Install the DIMM module into the slot and press it carefully but firmly down so that it seats correctly. The latches at either side of the slot will be levered upwards and latch on to the edges of the DIMM when it is installed correctly.

Installing a Hard Disk Drive and CD-ROM

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

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.*

About IDE Devices.

Your mainboard has a primary IDE channel interface (IDE1) and a secondary IDE interface (IDE2). The mainboard ships with one IDE ribbon cable that supports one or two IDE devices. All IDE devices have jumpers or switches that can be used to set the IDE device as MASTER or SLAVE.

If you install two IDE devices on one cable, you must make sure 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.

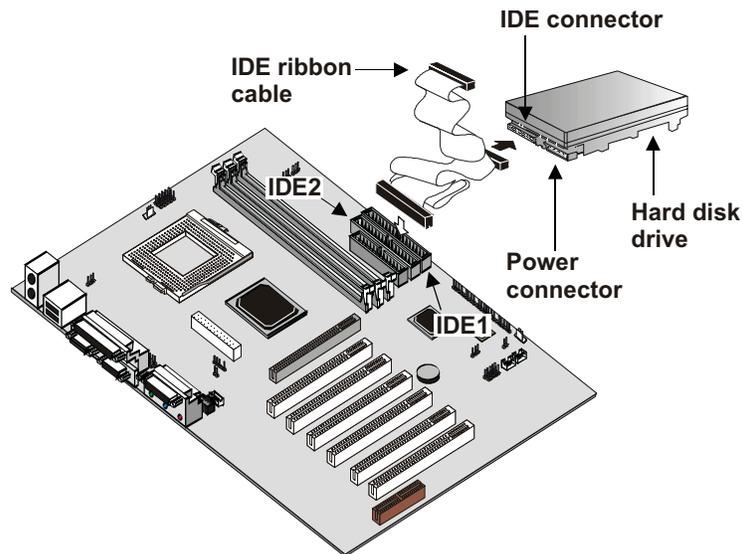
If you want to install more than two IDE devices, obtain a second IDE cable then you can add two more devices to the secondary IDE channel. If there are two devices on the cable, make one MASTER and one SLAVE.

About UDMA

This mainboard supports UltraDMA 33/66/100. UDMA is a technology that speeds the performance of devices in the IDE channel. We recommend that you install IDE devices that support UDMA, and use IDE cables that support UDMA.

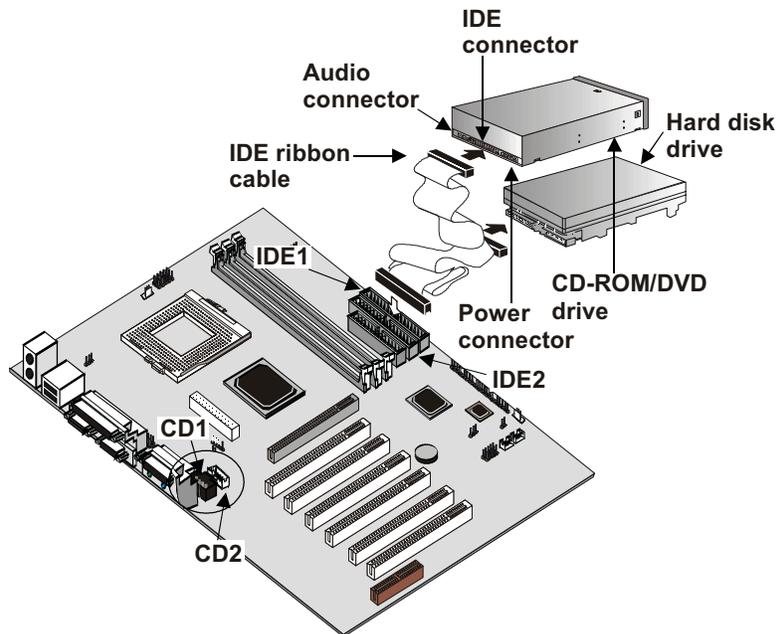
Installing a Hard Disk Drive

1. Install the hard disk drive into the drive cage in your system case.
2. Plug the IDE cable into the primary IDE channel on the mainboard IDE1.
3. Plug one of the cable IDE connectors into the hard disk drive IDE connector. It doesn't matter which connector on the cable that you use. Make sure that you have the pin-1 side of the cable matched with the pin-1 side of the connector.
4. Plug a power cable from the case power supply into the power connector on the back edge of the hard disk drive.
5. When you first start up your system, go immediately to the Setup Utility and use the IDE Hard Disk Auto Detect feature to configure the IDE devices that you have installed. See Chapter 3 for more information.



Installing a CD-ROM/DVD Drive

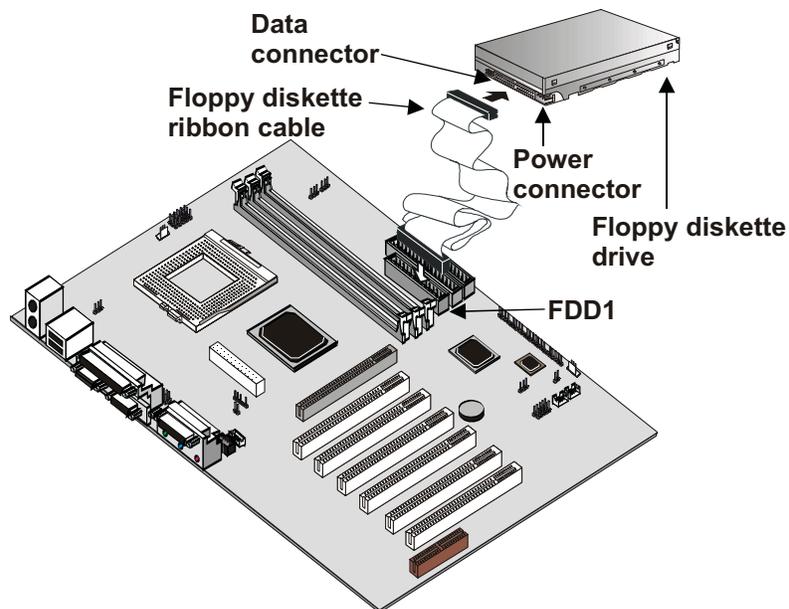
1. Install the CD-ROM/DVD drive into the drive cage in your system case. Plug the IDE cable into the primary IDE channel on the mainboard IDE1.
2. Plug one of the connectors on the IDE cable into the IDE connector on the back edge of the CD-ROM/DVD drive. It doesn't matter which connector on the cable that you use. Make sure that you have the pin-1 side of the cable matched with the pin-1 side of the connector.
3. Plug a power cable from the case power supply unit into the power connector on the back edge of the CD-ROM/DVD drive.
4. Use the audio cable provided with the CD-ROM/DVD drive to connect the audio connector on the rear edge of the CD-ROM/DVD drive to the one of the two audio-in connectors CD1 and CD2 on the mainboard.
5. When you first start up your system, go immediately to the Setup Utility and use the IDE Hard Disk Auto Detect feature to configure the IDE devices that you have installed. See Chapter 3 for more information.



Installing a Floppy Diskette Drive

The mainboard has a floppy diskette drive interface and it ships with a diskette drive ribbon cable that supports one or two floppy diskette drives. You can install a 5.25-inch and a 3.5-inch drive with various capacities.

1. Install the floppy diskette drive into the drive cage in your system case. Plug the diskette drive cable into the diskette drive interface on the mainboard FDD1.
2. Plug one of the connectors on the diskette drive cable into the data connector on the back edge of the floppy diskette drive. Make sure that you have the pin-1 side of the cable matched with the pin-1 side of the connector.
3. Plug a power cable from the case power supply unit into the power connector on the back edge of the diskette drive.
4. When you first start up your system, go immediately to the BIOS Setup Utility and use *Standard CMOS Setup* to configure the floppy diskette drives that you have installed. See Chapter 3 for more information.



Using the Expansion Slots

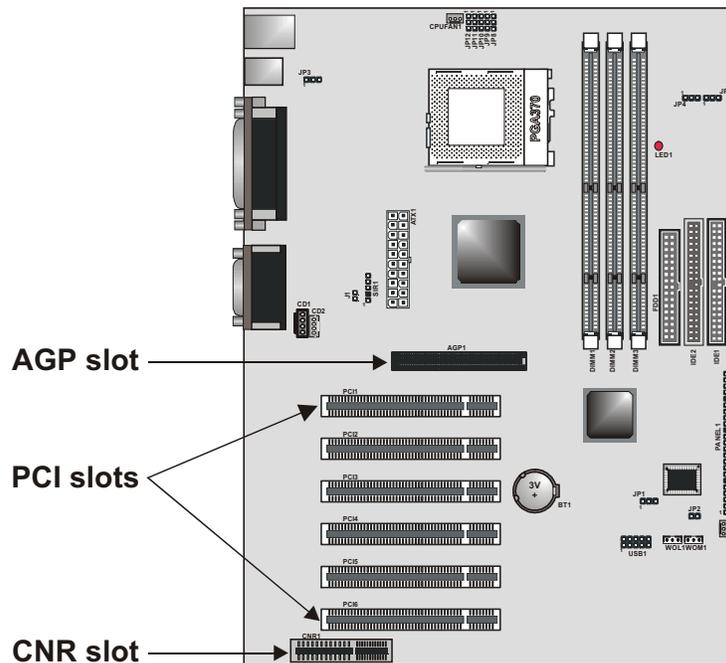
This mainboard has six 32-bit PCI expansion slots, one 4xAGP slot, and a CNR slot.

PCI Slots: The PCI slots can be used to install add-in cards that have the 32-bit PCI (Peripheral Components Interconnect) interface.

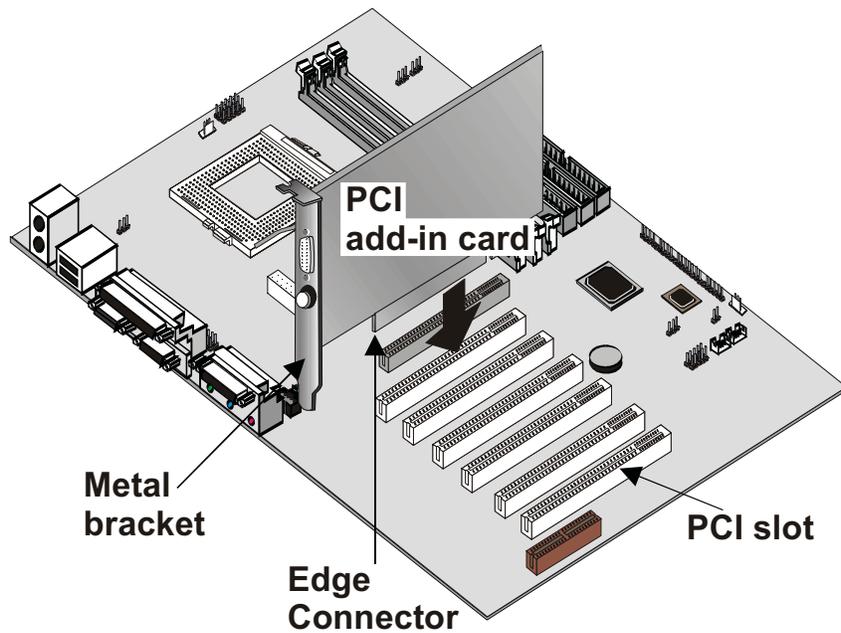
4xAGP Slot: The 4xAGP can be used to install a graphics adapter that supports the 4xAGP specification and has the 4xAGP edge connector.

CNR Slot: The CNR1 slot is for installing all types of CNR (Communications Networking Riser) cards, including LAN, modem, and Codec cards.

Note: The CNR slot is shared with PCI 6. You can install an expansion card into either the CNR slot or PCI 6, but you cannot use both slots at the same time.

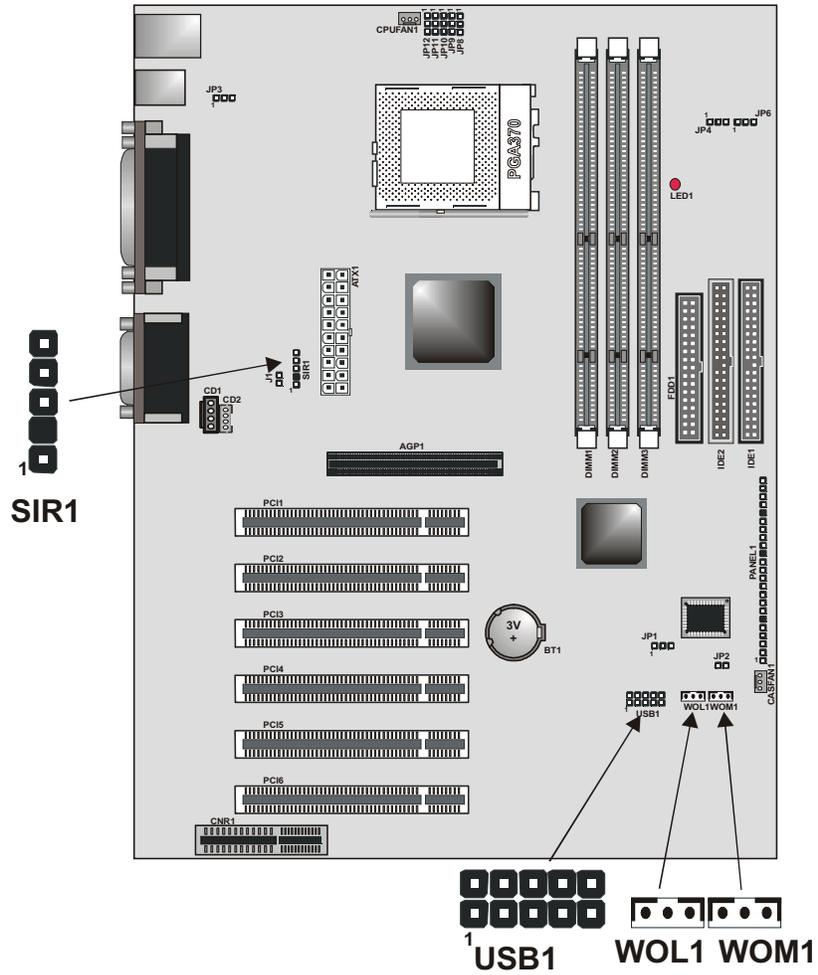


1. Before installing an expansion card, check the documentation for the card. If the card is not Plug and Play, you may have to manually configure the card before installation.
2. In the system case, remove the blanking plate from the slot in the system case that corresponds to the expansion slot that you are going to use.
3. Position the edge connector of the add-in card over the expansion slot. Position the metal bracket of the card in the empty slot in the system case.
4. Install the edge connector of the add-in card into the expansion slot. Press down quite firmly so that you are sure that the edge connector is correctly seated in the slot.
5. Secure the metal bracket of the card in the empty slot, in the system case, with a screw.
6. For some add-in cards, for example graphics adapters and network adapters, you have to install drivers and software before you can begin using the add-in card.



Other Options

This section lists the other options that come with this mainboard.



SIR1: Serial Infrared Connector.

Connect the cable from the optional IR port to SIR1 (for SIR infrared). After you have connected the cable, secure the optional IR port to the appropriate location on your system case.

This option can be purchased from third-party vendors.

Note: *An IR port may use some of the resources required by a second serial port or a fax/modem card. If you have more than one of these items installed, you may not be able to use them at the same time. You can use the Peripherals page of the Setup Utility to switch resources between an IR port and a second serial port. See Chapter 3 for more information.*

USB1: Extra USB Port Header

Some cases come with USB ports on the front panel. If your case has these ports, you can connect them to the USB1 header.

WOL1: Wake on LAN

If you have installed a LAN/modem card, you can use the cable provided with the card to plug into the WOL1 connector on the mainboard. This is the Wake On LAN feature. When your system is in a power-saving mode, any incoming calls to the LAN automatically resume the system.

You must enable this item using the Power Management page of the Setup Utility. See Chapter 3 for more information.

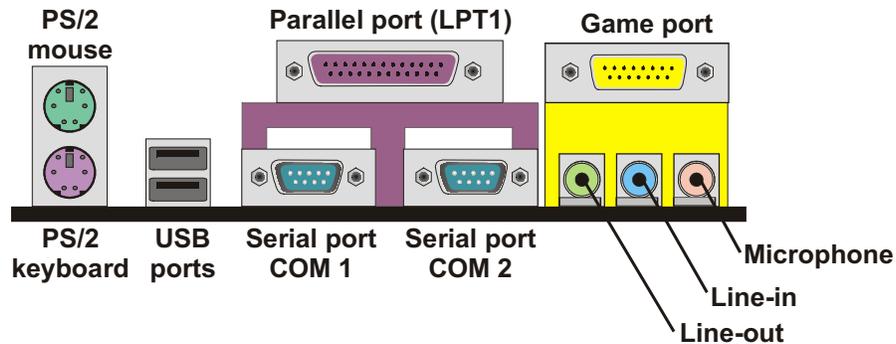
WOM1: Wake on Modem

If you have installed a fax/modem card, you can use the cable provided with the card to plug into the WOM1 connector on the mainboard. This is the Wake On Modem feature. When your system is in a power-saving mode, any incoming calls to the modem automatically resume the system.

You must enable this item using the Power Management page of the Setup Utility. See Chapter 3 for more information.

Making External Connections

After you have installed the mainboard, make the connections to the external ports.



1. There are two stacked PS/2 ports. The upper port can be used by a PS/2 mouse or pointing device. The lower port can be used by a PS/2 keyboard.
2. Use the USB ports to connect USB devices.
3. LPT1 is a parallel port that can be used by printers or other parallel communications devices. The system identifies the parallel port as LPT1.
4. COM1 and COM2 are serial ports that can be used by serial devices such as a mouse, a fax/modem and so on.
5. You can use the game port to connect a joystick or a MIDI device to your system.
6. Three audio ports are provided. 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.

External Connector Color Coding

To help identify the external connectors, many connectors now use standard colors as shown in the table below.

Connector	Color
Analog VGA	Blue
Audio line-in	Light blue
Audio line-out	Lime
Digital monitor / flat panel	White
IEEE 1394	Grey
Microphone	Pink
MIDI/Game	Gold
Parallel	Burgundy
PS/2 compatible keyboard	Purple
PS/2 compatible mouse	Green
Serial	Teal or Turquoise
Speaker out/subwoofer	Orange
Right-to-left speaker	Brown
USB	Black
Video out	Yellow
SCSI, network, telephone, modem	None

— Notes —

Chapter 3: Setup

About the Setup Utility

The computer employs the latest Award BIOS CMOS chip with support for Windows Plug and Play. This CMOS chip contains the ROM setup instructions for configuring the mainboard's BIOS. The BIOS (Basic Input and Output System) Setup Utility is a ROM-based configuration utility that displays the system's configuration status and provides you with a tool to set system parameters. These parameters are stored in non-volatile battery-backed-up CMOS RAM that saves this information even when the power is turned off. When the system is turned back on, the system is configured with the values found in CMOS.

Using easy-to-use pull down menus, you can configure such items as:

- 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 intimately affect how the computer performs. It is important, therefore, first to try to understand all the Setup Utility's options, and second, to make settings appropriate for the way you use the computer. This chapter guides you through the Setup Utility by providing clear explanations for all Setup Utility options.

A standard configuration has already been set in the Setup Utility. However, we recommend that you read this chapter just in case you need to make any changes in the future.

This program should be executed under the following conditions:

- When changing the system configuration
- When a configuration error is detected by the system and you are prompted to make changes to the Setup Utility
- When resetting the system clock
- When redefining the communication ports to prevent any conflicts
- When making changes to the Power Management configuration
- When changing the password or making other changes to the security setup

Normally, running the Setup Utility is needed when the system hardware is not consistent with the information contained in the CMOS RAM, whenever the CMOS RAM has lost power, or the system features need to be changed.

Entering the Setup Utility

When the system is powered on, the BIOS will enter the Power-On Self Test (POST) routines. These routines perform various diagnostic checks; if an error is encountered, the error will be reported in one of two different ways:

1. If the error occurs before the display device is initialized, a series of beeps will be transmitted.
2. If the error occurs after the display device is initialized, the screen will display an error message.

After the POST routines are completed, the following message appears:

Press DEL to enter SETUP

To access the Award BIOS Setup Utility, press the delete key to display the "CMOS Setup Utility" screen:

CMOS Setup Utility - Copyright (C) 1984 - 2000 Award Software

▶ Standard CMOS Features	▶ Frequency/Voltage Control
▶ Advanced BIOS Features	Load Fail-Safe Defaults
▶ Advanced Chipset Features	Load Optimized Defaults
▶ Integrated Peripherals	Set Supervisor Password
▶ Power Management Setup	Set User Password
▶ PnP/PCI Configurations	Save & Exit Setup
▶ PC Health Status	Exit Without Saving
Esc : Quit	↑ ↓ → ← : Select Item
F10 : Save & Exit Setup	
Time, Date, Hard Disk Type . . .	

This screen provides access to the utility's various functions.

BIOS Navigation Keys

Listed below are explanations of the keys displayed at the bottom of the screens:

Key	Function
Esc	Escape key: Exits the current menu
← ↓ ↑ →	Cursor keys: Scroll through the items on a menu
+/-/PU/PD	Plus, minus, Page Up and Page Down keys: Modify the selected field's values
F10	F10 key: Saves the current configuration and exits setup
F1	F1 key: Displays a screen that explains all key functions
F5	F5 key: Loads previously saved values to CMOS
F6	F6 key: Loads a minimum configuration for troubleshooting.
F7	F7 key: Loads an optimum set of values for peak performance

Using BIOS

When you start the Setup Utility, the main menu appears. The main menu of the Setup Utility shows a list of the options that are available. A highlight indicates which option is currently selected. You can use the cursor arrow keys to move the highlight to other options. When an option is highlighted, you can execute the option by pressing the enter key.

Some options lead to pop-up dialog boxes that may ask you to verify that you wish to execute that option. You usually answer these dialogs by typing **Y** for yes and **N** for no. Some options may lead to more dialog boxes that ask for more information. Setting passwords have this kind of dialog box.

Enter Password:

Selecting some fields and pressing the enter key displays a list of options for that field. In the Standard CMOS Features screen, selecting "Drive A" and pressing **ENTER** displays this screen:

Drive A			
None	[]	
360K , 5.25 in.	[]	
1.2M , 5.25 in.	[]	
720K , 3.5 in.	[]	
1.44M , 3.5 in.	[]	
2.88M , 3.5 in.	[]	
↑↓ : Move Enter : Accept ESC: Abort			

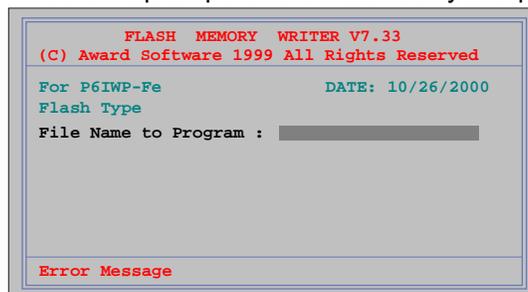
Select the setting you want with the cursor keys. Press <ENTER> to select, or <ESC> to discard changes and return to the previous menu. Alternatively, you can select a field and press the minus, plus, Page Up or Page Down keys to scroll through the options for that field.

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.

How to Flash a New BIOS

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

1. Some mainboards have a Flash BIOS jumper that protects the current BIOS from being changed or overwritten. If your mainboard has this jumper, change the setting to allow BIOS flashing.
2. Some Setup Utilities have an item called Firmware Write Protect that prevents the BIOS from being overwritten. If your BIOS has this item (check the Advanced BIOS Features Setup page) disable it for the present.
3. Your computer must be running in a real-mode DOS environment, not the DOS window of Windows NT or Windows 95/98. We recommend that you create a new formatted DOS system floppy diskette.
4. Download the Flash Utility and new BIOS file from the manufacturer's Web site. Copy these files to a system diskette.
5. Turn off your computer and insert the system diskette in your computer's diskette drive.
6. 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.
7. At the A:\ prompt run the Flash Utility and press <Enter>.



8. In the "File Name to Program" dialog box, type in the file-name of the new BIOS and follow the onscreen directions to flash the new BIOS to the mainboard.
9. 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.

Standard CMOS Features Option

This option displays a table of items defining basic information about your system.

CMOS Setup Utility – Copyright (C) 1984 – 2000 Award Software
Standard CMOS Features

Date (mm:dd:yy)	Tue, May 15 2000	Item Help
Time (hh:mm:ss)	12 : 8 : 59	
▶ IDE Primary Master	Press Enter 4303 MB	Menu Level ▶ Change the day, month, year and century.
▶ IDE Primary Slave	Press Enter None	
▶ IDE Secondary Master	Press Enter None	
▶ IDE Secondary Slave	Press Enter None	
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	64512K	
Total Memory	65536K	

↑↓ → ← : 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 held by your 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**

Default: 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 sub-menu:

CMOS Setup Utility – Copyright © 1984 – 2000 Award Software
IDE Primary Master

IDE HDD Auto-Detection	Press Enter	Item Help
IDE Primary Master	Auto	Menu Level ►► To auto-detect the HDD's size, head . . . on this channel
Access Mode	Auto	
Capacity	0 MB	
Cylinder	0	
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 if you want the Setup Utility to automatically detect and configure a hard disk drive 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

If you leave this item at Auto, the system will automatically detect and configure any IDE devices it finds. If it fails to find a hard disk, change the value to Manual and then manually configure the drive by entering the characteristics of the drive in the items below (Capacity, Cylinder, Head, Precomp, etc.) Refer to your drive's documentation or look on the drive 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, make sure 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 some special 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 close the IDE device sub-menu and return to the Standard CMOS Features page.

Drive A and Drive B **Default: 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 **Default: 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 **Default: 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 **Default: 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.

External Cache **Default: Enabled**

Most processors that can be installed in this system use external (L2) cache memory to improve performance. The exceptions are older SEPP Celeron CPUs running at 266 or 300 MHz. Enable this item for all but these two processors.

CPU L2 Cache ECC Checking **Default: Enabled**

This item enables or disables ECC (Error Correction Code) error checking on the CPU cache memory. We recommend that you leave this item at the default value.

Processor Number Feature **Default: Enabled**

Some of the new generations of Socket 370 processors are installed with a unique processor number. This number may be used for verification in Internet transactions and e-commerce. If you prefer not to use or distribute the unique processor number, use this item to suppress the processor number.

Quick Power On Self Test **Default: Enabled**

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

1st/2nd/3rd Boot Device **Default: Floppy/HDD-0/LS120**

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 **Default: Enabled**

If you enable this item, the system will search 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 **Default: 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 **Default: Enabled**

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

Boot Up NumLock Status **Default: On**

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

Gate A20 Option **Default: Fast**

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

Typematic Rate Setting **Default: 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) **Default: 6**

If the item Typematic Rate Setting is enabled, you can use this item to define how many characters per second are generated by a held-down key.

Typematic Delay (Msec) **Default: 250**

If the item Typematic Rate Setting is enabled, you can use this item to define how many milliseconds must elapse before a held-down key begins generating repeat characters.

Security Option **Default: Setup**

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

OS Select For DRAM > 64 MB **Default: 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 Non-OS2.

HDD S.M.A.R.T. capability: ***Default: 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.

Report No FDD For WIN 95 ***Default: Yes***

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

Advanced Chipset Features Option

This option displays a table of items that defines critical timing parameters of the mainboard components including the memory, and the system logic. Generally, you should leave the items on this page at their default values unless you are very familiar with the technical specifications of your system hardware. If you change the values incorrectly, you may introduce fatal errors or recurring instability into your system.

CMOS Setup Utility – Copyright (C) 1984 – 2000 Award Software
Advanced Chipset Features

SDRAM CAS Latency Time	[3]	Item Help
SDRAM Cycle Time Tras/Trc	[7/9]	
SDRAM RAS-to-CAS Delay	[3]	Menu Level ▶
SDRAM RAS Precharge Time	[3]	
System BIOS Cacheable	[Enabled]	
Video BIOS Cacheable	[Enabled]	
Memory Hole AT 15M-16M	[Disabled]	
CPU Latency Timer	[Enabled]	
Delayed Transaction	[Enabled]	
AGP Graphics Aperture Size	[64MB]	
System Memory Frequency	[Auto]	

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

SDRAM CAS Latency Time **Default: 3**

Enables you to select the CAS latency time in HCLKs of 2/2 or 3/3. 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. The options are 2 and 3.

SDRAM Cycle Time Tras/Trc **Default: 7/9**

This item sets the minimum time from activation to activation of the same memory bank.

SDRAM RAS-to-CAS Delay **Default: 3**

This sets the relative delay between the Row Address Strobe (RAS) and the Column Address Strobe (CAS). Options are 2 and 3.

SDRAM RAS Precharge Time ***Default: 3***

These four items set the timing and wait states for SDRAM memory. We recommend that you leave these items at the default value.

System/Video BIOS Cacheable ***Default: Enabled***

These items allow the video and/or system to be cached in memory for faster execution. We recommend that you leave these items at the default value.

Memory Hole at 15M-16M ***Default: Disabled***

This item can be used to reserve memory space for some ISA expansion cards that require it.

CPU Latency Timer ***Default: Enabled***

This item sets a timing parameter for CPU access. Since the CPU timing is determined by the system hardware, leave this item at the default value.

Delayed Transaction ***Default: Enabled***

If the chipset has an embedded 32-bit write buffer, to support delay transaction cycles, you can enable this item to provide compliance with PCI Ver. 2.1 specifications. We recommend that you leave this item at the default value.

AGP Graphics Aperture Size ***Default: 64 MB***

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.

System Memory Frequency ***Default: Auto***

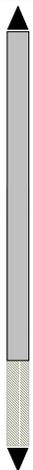
This item sets the main memory frequency. When you use an external graphics card, you can adjust this to enable the best performance for your system.

Integrated Peripherals Option

This option displays a list of items that defines the operation of some peripheral components on the system's input/output ports.

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Integrated Peripherals

On-Chip Primary	PCI IDE	[Enabled]		Item Help
On-Chip Secondary	PCI IDE	[Enabled]		Menu Level ▶
IDE Primary Master	PIO	[Auto]		
IDE Primary Slave	PIO	[Auto]		
IDE Secondary Master	PIO	[Auto]		
IDE Secondary Slave	PIO	[Auto]		
IDE Primary Master	UDMA	[Auto]		
IDE Primary Slave	UDMA	[Auto]		
IDE Secondary Master	UDMA	[Auto]		
IDE Secondary Slave	UDMA	[Auto]		
USB Controller		[Enabled]		
USB Keyboard Support		[Disabled]		
Init Display First		[PCI Slot]		
AC97 Audio		[Auto]		
AC97 Modem		[Auto]		
Hardware Reset Control		[Enabled]		
IDE HDD Block Mode		[Enabled]		
POWER ON Function		[Hot KEY]		
KB Power ON Password		[Enter]		

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

On-Chip Primary/Secondary PCI IDE Default: Enabled

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

IDE Primary/Secondary Master/Slave PIO Default: 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. You can choose Auto, to let the system auto detect which PIO mode is best, or you can install a PIO mode from 0-4.

IDE Primary/Secondary Master/Slave UDMA Default: Auto

Each IDE channel supports a master device and a slave device. This mainboard supports UltraDMA. UltraDMA technology 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.

USB Controller **Default: Enabled**

Use this item to enable the USB ports that are integrated on this mainboard.

USB Keyboard Support **Default: Disabled**

Enable this item if you are using a keyboard connected through the USB port.

Init Display First **Default: PCI Slot**

Use this item to define if your graphics adapter is installed in one of the PCI slots or select Onboard if you have a graphics system integrated on the mainboard.

AC97 Audio/Modem

Set these items to Auto when you are using the onboard AC 97 audio and modem chip. If you are using an audio or modem add-in card, or external modem, you should disable these items.

Hardware Reset Control **Default: Enabled**

This item enables or disables the hardware reset button. When set to Disabled, pushing the hardware reset button will not reset the system.

IDE HDD Block Mode **Default: Enabled**

Block mode transfers can improve the access to IDE devices. Enable this item if your IDE devices support block mode transfers.

Power ON Function **Default: Hot KEY**
KB Power ON Password **Default: Enter**
Hot Key Power ON **Default: Ctrl-F12**

The Power On Function item allows you to power on the system by pressing hot-keys, or typing a password. If you choose Password, you can use the item KB Power On Password to install a power on password. Press <Enter> to display the Password dialog box. If you set it to Hot Key, you can then use the item Hot Key Power On to choose which hot keys are used to power on the system.

Onboard FDC Controller **Default: Enabled**

This option enables the onboard floppy disk drive controller.

Onboard Serial Port 1 **Default: 3F8/IRQ4**

This option is used to assign the I/O address for onboard serial port 1.

Onboard Serial Port 2 **Default: 2F8/IRQ3**

This option is used to assign the I/O address for onboard serial port 2.

UART Mode Select **Default: Normal**

This field is available if the Onboard Serial Port 2 field is set to any option but Disabled. UART Mode Select enables you to select the infrared communication protocol—Normal, IrDA, ASKIR or SCR.

The UART mode setting depends on which type of infrared module is used in the system. When set to SCR, ASKIR or IrDA, the UART mode is used to support the infrared module connected on the mainboard. If this option is not set to Normal, a device connected to the COM2 port will no longer work.

UR2 Duplex Mode **Default: Half**

This item enables you to determine the infrared (IR) function of the onboard infrared chip. The options are Full and Half.

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 **Default: 378/IRQ7**

This option is used to assign the I/O address for the onboard parallel port.

Parallel Port Mode **Default: 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 ***Default: 3***

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

Game Port Address ***Default: 201***

Enables you to specify the I/O address of the game port.

Midi Port Address ***Default: 330***

Enables you to specify the I/O address of the MIDI port.

Midi Port IRQ ***Default: 10***

Enables you to specify the IRQ of the MIDI port if installed.

Power Management Setup Option

This option displays items that let you control the system power management. Modern operating systems take care of much of the power management. This mainboard supports ACPI (advanced configuration and power interface). The system has various power saving modes including powering down the hard disk, turning off the video, suspending to RAM, and a software power down that allows the system to be automatically resumed by certain events.

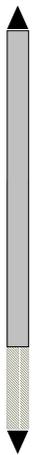
Power Management Timeouts

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 in suspend mode, 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.

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Power Management Setup

ACPI Function	[Enabled]		Item Help
ACPI Suspend Type	[S1(POS)]		Menu Level ▶
Power Management	[User Define]		
Video Off Method	[DPMS]		
Video Off In Suspend	[Yes]		
Suspend Type	[Stop Grant]		
MODEM Use IRQ	[3]		
Suspend Mode	[Disabled]		
HDD Power Down	Disabled		
Soft-Off by PWR-BTTN	[Instant-Off]		
Wake-Up by PCI card	[Disabled]		
Power On by Ring	[Disabled]		
Wake Up On LAN	[Enabled]		
USB KB Wake-Up From S3	[Disabled]		
Resume by Alarm	[Disabled]		
x Date(of Month) Alarm	0		
x Time(hh:mm:ss) Alarm	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

ACPI Function

Default: Enabled

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

ACPI Suspend Type

Default: S1(POS)

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

Power Management**Default: User Define**

This item acts like a master switch for the power-saving modes and hard disk timeouts. If this item is set to Max Saving, power-saving modes occur after a short timeout. If this item is set to Min Saving, power-saving modes occur after a longer timeout. If the item is set to User Define, you can insert your own timeouts for the power-saving modes.

Video Off Method**Default: DPMS**

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

Video Off In Suspend**Default: Yes**

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

Suspend Type**Default: Stop Grant**

If this item is set to the default Stop Grant, the CPU will go into Idle Mode during power saving mode.

MODEM Use IRQ**Default: 3**

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 have to connect the fax/modem to a mainboard Wake On Modem connector for this feature to work.

Suspend Mode**Default: Disabled**

If you have selected User Define for the *Power Management* item, you can set this item to a timeout from 1 Min to 1 Hour. The system will go into power saving suspend mode if the timeout passes without any system activity.

HDD Power Down**Default: Disabled**

If you have selected User Define for the Power Management item, you can set this item to a selection of timeouts from 1 to 15 minutes. The hard disk drive will power down if the selected timeout passes without any activity on the hard disk.

Soft-Off by PWR-BTTN**Default: 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 normal 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.

Wake-Up by PCI card**Default: Disabled**

When this item is enabled, the system power will be turned on if there is any PCI card activity.

Power On by Ring**Default: Disabled**

If this item is enabled, it allows the system to resume from a software power down or a power-saving mode whenever there is an incoming call to an installed fax/modem. You have to connect the fax/modem to a mainboard Wake On Modem connector for this feature to work.

Wake Up On LAN**Default: Enabled**

When set to Enabled, the system power will be turned on if the LAN port receives an incoming signal. You have to connect the fax/modem to a mainboard Wake On LAN connector for this feature to work.

USB KB Wake-Up From S3**Default: Disabled**

If you are using a USB keyboard, and the ACPI suspend type is set to S3, you can enable this item to allow a keystroke to wake up the system from power saving mode.

Resume by Alarm**Default: Disabled**

When set to Enabled, you may set the date (day of the month), hour, minute and second to turn on your system. When set to set 0 (zero) for the day of the month, the alarm will power on your system every day at the specified time.

Date (of Month) Alarm**Default: 0**

When Resume by Alarm is enabled, you can set the date you wish the computer to turn on.

Time (hh:mm:ss) Alarm**Default: 0 0 0**

When Resume by Alarm is enabled, you can set the time you wish the computer to turn on.

****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 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**Default: Disabled**

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

FDD, COM, LPT Port**Default: Disabled**

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

PCI PIRQ[A-D]#**Default: Disabled**

When enabled, any activity on the PCI card channels will wake up the system from a power saving mode.

PnP/PCI Configuration Option

This option displays a table of items that configures how PnP (Plug and Play) and PCI expansion cards operate in your system.

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PnP/PCI Configurations

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

↑↓ → ← : 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

Default: Disabled

If you enable this item and restart the system, any PnP configuration data stored in the BIOS Setup is cleared from memory, and new updated data is created.

Resources Controlled By

Default: 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 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* and *Memory Resources* sub-menus.

In the IRQ Resources sub-menu, if you change any of the IRQ assignments to Legacy ISA, then that Interrupt Request Line is reserved for a legacy ISA expansion card. Press <Esc> to close the IRQ Resources sub-menu.

PCI/VGA Palette Snoop

Default: Disabled

This item is designed to overcome some problems that can be caused by some non-standard VGA cards.

This mainboard includes a built-in VGA system that does not require palette snooping so you must leave this item disabled.

PC Health Status Option

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

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PC Health Status

Shutdown Temperature	[60°C/140°F]	Item Help
Vcore		Menu Level ▶
1.8 V		
3.3 V		
+ 5 V		
+12 V		
-12 V		
Voltage 6		
Voltage Battery	3.36V	
System Temp		
CPU Temp.		
CPU FAN		
Case FAN		

↑ ↓ → ← : 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. The following information is displayed:

<ul style="list-style-type: none"> • Vcore (CPU core voltage) • 1.8 V (2.5 NB core voltage) • 3.3 V Vcc3 (onboard 3.3 volt) • +5 V (power supply's +5 volt) • +12V (power supply's +12 volt) • -12V (power supply's -12 volt) 	<ul style="list-style-type: none"> • Voltage 6 • Voltage battery • System temperature • CPU temperature • CPU FAN • Case FAN
---	--

Frequency Control Option

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

CMOS Setup Utility – Copyright (C) 1984 – 2000 Award Software
Frequency Control

Auto Detect DIMM/PCI Clk	[Enabled]	Item Help
CPU Internal Core Speed	[Auto]	Menu Level ►
Spread Spectrum Modulated	[Disabled]	
CPU Host/PCI Clock	Default	
CPU Clock Ratio	Auto	

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

Auto Detect DIMM/PCI Clk **Default: Enabled**

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

CPU Internal Core Speed **Default: Auto**

The value for this item will be automatically detected by the system. If you set this value to Manual the CPU Host/PCI Clock and CPU Clock Ratio items appear.

Spread Spectrum Modulated **Default: Enabled**

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

CPU Host/PCI Clock
CPU Clock Ratio

Default: 66/33MHz
Default: 3.5/11.5

These items appear if you have set the CPU Internal Core Speed to Manual. Use the CPU Host/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* 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)**.

Load Fail-Safe Defaults Option

This option opens a dialog box that lets you install fail-safe defaults for all appropriate items in the whole 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 whole 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 and User Password Options

These items can be used to install a password. A Supervisor password takes precedence over a User password, and the Supervisor can limit the activities of a User. To install a password, follow these steps:

1. Highlight the item Set Supervisor/User Password on the main menu and press <Enter>.
2. The password dialog box appears.

Enter Password:

3. If you are installing a new password, type in the password. You cannot use more than eight characters or numbers. The Set Supervisor/User Password item differentiates between upper case and lower characters. Press <Enter> after you have typed in the password. If you are deleting a password that is already installed just press <Enter> when the password dialog box appears. You see a message that indicates that the password has been disabled.

PASSWORD DISABLED !!!
Press any key to continue . . .

4. Press any key. You are asked to confirm the password.

Confirm Password:

5. Type the password again and press <Enter>, or just press <Enter> if you are deleting a password that is already installed.
6. If you typed the password correctly, the password will be installed.

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:

SAVE to CMOS and EXIT (Y/N)? **Y**

Exit Without Saving Option

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.

Quit Without Saving (Y/N)? **N**

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.

— Notes —

Chapter 4: Software

About the Software

The software for this mainboard is supplied on a CD-ROM. The disk has some folders that can be used by many different mainboards, for example the **UTILITY** and **PERIPHERAL** folders. Some folders can only be used by mainboards which have certain brands of chipsets, for example the **INTEL** and **VIA** folders. In addition, software that is specifically intended for one kind of mainboard is stored in a folder with the name of that mainboard. Software for this mainboard is stored in the **P6IPA** folder.

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

Folders for this Mainboard

For this mainboard, you can install software from the following folders:

Utility Folder

You can use the software in the following sub-folders:

- AWDFLASH:** Software to erase and install new revisions of the system BIOS
- GAMUT:** Audio rack for built-in sound system
- MEDIARING TALK:** Telephony software
- PC-CILLIN:** Anti-virus software
- SUPER VOICE:** Fax/modem software

P6IPA Folder

You can use the software in the following sub-folders:

- AUDIO:** Drivers and software for the onboard audio co-
dec (a readme file points you to the correct directory for
installing the files)
- IDE:** Enhanced IDE drivers (a readme file points you to
the correct directory for installing the files)
- INF:** Upgrades and patches for the mainboard chipset (a
readme file points you to the correct directory for install-
ing the files)

Note: Some folders are subdivided into different operating systems such as DOS, Windows 95, and Windows NT. Always make sure that you are installing the correct software for the operating system on your computer. Some folders are also subdivided into different language versions, such as English, French, and German.

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.

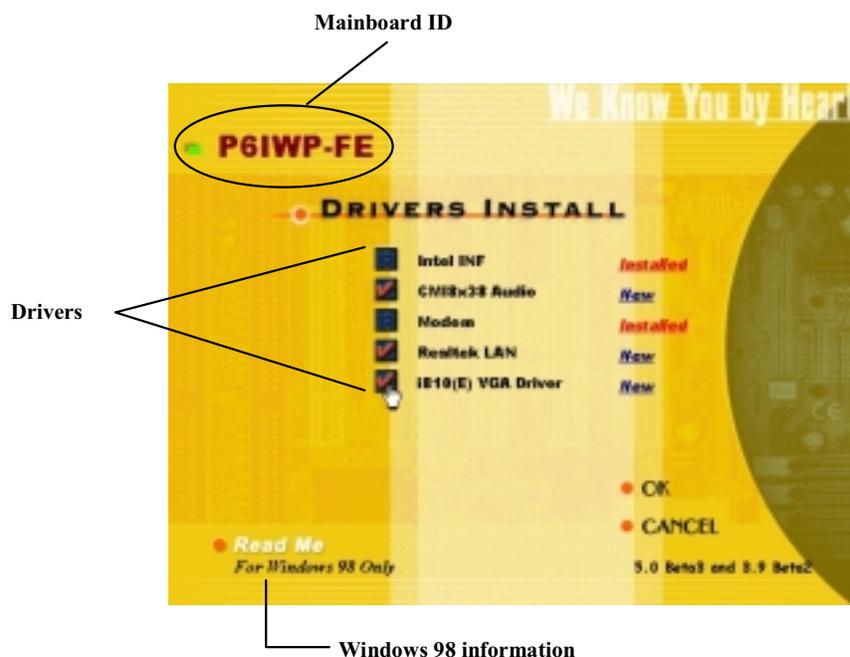
Auto-installing under Windows 98

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 all the drivers through the Windows Explorer.

The support software CD-ROM disc loads automatically under Windows 98. When you insert the CD-ROM disc in the system CD-ROM drive, the autorun feature will automatically bring up the install screen:

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



The mainboard identification is located in the upper left-hand corner. Click which drivers you want to install, and then click **OK**. Click **Cancel** if you do not want to install drivers at this time.



When the process is finished, all the support software will be installed and working.

After you finish installing the drivers for your mainboard, the Applications screen appears:



Select which applications you want to install, and click **OK**.

If the mainboard doesn't support the autoinstall feature, you will see the following screen:



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

Click READ ME to read the latest installation instructions. Click BROWSE THE CD TITLE to open Windows File Manager and show the contents of the support CD.

Double-click a folder to display the sub-folders. Before installing the software, 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.

Note: Enable Windows Explorer to display file extensions (for example, EXE).

Utility Folder Installation Notes

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 BIOS to the chip. Take care how you use 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.

For this mainboard, you must use the **AWD7xx.EXE** utility (where xx is the version number). To use the utility, you must be in real-mode DOS (not the DOS box that is available in Windows 98/95/NT). If you are using Windows 98/95, shut down your computer and select the option "Restart in DOS" in the shutdown dialog box. If you are running Windows NT, shut down your computer and boot from a DOS diskette temporarily in order to run the flash memory utility.

GAMUT

Gamut audio rack software is provided for the built-in sound system. Go to the directory \UTILITY\GAMUT; then run SETUP.EXE to install the application software.

MediaRing Talk

To install the MediaRing Talk voice modem software, go to the directory \UTILITY\MEDIARING TALK; then run MRTALK-SETUP7.2.EXE to install the application software.

PC-cillin Software

The PC-cillin software program provides anti-virus protection for your system. This program is available for:

- DOS – \UTILITY\PC-CILLIN\DOS\PCSCAN.EXE
- Win98 – \UTILITY\PC-CILLIN\WIN98\SETUP.EXE

Anti-virus software is provided for DOS and WIN 98. Browse to the appropriate directory for your operating system. For DOS, copy all the files in the DOS folder to your hard disk drive and run PSCAN to scan your system. For Windows 98, run SETUP to install the application software.

Super Voice

To install the Super Voice voice, fax, and data communication application, go the directory \UTILITY\SUPER VOICE; then run PICSHELL.EXE to install the application software.

Mainboard (P6IPA) Installation Notes

The sub-folders in this folder are empty except for a README file giving directions to alternate folders for the appropriate software.

Audio Software

This folder has software and drivers for the sound system that is integrated on this mainboard. Drivers are provided for Windows 2000/98 and Windows NT.

Windows 2000 Installation

Browse to the \INTEL\REALTEK-CODECWIN2000 folder and run SETUP.EXE to install the audio driver for your operating system.

Windows 98 Installation

Browse to the \INTEL\REALTEK-CODECWIN98 folder and run SETUP.EXE to install the audio driver for your operating system.

Windows NT 4.0 Installation

Browse to the \INTEL\REALTEK-CODECWINNT folder and run SETUP.EXE to install the audio driver for your operating system.

IDE Software

This folder has software and drivers for the IDE that is integrated on this mainboard. Drivers are provided for Windows 2000/98 and Windows NT.

Windows 2000/98/NT Installation

Browse to the \INTEL\IDE folder and run SETUP.EXE to install the IDE driver for your operating system.

Inf Files

This folder has driver updates and patches for the chipset on this mainboard.

Windows 2000/98/NT Installation

Browse to the \INTEL\INST folder and run SETUP.EXE to install the INF driver for your operating system.

—Notes—

Appendix: Jumper Setting Reference

Jumper Setting Quick Reference

JP1: Clear BIOS jumper

This jumper lets you erase the BIOS Setup Utility settings that are stored in CMOS memory. You might need to erase this data if incorrect settings are preventing your system from operating. You must first set JP2 to open before you can flash the CMOS.

To clear the CMOS memory, turn off the system, disconnect the power cable from the mainboard, and short the appropriate pins for a few seconds. Then return the jumper to the Normal operation setting and power on the computer.

Function	Jumper Setting
Normal operation	Short pins 1-2
Clear BIOS	Short pins 2-3



JP2: BIOS flash protect jumper

Use this jumper to protect the system BIOS from being accidentally flashed (updated).

Function	Jumper Setting
Protect	Short
Unprotect	Open



JP3: Keyboard power on jumper

When set to enabled, pressing any key on the keyboard will power on the computer.

Function	Jumper Setting
Enable	Short pins 1-2
Disable	Short pins 2-3



JP4: CPU frequency select jumper

This jumper enables you to force the CPU to clock at a higher frequency than it is rated. Short pins 2 and 3 to force the CPU to run at a 100 MHz FSB instead of a 66 MHz FSB. We recommend that you leave the jumper on the normal operation setting.

Function	Jumper Setting
Auto	Short pins 1-2
Force 66 MHz FSB to run at 100 MHz FSB.	Short pins 2-3



JP6: CPU frequency select jumper

This jumper enables you to force the CPU to clock at a higher frequency than it is rated. Short pins 2 and 3 to force the CPU to run at a 133 MHz FSB instead of a 100 MHz FSB. We recommend that you leave the jumper on the normal operation setting.

Function	Jumper Setting
Auto	Short pins 1-2
Force 100 MHz FSB to run at 133 MHz FSB	Short pins 2-3



Note: The CPU speed is determined by the CPU Host/PCI Clock speed multiplied by the CPU Clock Ratio. Refer to the Frequency Control Option in Chapter 3 for more information.

Forcing the CPU to run at a higher clock speed than it was rated for is called overclocking and is not recommended.

JP8~JP12: CPU core voltage jumpers

<p>Use these 3 x 5 pin jumpers set to manually set the CPU core voltage. See later in this chapter for information on the core voltage setting required for the processor that you have installed.</p> <p>Refer to the following table for pin information.</p>	<table><thead><tr><th></th><th>VID4 (JP12)</th><th></th><th>VID0 (JP8)</th></tr></thead><tbody><tr><td>1</td><td></td><td></td><td></td></tr><tr><td>2</td><td></td><td></td><td></td></tr><tr><td>3</td><td></td><td></td><td></td></tr></tbody></table>		VID4 (JP12)		VID0 (JP8)	1				2				3			
	VID4 (JP12)		VID0 (JP8)														
1																	
2																	
3																	

Jumper 8 – 12 pin settings

Volt.	Pin Settings				
	VID0	VID1	VID2	VID3	VID4
Auto*	1-2	1-2	1-2	1-2	1-2
1.30V	Open	Open	Open	Open	2-3
1.35V	2-3	Open	Open	Open	2-3
1.40V	Open	2-3	Open	Open	2-3
1.45V	2-3	2-3	Open	Open	2-3
1.50V	Open	Open	2-3	Open	2-3
1.55V	2-3	Open	2-3	Open	2-3
1.60V	Open	2-3	2-3	Open	2-3
1.65V	2-3	2-3	2-3	Open	2-3
1.70V	Open	Open	Open	2-3	2-3
1.75V	2-3	Open	Open	2-3	2-3
1.80V	Open	2-3	Open	2-3	2-3
1.85V	2-3	2-3	Open	2-3	2-3
1.90V	Open	Open	2-3	2-3	2-3
1.95V	2-3	Open	2-3	2-3	2-3
2.00V	Open	2-3	2-3	2-3	2-3
2.05V	2-3	2-3	2-3	2-3	2-3
2.1V	2-3	Open	Open	Open	Open
2.2V	Open	2-3	Open	Open	Open
2.3V	2-3	2-3	Open	Open	Open
2.4V	Open	Open	2-3	Open	Open
2.5V	2-3	Open	2-3	Open	Open
2.6V	Open	2-3	2-3	Open	Open
2.7V	2-3	2-3	2-3	Open	Open
2.8V	Open	Open	Open	2-3	Open
2.9V	2-3	Open	Open	2-3	Open
3.0V	Open	2-3	Open	2-3	Open
3.1V	2-3	2-3	Open	2-3	Open
3.2V	Open	Open	2-3	2-3	Open
3.3V	2-3	Open	2-3	2-3	Open
3.4V	Open	2-3	2-3	2-3	Open
3.5V	2-3	2-3	2-3	2-3	Open

***Auto:** When all 1-2 pins are shorted, the core voltage will automatically be determined.

Note: These values are for reference only. It is not recommended to change the settings for jumper 8 ~ 12. Please notice that the CPU will burn out if the core voltage is higher than 2.1V.

FP1: Panel connectors for switches and indicators

Use the panel connector to implement the switches and indicators on your system case.

Function	Pins	PANEL1
Power switch	22, 23	23
Hard disk LED Indicator	+20, -21	Power Switch 22-23
Empty pin	19	HDD LED 20-21
Speaker	+15, -16, 17, 18	Speaker 15-16-17-18
Empty pin	14	
Reset switch	12, -13	Reset Switch 12-13
Keyboard lock	10, -11	KeyLock 10-11
Green LED indicator	+7, +8, -9	Green LED 7-8-9
Empty pin	6	
Sleep switch	4, -5	Sleep Switch 4-5
Power LED indicator	+1, +2, -3	Power LED 1-2-3

Note: The plus sign (+) indicates a pin which must be connected to a positive voltage.