Preface

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Version 1.0

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

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

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Declaration of Conformity

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

- This device may not cause harmful interference, and

- This device must accept any interference received, including interference that may cause undesired operation.

Canadian Department of Communications

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

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

About the Manual

The manual consists of the following:

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Introducing the Mainboard

Introduction

This mainboard has a **Socket-478** processor socket for **Intel Pentium 4** type of processors supporting front side bus (FSB) speeds up to **400 MHz**.

This mainboard uses the **XP4** chipset which supports built-in **AC97 Codec**, **2 DDR + 2 SDR** modules up to 2GB system memory, and provides **Ultra DMA** 33/**66/100** function. This mainboard has one **4X AGP** slot for highly graphics display, one **AMR** (Audio Modem Riser) slot to support Audio and Modem application, and **10BaseT/100BaseTX Network Interface (optional)**. In addition, this mainboard has a full set of I/O ports including two PS/2 ports for mouse and keyboard, two serial ports, one parallel port, one MIDI/game port and four USB ports (two backpanel ports, onboard USB headers providing two extra ports). By means of the Extended USB Module connected to the mainboard, you can make two extra USB ports.

This mainboard is an ATX mainboard that uses a 4-layer printed circuit board and measures 305 x 244mm.

Checklist

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

Standard Items

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

Optional Accessories

You can purchase the following optional accessories for this mainboard.

- Extended USB module
- AMR v.90 56K Fax/Modem card

Features

Processor	• The mPGA Socket 478 • Accommodates Intel Pentium 4 CPUs • Supports up to 400 MHz Front-Side Bus
Memory	• Two 168-pin DIMM slots for SDRAM memory modules • Two 184-pin DIMM slots for DDR memory modules • Support SDRAM up to 133 MHz /DDR up to 333 MHz memory bus • Maximum installed memory is 2GB *Note:* You can NOT use SDRAM and DDR simultaneously.
Expansion Slots	• One AMR slot for a special audio/modem riser card • One 4xAGP slot for AGP 2.0-compliant interface • Five 32-bit PCI slots for PCI 2.2-compliant bus interface
Onboard IDE channels	• Primary and Secondary PCI IDE channels • Support for PIO (programmable input/output) modes • Support for Multiword DMA mode • Support for Bus Mastering and Ultra DMA 33/**66**/**100** mode
Power Supply and Power Management	• ATX power supply connector • Meets ACPI 1.0b and APM 1.2 requirements, keyboard power on/off • Supports RTC Alarm, Wake On Modem, AC97 Wake-Up and USB Wake-Up

VGA	This mainboard includes a 4xAGP slot that provides four times the bandwidth of the original AGP specification. AGP technology provides a direct connection between the graphics sub-system and memory so that the graphics do not have to compete for processor time with other devices on the PCI bus.
AC'97 Audio Codec	• Compliant AC'97 2.1 specification • Supports 18-bit ADC (Analog Digital Converter) and DAC (Digital Analog Converter) as well as 18-bit stereo full-duplex codec
Built-in Ethernet LAN (optional)	• Built-in **10BaseT/100BaseTX Ethernet LAN** • SiS961 Embedded Fast Ethernet MAC and onboard Realtek RTL8201 LAN PHY compliant with IEEE802.3u 100BASE-TX, 10BASE-T and ANSI X3.263 TP-PMD standards • Compliant with ACPI 1.0 and the Network Device Class Power Management 1.0 • High Performance provided by 100Mbps clock generator and data recovery circuit for 100Mbps receiver
Onboard I/O Ports	The mainboard has a full set of I/O ports and connectors: • Two PS/2 ports for mouse and keyboard • Two serial ports • One parallel port • One MIDI/game port • Four USB ports (two backpanel ports, onboard USB headers providing two extra ports) • Audio jacks for microphone, line-in and line-out
Hardware Monitoring	Built-in hardware monitoring for CPU & System temperatures, fan speeds and mainboard voltages.
Onboard Flash ROM	• Supports Plug and Play configuration of peripheral devices and expansion cards • Built-in virus protection using **Trend's ChipAwayVirus** provides boot process virus protection.

Dimensions	ATX from factor 305 x 244 mm

Mainboard Components
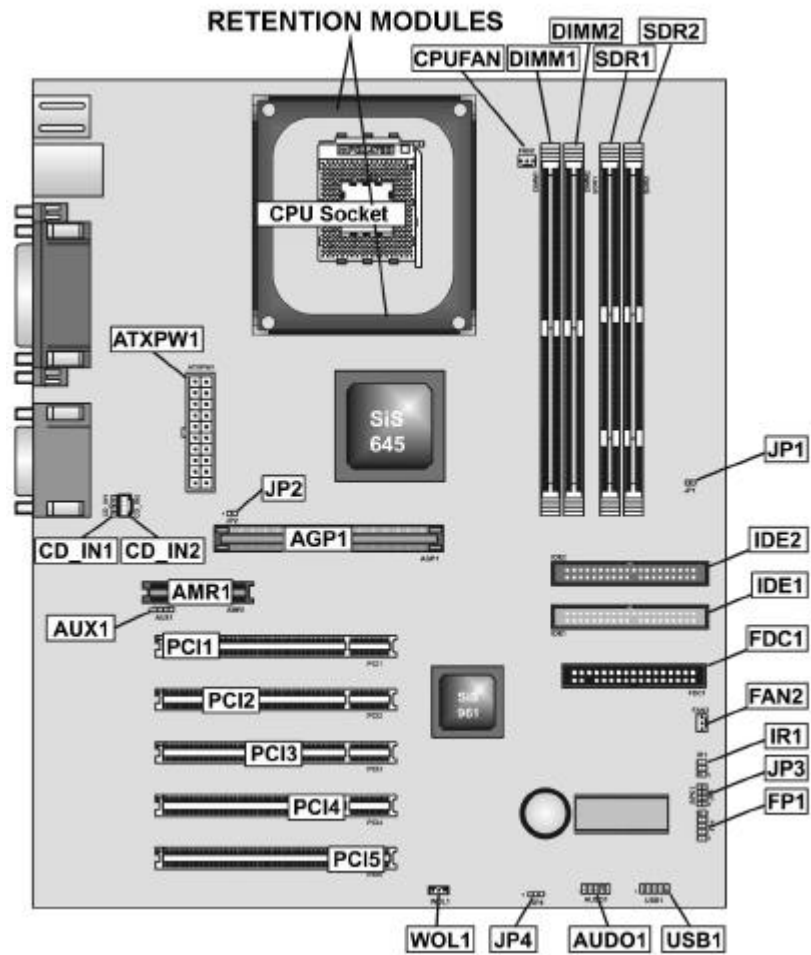
Choosing a Computer Case

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

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

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

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

Installing the Mainboard

Safety Precautions

Follow these safety precautions when installing the mainboard:

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

Quick Guide

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

The following table provides a reference for installing specific components:

Note: The appendix provides a quick reference for jumper settings.

Checking Jumper Settings

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

Setting Jumpers

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

Short   **Open**
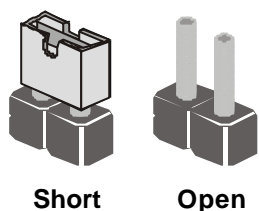
This illustration shows a 2-pin jumper. When the jumper cap is placed on both pins, the jumper is SHORT. If you remove the jumper cap, or place the jumper cap on just one pin, the jumper is OPEN.
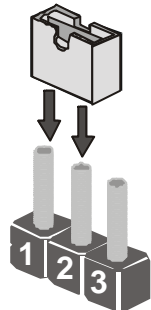
This illustration shows a 3-pin jumper. Pins 1 and 2 are SHORT.

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Checking Jumper Settings

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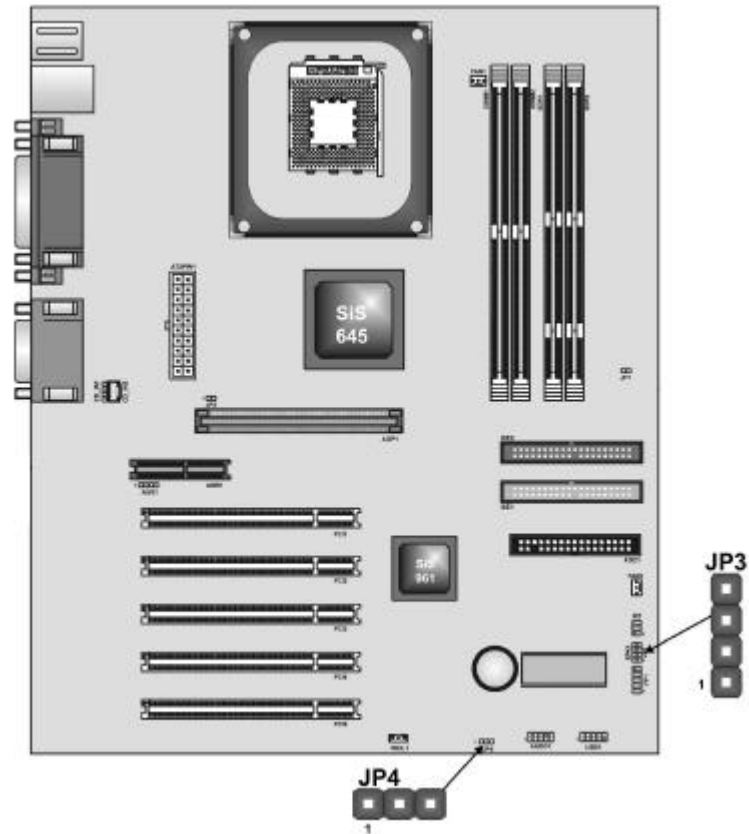
Jumper Settings

Jumper	Description	Setting (*default*)	
JP4	Clear CMOS jumper	*1-2: Normal* 2-3: Clear CMOS	**JP4** 1
JP3	Onboard LAN LED Jumper	*1-2: Link LED* *3-4: LED Active*	**JP3** 1

JP4: Clear CMOS Jumper

Use this jumper to clear the contents of the CMOS memory. You may need to clear the CMOS memory if the settings in the Setup Utility are incorrect and prevent your mainboard from operating. To clear the CMOS memory, disconnect all the power cables from the mainboard and then move the jumper cap into the CLEAR setting for a few seconds.

JP3: Onboard LAN LED Jumper

If you have a set indicator LEDs for the onboard LAN communication, you can connect the LED cable to the jumper JP3. Pins 1-2 are for LINK LED. Pins 3-4 are for 10/100 Mbps mode LED, the onboard LAN run in 100 Mbps mode when the LED lit.

Installing the Mainboard in a Case

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

This illustration shows an example of a mainboard being installed in a tower-type case: **Note:** Do not over-tighten the screws as this can stress the mainboard. Most system cases have mounting brackets installed in the case, which correspond to the holes in the mainboard. Place the mainboard over the mounting brackets and secure the mainboard onto the mounting brackets with screws.	2. Secure the mainboard with screws where appropriate. 1. Place the mainboard over the mounting brackets.
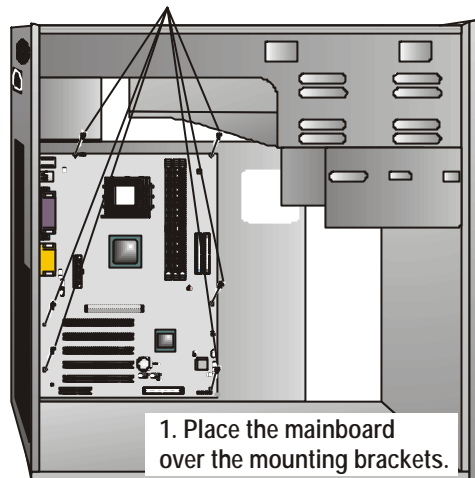
Ensure that your case has an I/O template that supports the I/O ports and expansion slots on your mainboard.

Connecting Case Components

After you have installed the mainboard into a case, you can begin connecting the mainboard components. Refer to the following:
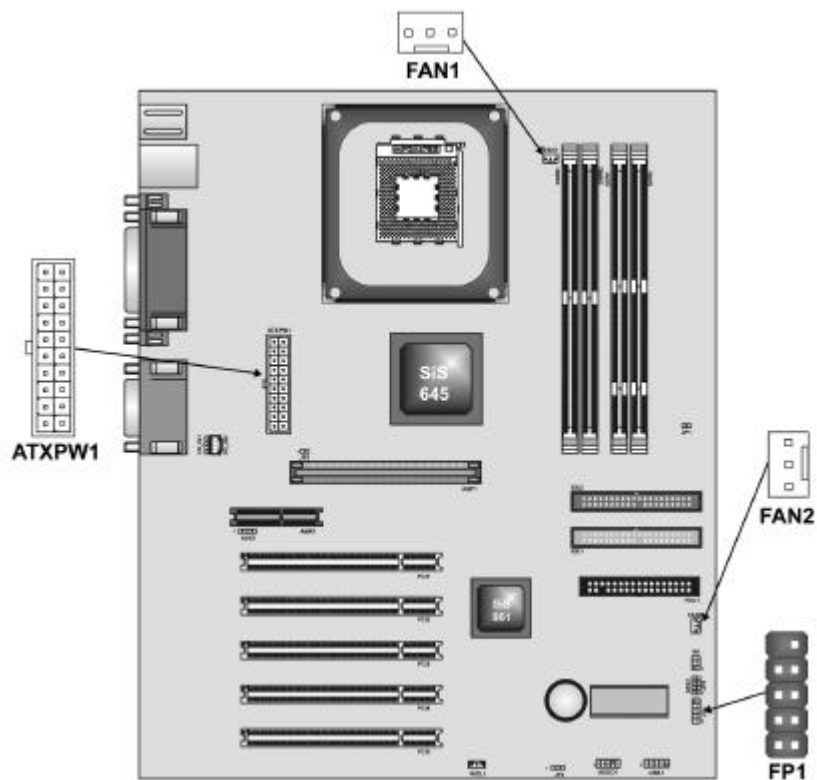
1. Connect the power connector from the power supply to the **ATX_PW1** connector on the mainboard.
2. If there is a cooling fan installed in the system chassis, connect the cable from the cooling fan to the **FAN2** fan power connector on the mainboard.
3. Connect the case switches and indicator LEDs to the **FP1** header.
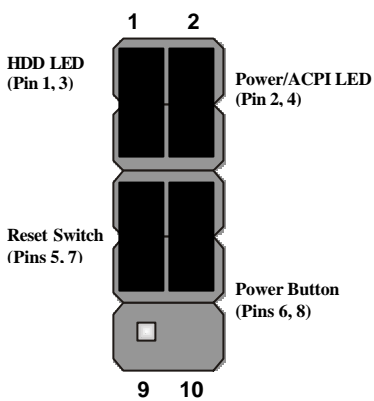
See the **FP1** connector pin assignments on the next page.

The FP1 Connector

FP1

This panel connector provides a set of switch and LED connectors found on ATX case. Refer to the table below for information.

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

HDD LED (Pin 1, 3)

Power/ACPI LED (Pin 2, 4)

Reset Switch (Pins 5. 7)

Power Button (Pins 6, 8)

1　2

9　10

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

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Installing Hardware

Installing the Processor

Caution: When installing a CPU heatsink and cooling fan make sure that you DO NOT scratch the mainboard or any of the surface-mount resistors with the clip of the cooling fan. If the clip of the cooling fan scrapes across the mainboard, you may cause serious damage to the mainboard or its components.

On most mainboards, there are small surface-mount resistors near the processor socket, which may be damaged if the cooling fan is carelessly installed.

Avoid using cooling fans with sharp edges on the fan casing and the clips. Also, install the cooling fan in a well-lit work area so that you can clearly see the mainboard and processor socket.

Before installing the Processor

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

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

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

CPU Installation Procedure

The following illustration shows CPU installation components:
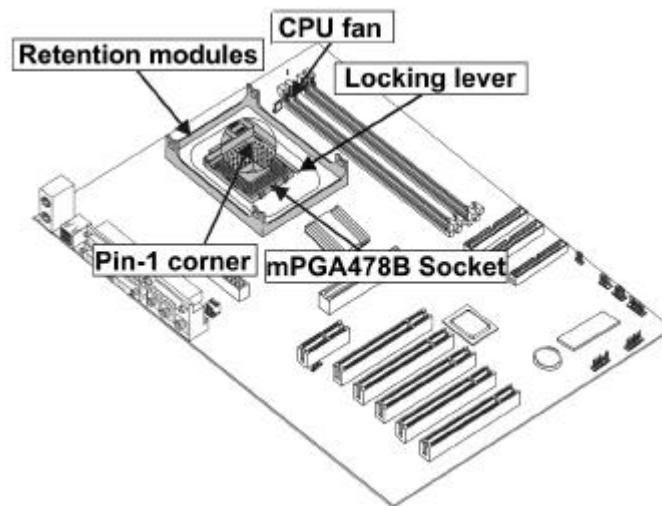
Note: The pin-1 corner on the CPU and socket is empty.

Follow these instructions to install the CPU:

1. Install and secure the Retention Module on the main-board.
2. Pull the CPU socket locking lever away from the socket to unhook it and raise the locking lever to the upright position.
3. Match the pin 1 corner on the CPU socket and the pin 1 corner on the processor and insert the processor into the socket. Do not use force.

Locking lever

Pin-1
corners
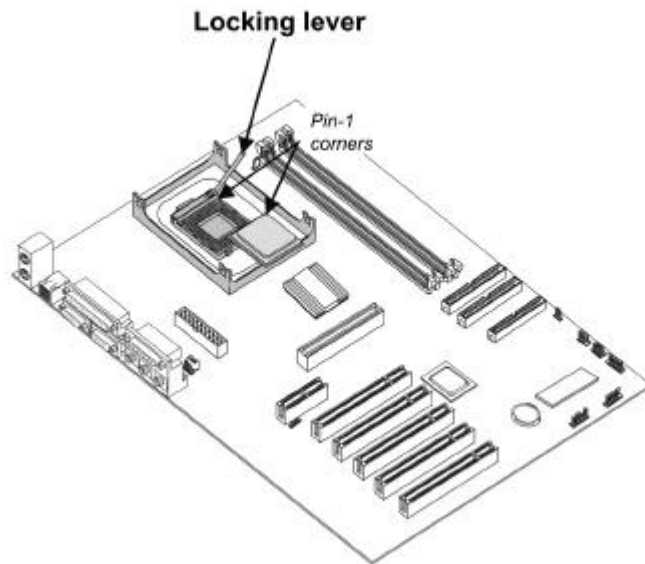
4. Swing the locking lever down and hook it under the latch on the edge of the socket.
5. Apply thermal grease to the top of the CPU.
6. Lower the CPU fan/heatsink unit onto the CPU and CPU socket and then use the retention module clamps to snap the fan/heatsink into place (refer to diagram below).

CPU Fan   CPU Fan Power Cable

Heatsink
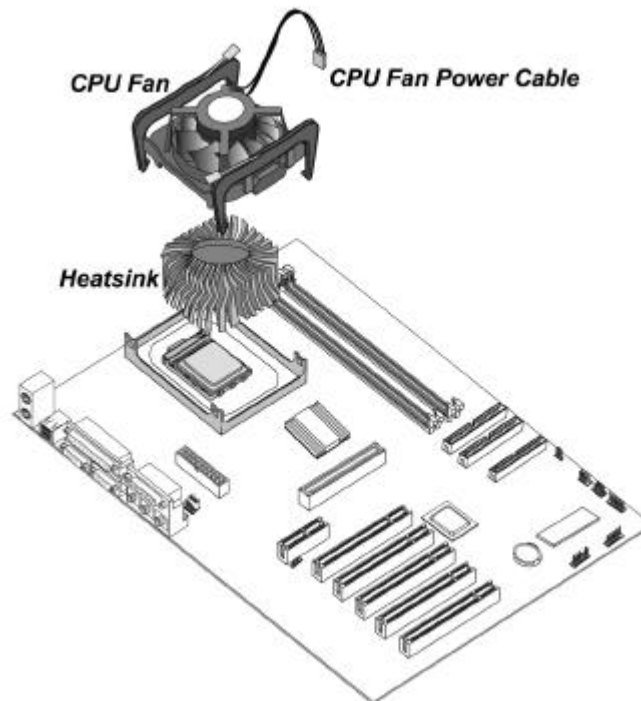
7. Plug the CPU fan power cable into the CPU cooling fan power supply on the mainboard.

CPU fan connector

FAN1
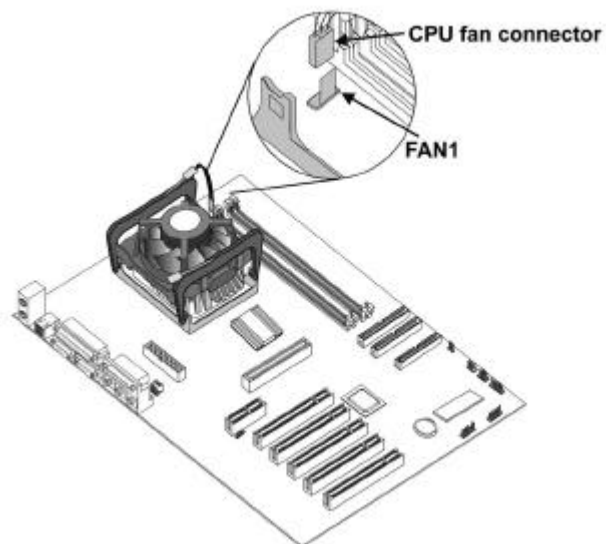
Installing Memory Modules

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

The CPU supports 100MHz front side bus. The SDRAM DIMMs operates over 100/133 MHz front side bus while the DDR SDRAM can operate on a 100/133/166 MHz front side bus.

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

The memory controller can support both DDR and SDRAM. It can offer bandwidth up to 2.7GB/s under DDR333 and 1GB/s under PC133. DDR SDRAM uses additional power and ground lines and requires 184-pin 2.5V unbuffered DIMM module rather than the 168-pin 3.3V unbuffered DIMMs used by SDRAM.

Installation Procedure

20
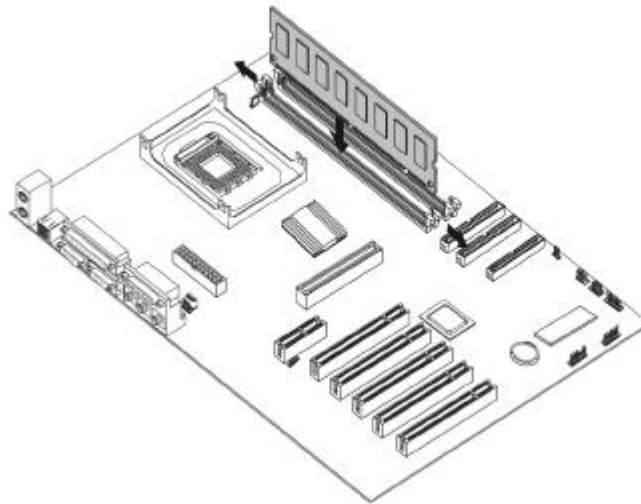
The mainboard accommodates two memory modules. You must install at least one module in any of the two slots. Each module can be installed with up to 1 GB of memory; total memory capacity is 2 GB.

Refer to the following to install the memory modules.

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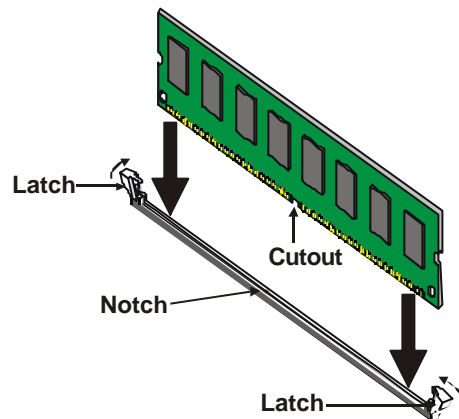
4. Install the DIMM module into the slot and press it firmly down until it seats correctly. The slot latches are levered upwards and latch on to the edges of the DIMM.
5. Install any remaining DIMM modules.

Installing a Hard Disk Drive/CD-ROM

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

About IDE Devices

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

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

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

About UltraDMA

This mainboard supports Ultra DMA 33/66/100. UDMA is a technology that accelerates the performance of devices in the IDE channel. To maximize performance, install IDE devices that support UDMA and use 80-pin IDE cables that support UDMA 33/66/100.

Installing a Hard Disk Drive

1. Install the hard disk drive into the drive cage in your ATX system case.
2. Plug the IDE cable into IDE1 (A).
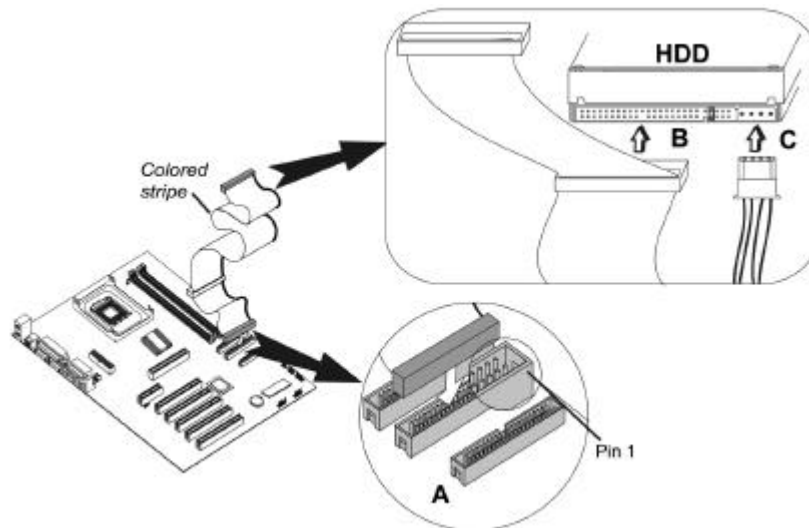
> **Note:** Ribbon cable connectors are usually keyed so that they can only be installed correctly on the device connector. If the connector is not keyed, make sure that you match the pin-1 side of the cable connector with the pin-1 side of the device connector. Each connector has the pin-1 side clearly marked. The pin-1 side of each ribbon cable is always marked with a colored stripe on the cable.

3. Plug an IDE cable connector into the hard disk drive IDE connector (B). It doesn't matter which connector on the cable you use. Ensure that the pin-1 side of the cable is matched with the pin-1 side of the connector. Refer to the previous note.
4. Plug a power cable from the case power supply into the power connector on the hard disk drive (C).

When you first start up your system, the BIOS should automatically detect your hard disk drive. If it doesn' t, enter the Setup Utility and use the IDE Hard Disk Auto Detect feature to configure the hard disk drive that you have installed.

Installing a CD-ROM/DVD Drive

1. Install the CD-ROM/DVD drive into the drive cage in your ATX system case.
2. Plug the IDE cable into IDE1 (A). If you have already installed an HDD, use the other connector on the IDE cable.

Note: Ribbon cable connectors are usually keyed so that they can only be installed correctly on the device connector. If the connector is not keyed, make sure that you match the pin-1 side of the cable connector with the pin-1 side of the device connector. Each connector has the pin-1 side clearly marked. The pin-1 side of each ribbon cable is always marked with a colored stripe on the cable.

3. Plug an IDE cable connector into the CD-ROM/DVD drive IDE connector (B). It doesn't matter which connector on the cable you use. Ensure that the pin-1 side of the cable is matched with the pin-1 side of the connector. Refer to the previous note.
4. Use the audio cable provided with the CD-ROM/DVD drive to connect to the mainboard CD-in connector CD1 or CD2.

5. Plug a power cable from the case power supply into the power connector on the CD-ROM/DVD drive (C).

When you first start up your system, the BIOS should automatically detect your CD-ROM/DVD drive. If it doesn't, enter the Setup Utility and configure the CD-ROM/DVD drive that you have installed.

Installing a Floppy Diskette Drive

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

1. Install the FDD into the drive cage in your ATX system case.
2. Plug the FDD cable into FDD1 (A).
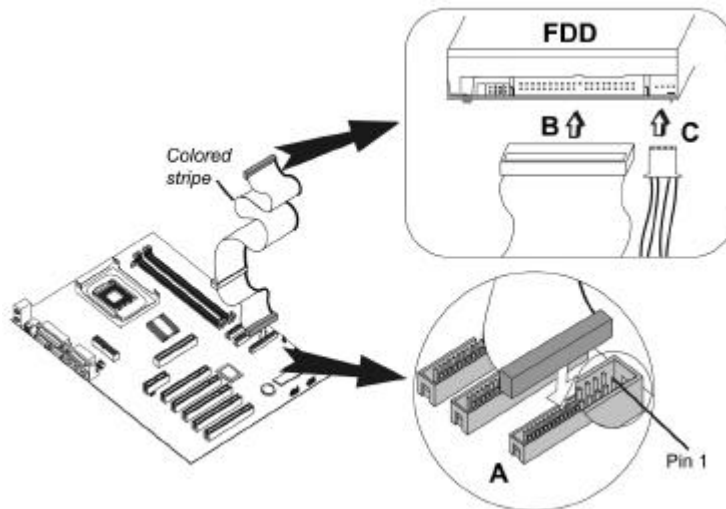
> **Note:** Ribbon cable connectors are usually keyed so that they can only be installed correctly on the device connector. If the connector is not keyed, make sure that you match the pin-1 side of the 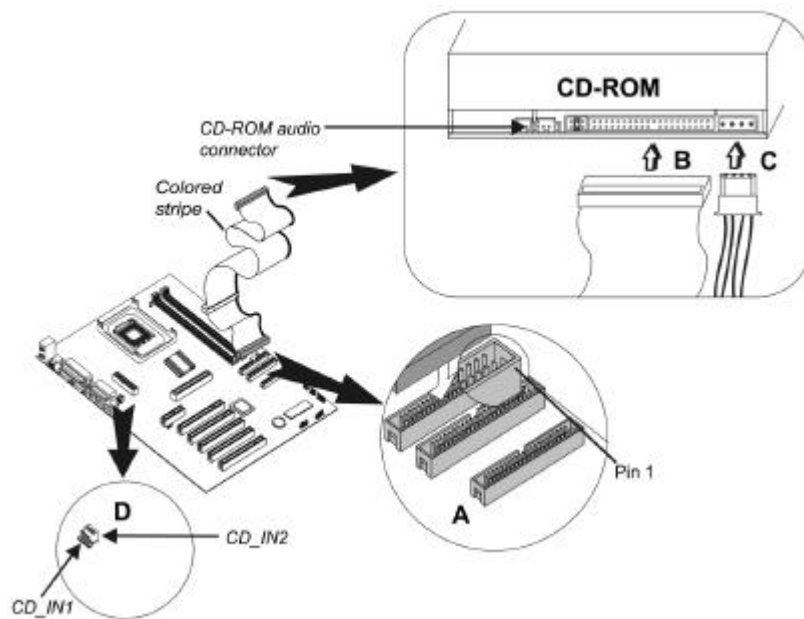cable connector with the pin-1 side of the device connector. Each connector has the pin-1 side clearly marked. The pin-1 side of each ribbon cable is always marked with a colored stripe on the cable.

3. Plug the correct connector on the FDD cable for the 5.25-inch or 3.5-inch drive into the FDD connector (B).
4. Plug a power cable from the case power supply into the power connector on the FDD (C).

When you first start up your system, go immediately to the Setup Utility to configure the floppy diskette drives that you have installed.

Installing Add-on Cards

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

4xAGP Slot   The 4xAGP slot is used to install a graphics adapter that supports the 4xAGP specifications and has a 4xAGP edge connector.

PCI Slots   PCI slots are used to install expansion cards that have the 32-bit PCI interface.

AMR Slot   The AMR (Audio Modem Riser) slot is an industry standard slot that allows for the installation of a special audio/modem riser card. Different territories have different regulations regarding the specifications of a modem card. You can purchase an AMR card that is approved in your area and install it directly into the AMR slot.

> **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.
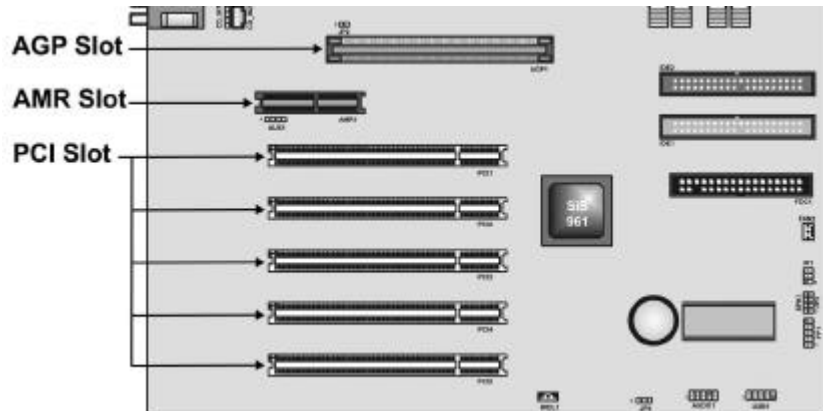
1. Remove a blanking plate from the system case corresponding to the slot you are going to use.
2. Install the edge connector of the add-on card into the expansion slot. Ensure that the edge connector is correctly seated in the slot.
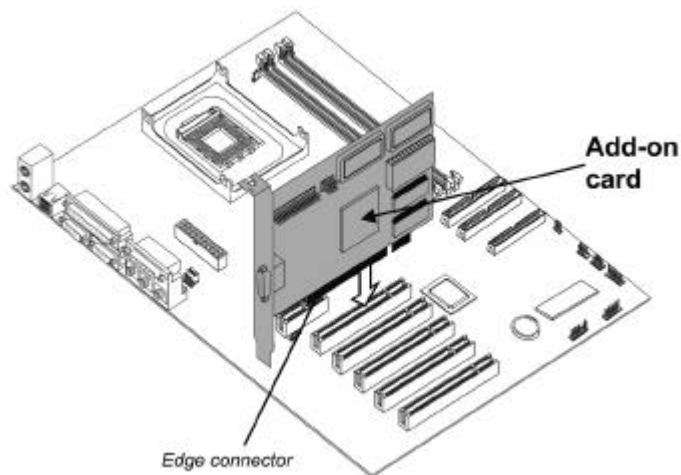
3. Secure the metal bracket of the card to the system case with a screw.

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 main-board's optional devices:
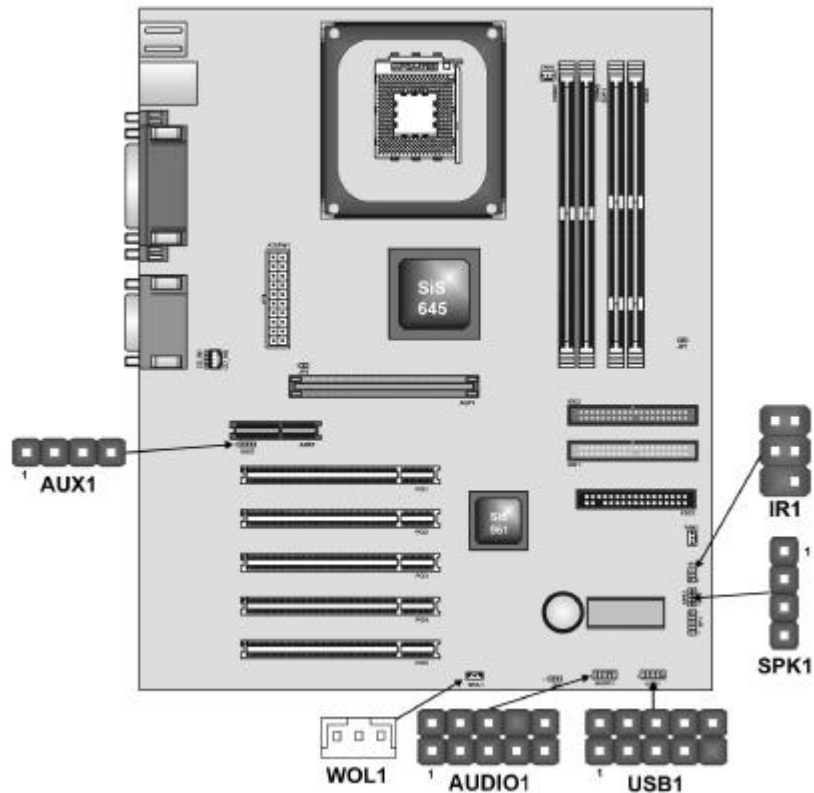
AUDIO1: Front panel MIC/Speaker Out header

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

Pin	Signal Name	Pin	Signal Name
1	MICIN	2	GND
3	MIC-P 3	4	VCC
5	FPOUT-R 5	6	RET-R
7	NC	8	KEY
9	FPOUT-L	10	RET-L

SPK1: Speaker Connector

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

USB1: Front panel USB headers

The mainboard has USB ports installed on the rear edge I/O port array. Some computer cases have a special module that mounts USB ports at the front of the case. If you have this kind of case, use auxiliary USB connectors USB1 to connect the front-mounted ports to the mainboard.

Pin	Signal Name	Pin	Signal Name
1	VCC (+5V)	2	VCC (+5V)
3	Data1-	4	Data2-
5	Data1+	6	Data2+
7	GND	8	GND
9	Key pin	10	OC# (over current detect)

WOL1: Wake On LAN

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

Pin	Signal Name
1	5VSB
2	Ground
3	SENSE

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

IR1: Infrared port

The mainboard supports a Infrared (IR1) data port. hfrared ports allow the wireless exchange of information between your computer and similarly equipped devices such as printers, laptops, Personal Digital Assistants (PDAs), and other computers.

Pin	Signal Name	Pin	Signal Name
1	FIR	4	Ground
2	Key	5	IRTX
3	+5V	6	IRRX

AUX1: Auxilliary header

On the mainboard, locate the 4-pin Aux-In header AUX1and connect the cable to the connector.

Connecting I/O Devices

The backplane of the mainboard has the following I/O ports:
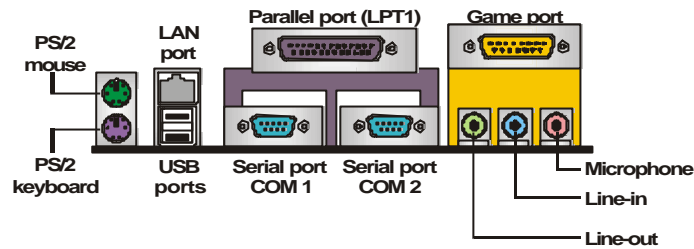
PS/2 Mouse	Use the upper PS/2 port to connect a PS/2 pointing device.
PS/2 Keyboard	Use the lower PS/2 port to connect a PS/2 keyboard.
LAN Port (optional)	Use the LAN port to connect to the network.
USB Ports	Use the USB ports to connect USB devices.
LPT1	Use LPT1 to connect printers or other parallel communications devices.
COM1/2	Use the COM ports to connect serial devices such as mice or fax/modems. COM1 is identified by the system as COM1/3. COM2 is identified by the system as COM2/4.
Game Port	Use the game port to connect a joystick or a MIDI device.
Audio Ports	Use the three audio ports to connect audio devices. The left side jack is for a stereo line-out signal. The middle jack is for a stereo line-in signal. The right side jack is for a microphone.

External Connector Color Coding

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

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

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

Using BIOS

About the Setup Utility

The BIOS Setup Utility records computer's settings and information, such as date and time, type of installed hardware, and various configuration settings. Your computer applies the information to initialize all the components when booting up, and basic functions of overall coordination between system components.

If the Setup Utility configuration is incorrect, it may cause system's malfunction. It can even keep your computer from booting properly. If it happens, you can use the clear CMOS jumper to clear the CMOS memory that has stored the configuration information.

You can run the setup utility and manually make changes to the configuration. You might need to do this to configure some of the hardware that you install on or connect to the mainboard, such as the CPU, system memory, disk drives, etc.

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 AMI BIOS Setup Utility:

AMIBIOS SIMPLE SETUP UTILITY – VERSION 1.21.05

(C) 2000 American Megatrends, Inc. All Rights Reserved

Standard CMOS Setup	Features Setup
Advanced Setup	CPU PnP Setup
Power Management Setup	Hardware Monitor
PCI / Plug and Play Setup	Change Password
Load Optimal Settings	Exit
Load Best Performance Settings	

Esc :   Quit   - ‾ ¬ ® : Select Item   (Shift)F2 : Change Color   F5 : Old Values
F6 :   Optimal values   F7 : Best performance values   F10 : Save&Exit

Standards COMOS setup for changing time, date, hard disk type, etc.

You can use the cursor arrow keys to highlight any of the options on the main menu page. Press **Enter** to select the highlighted option. To leave the setup utility, press the **Escape** key. To cycle through the Setup Utility's optional color schemes hold down the **Shift** key and press **F2**.

Some of the options on the main menu page lead to tables of items with installed values. In these pages, use the cursor arrow keys to highlight the items, and then use the **PgUp** and **PgDn** keys to cycle through the alternate values for each of the items. Other options on the main menu page lead to dialog boxes which require you to answer Yes or No by hitting the **Y** or **N** keys.

If you have already made changes to the setup utility, press **F10** to save those changes and exit the utility. Press **F5** to reset the changes to the original values. Press **F6** to install the setup utility with a set of default values. Press **F7** to install the setup utility with a set of high-performance values.

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 Setup Page

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

```
                    AMIBIOS SETUP – STANDARD CMOS SETUP
            (C) 2000  American Megatrends, Inc. All Rights Reserved

Date  (mm/dd/yy) : Wed Sep.19, 2001
Time  (hh/mm/ss) :  17:01:35
                                                   LBA    Blk    PIO    32Bit
              Type            Size  Cyln  Head  WPcom  Sec Mode  Mode  Mode  Mode
Pri Master  :  Auto                                           On
Pri Slave   :  Auto                                           On
Sec Master :  Auto                                           On
Sec Slave  :  Auto                                           On

Floppy Drive A :  1.44 MB 3 1/2
Floppy Drive B :  Not Installed

Month :  Jan – Dec                                     ESC  :  Exit
  Day :  01 – 31                                       ↑↓  : Select Item
  Year :  1901 – 2099                              PU/PD/+/- :  Modify
                                                    (Shift)F2 :  Color
                                                   F3 : Detect All HDD
```

Date and Time

The Date and Time items show the current date and time on the computer. If you are running a Windows OS, these items are automatically updated whenever you make changes to the Windows Date and Time Properties utility.

IDE Pri Master/Slave and IDE Sec Master/Slave

Use these items to configure devices connected to the Primary and Secondary IDE channels. To configure an IDE hard disk drive, choose *Auto*. If the *Auto* setting fails to find a hard disk drive, set it to *User*, and then fill in the hard disk characteristics (Size, Cyls, etc.) manually. If you have a CD-ROM drive, select the setting *CDROM*. If you have an ATAPI device with removable media (e.g. a ZIP drive or an LS-120), select *Floptical*.

Floppy Drive A and Floppy Drive B

Use these items to set up size and capacity of the floppy diskette drive(s) installed in the system.

Advanced Setup Page

This page sets up more advanced information about your system. Be more careful to this page. Any changes can affect the operation of your computer.

```
┌─────────────────────────────────────────────────────────────────┐
│              AMIBIOS SETUP – ADVANCED SETUP                      │
├─────────────────────────────────────────────────────────────────┤
│        (C) 2000  American Megatrends, Inc. All Rights Reserved   │
├──────────────────────────────┬──────────────────────────────────┤
│ Quick Boot            Enabled │                                  │
│ 1st Boot Device       IDE-0   │                                  │
│ 2nd Boot Device       Floppy  │                                  │
│ 3rd Boot Device       CDROM   │                                  │
│ Try Other Boot Devices Yes    │                                  │
│ S.M.A.R.T. for Hard Disks Disabled │                             │
│ BootUp Num-Lock       On      │                                  │
│ Floppy Drive Swap     Disabled │                                 │
│ Floppy Drive Seek     Disabled ├──────────────────────────────── │
│ PS/2 Mouse Support    Enabled │                                  │
│ Password Check        Setup   │ ESC : Quit      ─ ⁻ ¬  ® : Select Item │
│ Boot To OS/2 > 64MB   No      │ F1   : Help      PU/PD/+/- : Modify │
│ L2 Cache              Enabled │                                  │
│ System BIOS Cacheable Enabled │ F5   : Old Values (Shift)F2 : Color │
│ Graphic Win Size      4M      │                                  │
│ DRAM CAS# Latency     3T      │ F6   : Load BIOS Defaults         │
│ Auto Detect DIMM/PCI Clk Disabled │ F7   : Load Setup Defaults    │
│ Spread Spectrum       Disabled │                                 │
└──────────────────────────────┴──────────────────────────────────┘
```

Quick Boot

If you enable this item, the system starts up more quickly be elimination some of the power on test routines.

1st Boot Device/ 2nd Boot Device/ 3rd Boot Device

Use these items to determine the device order the computer uses to look for an operating system to load at start-up time.

Try Other Boot Device

If you enable this item, the system will also search for other boot devices if it fails to find an operating system from the first two locations.

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S.M.A.R.T. for Hard Disks

Enable this item if any IDE hard disks support the S.M.A.R.T. (Self-Monitoring, Analysis and Reporting Technology) feature.

BootUp NumLock

This item determines if the Num Lock key is active or inactive at system start-up time.

Floppy Drive Swap

If you have two diskette drives installed and you enable this item, drive A becomes drive B and drive B becomes drive A.

Floppy Drive Seek

If you enable this item, your system will check all floppy disk drives at start up. Disable this item unless you are using an old 360KB drive.

PS/2 Mouse Support

Enable this item if you plan to use a PS/2 mouse.

Password Check

If you have entered a password for the system, use this item to determine, if the password is required to enter the Setup Utility (*Setup*) or required both at start-up and to enter the Setup Utility (*Always*).

Boot to OS/2 > 64MB

Enable this item if you are booting the OS/2 operating system and you have more than 64MB of system memory installed.

L2 Cache

Leave these items enabled since all the processors that can be installed on this board have internal L2 cache memory.

System BIOS Cacheable

If you enable this item, a segment of the system BIOS will be copied to main memory for faster execution.

Graphic Win Size

This item defines the size of aperture if you use a graphic adapter.

DRAM CAS# Latency

This item determines the operation of DRAM memory CAS (column address strobe). It is recommended that you leave this item at the default value. The 3T setting requires faster memory that specifically supports this mode.

Auto detect DIMM/PCI Clk

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

Spread Spectrum

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

Power Management Setup Page

This page sets some of the parameters for system power management operation.

```
          AMIBIOS SETUP – POWER MANAGEMENT SETUP
        (C) 2000 American Megatrends, Inc. All Rights Reserved

ACPI Aware O/S            Yes
Power Management/APM     Enabled
Suspend Time Out(Minute) Disabled
Hard Disk Time out       Disabled
Resume on RTC Alarm      Disabled
RTC Alarm Date           15
RTC Alarm Hour           12
RTC Alarm Minute         30
RTC Alarm Second         30         ESC : Quit       -  ‾ ¬   ® : Select
LAN/Ring Power On        Disabled   Item
Keyboard Power On        Disabled
                                    F1  : Help       PU/PD/+/- : Modify

                                    F5  : Old Values (Shift)F2  : Color

                                    F6  : Load BIOS Defaults

                                    F7  : Load Setup Defaults
```

ACPI Aware O/S

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

Power Management

Use this item to enable or disable a power management scheme. If you enable power management, you can use the items below to set the power management operation. Both APM and ACPI are supported.

Suspend Time Out

This sets the timeout for Suspend mode in minutes. If the time selected passes without any system activity, the computer will enter power-saving Suspend mode.

Hard Disk Time Out

This sets the timeout to power down the hard disk drive, if the time selected passes without any hard disk activity.

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Resume on RTC Alarm/Date/Hour/Minute/Second

The system can be turned off with a software command. If you enable this item, the system can automatically resume at a fixed time based on the system's RTC (realtime clock). Use the items below this one to set the date and time of the wake-up alarm. You must use an ATX power supply in order to use this feature.

LAN/Ring Power On

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

Keyboard Power On

If you enable this item, you can turn the system on and off by pressing hot keys on the keyboard. You must enable the Keyboard Power On jumper and use an ATX power supply in order to use this feature.

PCI / Plug and Play Setup Page

This page sets some of the parameters for devices installed on the PCI bus and devices that use the system plug and play capability.

```
                AMIBIOS SETUP – PCI / PLUG AND PLAY SETUP
          (C) 2000 American Megatrends, Inc. All Rights Reserved

 Plug and Play Aware O/S      Yes
 Primary Graphics Adapter     AGP
 Allocate IRQ for PCI VGA     Yes

                                   ESC : Quit         - ¯ ¬ ® : Select Item
                                   F1  : Help      PU/PD/+/- :  Modify
                                   F5  : Old Values  (Shift)F2  : Color
                                   F6  : Load BIOS Defaults
                                   F7  : Load Setup Defaults
```

Plug and Play Aware O/S

Enable this item if you are using an O/S that supports Plug and Play such as Windows 95 or 98.

Primary Graphics Adapter

This item indicates if the primary graphics adapter uses the PCI or the AGP bus. The default AGP setting still lets the on-board display work and allows the use of a second display card installed in an AGP slot.

Allocate IRQ for PCI VGA

If this item is enabled, an IRQ will be assigned to the PCI VGA graphics system. You set this value to No to free up an IRQ.

Load Optimal Settings

If you select this item and press **Enter** a dialog box appears. If you press **Y**, and then **Enter**, the Setup Utility loads a set of fail-safe default values. These default values are not very demanding and they should allow your system to function with most kinds of hardware and memory chips.

Load Best Performance Settings

If you select this item and press **Enter** a dialog box appears. If you press **Y**, and then **Enter**, the Setup Utility loads a set of best-performance default values. These default values are quite demanding and your system might not function properly if you are using slower memory chips or other low-performance components.

Features Setup Page

This page sets some of the parameters for peripheral devices connected to the system.

```
┌─────────────────────────────────────────────────────────────────────────┐
│                  AMIBIOS SETUP – FEATURES SETUP                           │
│        (C) 2000 American Megatrends, Inc. All Rights Reserved             │
├───────────────────────────────────┬─────────────────────────────────────┤
│ OnBoard FDC              Enabled   │                                     │
│ OnBoard Serial PortA     3F8h/COM1 │                                     │
│ OnBoard Serial PortB     2F8h/COM2 │                                     │
│  Serial Port2 Mode       Normal    │                                     │
│ OnBoard Parallel Port    378h      │                                     │
│   Parallel Port Mode     ECP       │                                     │
│   Parallel Port IRQ      7         │                                     │
│   Parallel Port DMA      3         │ ESC : Quit      - ‾ ¬  ® : Select    │
│ OnBoard Game Port        201h      │ Item                                │
│ OnBoard MIDI Port        300h      │ F1  : Help       PU/PD/+/- : Modify  │
│   MIDI Port IRQ          10        │ F5  : Old Values  (Shift)F2  : Color │
│ OnBoard PCI IDE          Both      │                                     │
│ Audio Device             Enabled   │ F6  : Load BIOS Defaults             │
│ Modem Device             Enabled   │ F7  : Load Setup Defaults            │
│ Ethernet Device          Enabled   │                                     │
│ Onboard USB Function     Enabled   │                                     │
│ USB Function for DOS     Disabled  │                                     │
└───────────────────────────────────┴─────────────────────────────────────┘
```

OnBoard FDC

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

OnBoard Serial Port A/B

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

Serial Port2 Mode

Use this item to allocate the resources of the second serial port. Under Normal, the resources are allocated to the on-board serial port. Under ASKIR or IrDA, the resources are allocated to the onboard IR port.

OnBoard Parallel Port

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

Parallel Port Mode

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

Parallel Port IRQ

Use this item to assign IRQ to the parallel port.

Parallel Port DMA

Use this item to assign a DMA channel to the parallel port.

OnBoard Game Port

This item enables or disables the I/O address for the game port.

OnBoard MIDI Port

Use this item to enable or disable the onboard MIDI port, and to assign a port address.

MIDI Port IRQ

Use this item to assign IRQ 7 to the parallel port.

OnBoard PCI IDE

Use this item to enable or disable either or both of the on-board Primary and Secondary IDE channels.

Audio Device

This item enables or disables the onboard AC' 97 audio chip.

Modem Device

This item enables or disables the onboard AC' 97 modem chip.

Ethernet Device

This item enables or disables the onboard Ethernet LAN.

Onboard USB Function

Enable this item if you plan to use the USB ports on this mainboard.

USB Function for DOS

Enable this item if you plan to use the USB ports on this mainboard in a DOS environment.

CPU PnP Setup Page

This page helps you manually configure the mainboard for the CPU. The system will automatically detect the type of installed CPU and make the appropriate adjustments to the items on this page.

```
            AMIBIOS SETUP – CPU PnP SETUP
        ©2000 American Megatrends, Inc. All Rights Reserved

 CPU Type              Intel P4
 CPU/DRAM Speed        100/133 MHz
 CPU Core Voltage      1.712V
 CPU Ratio             x18(if P4 1.8G)
 CPU Frequency         100 MHz
 DRAM Frequency        133 MHz


                             ESC : Quit        -  ¯ ¬  ® : Select
                          Item
                             F1  : Help        PU/PD/+/- : Modify
                             F5  : Old Values  (Shift)F2  : Color
                             F6  : Load Optimal values
                             F7  : Load Best performance values
```

CPU Type/Core Voltage/Ratio/Frequency

These items show the type, core voltage, ratio and frequency of CPU installed in your system.

CPU/DRAM Speed/Frequency

These items decide CPU/DRAM speed/frequency installed in your system.

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Hardware Monitor Page

This page sets some of the parameters for the hardware monitoring function of this mainboard.

```
                    AMIBIOS SETUP – HARDWARE MONITOR
            (C) 2000 American Megatrends, Inc. All Rights Reserved

*** System  Hardware  ***
Vcore                        1.632V
Vcc 2.5V/Vcc3.3V             2.496V
Vcc 3.3V                     3.392V
Vcc                          4.972V
+12V                         11.968V
SB3V                         3.264V
-12V                         -0.907V
SB5V                         5.053V
VBAT                         3.488V      ESC : Quit          - ¯ ¬  ® : Select
SYSTEM Fan Speed             0 RPM       Item
CPU Fan Speed                5400 RPM    F1   : Help        PU/PD/+/- : Modify
Power Temperature            33°C/91°F
SYSTEM Temperature           40°C/104°F  F5   : Old Values  (Shift)F2  : Color
CPU Temperature              35°C/95°F   F6   : Load BIOS Defaults

                                         F7   : Load Setup Defaults
```

CPU/System Temperature

These items display CPU and system temperature measurement.

FANs & Voltage Measurements

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

Change Password

If you highlight this item and press Enter, a dialog box appears that you can enter a Supervisor password. You can enter no more than six letters or numbers. Press Enter after you have typed in the password. There will be the second dialog box asking you to retype the password for confirmation. Press Enter after you have retyped it correctly. Then, the password is required for the access to the Setup Utility or for it at start-up, depending on the setting of the Password Check item in Advanced Setup.

Exit

Highlight this item and press Enter to save the changes that you have made in the Setup Utility configuration and exit the program. When the Save and Exit dialog box appears, press Y to save and exit, or press N to exit without saving.

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

Using the Mainboard Software

About the Software CD-ROM

The support software CD-ROM that is included in the main-board 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 lo-cation for your mainboard version. More information on some programs is available in a README file and PATH.DOC file, located in the same directory as the software.

Note: Do not install software from a folder that is not specified for use with your mainboard.

Before installing any software, always inspect the folder for files named README.TXT, PATH.DOC, or something similar. These files may contain important information that is not in-cluded in this manual.

Auto-installing under Windows 98

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

Note: If the Auto-install CD-ROM does not work on your system, you can still install drivers through the file manager for your OS (for example, Windows Explorer). Double-click the file "setup.exe" in the root directory. Refer to Path.doc file for Installation Notes later in this chapter for information on installing individual programs.

When you insert the CD-ROM disc in the CD-ROM drive, the autorun feature automatically displays the Auto Setup Window:
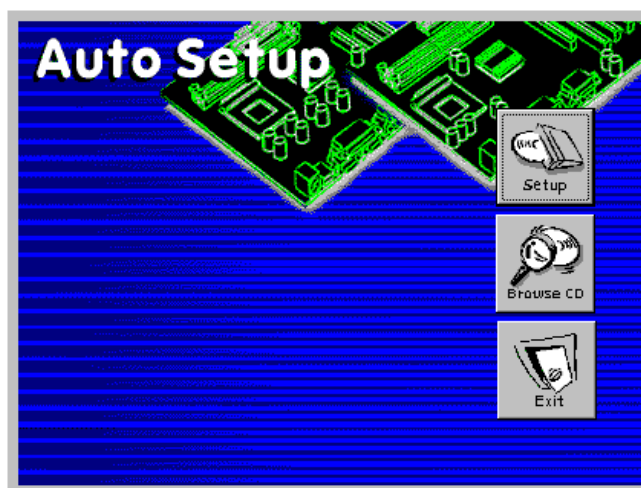
The screen has three buttons on it: *Setup*, *Browse CD*, and *Exit*.

Setup

Click the Setup button to run the software and driver installation program.

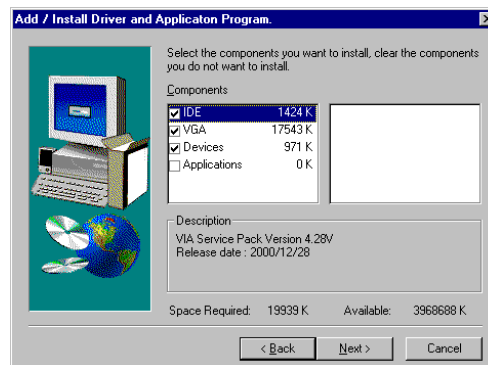Follow these instructions to install device drivers and software for the mainboard:

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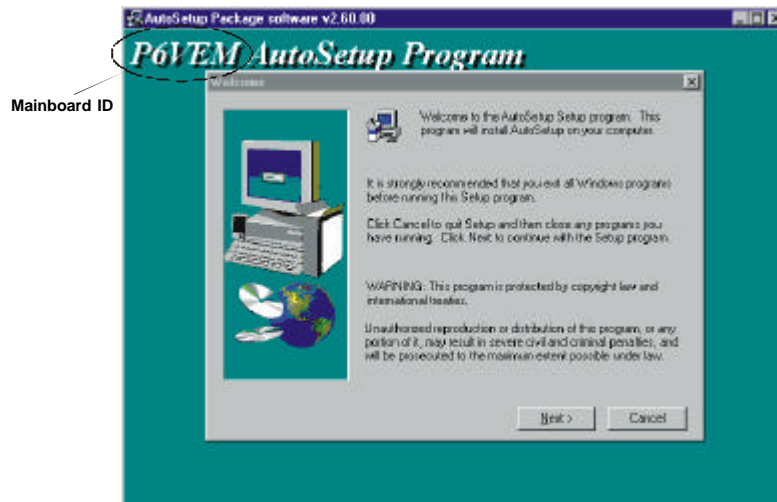
Mainboard ID

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

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

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

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

4. Click **Next** to run the Installation Wizard. An item installation screen appears:
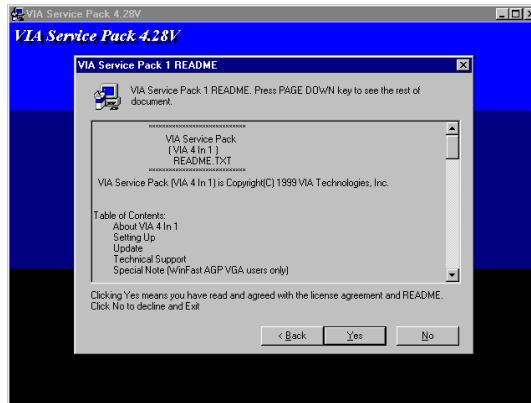
5. Follow the instructions on the screen to install the items.

Drivers and software are automatically installed in sequence. Follow the onscreen instructions, confirm commands, and al-low the computer to restart after each installation.

Browse CD

The Browse CD button is the standard Windows command that allows you to open Windows Explorer and show the contents of the support CD.

Before installing the software from Windows Explorer, look for a file named README.TXT, PATH.DOC or something similar. This file may contain important information to help you install the software correctly.

Some software is filed in separate folders for different operating systems, such as DOS, WIN NT, or WIN98/95. Always go to the correct folder for the kind of OS you are using.

To install the software, execute a file named SETUP.EXE or INSTALL.EXE by double-clicking the file and then following the instructions on the screen.

Exit

The Exit button closes the Auto Setup window.

Drivers Manual Installation

Insert the CD in the CD-ROM drive and look for the **Path.doc** file. This file contains all the necessary information needed to begin the manual installation.

Look for the chipset and mainboard model; then follow the directory and path to begin installing the drivers.

Utility Software Reference

All the utility software available from this page is Windows compliant. It is provided only for the convenience of the users. The following software is furnished under license and may only be used or copied in accordance with the terms of the license.

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

AMI Flash Memory Utility

This utility lets you erase the system BIOS stored on a Flash Memory chip on the mainboard, and lets you copy an updated version of the BIOS to the chip. Proceed with caution when using this program. If you erase the current BIOS and fail to write a new BIOS, or write a new BIOS that is incorrect, your system will malfunction. Refer to Chapter 3, *Using BIOS* for more information.

PC-CILLIN

The PC-CILLIN software program provides anti-virus protection for your system. This program is available for Windows 2000/ME/98SE and Windows NT. 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.

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

MediaRing Talk – Telephony Software

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

Super Voice – Fax/Modem Software

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

CD Ghost

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

\UTILITY\CDGHOST\ENG\CDGHOST

Recovery Genius

The Recovery Genius software program is an innovative windows application system that protects your hard disk drive from virus intrusion, accidental deletions and from system corruption. To install the Recovery Genius software program run SETUP.EXE from the following directory:

\UTILITY\RECOVERY GENIUS\ENG\RECOVERYGENIUS

Language Genius

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

\UTILITY\LANGUAGE GENIUS\ENG\LANGUAGEGENIUS

PageABC

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

This concludes Chapter 4.

Setting Jumpers

Jumper	Description	Setting (*default*)	
JP4	Clear CMOS jumper	*1-2: Normal* 2-3: Clear CMOS	**JP4** 1 ⬛▬▬
JP3	Onboard LAN LED Jumper	*1-2: Link LED* *3-4: LED Active*	**JP3** ⬛ ⬛ ▮ 1

JP4: Clear CMOS Jumper

Use this jumper to clear the contents of the CMOS memory. You may need to clear the CMOS memory if the settings in the Setup Utility are incorrect and prevent your mainboard from operating. To clear the CMOS memory, disconnect all the power cables from the mainboard and then move the jumper cap into the CLEAR setting for a few seconds.
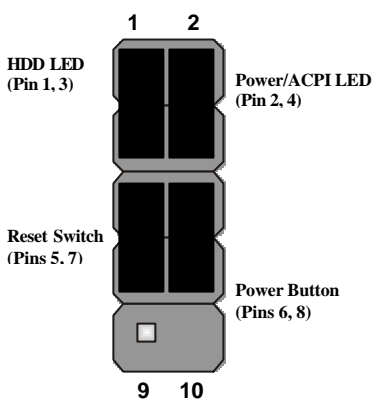
JP3: Onboard LAN LED Jumper

If you have a set indicator LEDs for the onboard LAN communication, you can connect the LED cable to the jumper JP3. Pins 1-2 are for LINK LED. Pins 3-4 are for 10/100 Mbps mode LED, the onboard LAN run in 100 Mbps mode when the LED lit.

The FP1 Connector

FP1

This panel connector provides a set of switch and LED connectors found on ATX case. Refer to the table below for information.

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

1   2

HDD LED
(Pin 1, 3)

Power/ACPI LED
(Pin 2, 4)

Reset Switch
(Pins 5. 7)

Power Button
(Pins 6, 8)

9   10

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