

# MSI

MICRO-STAR INTERNATIONAL

## **MS-6395 ATX Mainboard**



**Version 1.0**  
**G52-MA00307**

Manual Rev : 1.0

Release Date : Apr. 2001



## **FCC-B Radio Frequency Interference Statement**

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 when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

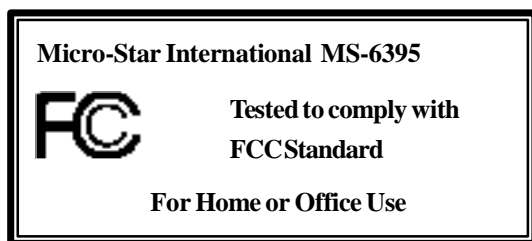
### **Notice 1**

The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

### **Notice 2**

Shielded interface cables and A.C. power cord, if any, must be used in order to comply with the emission limits.

**VOIR LANOTICED'INSTALLATION AVANT DERACCORDER A URESEAU.**



## **Edition**

April 2001

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## **Revision History**

<b>Revision</b>	<b>Revision History</b>	<b>Date</b>
V1.0	First Release	Apr. 2001

## Safety Instructions

1. Always read the safety instructions carefully.
2. Keep this User's Manual for future reference.
3. Keep this equipment away from humidity.
4. Lay this equipment on a reliable flat surface before setting it up.
5. The openings on the enclosure are for air convection hence protects the equipment from overheating. **DO NOT COVER THE OPENINGS.**
6. Make sure the voltage of the power source and adjust properly 110/220V before connecting the equipment to the power inlet.
7. Place the power cord such a way that people can not step on it. Do not place anything over the power cord.
8. Always Unplug the Power Cord before inserting any add-on card or module.
9. All cautions and warnings on the equipment should be noted.
10. Never pour any liquid into the opening that could damage or cause electrical shock.
11. If any of the following situations arises, get the equipment checked by a service personnel:
  - ✍ The power cord or plug is damaged
  - ✍ Liquid has penetrated into the equipment
  - ✍ The equipment has been exposed to moisture
  - ✍ The equipment has not work well or you can not get it work according to User's Manual.
  - ✍ The equipment has dropped and damaged
  - ✍ If the equipment has obvious sign of breakage
12. **DO NOT LEAVE THIS EQUIPMENT IN AN ENVIRONMENT UNCONDITIONED, STORAGE TEMPERATURE ABOVE 60°C (140°F), IT MAY DAMAGE THE EQUIPMENT.**



**CAUTION:** Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer.

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# Introduction

# 1

The MS6395 MICRO ATX mainboard is a high-performance computer mainboard based on Intel® 810M/E chipset. The Intel® 810M/E chipset enhances the performance of the first generation Integrated Graphics chipset designed for the Intel® Celeron™ processor and Intel® Pentium III processor. The Intel® 810M/E chipset's architecture also enables a new security and manageability infrastructure through a Firmware Hub Flash BIOS component.

The Intel® 810M/E chipset contains two core components:

- Intel® 82810E Graphics and Memory Controller Hub (GMCH)
- Intel® 82801BA I/O Controller Hub 2 (ICH2)

The GMCH integrates 66/100/133 MHz, P6 family system bus controller, integrated 2D/3D graphics accelerator, 100Mhz SDRAM controller and a high-speed hub interface for communication within the I/O Controller Hub (ICH2). The ICH2 integrates an Ultra ATA/100 controller, 2 USB host controller with a total of 4 ports, LPC interface controller, FWH Flash BIOS interface controller, PCI interface controller, AC'97 digital controller and a hub interface for communication with the GMCH.

This chapter contains the following topics:

Mainboard Specifications	1-2
Mainboard Layout	1-4
Quick Components Guide	1-5
Key Features	1-6
MSI Special Features	1-6

## **Chapter 1**

# **Mainboard Specifications**

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## **CPU**

Support Intel® Celeron™ and Pentium III processor in FC-PGA package (Socket370)

Support 533MHz, 550MHz ... 1GHz, and 1.13GHz (Coppermine-D)

## **Chipset**

Intel® 810M/E (GMCH) chipset (421 BGA)

- Integrated Graphics Controller
- Intel DDM+ Architecture
- SDRAM memory Independent of System Bus

Intel® ICH2 chipset. (241 BGA)

- AC'97 Controller Integrated
- 2 full IDE channels, up to ATA100
- Low pin count interface for SIO

## **Front Side Bus (FSB)**

66/100/133MHz clocks are supported

## **Main Memory**

Support two 168-pin DIMM sockets

Support a maximum memory size of 512MB SDRAM

## **Slots**

One CNR (Communication and Network Riser) slot

Three 32-bit Master PCI Bus slots and one 16-bit ISA bus slot

Support 3.3v/5v PCI bus Interface

## **On-Board IDE**

An IDE controller on the ICH2 chipset provides IDE HDD/CD-ROM with PIO, Bus Master and Ultra DMA/100 operation modes

Can connect up to four IDE devices

## **Video**

GMCH chip integrated  
2D/3D Graphics  
Onboard 4MB Display Cache (optional)

## **On-Board Peripherals**

On-Board Peripherals include:

- 1 floppy port supports 2 FDD with 360K, 720K, 1.2M, 1.44M and 2.88Mbytes
- 2 serial ports (COMA + COMB pin header)
- 1 parallel port supports SPP/EPP/ECP mode
- 2 USB ports (2 rear ports + 2 front connectors)
- 1 IrDA connector for SIR
- 1 VGA port
- 1 Audio/Game port

## **Audio**

AC97 Codec  
ICH2 chip integrated

## **BIOS**

The mainboard BIOS provides “Plug & Play” BIOS which detects the peripheral devices and expansion cards of the board automatically

The mainboard provides a Desktop Management Interface(DMI) function which records your mainboard specifications

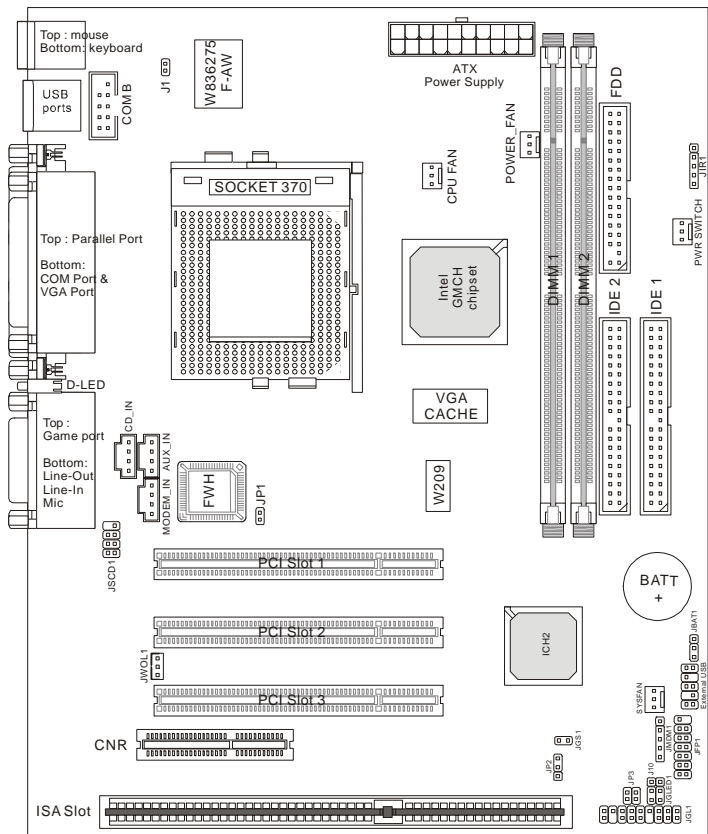
## **Dimension**

Micro ATX Form Factor: 24cm x 20cm

## **Mounting**

6 mounting holes

# Mainboard Layout



MS-6395 MICRO ATX Mainboard

## Quick Components Guide

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The table below provides you the quick guide for setting up the system.

Component	Function	Reference
Socket 370	Installing CPU	p. 2-2
DIMM1~2	Installing memory module	p. 2-4
ATX Power Supply	Installing power supply	p. 2-6
FDD	Connecting to floppy disk drive	p. 2-12
USB Connector	Connecting to USB interface	p. 2-12
IDE1 & IDE2	Connecting to HDD drive	p. 2-13
JFP1	Connecting to case	p. 2-16
JMDM1	Connecting to modem card	p. 2-15
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CPU FAN	Connecting to CPU fan	p. 2-18
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SYSFAN	Connecting to system fan	p. 2-18
JIR1	Connecting to IR module	p. 2-19
JBAT1	Setting clear CMOS	p. 2-22
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JP2	Setting Onboard Audio	p. 2-23
JP3	Setting Front Audio	p. 2-24
J1	Chassis Intrusion function	p. 2-14
PCI Slot	Installing expansion cards	p. 2-25
CNR Slot	Installing CNR cards	p. 2-25
ISA Slot	Installing expansion cards	p. 2-25

## Chapter 1

### Key Features

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PC99 Color Connector  
Micro ATX Form Factor  
Audio/Video Chip Integrated  
PC Alert System Hardware Monitor  
Support DMI (Desktop Management Interface) through BIOS  
TOP Tech. (Thermal Overheat Protection Technology) III (optional)  
Wake Up On LAN function  
Modem (Internal/External) Ring Wake Up function  
Suspend to RAM (optional)

### MSI Special Features

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The MSI special features are designed by MSI R&D which are only available in MSI mainboards. The MS-6395 mainboard is equipped with PC Alert™ III and T.O.P Tech™ III.

#### T.O.P TechIII™

The T.O.P Tech™ is an extended sensing device that can 100% accurately detect the CPU's temperature. You can see the temperature on BIOS setup menu. The PC Alert™ also can provide the information.

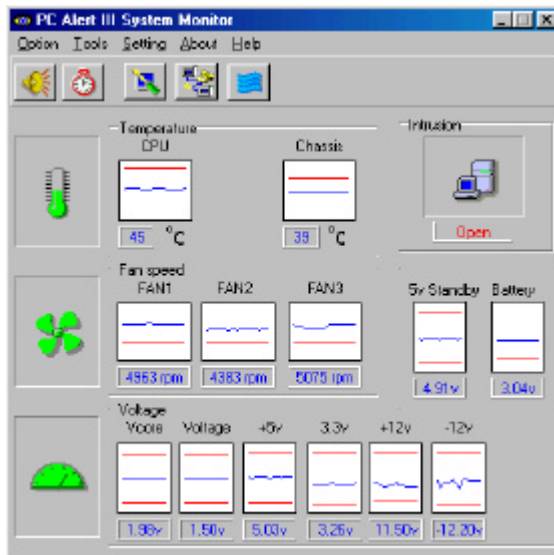


## **PC Alert™ III**

The PC Alert™ III is a utility you can find in the CD-ROM. The utility is just like your PC doctor that can detect the following PC hardware status during real time operation:

- monitor CPU & system temperature
- monitor fan speed
- monitor system voltage
- monitor chassis intrusion

If one of the items above is abnormal, the program main screen will be immediately shown on the screen, with the abnormal item highlighted in red. This will continue to be shown until user disables warning.



## Chapter 1



### Features:

Network Management

- Monitoring & remote control

Basic System Utilities

- Scandisk & Defragment to maintain your HDD

3D Graphics Design

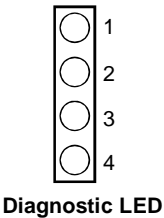
- Enables a more friendly user interface

Software Utilities

- SoftCooler Optimized Cooling
- Doctor Y2K diagnoses Y2K problems
- BusRacing function adjusts F.S.B under Windows 95/98
- MoSpeed speeds up your modem transmission

D-LED™ (optional)











The D-LED™ uses graphic signal display to help users understand their system. Four LEDs embedded in the mainboard provide up to 16 combinations of signals to debug the system. The 4 LEDs can debug all problems that fail the system, such as VGA, RAM or other failures. This special feature is very useful for the overclocking users. These users can use the feature to detect if there are any problems or failures.



● Red      ○ Green

D-LED	Description
<div>1 2 3 4</div> <div><div>●●●●</div></div>	System Power ON - The D-LED will hang here if the processor is damaged or not installed properly.
<div><div>○●●●</div></div>	Early Chipset Initialization
<div><div>●○●●</div></div>	Memory Detection Test - Testing onboard memory size. The D-LED will hang if the memory module is damaged or not installed properly.
<div><div>○○●●</div></div>	Decompressing BIOS image to RAM for fast booting.
<div><div>●●○●</div></div>	Initializing Keyboard Controller.
<div><div>○●○●</div></div>	Testing VGA BIOS - This will start writing VGA sign-on message to the screen.

## Chapter 1

	<b>Processor Initialization</b> - This will show information regarding the processor (like brand name, system bus, etc...)
	<b>Testing RTC (Real Time Clock)</b>
	<b>Initializing Video Interface</b> - This will start detecting CPU clock, checking type of video onboard. Then, detect and initialize the video adapter.
	<b>BIOS Sign On</b> - This will start showing information about logo, processor brand name, etc....
	<b>Testing Base and Extended Memory</b> - Testing base memory from 240K to 640K and extended memory above 1MB using various patterns.
	<b>Assign Resources to all ISA.</b>
	<b>Initializing Hard Drive Controller</b> - This will initialize IDE drive and controller.
	<b>Initializing Floppy Drive Controller</b> - This will initializing Floppy Drive and controller.
	<b>Boot Attempt</b> - This will set low stack and boot via INT 19h.
	<b>Operating System Booting</b>

---

## Hardware Setup

# 2

This chapter provides you with the information about hardware setup procedures. While doing the installation, be careful in holding the components and follow the installation procedures. For some components, if you install in the wrong orientation, the components will not work properly.

Besides, please use a grounded wrist strap before handling computer components. Static electricity may damage the components.

This chapter contains the following topics:

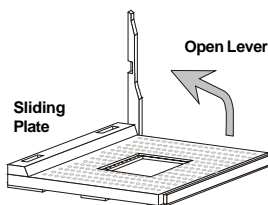
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# Central Processing Unit: CPU

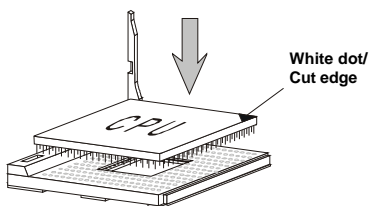
The mainboard supports Intel® Celeron™ / Pentium III (FC-PGA) processors. The mainboard uses a CPU socket called Socket 370 for easy CPU installation. Make sure that the CPU has a Heat Sink and a cooling fan attached to prevent overheating. If you do not find the Heat Sink and cooling fan, contact your dealer or purchase them before turning on the computer.

## CPU Installation Procedures

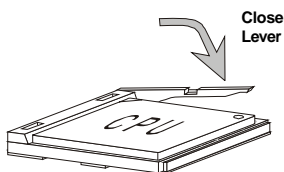
1. Pull the lever sideways away from the socket. Then, raise the lever up to a 90-degree angle.



2. Look for the white dot or cut edge in the CPU. Insert the CPU. It should insert easily.



3. Press the lever down to complete the installation.



**WARNING!**

*Overheating will seriously damage the CPU and system. Always make sure the cooling fan can work properly to protect the CPU.*

## **CPU Core Speed Derivation Procedure**

The mainboard can automatically set the CPU Host Bus Frequency Clock.

<b>If</b>	<u>CPU Clock</u>	=	100MHz
	<u>Core/Bus ratio</u>	=	7
<b>then</b>	<u>CPU core speed</u>	=	<u>Host Clock</u> x <u>Core/Bus ratio</u>
		=	100MHz x 7
		=	700MHz



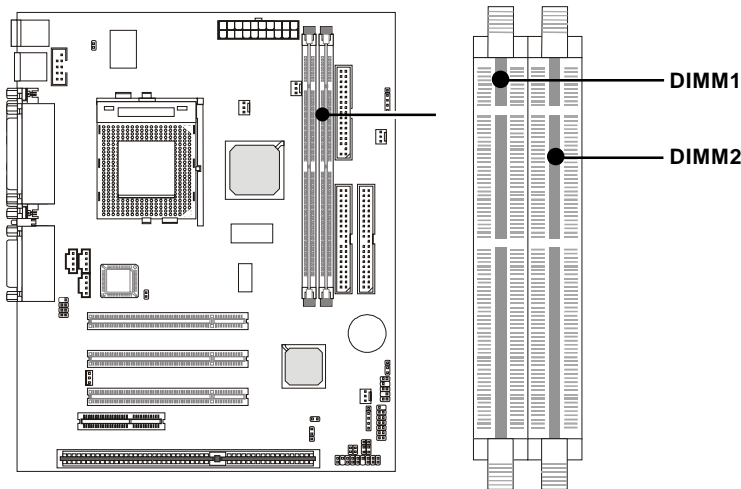
**WARNING!**

### ***OVERCLOCKING***

*This motherboard are designed to support overclocking. However, please make sure your components are able to tolerate such abnormal setting, while doing overclocking. Any attempt to operate beyond product specifications are not recommended. **We do not guarantee the damages or risks caused by inadequate operation or beyond product specifications.***

# Memory Installation

The mainboard provides 2 sockets for 168-pin, 3.3V SDRAM with 4 memory banks. To operate properly, at least one DIMM module must be installed. The mainboard supports the memory size up to 512MB.



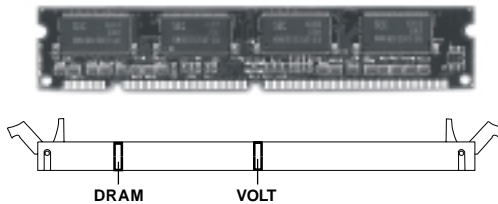
## The DRAM Addressing & Size

DRAM Tech.	DRAM Density & Width	DRAM Addressing	Address Size		MB/DIMM	
			Row	Column	Single no. Side(S) pcs.	Single no. Side(D) pcs.
16M	1Mx16	ASYM	11	8	8MBx4	16MBx8
	2Mx8	ASYM	11	9	16MBx8	32MBx16
	4Mx4	ASYM	11	10	32MB	64MB
64M	2Mx32	ASYM	11	9	32MBx2	64MBx4
	2Mx32	ASYM	12	8	16MBx2	32MBx4
	4Mx16	ASYM	11	10	32MB	64MB
	4Mx16	ASYM	13	8	32MB	64MB
64M	8Mx8	ASYM	13	9	64MB	128MB
	16Mx4	ASYM	13	10	128MB	256MB
	2Mx32	ASYM	12	8	16MB	32MB
	4Mx16	ASYM	13	8	32MB	64MB
	8Mx8	ASYM	13	9	64MB	128MB
	16Mx4	ASYM	13	10	128MB	256MB

## **Module Installation Procedures**

You can install the single-sided or double-sided DIMM according to your needs. There are two notches on each DIMM. The pins on the either side of the breaks are different. Pay attention to the orientation as shown below. The module will only fit in the right orientation.

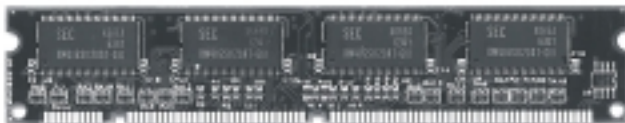
1. Insert the DIMM module vertically into the DIMM slot. Make sure the notch is on the right orientation.
2. The plastic clip at the side of the DIMM slot will automatically close.



### **Single-Sided DIMM**



### **Double-Sided DIMM**



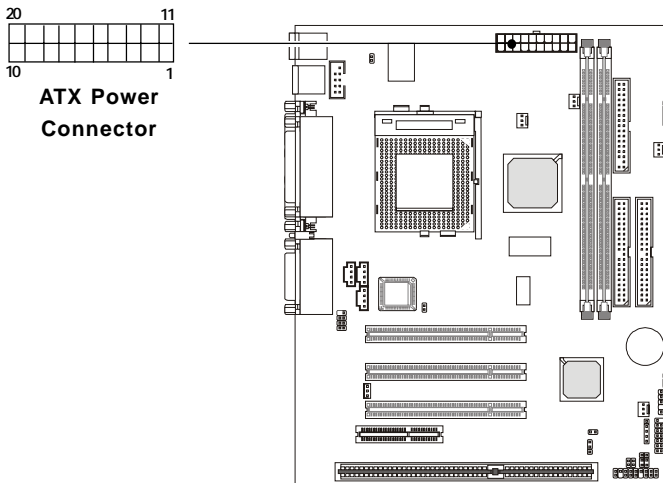
# Power Supply

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The mainboard supports ATX power supply for the power system. As the mainboard has the instant power on function, make sure that all components are installed properly before inserting the power supply connector to ensure that no damage will be done.

## ATX 20-pin Power Supply

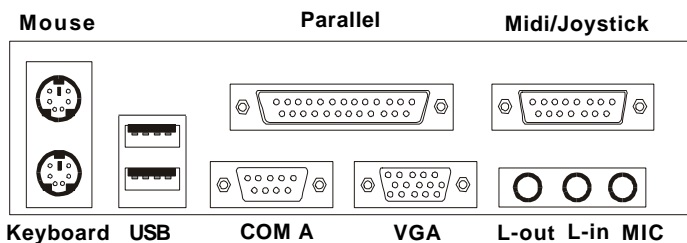
This connector allows you to connect to an ATX power supply. To connect to the ATX power supply, make sure the plugs of the power supply insert in the proper orientation and the pins are aligned. Then push down the power supply firmly into the connector.



## Back Panel

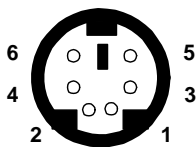
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The Back Panel provides the following connectors:



### Mouse Connector

The mainboard provides a standard PS/2® mouse mini DIN connector for attaching a PS/2® mouse. You can plug a PS/2® mouse directly into this connector.



**PS/2 Mouse (6-pin Female)**

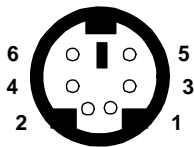
PIN	SIGNAL	DESCRIPTION
1	Mouse DATA	Mouse DATA
2	NC	No connection
3	GND	Ground
4	VCC	+5V
5	Mouse Clock	Mouse clock
6	NC	No connection

**Pin Definition**

Chapter 2

Keyboard Connector

The mainboard provides a standard PS/2® keyboard mini DIN connector for attaching a PS/2® keyboard. You can plug a PS/2® keyboard directly into this connector.



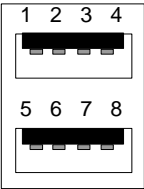
PS/2 Keyboard (6-pin Female)

PIN	SIGNAL	DESCRIPTION
1	Keyboard DATA	Keyboard DATA
2	NC	No connection
3	GND	Ground
4	VCC	+5V
5	Keyboard Clock	Keyboard clock
6	NC	No connection

Pin Definition

USB Connectors

The mainboard provides a UHCI (Universal Host Controller Interface) Universal Serial Bus root for attaching USB devices such as keyboard, mouse or other USB devices. You can plug the USB device directly into this connector.



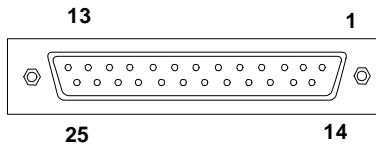
USB Ports

PIN	SIGNAL	DESCRIPTION
1	VCC	+5V
2	-Data 0	Negative Data Channel 0
3	+Data0	Positive Data Channel 0
4	GND	Ground
5	VCC	+5V
6	-Data 1	Positive Data Channel 1
7	+Data 1	Negative Data Channel 1
8	GND	Ground

USB Port Description

**Parallel Port Connector**

The mainboard provides a 25 pin female centronic connector for LPT. A parallel port is a standard printer port that also supports Enhanced Parallel Port (EPP) and Extended Capabilities Parallel Port (ECP).



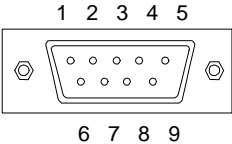
PIN	SIGNAL	DESCRIPTION
1	STROBE	Strobe
2	DATA0	Data0
3	DATA1	Data1
4	DATA2	Data2
5	DATA3	Data3
6	DATA4	Data4
7	DATA5	Data5
8	DATA6	Data6
9	DATA7	Data7
10	ACK#	Acknowledge
11	BUSY	Busy
12	PE	Paper End
13	SELECT	Select
14	AUTOFEED#	Automatic Feed
15	ERR#	Error
16	INIT#	Initialize Printer
17	SLIN#	Select In
18	GND	Ground
19	GND	Ground
20	GND	Ground
21	GND	Ground
22	GND	Ground
23	GND	Ground
24	GND	Ground
25	GND	Ground1

**Pin Definition**

Chapter 2

Serial Port Connectors: COM A

The mainboard has one 9-pin male DIN connector for serial port COM A. You can attach a mouse or other serial devices directly into this connector.



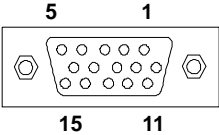
PIN	SIGNAL	DESCRIPTION
1	DCD	Data Carry Detect
2	SIN	Serial In or Receive Data
3	SOUT	Serial Out or Transmit Data
4	DTR	Data Terminal Ready
5	GND	Ground
6	DSR	Data Set Ready
7	RTS	Request To Send
8	CTS	Clear To Send
9	RI	Ring Inticate

9-Pin Male DIN Connectors

Pin Definition

VGA DB 15-pin Connector

The mainboard provides one DB 15-pin female connector to connect a VGA monitor.



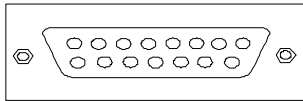
Analog Video Display Connector (DB-15S)	
PIN	SIGNAL DESCRIPTION
1	Red
2	Green
3	Blue
4	Not used
5	Ground
6	Ground
7	Ground
8	Ground
9	Not used
10	Ground
11	Not used
12	SDA
13	Horizontal Sync
14	Vertical Sync
15	SCL

DB 15-Pin Female Connector

Pin Definition

## **Joystick/Midi Connector**

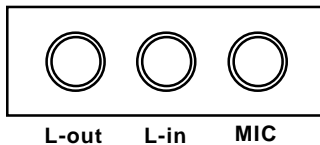
You can connect game joysticks or game pads to this 15-pin female connector for playing game. You can also connect MIDI devices for playing or editing professional audio.



---

## **Audio Port Connectors**

**Line Out** is a connector for headphone or speakers. **Line In** is used for external CD player, tape players or other audio devices to be recorded by your computer or played through the Line Out. **Mic** is a connector for the microphone.

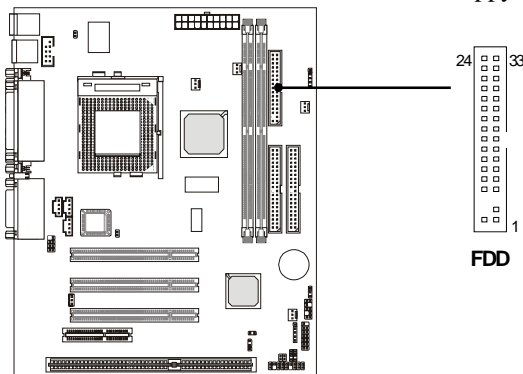


# Connectors

The mainboard provides the connectors to connect to FDD, USB, HDD, case, modem, LAN, FAN, smart card, power saving switch, IR module, CD-ROM and DVD add on card.

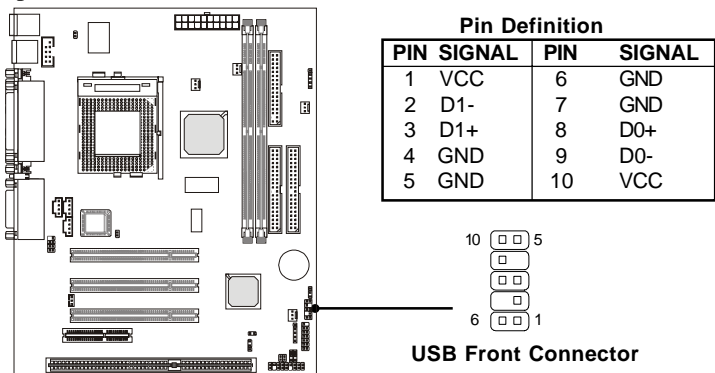
## Floppy Disk Drive Connector: FDD

The mainboard provides a standard floppy disk drive connector that supports 360K, 720K, 1.2M, 1.44M and 2.88M floppy disk types.



## USB Front Connector

The mainboard provides a **Front Universal Serial Bus connector**. This is an optional USB connector for Front Panel.



### Hard Disk Connectors: IDE1 & IDE2

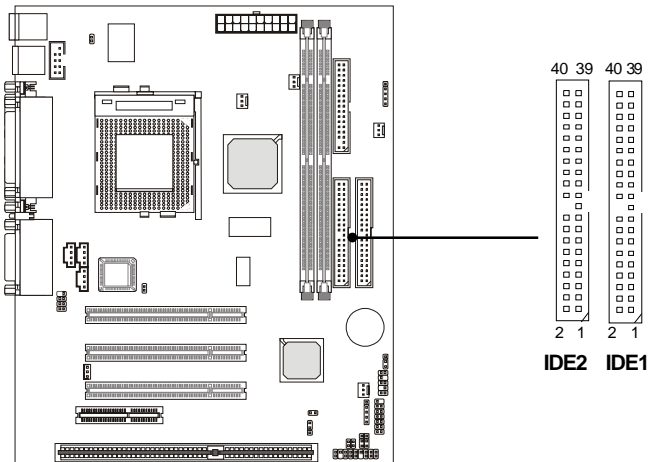
The mainboard has an IDE controller on the ICH chipset that provides IDE HDD/CD-ROM with PIO, Bus Master and Ultra DMA66/100 operations modes. It has two HDD connectors IDE1 (Primary) and IDE2 (Secondary). You can connect up to four hard disk drives, CD-ROM or 120MB Floppy to IDE1 and IDE2.

#### IDE1 (Primary IDE Connector)

- The first hard disk drive should always be connected to IDE1. You can connect a Master and a Slave drive to IDE1.

#### IDE2 (Secondary IDE Connector)

- You can connect a Master and a Slave drive to IDE2.



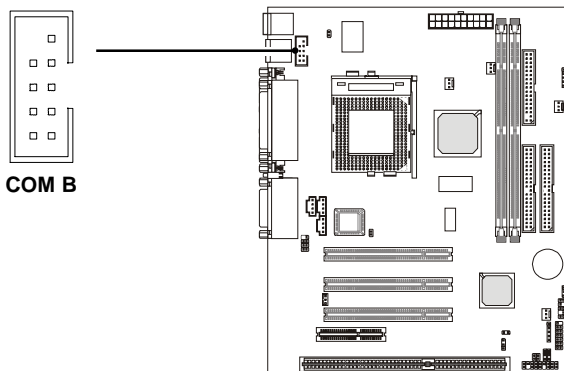
#### TIP:

*If you install two hard disks, you must configure the second drive to Slave mode by setting its jumper accordingly. Refer to the hard disk documentation for the jumper setting.*

## Chapter 2

### COM B Connector: COM B

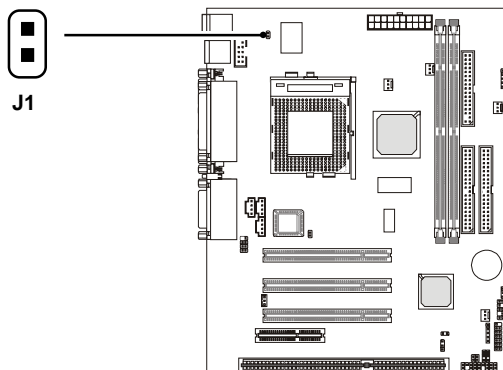
This connector is connected to a bracket containing the second serial port: COM B.



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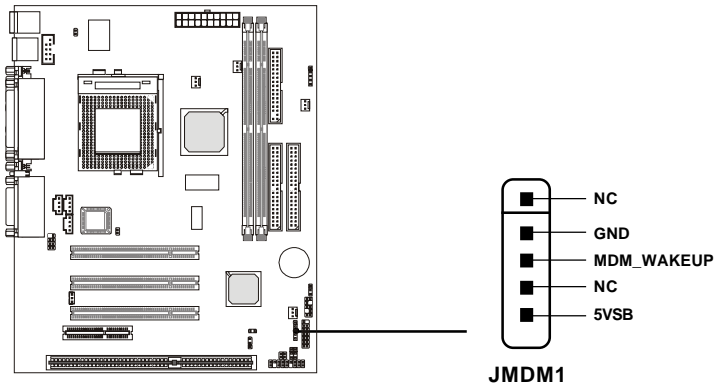
### Chassis Intrusion Switch Connector: J1

This connector is connected to a 2-pin chassis switch. If the chassis is opened, the switch will be short. The system will record this status and show a warning message on the screen. To clear the warning message, you must enter the BIOS utility and clear the record.



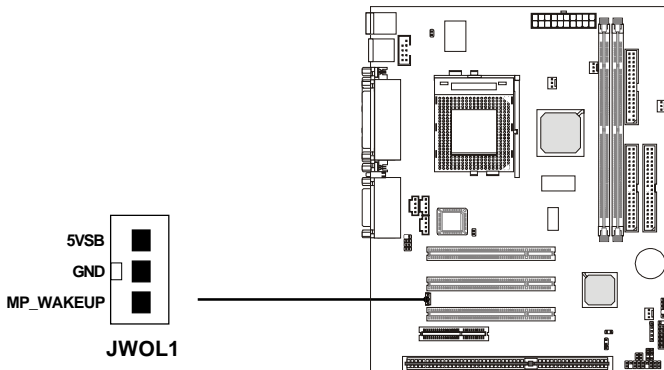
## **Wake On Ring Connector: JMDM1**

This connector allows you to connect to a modem card with Wake On Ring function. The connector will power on the system when a signal is received through the modem card.



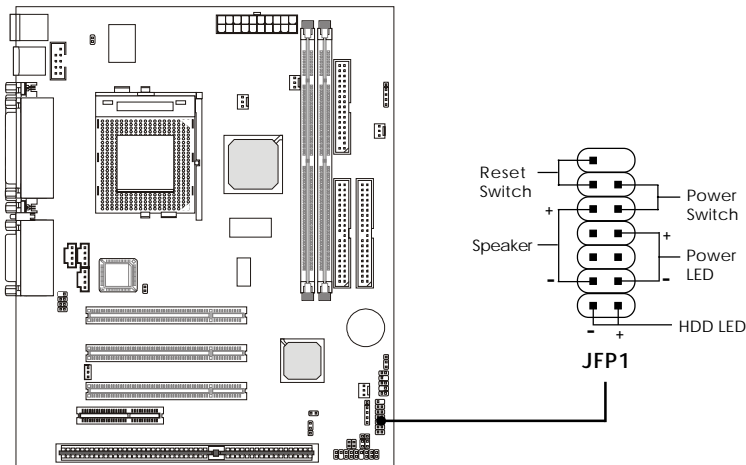
## **Wake On LAN Connector: JWOL1**

This connector allows you to connect to a LAN card with Wake On LAN function. You can wake up the computer via remote control through a local area network.



Case Connector: JFP1

The case connector block JFP1 allows you to connect the Power Switch, Reset Switch, Power LED, Speaker, and HDD LED.



### **Power Switch**

Connect to a 2-pin push button switch.

### **Reset Switch**

Reset switch is used to reboot the system rather than turning the power ON/OFF. Avoid rebooting while the HDD LED is lit. You can connect the Reset switch from the system case to this pin.

### **PowerLED**

The Power LED is lit while the system power is on. You can connect the Power LED from the system case to this pin. There are two types of LED that you can use: 3-pin single color LED or 2-pin dual color LED (ACPI request).

- a. 3 pin single color LED connector to pin 4,5 & 6. This LED will lit when the system is on.
- b. 2 pin dual color LED connector to pin 5 & 6.

**GREEN** color : Indicate the system is in full on mode.

**ORANGE** color : Indicate the system is in suspend mode.

### **Speaker**

Speaker from the system case is connected to this pin.

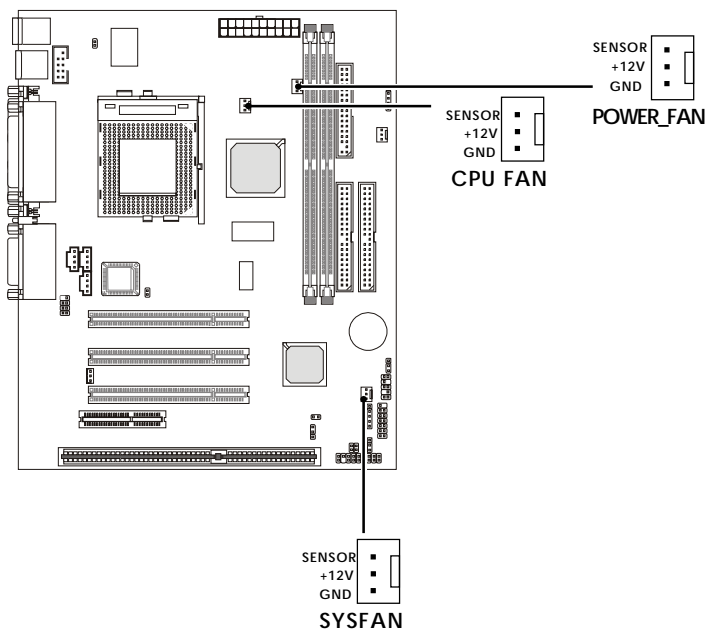
### **HDD LED**

HDD LED shows the activity of a hard disk drive. Avoid turning the power off while the HDD led is lit. You can connect the HDD LED from the system case to this pin.

## Chapter 2

### Fan Power Connectors: CPUFAN/POWER\_FAN/SYSFAN

The CPUFAN (processor fan), PSFAN(power supply fan) and SYSFAN (system fan) support system cooling fan with +12V. It supports three pin head connector. When connecting the wire to the connector, always take note that the red wire is the positive and should be connected to the +12V, the black wire is Ground and should be connected to GND. As the mainboard has a System Hardware Monitor chipset on-board, you must use a specially designed fan with speed sensor to take advantage of the CPU fan control.

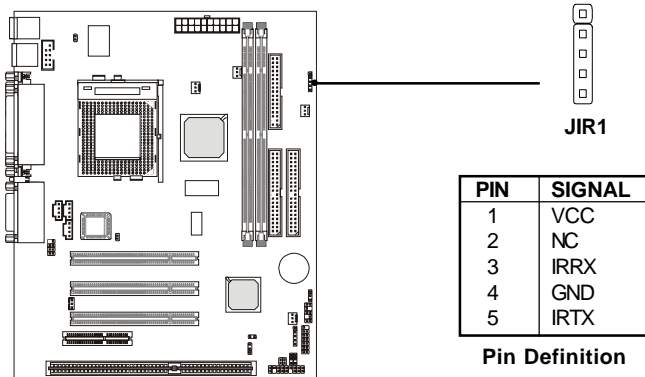


#### Note:

1. Always consult the vendor for proper CPU cooling fan.
2. CPU Fan supports the fan control. You can install the PC Alert utility that will automatically control the CPU Fan speed according to the actual CPU temperature.

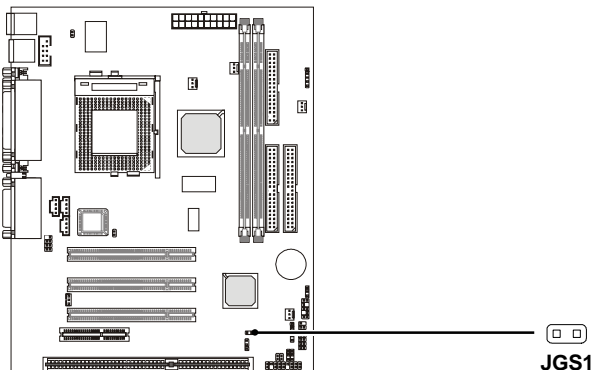
### **IrDA Infrared Module Connector: JIR1**

The mainboard provides one infrared (IR) connector for IR modules. This connector is for optional wireless transmitting and receiving infrared module. You must configure the setting through the BIOS setup to use the IR function.



### **Power Saving Switch Connector: JGS1**

This connector allows you to connect to a power saving switch. When the switch is pressed, the system immediately goes into suspend mode. You can press any key to wake up the system.



## Chapter 2

### CD-In Connector

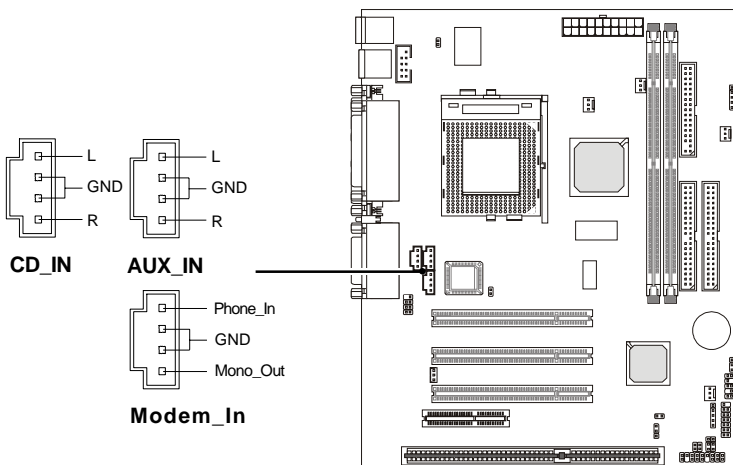
This connector allows you to connect to CD-ROM audio connector.

### AUX Line-In Connector

This connector is used for a DVD add-on card with line-in connector.

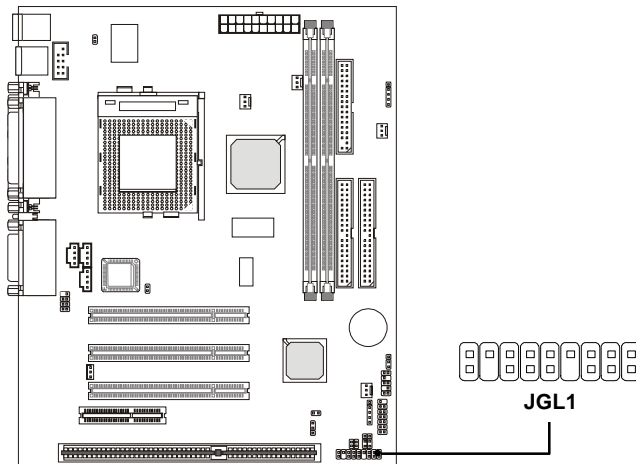
### Modem-In

This connector is for Modem with internal voice connector. Mono\_Out is connected to the Modem Speaker Out connector. Phone\_In is connected to the Modem Microphone In connector.



## **Front Audio Connector**

This connector is connected to the audio port on the front panel of your computer (if any).

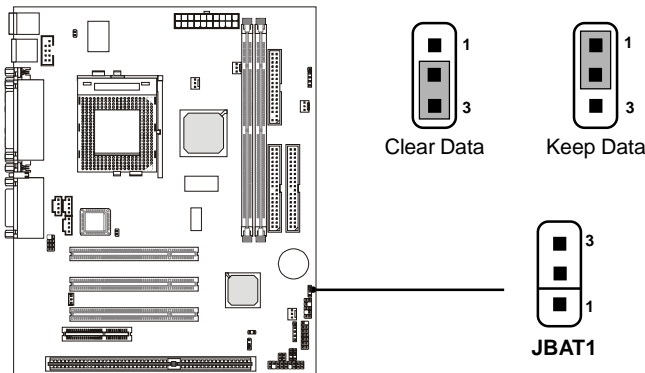


# Jumpers

The motherboard provides the following jumpers for you to set the computer’s function. Besides jumper settings, some of the motherboard’s onboard functions are adjusted through the DIP switches. This section will mention how to change your motherboard’s function through the use of jumpers and/or switches.

## Clear CMOS Jumper: JBAT1

There is a CMOS RAM on board that has a power supply from external battery to keep the data of system configuration. With the CMOS RAM, the system can automatically boot OS every time you turn on the computer. That battery has long life time for at least 5 years. If you want to clear the system configuration, you can use the JBAT1 (Clear CMOS Jumper ) to clear data. Follow the instructions below to clear the data:

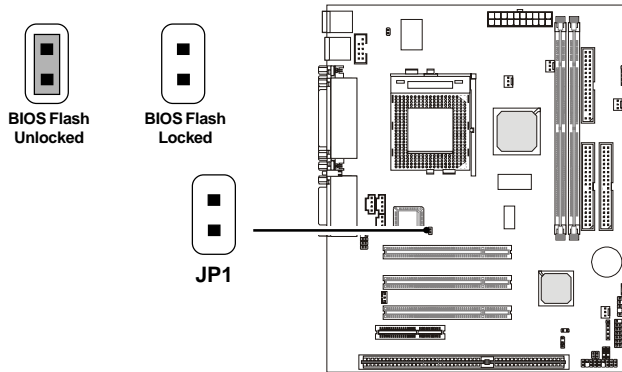


**WARNING!**

*You can clear CMOS by shorting 2-3 pin while the system is off. Then return to 1-2 pin position. Avoid clearing the CMOS while the system is on; it will damage the mainboard.*

## **BIOS Flash Jumper: JP1**

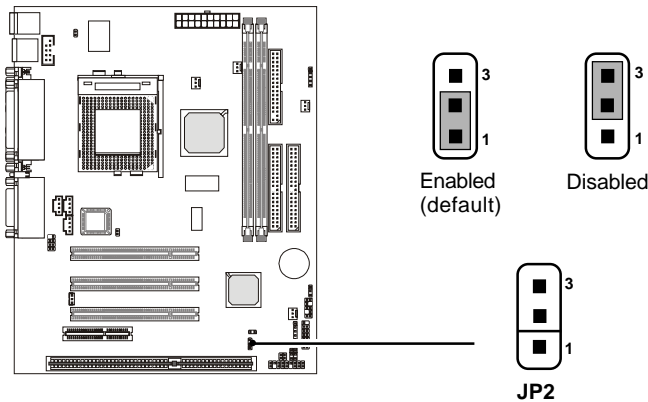
This jumper is used to locked/unlocked BIOS Flash. This jumper should be unlock when flashing/programming the BIOS.



---

## **Onboard Audio Jumper: JP2**

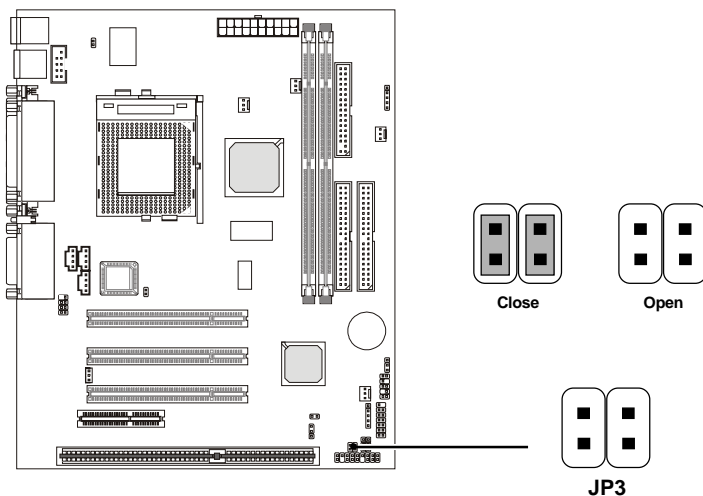
This jumper is used to enable/disable the onboard soft audio codec.



## Chapter 2

### Front Audio Jumper: JP3

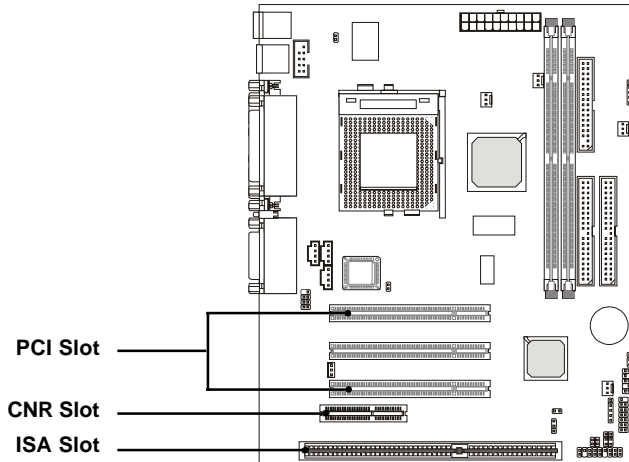
This jumper is used to set the function of onboard audio and front audio (when connected). “Close” the jumper to enable both the onboard audio port and front audio port. “Open” the jumper to disable the onboard audio port but enable the front audio port only.



## Slots

---

The motherboard provides one CNR (Communication and Network Riser) slot, three 32-bit Master PCI Bus Slots, and one ISA slot.



### PCI Slots

The three PCI slots allow you to insert the expansion cards according to your needs. When adding or removing expansion cards, make sure that you unplug the power supply. Meanwhile, read the documentation for the expansion card and make any necessary hardware or software settings for the expansion card, such as jumpers, switches or BIOS.

### CNR Slot

The CNR specification is an open industry-standard specification that defines a hardware scalable Original Equipment Manufacturer (OEM) mainboard riser board and interface, which supports audio and modem only.

### ISA Slot

This slot allows you to install ISA expansion card.

## **Chapter 2**

### **PCI Interrupt Request**

The IRQ, abbreviation of interrupt request line, and pronounced I-R-Q, are hardware lines over which devices can send interrupt signals to the microprocessor. The PCI IRQ pins are typically connected to the PCI bus INTA#-INTD# pins as follows.

PCI Slot1	INT A#	INT B#	INT C#	INT D#
PCI Slot2	INT B#	INT C#	INT D#	INT A#
PCI Slot3	INT C#	INT D#	INT A#	INT B#

---

## Award® BIOS Setup

# 3

This mainboard uses Award® BIOS ROM that has a built-in Setup program to allow users to modify the basic system configuration. The information is stored in battery-backed RAM (CMOS RAM) so that it retains the Setup information when the power is turned off.

This chapter provides you with the overview of the BIOS Setup program. It contains the following topics:

Entering Setup	3-2	Frequency/Voltage Control	3-33
Control Keys	3-2	Load Fail-Safe Defaults	3-34
Getting Help	3-3	Load Optimized Defaults	3-35
Main Menu	3-4	Set Supervisor/User Password	3-36
Standard CMOS Feature	3-6	Save & Exit Setup	3-38
Advanced BIOS Features	3-9	Exit without Saving	3-39
Advanced Chipset Features	3-14		
Integrated Peripherals	3-18		
Power Management Setup	3-24		
PnP/PCI Configurations	3-29		
PC Health Status	3-31		

# Entering Setup

---

Power on the computer. When the below message appears briefly at the bottom of the screen during the POST (Power On Self Test), press <Del> key or simultaneously press <Ctrl>, <Alt>, and <Esc> keys to enter Setup.

TO ENTER SETUP BEFORE BOOT, PRESS <CTRL-ALT-ESC>  
OR <DEL> KEY

If the message disappears before you respond and you still wish to enter Setup, restart the system by turning it OFF then On or pressing the RESET button to try again. You may also restart by simultaneously pressing <Ctrl>, <Alt>, and <Delete> keys.

# Control Keys

---

<? >	Move to the previous item
<? >	Move to the next item
<? >	Move to the item in the left hand
<? >	Move to the item in the right hand
<Enter>	Select the item
<Esc>	Jumps to the Exit menu or returns to the main menu from a submenu
<+/PU>	Increase the numeric value or make changes
<-/PD>	Decrease the numeric value or make changes
<F1>	General help, only for Status Page Setup Menu and Option Page Setup Menu
<F5>	Restore the previous CMOS value from CMOS, only for Option Page Setup Menu
<F6>	Load the default CMOS value from Fail-Safe default table, only for Option Page Setup Menu
<F7>	Load Optimized defaults
<F10>	Save all the CMOS changes and exit

## Getting Help

---

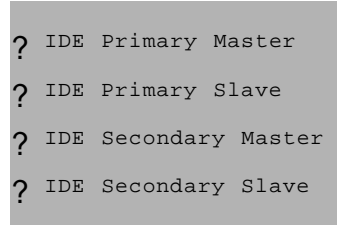
After entering the Setup program, the first screen you will see is the Main Menu.

### Main Menu

The main menu lists the setup functions you can make changes to. You can use the control keys ( ? ? ? ) to select the item. The on-line description of the highlighted setup function is displayed at the bottom of the screen.

### Sub-Menu

If you find a right pointer symbol (as shown in the right view) appears to the left of certain fields that means a sub-menu can be launched from this field. A sub-menu contains additional options for a field parameter. You can use control keys ( ? ? ? ) to highlight the field and press <Enter> to call up the sub-menu. Then you can use the control keys to enter values and move from field to field within a sub-menu. If you want to return to the main menu, just press the <Esc>.



```

☐ IDE Primary Master
☐ IDE Primary Slave
☐ IDE Secondary Master
☐ IDE Secondary Slave

```

### General Help <F1>

The BIOS setup program provides a General Help screen. You can call up this screen from any menu by simply pressing <F1>. The Help screen lists the appropriate keys to use and the possible selections for the highlighted item. Press <Esc> to exit the Help screen.

Chapter 3

Main Menu

Once you enter Award® BIOS CMOS Setup Utility, the Main Menu will appear on the screen. The Main Menu allows you to select from twelve setup functions and two exit choices. Use arrow keys to select among the items and press <Enter> to enter the sub-menu.

CMOS Setup Utility - Copyright(C) 1984-2001 Award Software		
<input type="checkbox"/> Standard CMOS Features	<input type="checkbox"/> Frequency/Voltage Control	
<input type="checkbox"/> Advanced BIOS Features	Load Fail-Safe Defaults	
<input type="checkbox"/> Advanced Chipset Features	Load Optimized Defaults	
<input type="checkbox"/> Integrated Peripherals	Set Supervisor Password	
<input type="checkbox"/> Power Management Setup	Set User Password	
<input type="checkbox"/> PnP/PCI Configurations	Save & Exit Setup	
<input type="checkbox"/> PC Health Status	Exit Without Saving	
ESC : Quit                      F9 : Menu in BIOS                      ???? : Select Item		
F10 : Save & Exit Setup		
Time, Date, Hard Disk Type...		

Standard CMOS Setup

Use this menu for basic system configurations.

Advanced BIOS Features

Use this menu to set the items of Award special enhanced features.

Advanced Chipset Features

Use this menu to change the values in the chipset registers and optimize your system’s performance.

Integrated Peripherals

Use this menu to specify your settings for integrated peripherals.

**Power Management Setup**

Use this menu to specify your settings for power management.

**PnP/PCI Configuration**

This entry appears if your system supports PnP/PCI.

**PC Health Status**

This entry shows your PC health status.

**Frequency/Voltage Control**

Use this menu to specify your settings for frequency/voltage control.

**Load Fail-Safe Defaults**

Use this menu to load the BIOS default values for the minimal/stable performance for your system to operate.

**Load Optimized Defaults**

Use this menu to load the BIOS default values that are factory settings for optimal system performance operations.

**Set Supervisor Password**

Use this menu to set Supervisor Passwords.

**Set User Password**

Use this menu to set User Passwords.

**Save & Exit Setup**

Save CMOS value changes to CMOS and exit setup.

**Exit Without Saving**

Abandon all CMOS value changes and exit setup.

Chapter 3

Standard CMOS Features

The items in Standard CMOS Setup Menu are divided into 13 categories. Each category includes none, one or more than one setup items. Use the arrow keys to highlight the item and then use the <PgUp> or <PgDn> keys to select the value you want in each item.

CMOS Setup Utility - Copyright(C) 1984-2001 Award Software Standard CMOS Features	
Date(mm:dd:yy): Thu., Nov 16 2000 Time(hh:mm:ss): 16: 15 : 9	Item Help
<input type="checkbox"/> IDE Primary Master <input type="checkbox"/> IDE Primary Slave <input type="checkbox"/> IDE Secondary Master <input type="checkbox"/> IDE Secondary Slave	Menu Level <input type="checkbox"/>
Drive A [1.44M, 3.5 in.] Drive B [None]	Change the day, month, year and century
Video [EGA/VGA] Halt On [All, But Keyboard]	
Base Memory 640K Extended Memory 65472K Total Memory 1024K	
??? ? Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help F5:Previous Values F6:Fail-safe Defaults F7:Optimized Defaults	

Date

This item allows you to set the system to the date that you specify (usually the current date). The format is <day> <month> <date> <year>.

- Day

Day of the week, from Sun. to Sat., determined by BIOS. Read-only.
- month

The month from Jan. through Dec.
- date

The date from 1 to 31 can be keyed by numeric function keys.
- year

The year, depends on the year of the BIOS

Time

This item allows you to set the system to the time that you specify (usually the current time). The time format is <hour> <minute> <second>.

PrimaryMaster/PrimarySlave/SecondaryMaster/Secondary Slave

Press PgUp/<+> or PgDn/<-> to select the hard disk drive category. The specification of hard disk drive will show on the right hand according to your selection. You can press <Enter> to enter the sub-menu. The sub-menu will appear as the following example:

IDE Primary Master		
IDE HDD Auto-Detection	[Press Enter]	Item Help
IDE Primary Master	[Auto]	Menu Level <input type="checkbox"/> <input type="checkbox"/>  To auto-detect the HDD's size, head...on this channel
Access Mode	[Auto]	
Capacity	15365MB	
Cylinder	29770	
Head	16	
Precomp	65535	
Landing Zone	29769	
Sector	63	

<u>Access Mode</u>	The settings are Auto, Normal, Large and LBA
<u>Cylinder</u>	number of cylinders
<u>Head</u>	number of heads
<u>Precomp</u>	write precompensation
<u>Landing Zone</u>	Cylinder location of the landing zone
<u>Sector</u>	number of sectors

## **Chapter 3**

### **Drive A, Drive B**

This item allows you to set the type of floppy drivers installed. Available options are: [None] , [360K, 5.25in] , [1.2M, 5.25in] , [720k, 3.5in] , [1.44M, 3.5in] and [2.88M, 3.5in]. Default value for Drive A is [1.44M, 3.5in], and for Drive B is [None].

### **Video**

This item allows you to set the type of video card. Available options are [EGA/VGA], [CGA40], [CGA80] and [MONO]. Default value is [EGA/VGA].

### **Halt on**

This item allows you to set the type of errors that will cause system halt on. Setting option: [All Errors] [No Errors] [All, But Keyboard] [All, But Diskette] [All, But Disk/Key]. Default value is [All, But Keyboard].

All Errors: The system will halt on and display the error message if any error happens.

No Errors: The system will not halt on no matter any error happens.

All, But Keyboard: The system will halt on if any error happens. But the system will not halt on if the keyboard function is not normal.

All, But Diskette: The system will halt on if any error happens. But the system will not halt on if the disk drive function is not normal.

All, But Disk/Key: The system will halt on if any error happens. But the system will not halt on if the disk drive and keyboard function is not normal.

# Advanced BIOS Features

CMOS Setup Utility - Copyright(C) 1984-2001 Award Software  
Advanced BIOS Features

Anti-Virus Protection	[Disabled]	Item Help
CPU Internal Cache	[Enabled]	<div>Menu Level <input type="checkbox"/></div> <p>Allows you to choose the VIRUS warning feature for IDE Hard Disk boot sector protection. If this function is enabled and someone attempt to write data into this area, BIOS will show a warning message on screen and alarm beep</p>
External Cache	[Enabled]	
CPU L2 Cache ECC Checking	[Enabled]	
Processor Number Feature	[Enabled]	
Quick Power On Self Test	[Disabled]	
First Boot Device	[Floppy]	
Second Boot Device	[HDD-0]	
Third Boot Device	[LS120]	
Boot Other Device	[Enabled]	
Swap Floppy Drive	[Disabled]	
Boot Up Floppy Seek	[Enabled]	
Boot Up NumLock Status	[On]	
Gate A20 Option	[Fast]	
Typematic Rate Setting	[Disabled]	
X Typematic Rate (Chars/Sec)	6	
X Typematic Delay (Msec)	250	
Security Option	[Setup]	
OS Select For DRAM > 64MB	[Non-OS2]	
HDD S.M.A.R.T Capability	[Disabled]	
Report No FDD For WIN95	[No]	
<div>??? ? Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help F5:Previous Values F6:Fail-safe Defaults F7:Optimized Defaults</div>		


## Anti-Virus Protection

This item allows you to choose the VIRUS Warning feature for IDE Hard Disk boot sector protection. If this function is enabled and someone attempts to write data into this area, BIOS will show a warning message on screen and alarm beeps. Available options are [Disabled] and [Enabled]. Default value is [Disabled]

## Chapter 3

### CPU Internal Cache

This item allows you to choose from the default of [Enabled] or choose [Disabled] to turn on or off the CPU's internal cache (L1 cache). Available options are [Disabled] and [Enabled].

 **Note:** *The internal cache is built in the processor.*

### External Cache

This item allows you to choose from the default of [Enabled] or choose [Disabled] to control the function of level 2 cache memory. Available options are [Disabled] and [Enabled]. Default value is [Enabled].

### CPU L2 Cache ECC Checking

This item allows you to control the ECC (error check correction) capability in the CPU level 2 cache. Available options are [Disabled] and [Enabled]. Default value is [Enabled].

### Processor Number Feature

This feature is for Pentium !!! only. When set to [Enabled], the system will check the processor's serial number. Available options are [Disabled] and [Enabled]. Default value is [Enabled].

### Quick Power On Self Test

This item allows you to speed up Power On Self Test (POST) after you power on the computer. If this is set to [Enabled], BIOS will shorten or skip some check items during POST. Available options are [Disabled] and [Enabled]. Default value is [Disabled].

### First/Second/Third Boot Device

This item allows you to set the sequence of boot device from that the BIOS attempts to load the operating system. Available options are [Floppy], [LS120], [HDD-0], [SCSI], [CDROM], [HDD-1], [HDD-2], [HDD-3], [ZIP100], [LAN], and [Disabled].

### **Boot Other Device**

This function allows the system to try to boot from other device if the system fails to boot from the 1st/2nd/3rd boot device.

### **Swap Floppy Drive**

This item allows you to choose from the default of [Disabled] or choose [Enabled] to switch the floppy disk drives between being designated as A and B. Available options are [Disabled] and [Enabled]. Default value is [Disabled].

### **Boot Up Floppy Seek**

This function allows the system to check if floppy installed or uninstalled when booting up the computer. Available options are [Disabled] and [Enabled]. Default value is [Enabled].

### **Boot Up NumLock Status**

This item allows you to set the NumLock status when you boot up your computer. When you choose from the default of [On], the keypad is numeric keys; when you choose [Off], the keypad is arrow keys. Available options are [On] and [Off]. Default value is [On]

### **Gate A20 Option**

This allows you to set the Gate A20 status. When you choose from the default of [Fast], the Gate A20 is controlled by chipset. When you choose [Normal], a pin in the keyboard controller controls the Gate A20. Available options are [Fast] and [Normal]. Default value is [Fast].

### **Typematic Rate Setting**

This item allows you to set the keystrokes repeat rate determined by keyboard controller. When you choose “Enabled”, the “Typematic Rate” and “Typematic Delay” can be selected. Default value is [Disabled].

## **Chapter 3**

### **Typematic Rate (Chars/Sec)**

This item allows you to set the number of times a second to repeat a keystroke when you hold the key down. Available options are [6], [8], [10], [12], [15], [20], [24], and [30]. Default value is [6].

### **Typematic Delay (Msec)**

This item allows you to set the delay time before the key begins to repeat the keystroke while holding down the key. Available options are [250], [500], [750], and [1000]. Default value is [250].

### **Security Option**

This item allows you to limit access to the system and Setup, or just to Setup. When you choose from the default of [Setup], the system will boot, but access to Setup will be denied if the correct password is not entered at the prompt. When you choose [System], the system will not boot and access to Setup will be denied if the correct password is not entered at the prompt. Available options are [Setup] and [System]. Default value is [Setup].

### **OS Select For DRAM > 64MB**

This item allows you to run the OS/2® operating system with > 64 MB of DRAM. When you choose from the default of [Non-OS2], you cannot run the OS/2® operation system with > 64 MB of DRAM. When you choose [OS2], it is possible. Available options are [Non-OS/2] and [OS2]. Default value is [Non-OS/2]

Setting options: [No] [Yes]. Default value: [No]

### **HDD S.M.A.R.T Capability**

This item allows you to set the HDD S.M.A.R.T capability. S.M.A.R.T is a utility that monitors your disk hardware with the goal of identifying disks that have a strong possibility of crashing. This provides you a window of opportunity to gracefully remove data from a failing disk and take it offline before your disk drive takes you offline. Available options are [Enabled] and [Disabled]. Default value is [Disabled].

### **Report No FDD For WIN95**

This function is only used when you are testing HCT for Windows® 95 Logo.

Chapter 3

Advanced Chipset Features

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Advanced Chipset Features

SDRAM CAS Latency Time [Auto] SDRAM Cycle Time Tras/Trc [6/8] SDRAM RAS-to-CAS Delay [3] SDRAM RAS Precharge Time [3] System BIOS Cacheable [Disabled] Video BIOS Cacheable [Disabled] Memory Hole At 15M-16M [Disabled] CPU Latency Timer [Disabled] Delayed Transaction [Enabled] On-Chip Video [Enabled] Local Memory Frequency [100Mhz]  * Onboard Display Cache Setting * Initial Display Cache [Enabled] CAS# Latency [3] Paging Mode Control [Open] RAS-to-CAS Override [by CAS#LT] RAS# Timing [Fast] RAS# Precharge Timing [Fast]		Item Help
		Menu Level <input type="checkbox"/>
??? ? 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

This item allows you to set the SDRAM CAS Latency time. Available options are [Auto], [2], and [3]. Default value is [Auto].

SDRAM Cycle Time Tras/Trc

This item allows you to control the number of SDRAM clocks used for SDRAM parameters Tras and Trc. Tras specifies the minimum clocks required between active command and prechange command. Trc specifies the minimum clocks required between active command and re-active command. Available options are [5/7] and [6/8]. Default value is [6/8].

### **SDRAMRAS-to-CAS Delay**

This item allows you to control the latency between the SDRAM active command and the read/write command. Available options are [3] and [2]. Default value is [3].

### **SDRAM RAS Prechange Time**

This item allows you to control the idle clocks after issuing a prechange command to the SDRAM. Available options are [3] and [2]. Default value is [3].

### **System BIOS Cacheable**

Selecting [Enabled] allows the caching of the system BIOS ROM at F0000h-FFFFFh, resulting in better system performance. However, if any program writes to this memory area, a system error may result. Available options are [Enabled] and [Disabled]. Default value is [Disabled].

### **Video BIOS Cacheable**

Selecting [Enabled] allows caching of the video RAM, resulting in better system performance. However, if any program writes to this memory area, a system error may result. Available options are [Enabled] and [Disabled]. Default value is [Disabled].

### **Memory Hole at 15M-16M**

This item allows you to reserve an address space for ISA expansion cards that require it. Available options are [Enabled] and [Disabled]. Default value is [Disabled].

## **Chapter 3**

### **CPU Latency Timer**

This item allows you to control the GMCH's response to CPU deferrable cycles. Available options are [Disabled] and [Enabled]. Default value is [Disabled].

### **Delayed Transaction**

The chipset has an embedded 32-bit posted write buffer to support delay transactions cycles. Select [Enabled] to support compliance with PCI specification version 2.1. Available options are [Disabled] and [Enabled]. Default value is [Enabled].

### **On-Chip Video**

This item allows you to enable/disable the on-chip video window size for VGA driver use. Available options are [Enabled] and [Disabled]. Default value is [Enabled].

### **Local Memory Frequency**

This item allows you to select the Onboard Display Cache frequency. Available options are [100Mhz] and [133Mhz]. Default value is [100Mhz].

### **\* Onboard Display Cache Setting \* (Optional)**

#### **Initial Display Cache**

This item allows you to enable/disable Onboard Display Cache. Available options are [Enabled] and [Disabled]. Default value is [Enabled].

### **CAS# Latency**

The number of clock cycles of CAS# Latency depends on the Onboard Display cache timing. Available options are [2] and [3]. Default value is [3].

### **Paging Mode Control**

This item allows you to select the paging mode control. Available options are [Open] and [Close]. Default value is [Open].

### **RAS-to-CAS Override**

This item allows you to insert a timing delay between the CAS and RAS strobe signals, used when Onboard Display Cache is written to, read from, or refreshed. When set to [by CAS# LT], it will depend on the CAS# Latency setting in Onboard Display Cache; when set to [Override (2)], the RAS-to-CAS time is 2.

### **RAS# Timing**

This item controls RAS# active to Precharge, and refresh to RAS# active delay (in local memory clocks).

**Slow** RAS# to precharge ( $t_{RAS}$ ) = 7, refresh to RAS# act ( $t_{RC}$ ) = 10

**Fast** RAS# to precharge ( $t_{RAS}$ ) = 5, refresh to RAS# act ( $t_{RC}$ ) = 8

### **RAS# Precharge Timing**

This item controls RAS# precharge (in local memory clocks)

**Slow** RAS# Precharge Time = 3

**Fast** RAS# Precharge Time = 2

Chapter 3

Integrated Peripherals

CMOS Setup Utility - Copyright(C) 1984-2001 Award Software  
Integrated Peripherals

On-Chip Primary PCI IDE [Enabled]	Item Help
On-Chip Secondary PCI IDE [Enabled]	
IDE Primary Master PIO [Auto]	Menu Level <input type="checkbox"/>
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 [Disabled]	
IDE HDD Block Mode [Enabled]	
POWER ON Function [BUTTON ONLY]	
KB Power ON Password [Enter]	
Hot Key Power ON [Ctrl-F1]	
Onboard FDC Controller [Enabled]	
Onboard Serial Port 1 [3F8/IRQ4]	
Onboard Serial Port 2 [Disabled]	
UART Mode Select [Normal]	
RxD, TxD Active [Hi, Lo]	
IR Transmission Delay [Enabled]	
UR2 Duplex Mode [Half]	
Use IR Pins [IR-Rx2Tx2]	
Onboard Parallel Port [378/IRQ7]	
Parallel Port Mode [SPP]	
EPP Mode Select [EPP1.7]	
ECP Mode Use DMA [3]	
PWRON After PWR-Fail [off]	
Game Port Address [201]	
Midi Port Address [330]	
Midi Port IRQ [10]	
Power Status Led [Single]	
??? ? Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help F5:Previous Values F6:Fail-safe Defaults F7:Optimized Defaults	

### **OnChip Primary/Secondary PCIIDE**

The integrated peripheral controller contains an IDE interface with support for two IDE channels. Choose the default of [Enabled] to activate each channel separately. Available options are [Enabled] and [Disabled]. Default value is [Enabled].

### **IDE Primary/Secondary Master/Slave PIO**

The four IDE PIO (Programmed Input/Output) fields let you set a PIO mode (0-4) for each of the four IDE devices that the onboard IDE interface supports. Modes 0 through 4 provide successively increased performance. In Auto mode, the system automatically determines the best mode for each device. Available options are [Auto], [Mode 0], [Mode 1], [Mode 2], [Mode 3], and [Mode 4].

### **IDE Primary/Secondary Master/Slave UDMA**

Ultra DMA/33 implementation is possible only if your IDE hard drive supports it and the operating environment includes a DMA driver (Windows 95 OSR2 or a third-party IDE bus master driver). If your hard drive and your system software both support Ultra DMA/33 and Ultra DMA/66, select [Auto] to enable BIOS support. Available options are [Auto] and [Disabled]. Default value is [Auto].

### **USB Controller**

This item allows you to control the function of USB controller. When choosing [Enabled], the USB controller can be used while choosing [Disabled] make USB has no function. Available options are [Enabled] and [Disabled]. Default value is [Enabled].

### **USB Keyboard Support**

Select Enabled if your system contains a Universal Serial Bus (USB) controller and you have a USB keyboard. Available options are [Enabled] and [Disabled]. Default value is [Disabled]

## **Chapter 3**

### **Init Display First**

This item allows you to decide to activate whether PCI Slot or AGP Slot. Available options are [PCI Slot] and [Onboard]. Default value is [PCI Slot].

### **AC97 Audio/AC97 Modem**

Set [Auto] to allow the motherboard's BIOS to detect whether you are using any audio/modem device or not. If it is, the onboard modem/audio controller will be enabled. If not, the onboard modem/audio controller will be disabled. If you want to use different controller cards to connect modem and audio connectors, set these fields to [Disabled]. Available options are [Auto] and [Disabled].

### **IDE HDD Block Mode**

Block mode is also called block transfer, multiple commands, or multiple sector read/write. If your IDE hard drive supports block mode (most new drives do), select [Enabled] for automatic detection of the optimal number of block read/writes per sector the drive can support. Available options are [Enabled] and [Disabled]. Default value is [Enabled].

### **POWER ON Function**

This item allows you to choose the function from that the system is powered on. Available options are [password], [Hot KEY], [Mouse Left], [Mouse Right], [BUTTON ONLY], and [keyboard 98]. Default value is [BUTTON ONLY].

### **Keyboard Power ON Password**

This item allows you to set the password for keyboard power on function while the system is turned off.

### **Hot Key Power ON**

This item allows you to set the hot key power on function while the system is turned off. Default value is [Ctrl-F1].

### **Onboard FDC Controller**

Select [Enabled] if your system has a floppy disk controller (FDC) installed on the system board and you wish to use it. If you install add-on FDC or the system has no floppy drive, select [Disabled] in this field. Available options are [Disabled] and [Enabled]. Default value is [Enabled]

### **Onboard Serial Port 1/Port 2**

This item allows you to select an address and corresponding interrupt for the first and second serial ports. Available options are [3F8/IRQ4], [2E8/IRQ3], [3E8/IRQ4], [2F8/IRQ3], [Disabled] and [Auto]. Default value is [3F8/IRQ4] for Port 1, and [Disabled] for Port 2.

### **UART Mode Select**

This item allows you to select the UART mode. When set to [Normal], the following four items will have no function. Available options are [IrDA], [ASKIR] and [Normal]. Default value is [Normal].

### **Onboard Parallel Port**

There is a built-in-parallel port on the onboard Super I/O chipset that provides Standard, ECP, and EPP features. Available options are [Disabled], [3BC/IRQ7], [378/IRQ7], and [278/IRQ5]. Default value is [378/IRQ7].

## **Chapter 3**

### **Parallel Port Mode**

This item allows you to set the onboard parallel port mode. Available options are [SPP], [EPP], [ECP], and [ECP+EPP]. Default value is [SPP].

- SPP** : Standard Parallel Port
- EPP** : Enhanced Parallel Port
- ECP** : Extended Capability Port

### **EPP Mode Select**

This item allows you to select the type of EPP mode. Available options are [EPP1.7] and [EPP1.9]. Default value is [EPP1.7].

### **ECP Mode Use DMA**

This item allows you to select a DMA channel for the parallel port for use during ECP mode. Available options are [1] and [3]. Default value is [3].

### **PWRON After PWR-Fail**

This item allows you to choose how the system will power on after a power failure. Available options are [Off], [Former-Sts], and [On]. Default value is [Off].

### **Game Port Address**

This item allows you to set the Game Port address. Available options are [Disabled], [201], and [209]. Default value is [201].

### **Midi Port Address**

This item allows you to set the Midi Port address. Available options are [Disabled], [330], [300], and [290]. Default value is [330].

### **Midi Port IRQ**

This item allows you to set the Midi Port IRQ. Available options are [5] and [10]. Default value is [10].

### **Power Status Led**

This item allows you to choose the type of Power Status Led. Available options are [Single], [Dual], and [Blinking]. Default value is [Single].

Chapter 3

Power Management Setup

The Power Management Setup allows you to configure you system to most effectively save energy while operating in a manner consistent with your own style of computer use.

CMOS Setup Utility - Copyright(C) 1984-2001 Award Software  
Power Management Setup

IPCA Function	[Enabled]	Item Help
ACPI Suspend Type	[S1 (POS)]	
Power Management	[User Define]	Menu Level <input type="checkbox"/>
Video Off Method	[DPMS ]	
Video Off In Suspend	[Yes]	
Suspend Type	[PwrOn Suspend]	
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	[Enabled]	
Wake Up On LAN	[Enabled]	
USB KB Wake-Up From S3	[Disabled]	
CPU Thermal-Throttling	[50.0%]	
Resume by Alarm	[Disabled]	
Date (of Month) Alarm	[0]	
Time (hh:mm:ss) Alarm	0 0 0	
** Reload Global Timer Events **		
Primary IDE 0	[Disabled]	
Primary IDE 1	[Disabled]	
Secondary IDE 0	[Disabled]	
Secondary IDE 1	[Disabled]	
FDD, COM, LPT Port	[Disabled]	
PCI PIRQ[A-D]#	[Disabled]	

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

### **IPCAFunction**

This item allows you to set ACPI (Advanced Configuration and Power Management) function. Available options are [Enabled] and [Disabled]. Default value is [Enabled].

### **ACPI Suspend Type**

This item allows you to set the ACPI suspend type you will use. Available options are [S1 (POS)] and [S3 (STR)]. Default value is [S1 (POS)].

- |                       |  |
|-----------------------|--|
| <b><i>S1(POS)</i></b> | The S1 state is low power state. In this state, no system context (CPU or chipset) is lost and hardware maintains all system context.  |
| <b><i>S3(STR)</i></b> | The S3 state is a lower power state where the information of system configuration and open applications/files is saved to main memory that remains powered while most other hardware components turn off to save energy. The information stored in memory will be used to restore the system when an “wake up” event occurs. |

### **Power Management**

This item allows you to select the type (or degree) of power saving and is directly related to the following modes: HDD Power Down, Doze Mode, and Suspend Mode. There are three options for Power Management, two of which have fixed mode settings.

- |                           |  |
|---------------------------|--|
| <b><i>User Define</i></b> | Allows you to set each mode individually. When not disabled, each of the ranges are from 1 min. to 1 hr. except HDD Power Down which ranges from 1 min. to 15 min. and disabled. |
| <b><i>Min Saving</i></b>  | Minimum power management. Suspend Mode = 1 hr., and HDD Power Down = 15 min.   |
| <b><i>Max Saving</i></b>  | Maximum power management. Suspend Mode = 1 min., and HDD Power Down = 1 min.   |

## Chapter 3

### Video Off Method

This item determines the manner in which the monitor is blanked.

***V/H SYNC+Blank*** This option will cause the system to turn off the vertical and horizontal synchronization ports and write blanks to the video buffer.

***Blank Screen*** This option only writes blanks to video buffer.

***DPMS*** Initial display power management signaling.

### Video Off In Suspend

This item allows you to determine whether you want your monitor blanked for power management when entering suspend mode. Available options are [Yes] and [No]. Default value is [Yes].

### Suspend Type

This item allows you to select the suspend type for system power management. Available options are [Stop Grant] and [PwrOn Suspend]. Default value is [PwrOn Suspend].

### Modem Use IRQ

This item determines the IRQ in which the MODEM can use. Available options are [3/4/5/7/9/10/11] and [NA]. Default value is [3].

### Suspend Mode

This item allows you to set the time period before the system goes into suspend mode. Available options are [1/2/4/8//12/20/30/40 Min/1 Hour] and [Disabled]. Default value is [Disabled].

### **HDD Power Down**

This item allows you to set the time period before the hard disk drive will be powered down while all other devices remain active. Available options are [Disabled] and [1/2/3/4/5/6/7/8/9/10/11/12/13/14/15 Min]. Default value is [Disabled].

### **Soft-off by PWR-BTTN**

Set this item to [Delay 4 Sec] to allow pressing the power button for more than 4 seconds to force the system to enter the Soft-Off state. Available options are [Delay 4 sec] and [Instant-Off]. Default value is [Instant-Off].

### **Wake-Up by PCI Card**

This item allows you to enable the system to wake up through PCI Card peripheral. Available options are [Enabled] and [Disabled]. Default value is [Disabled].

### **Power On by Ring**

This item allows you to enable the system to wake up through modem card while the telephone is ringed. Available options are [Disabled] and [Enabled]. Default value is [Enabled].

### **Wake Up On LAN**

To use this function, you need a LAN add-on card which supports power on functions. It should also support the wake-up on LAN jumper (JWOL1). This function allows your computer to be booted from another computer via a network by sending a wake-up frame or signal. Available options are [Enabled] and [Disabled]. Default value is [Enabled].

## Chapter 3

### USB KB Wake-Up From S3

When set to [Enabled], pressing USB keyboard will wake up the system from shutdown in “Suspend to RAM” mode. Available options are [Enabled] and [Disabled]. Default value is [Disabled].

### CPU Thermal-Throttling

This item allows you to select the CPU Thermal-Throttling rate. Available options are [12.5/25.0/37.5/50.0/62.5/75.0/87.5 %]. Default value is [50.0%].

### Resume by Alarm


This item allows you to set the date and time alarm for your computer to boot up. When set to [Disabled], you cannot use this function; when set to [Enabled], you can set the date and time alarm. Default value is [Disabled].

#### - Date (of Month) Alarm

You can choose which month the system will boot up. Setting [0] will allow you to boot the system every day.

#### - Time (hh:mm:ss) Alarm

You can choose what hour, minute and second the system will boot up.

 **Note:** *If you have change the setting, you must let the system boot up until it goes to the operating system, before this function will work.*

### \*\* Reload Global Timer Events \*\*

Reload Global Timer 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 which occurs to a device which is configured as [Enabled] , even when the system is in a power down mode.

## PnP/PCI Configurations

This section describes configuring the PCI bus system. PCI (Personal Computer Interconnect) is a system which allows I/O devices to operate at speeds nearing the speed the CPU itself uses when communicating with its own special components. This section covers some very technical items and it is strongly recommended that only experienced users should make any changes to the default settings.

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PnP/PCI Configuration

PnP OS Installed	[No]	Item Help
Reset Configuration Data	[Disabled]	
Resources Controlled By	[Auto (ESCD)]	Menu Level <input type="checkbox"/>
X IRQ Resources	Press Enter	Default is Disabled.
X DMA Resources	Press Enter	Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup if you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the OS cannot boot
PCI/VGA Palette Snoop	[Disabled]	
INT Pin 1 Assignment	[Auto]	
INT Pin 2 Assignment	[Auto]	
INT Pin 3 Assignment	[Auto]	
INT Pin 4 Assignment	[Auto]	
??? ? Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help F5:Previous Values F6:Fail-safe Defaults F7:Optimized Defaults		

### PnP OS Installed

When set to [YES], BIOS will only initialize the PnP cards used for booting (VGA, IDE, SCSI). The rest of the cards will be initialized by the PnP operating system like Windows® 95 or 98. When set to [NO], BIOS will initialize all the PnP cards. So, select [Yes] if the operating system is Plug & Play aware.

### Reset Configuraton Data

This item allows you to reset the configuration data. Available options are [Disabled] and [Enabled]. Default value is [Disabled].

## Chapter 3

### Resource Controlled By

The Award Plug and Play BIOS has the capacity to automatically configure all of the boot and Plug and Play compatible devices. However, this capability means absolutely nothing unless you are using a Plug and Play operating system such as Windows<sup>®</sup> 95/98. If you set this field to “manual” choose specific resources by going into each of the sub menu that follows this field (a sub-menu is preceded by a “□ ”). Available options are [Auto(ESCD)] and [Manual]. (If you choose [Auto], the IRQ Resources and DMA Resources will not have function.)

### IRQ/DMA Resources

The items are adjustable only when **Resources Controlled By** is set to *Manual*. Press <Enter> and you will enter the sub-menu of the items. **IRQ Resources & DMA Resources** list IRQ 3/4/5/7/9/10/11/12/14/15 and DMA 0/1/3/5/6/7 for users to set each IRQ/DMA a type depending on the type of device using the IRQ/DMA. Settings are:

<b>PCI/ISA PnP</b>	For Plug & Play compatible devices designed for PCI or ISA bus architecture.
<b>Legacy ISA</b>	For devices compliant with the PC AT bus specification, requiring a specific interrupt.

### PCI/VGA Palette Snoop

Leave this field at [Disabled]. Available options are [Enabled] and [Disabled].

## PC Health Status

This section helps you to get more information about your system including CPU temperature, FAN speed and voltages. It is recommended that you contact with your motherboard supplier to get proper value about your setting of the CPU temperature.

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

CPU Warning Temperature	[Disabled]	Item Help
Current System Temp.		Menu Level <input type="checkbox"/>
Current CPU Temperature		
Current System Fan		
Current CPU Fan		
Current Power Fan		
Vcore		
VIT		
+3.3V		
+ 5V		
+12V		
-12V	-	
- 5V	-	
VBAT(V)		
5VSB(V)		
Chassis intrusion Detect	[Disabled]	
Shutdown Temperature	[Disabled]	
??? ? Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help F5:Previous Values F6:Fail-safe Defaults F7:Optimized Defaults		

### CPU Warning Temperature

This item allows you to set the CPU warning temperature. The system will beep while the CPU reaches the warning temperature. Default value is [Disabled].

### Current SystemTemp.

This item shows the current CPU System temperature.

### Current System/CPU/Power Fan

This item shows the state of these components' fan.

## **Chapter 3**

### **Vcore**

This item shows the current system voltage.

### **Chassis Intrusion Detect**

When set to [Enabled], any intrusion on the system chassis will be recorded. The next time you turn on the system, it will show a warning message on the screen. To clear the warning message, choose [Reset] in the field. After clearing the message it will go back to [Enabled].

### **Shutdown Temperature**

This item allows you to set the shutdown temperature level for the processor. When the processor reach the temperature you set, this will shutdown the system. This function only works in Windows® 95/98 operation system. Available options are [Disabled], [80°C/176°F], [85°C/185°F] and [90°C/194°F]. Default Value is [Disabled].

## Frequency/Voltage Control

This section is for setting CPU Frequency/Voltage Control.

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

Auto Detect DIMM/PCI Clk	[Enabled]	Item Help
CPU Host/SDRAM/PCI Clk/Sst	[Default]	Menu Level <input type="checkbox"/>
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/PCICLK

This item allows you to enable/disable auto detect DIMM/PCI Clock. Available options are [Enabled] and [Disabled]. Default value is [Enabled].

### CPU Host/SDRAM/PCI Clk/Sst

This item allows you to slightly adjust the CPU FSB (Front Side Bus), SDRAM and PCI clock frequency.

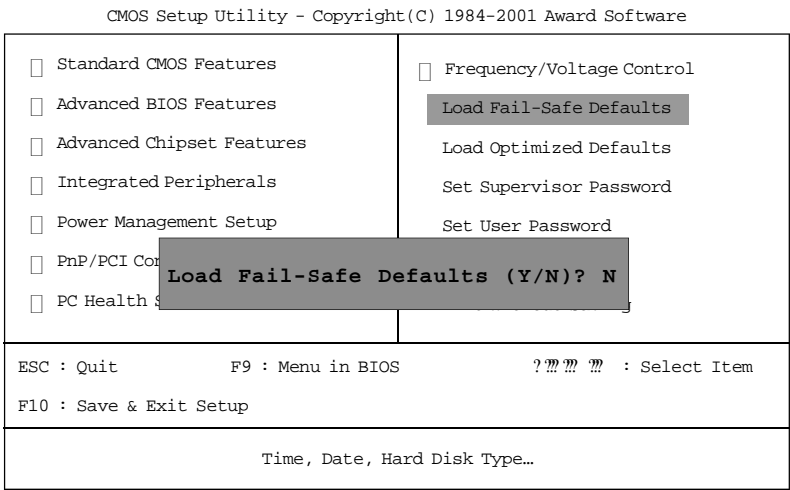
### CPU Clock Ratio

This item allows you to set the CPU Clock Ratio.

Chapter 3

Load Fail-Safe Defaults

When you select this function, a message as below will appear on the screen:



Pressing ‘Y’ to load the BIOS default values for the most stable, minimal performance system operations.

## Load Optimized Defaults

When you select this function, a message as below will appear on the screen:

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<input type="checkbox"/> Standard CMOS Features	<input type="checkbox"/> Frequency/Voltage Control
<input type="checkbox"/> Advanced BIOS Features	Load Fail-Safe Defaults
<input type="checkbox"/> Advanced Chipset Features	<b>Load Optimized Defaults</b>
<input type="checkbox"/> Integrated Peripherals	Set Supervisor Password
<input type="checkbox"/> Power Management Setup	Set User Password
<input type="checkbox"/> PnP/PCI Configuration	
<input type="checkbox"/> PC Health Status	

Load Optimized Defaults (Y/N)? N

ESC : Quit                      F9 : Menu in BIOS                      ? ? ? ? : Select Item

F10 : Save & Exit Setup

Time, Date, Hard Disk Type...

Pressing ‘Y’ to load the default values that are factory settings for optimal performance system operations.

## Set Supervisor/User Password

When you select this function, a message as below will appear on the screen:

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

<input type="checkbox"/> Standard CMOS Features	<input type="checkbox"/> Frequency/Voltage Control
<input type="checkbox"/> Advanced BIOS Features	Load Fail-Safe Defaults
<input type="checkbox"/> Advanced Chipset Features	Load Optimized Defaults
<input type="checkbox"/> Integrated Peripherals	<b>Set Supervisor Password</b>
<input type="checkbox"/> Power Management Setup	Set User Password
<input type="checkbox"/> PnP/PCI Co	
<input type="checkbox"/> PC Health S	

Enter Password:

ESC : Quit                      F9 : Menu in BIOS                      ? ? ? : Select Item

F10 : Save & Exit Setup

Time, Date, Hard Disk Type...

Type the password (up to eight characters in length) and press <Enter>. The password typed now will clear any previously entered password from CMOS memory. You will be asked to confirm the password. Type the password again and press <Enter>. You may also press <Esc> to abort the selection and not enter a password.

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

When a password has been enabled, you will be prompted to enter it every time you try to enter Setup. This prevents an unauthorized person from changing any part of your system configuration.

Additionally, when a password is enabled, you can also require the BIOS to request a password every time your system is rebooted. This would prevent unauthorized use of your computer.

You determine when the password is required within the BIOS Features Setup Menu and its Security option. If the Security option is set to “System”, the password will be required both at boot and at entry to Setup. If set to “Setup”, prompting only occurs when trying to enter Setup.

***About Supervisor Password & User Password:***

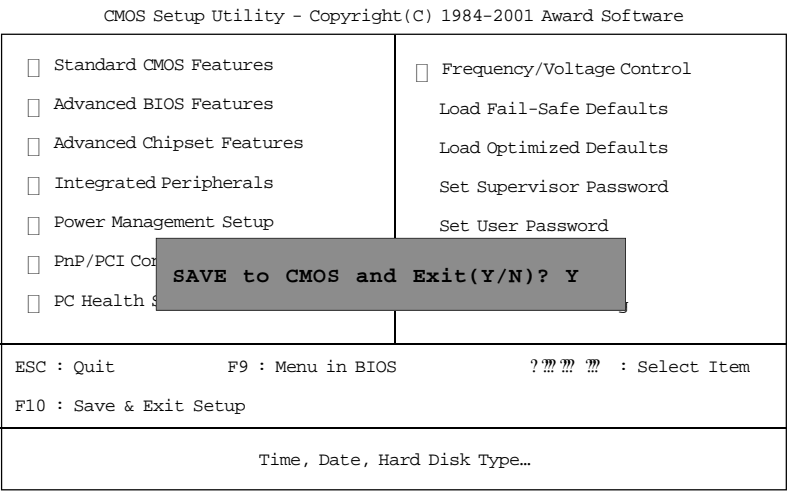
*Supervisor password :* Can enter and change the options of the setup menus.

*User password:* Can only enter but do not have the right to change the options of the setup menus. When you select this function, the following message will appear at the center of the screen to assist you in creating a password.

Chapter 3

Save & Exit Setup

When you want to quit the Setup menu, you can select this function to save the data. A message as below will appear on the screen:



Typing “Y” will allow you to quit the Setup Utility and save the user setup value to RTC CMOS.

Typing “N” will allow you to return to Setup Utility.

## Exit without Saving

When you want to quit the Setup menu, you can select this function without saving the data. A message as below will appear on the screen:

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

<input type="checkbox"/> Standard CMOS Features	<input type="checkbox"/> Frequency/Voltage Control
<input type="checkbox"/> Advanced BIOS Features	Load Fail-Safe Defaults
<input type="checkbox"/> Advanced Chipset Features	Load Optimized Defaults
<input type="checkbox"/> Integrated Peripherals	Set Supervisor Password
<input type="checkbox"/> Power Management Setup	Set User Password
<input type="checkbox"/> PnP/PCI Configuration	
<input type="checkbox"/> PC Health Status	

Quit Without Saving(Y/N)? Y

ESC : Quit                      F9 : Menu in BIOS                      ? < > < > : Select Item

F10 : Save & Exit Setup

Time, Date, Hard Disk Type...

Typing “Y” will allow you to quit the Setup Utility without saving data to RTC CMOS.

Typing “N” will allow you to return to Setup Utility.

# ***Glossary***

## **Buffer**

A temporary storage area, usually in RAM. The purpose of most buffers is to act as a holding area, enabling CPU to manipulate data before transferring it to a device.

## **Bus**

A collection of wires through which data is transmitted from one part of a computer to another. You can think of a bus as a highway on which data travels within a computer.

## **Chipset**

A number of integrated circuits designed to perform one or more related functions. For example, one chipset may provide the basic functions of a modem while another provides the CPU functions for a computer.

## **CMOS**

Abbreviation of *complementary metal oxide semiconductor*. Pronounced *see-moss*, CMOS is a widely used type of semiconductor. CMOS chips are particularly attractive for use in battery-powered devices, such as portable computers. Personal computers also contain a small amount of battery-powered CMOS memory to hold the date, time, and system setup parameters.

## **COM**

In DOS system, the name of a serial communications port. DOS supports four serial ports: COM1, COM2, COM3, and COM4.

## **DIMM**

Short for *dual in-line memory module*, a small circuit board that holds memory chips. A *single in-line memory module (SIMM)* has a 32-bit path to the memory chips whereas a DIMM has 64-bit path.

## **IDE**

Abbreviation of either *Intelligent Drive Electronics* or *Integrated Drive Electronics*, depending on who you ask. An IDE interface is an interface for mass storage devices, in which the controller is integrated into the disk or CD-ROM drive.

## **IrDA**

Short for *Infrared Data Association*, a group of device manufacturing that developed a standard for transmitting data via infrared light waves. This enables you to transfer data from one device to another without any cables.

## **LED**

Abbreviation of *light emitting diode*, an electronic device that lights up when electricity is passed through it. LEDs are usually red. They are good for displaying images because they can be relatively small, and they do not burn out.

## **LPT**

A name frequently used by operating systems to identify a printer. Although LPT originally stood for *line printer terminal*, it is now used more generally to identify any type of printer.

### **PCI**

Acronym for *Peripheral Component Interconnect*, a local bus standard developed by Intel Corporation. Most modern PCs include a PCI bus in addition to a more general ISA expansion bus.

### **PS/2 Port**

A type of port developed by IBM for connecting a mouse or keyboard to a PC. The PS/2 port supports a mini DIN plug containing just 6 pins. Most PCs have a PS/2 port so that the special port can be used by another device, such as a modem.