

# MSI

MICRO-STAR INTERNATIONAL

## **MS-6390 (v1.X) Micro-ATX Mainboard**



**Version 1.0**  
**G52-MA00552**

Manual Rev: 1.0  
Release Date: Feb. 2002



### **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.

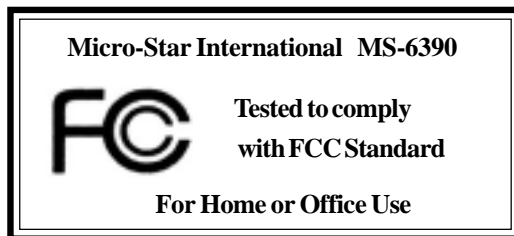
#### **Notice 1**

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 LA NOTICE D'INSTALLATION AVANT DE RACCORDER AU RESEAU.**



## **Edition**

Feb. 2002

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## **Revision History**

<b>Revision</b>	<b>Revision History</b>	<b>Date</b>
1.0	First Release	Feb. 2002

## 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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# Getting Started

# 1

Thank you for purchasing MS-6390 motherboard. The MS-6390 Micro-ATX mainboard is a high-performance computer mainboard based on **VIA® KM266 & VT8233A/8235** chipsets and designed for the **AMD® Athlon™, Athlon™ XP or Duron™** (PGA) processor for value business/ personal desktop markets.

## TOPICS

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## Mainboard Specification

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### CPU

- Supports Socket A (Socket-462) for AMD® Athlon™/Athlon™ XP /Duron™ processor
- Supports 1GHz to 2000+MHz and higher processor

### Chipset

- VIA® KM266 chipset
  - FSB @200/266MHz
  - Integrated ProSavage8 4 2D/3D Graphic Controller
  - AGP 4x and high bandwidth V-link host controller
  - Advanced memory controller supports PC200/266 DDR
- VIA® VT8233A/8235 chipset
  - High bandwidth V-link client controller
  - Direct sound ready AC97 digital audio controller
  - Ultra DMA 33/66/100 master mode EIDE controller
  - Supports both ACPI and legacy APM power management
  - USB 2.0 Integrated for VT8235 option

### Clock Generator

- 100/133MHz clocks are supported.

### Main Memory

- Supports four memory banks using two 184-pin DDR DIMMs
- Supports a maximum memory size up to 2GB
- Supports 2.5V DDR SDRAM DIMM

### Slots

- One AGP (Accelerated Graphics Port) slot
  - AGP specification compliant
  - Supports AGP 2.0 1x/2x/4x
- Three 32-bit Master PCI bus slots (support 3.3v/5v PCI bus interface)
- One CNR (Communication Network Riser) slot

### On-Board IDE

- An IDE controller on the VT8235/8233A chipset provides IDE HDD/CD-ROM with PIO, Bus Master and Ultra DMA33/66/100 operation modes
- Can connect up to four IDE devices

### Audio

- Front Audio supported
- Chip integrated
  - Direct Sound AC97 Audio

### TV-Out Onboard (Optional)

- Chronitel 7005
- Reserve 2 x 3 pin out


### LAN Onboard

- Realtek 8101L
- RJ45 connector

### Modem pin out

- Reserve 2 x 6 pin out
- Must use proprietary PCI Modem card with PCTEL solution
- Must work with LAN chip

### On-Board Peripherals

- On-Board Peripherals include:
    - 1 floppy port supports 2 FDDs with 360K, 720K, 1.2M, 1.44M and 2.88Mbytes
    - 1 serial port (COM A)
    - 1 VGA port
    - 1 parallel port supports SPP/EPP/ECP mode
    - 4 USB ports (2 Rear Connectors/ 1 USB Front Pin Header -- 2 ports)
-  *Note: All USB ports are compatible with USB2.0 spec when 8235 chipset is integrated on the board.*
- 1 IrDA connector for SIR/CIR/ASKIR/HPSIR
  - 1 audio/game port

### 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: 24.5 cm x 21.55 cm (9.6” x 8.5”)

## *Chapter 1*

### **Mounting**

- 6 mounting holes

### **Others**

- Modem (External/Internal) Ring Wake Up Function (Internal modem is through PME)
- LAN Wake Up Function (through PME)
- Supports PCI 2.2
- Suspend to RAM/Disk

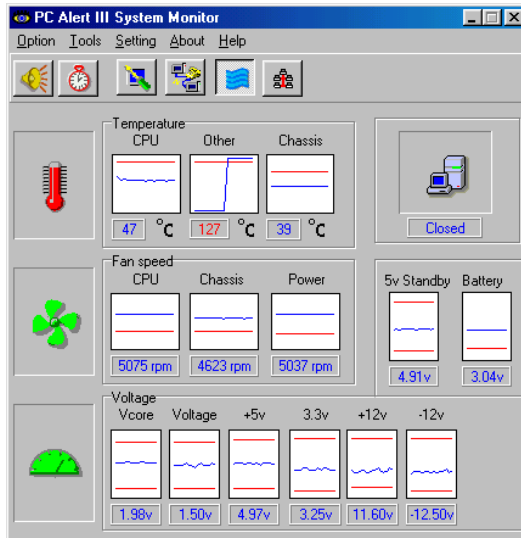
## MSI Special Features

### PC Alert™ III

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

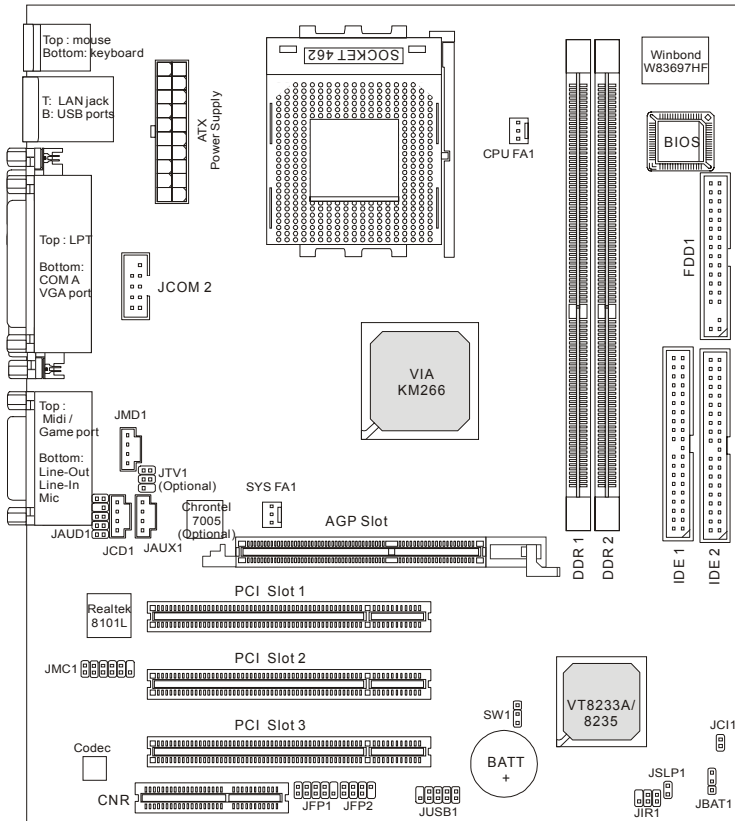
- \* monitor CPU & system temperatures
- \* monitor fan speed(s)
- \* monitor system voltage
- \* monitor chassis intrusion

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 the warning.



**Note:** Items shown on PC Alert III vary depending on your system's status.

# Mainboard Layout



**MS-6390 Micro-ATX Mainboard**

## Quick Components Guide

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Component	Function	Reference
DDR1~2	Installing DDR SDRAM modules	See p. 2-5~2-6
Socket 462	Installing CPU	See p. 2-2~2-4
CPUFA1	Connecting to CPUFAN	See p. 2-15
SYSFA1	Connecting to SYSTEM FAN	See p. 2-15
ATX Power Supply	Installing power supply	See p. 2-7
IDE1 & IDE2	Connecting to IDE hard disk drive	See p.2-14
FDD1	Connecting to floppy disk drive	See p.2-13
JUSB1	Connecting to USB interfaces	See p. 2-20
PCI Slot 1~3	Installing expansion cards	See p. 2-25
AGP Slot	Installing AGP cards	See p. 2-25
CNR Slot	Installing CNR cards	See p. 2-25
JMC1	Connecting to modem module	See p. 2-18
JBAT1	Clearing CMOS data	See p. 2-23
JFP1/2	Connecting to case	See p. 2-17
JIR1	Connecting to IR module	See p. 2-16
JCI1	Connecting to chassis intrusion switch	See p. 2-16
JSLP1	Connecting to power saving switch	See p. 2-20
JTV1	Connecting to TV-Out bracket	See p. 2-22
JCOM2	Connecting to COM port	See p. 2-10
JAUD1	Connecting to audio connector	See p. 2-19
JCD1	Connecting to CD-ROM audio connector	See p. 2-21
JAUX1	Connecting to DVD add-on card	See p. 2-21
JMD1	Connecting to modem's audio connector	See p. 2-21

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# *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.

Use a grounded wrist strap before handling computer components. Static electricity may damage the components.

**TOPICS**

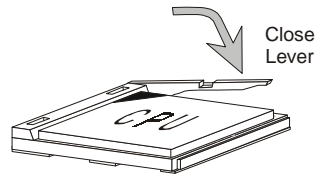
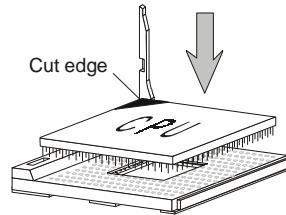
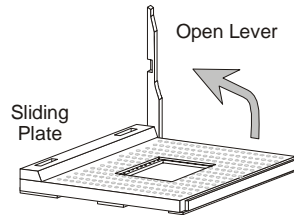
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## Central Processing Unit: CPU

The mainboard supports AMD® Athlon™, Athlon™ XP and Duron™ processors in the 462 pin package. The mainboard uses a CPU socket called Socket A for easy CPU installation. When you are installing the CPU, **make sure the CPU has a heat sink and a cooling fan attached on the top to prevent overheating.** If you do not find the heat sink and cooling fan, contact your dealer to purchase and install 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 cut edge. The cut edge should point towards the lever pivot. The CPU will only fit in the correct orientation.
3. Hold the CPU down firmly, and then close the lever 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 from overheating.*





**WARNING! Thermal Issue for CPU**

As processor technology pushes to faster speeds and higher performance, thermal management becomes increasingly crucial when building computer systems. Maintaining the proper thermal environment is key to reliable operation. As such, the processor must be maintained in the specified thermal requirements.

AMD Athlon™/Duron™/Athlon™ XP processor with a speed of **600MHz and above** requires LARGER heatsink and fan. You also need to add thermal grease between the CPU and heatsink to improve heat dissipation. Then, make sure that the CPU and heatsink are securely fastened and in good contact with each other. These are needed to prevent damaging the processor and ensuring reliable operation. If you want to get more information on the proper cooling, you can visit AMD's website for reference.

## Chapter 2

### CPU Core Speed Derivation Procedure

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

### CPU Clock Selection

The hardware configuration for CPU Front Side Bus (FSB) frequency on the motherboard is set to 100MHz by default. Therefore, to enable a 133MHz CPU to run at 133MHz when it is installed on the board, you have to adjust the CPU clock frequency through the jumper SW1.

For more information on the issue, refer to *CPU FSB Clock Jumper: SW1* later in this chapter.



**WARNING!**

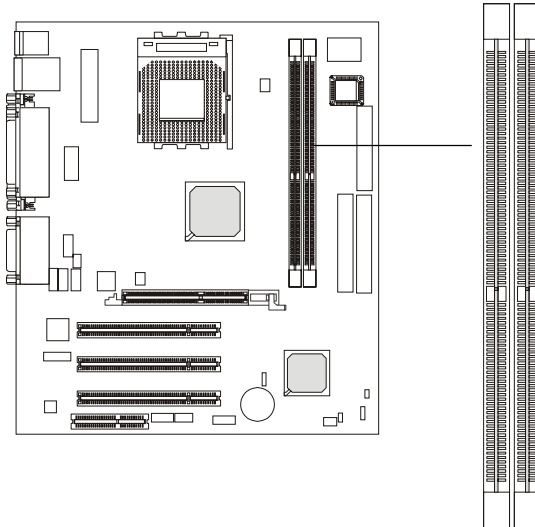
#### ***Overclocking***

*This motherboard is 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 is not recommended. **We do not guarantee the damages or risks caused by inadequate operation or beyond product specifications.***

## Memory

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The mainboard provides 2 sockets for 184-pin DDR SDRAM DIMM (Double In-Line Memory Module) modules and supports the memory size up to 2GB. You can install PC2100/DDR266 or PC1600/DDR200 DRAM modules on the DDR DIMM slots (DIMM 1~2).



**DDR DIMM Slots  
(DIMM 1~2)**

### Introduction to DDR SDRAM

DDR (Double Data Rate) SDRAM is similar to conventional SDRAM, but doubles the rate by transferring data twice per cycle. It uses 2.5 volts as opposed to 3.3 volts used in SDR SDRAM, and requires 184-pin DIMM modules rather than 168-pin DIMM modules used by SDR SDRAM. High memory bandwidth makes DDR an ideal solution for high performance PC, workstations and servers.

## Chapter 2

### DIMM Module Combination

Install at least one DIMM module on the slots. Memory modules can be installed on the slots in any order. You can install either single- or double-sided modules to meet your own needs.

Memory modules can be installed in any combination as follows:

Slot	Memory Module	Total Memory
DIMM 1 (Bank 0 & 1)	S/D	64MB~1GB
DIMM 2 (Bank 2 & 3)	S/D	64MB~1GB
<b>Maximum System Memory Supported</b>		64MB~2GB

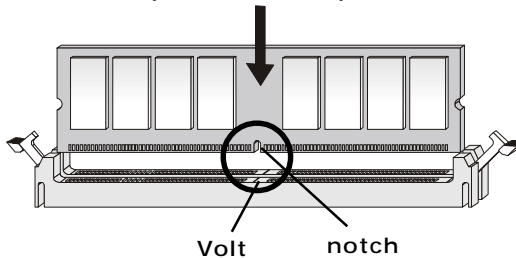
**S: Single Side**

**D: Double Side**

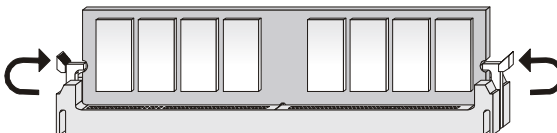
### Installing DIMM Modules

The DDR DIMM has only one notch on the center of the module. The module will only fit in the right orientation.

1. Insert the DIMM memory module vertically into the DIMM slot. Then push it in.



2. The plastic clip at each side of the DIMM slot will automatically close.

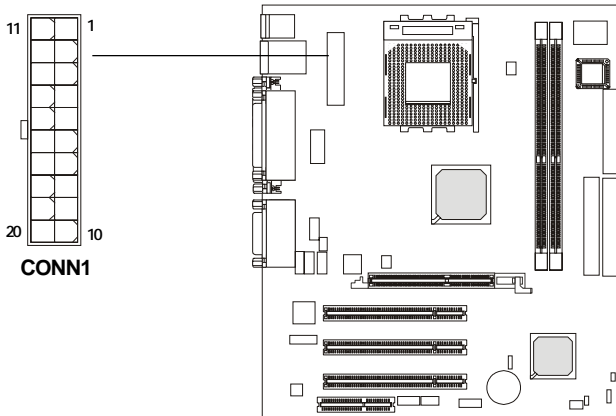


## Power Supply

The mainboard supports ATX power supply for the power system. Before inserting the power supply connector, always make sure that all components are installed properly to ensure that no damage will be caused.

### ATX 20-Pin Power Connector: CONN1

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



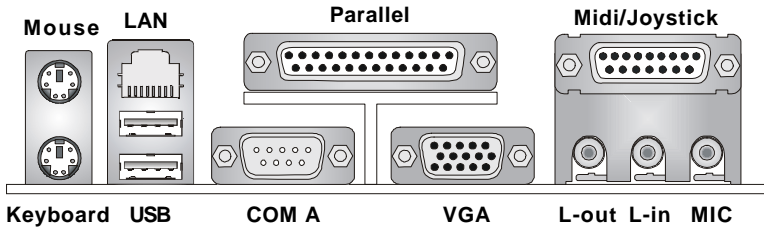
**CONN1 Pin Definition**

PIN	SIGNAL	PIN	SIGNAL
1	3.3V	11	3.3V
2	3.3V	12	-12V
3	GND	13	GND
4	5V	14	PS_ON
5	GND	15	GND
6	5V	16	GND
7	GND	17	GND
8	PW_OK	18	-5V
9	5V_SB	19	5V
10	12V	20	5V

## Back Panel

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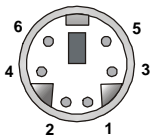
The Back Panel provides the following connectors:



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### Mouse Connector

The mainboard provides a standard PS/2<sup>®</sup> mouse mini DIN connector for attaching a PS/2<sup>®</sup> mouse. You can plug a PS/2<sup>®</sup> mouse directly into this connector. The connector location and pin assignments are as follows:



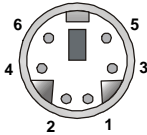
**PS/2 Mouse (6-pin Female)**

**Pin Definition**

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

## Keyboard Connector

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



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

**Pin Definition**

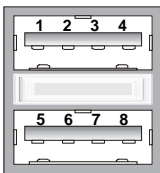
PIN	SIGNAL	DESCRIPTION
1	Keyboard DATA	Keyboard DATA
2	NC	No connection
3	GND	Ground
4	VCC	+5V
5	Keyboard Clock	Keyboard clock
6	NC	No connection

## 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-compatible devices. You can plug the USB device directly into the connector.

With 8233A chipset, the USB connectors are compliant to USB1.1 spec; with 8235 chipset, the connectors are compliant to *USB2.0* spec, which is 40 times faster than USB1.1, and is ideal for connecting high-speed USB peripherals such as USB-interfaced HDD, printer, modem, digital camera, MP3 player and so on.

**USB Port Description**



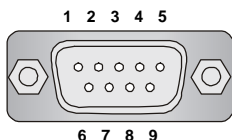
**USB Ports**

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	Negative Data Channel 1
7	+Data 1	Positive Data Channel 1
8	GND	Ground

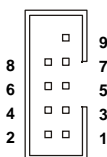
## Chapter 2

### Serial Port Connectors: COM A & COM B

The mainboard offers two 9-pin male DIN connectors as serial port COM A & COM B (COM B is the header *JCOM2* on the board). The ports are 16550A high speed communication ports that send/receive 16 bytes FIFOs. You can attach a serial mouse or other serial devices directly to the connectors.



**9-Pin Male DIN Connector**



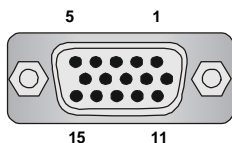
**JCOM 2 (COM B)**

#### Pin Definition

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 Indicate

### VGA DB 15 Pin Connector

One DB 15-pin VGA connector is supplied for connection to a VGA monitor.



**DB 15-Pin Female Connector**

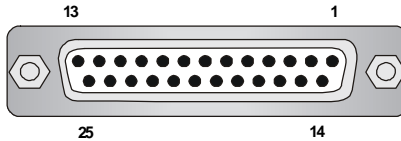
#### Pin Definition

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	Power
10	Ground
11	Not used
12	SDA
13	Horizontal Sync
14	Vertical Sync
15	SCL



## **Parallel Port Connector: LPT1**

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



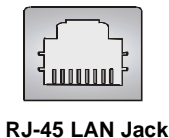
**Pin Definition**

<b>PIN</b>	<b>SIGNAL</b>	<b>DESCRIPTION</b>
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	AUTO FEED#	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	Ground

## Chapter 2

### LAN (RJ-45) Jack

The mainboard provides one standard RJ-45 jack for connection to Local Area Network (LAN). You can connect a network cable to the LAN jack.



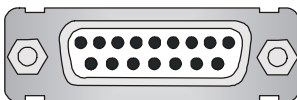
Pin Definition

PIN	SIGNAL	DESCRIPTION
1	TDP	Transmit Differential Pair
2	TDN	Transmit Differential Pair
3	RDP	Receive Differential Pair
4	NC	Not Used
5	NC	Not Used
6	RDN	Receive Differential Pair
7	NC	Not Used
8	NC	Not Used

---

### Joystick/Midi Connector

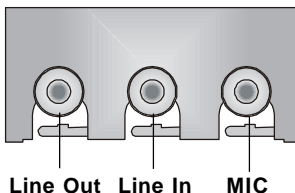
You can connect a joystick or game pad to this connector.



### Audio Port Connectors

**Line Out** is a connector for Speakers or Headphones. **Line In** is used for external CD player, Tape player, or other audio devices. **Mic** is a connector for microphones.

1/8" Stereo Audio Connectors



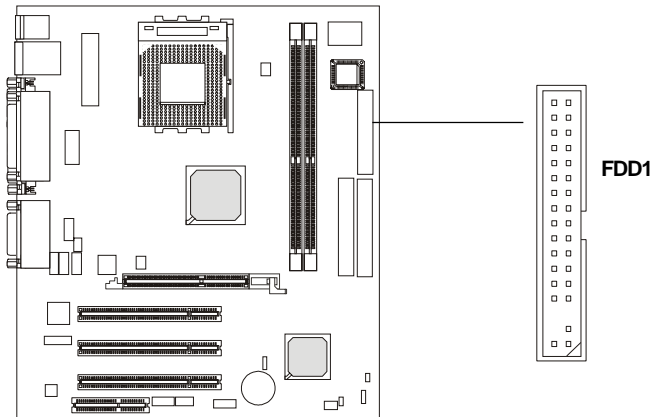
## Connectors

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The mainboard provides connectors to connect to FDD, IDE HDD, case, modem, USB Ports, IR module and CPU/System FAN.

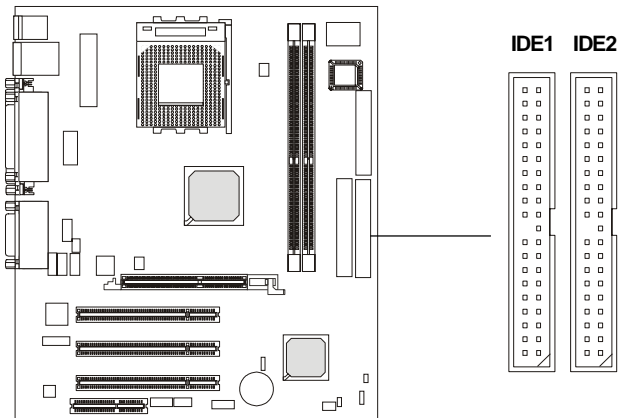
### **Floppy Disk Drive Connector: FDD1**

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



## **Hard Disk Connectors: IDE1 & IDE2**

The mainboard has a 32-bit Enhanced PCI IDE and Ultra DMA 33/66/100 controller that provides PIO mode 0~4, Bus Master, and Ultra DMA 33/66/100 function. You can connect up to four hard disk drives, CD-ROM, 120MB Floppy (reserved for future BIOS) and other devices. These connectors support the provided IDE hard disk cable.



### **IDE1 (Primary IDE Connector)**

The first hard drive should always be connected to IDE1. IDE1 can connect a Master and a Slave drive. You must configure second hard drive to Slave mode by setting the jumper accordingly.

### **IDE2 (Secondary IDE Connector)**

IDE2 can also connect a Master and a Slave drive.

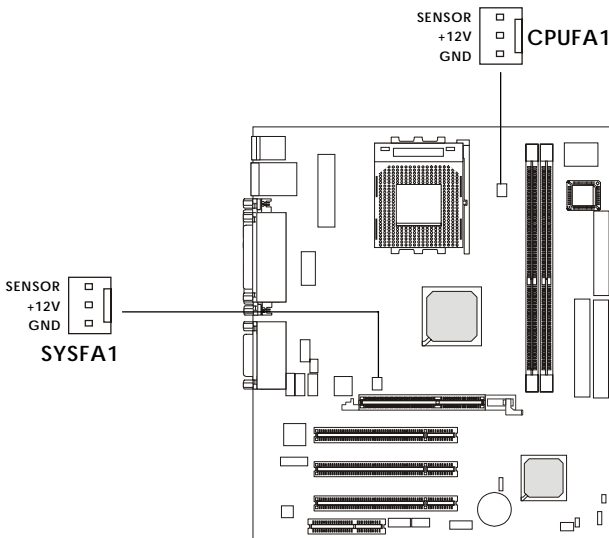


**TIP:**

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

## **Fan Power Connectors: CPUFA1/SYSFA1**

The CPUFA1 (processor fan) and SYSFA1 (system fan) support system cooling fan with +12V. It supports three-pin head connector. When connecting the wire to the connectors, 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. If 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.



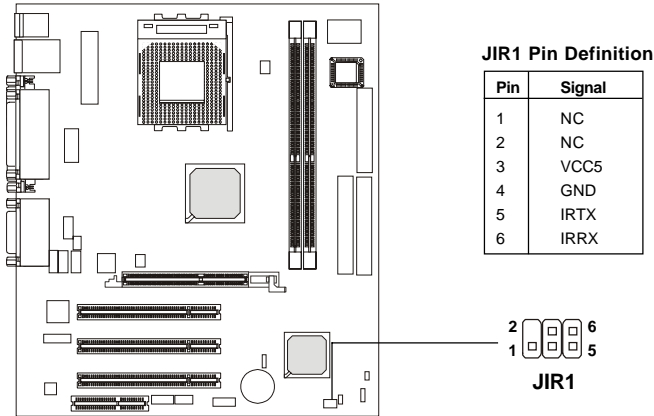
**Note:**

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.

## Chapter 2

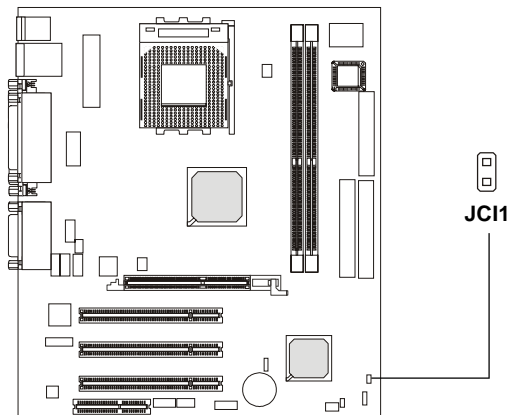
### IrDA Infrared Module Header: JIR1

The connector allows you to connect to IrDA Infrared module. You must configure the setting through the BIOS setup to use the IR function. JIR1 is compliant with Intel® Front Panel I/O Connectivity Design Guide.



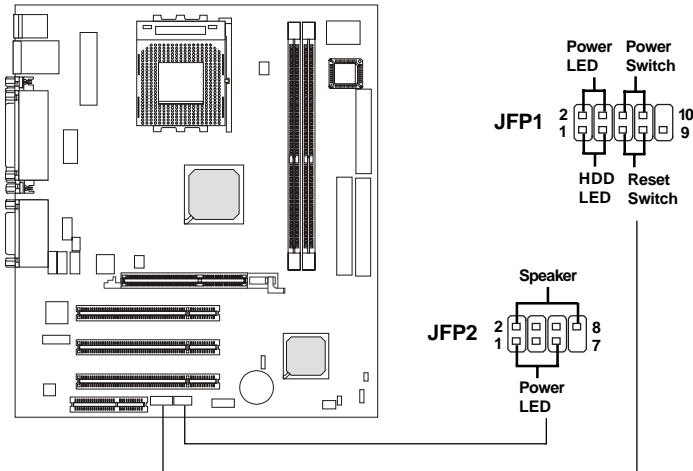
### Chassis Intrusion Switch Connector: JCI1

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, you must enter the BIOS utility and clear the record.



## Front Panel Connectors: JFP1 & JFP2

The mainboard provides two front panel connectors for electrical connection to the front panel switches and LEDs. JFP1 is compliant with Intel® Front Panel I/O Connectivity Design Guide.



**JFP1 Pin Definition**

PIN	SIGNAL	DESCRIPTION
1	HD_LED_P	Hard disk LED pull-up
2	FP PWR/SLP	MSG LED pull-up
3	HD_LED_N	Hard disk active LED
4	FP PWR/SLP	MSG LED pull-up
5	RST_SW_N	Reset Switch low reference pull-down to GND
6	PWR_SW_P	Power Switch high reference pull-up
7	RST_SW_P	Reset Switch high reference pull-up
8	PWR_SW_N	Power Switch low reference pull-down to GND
9	RSVD_DNU	Reserved. Do not use.

**JFP2 Pin Definition**

PIN	SIGNAL	PIN	SIGNAL
1	GND	2	SPK-
3	SLED	4	BUZ+
5	PLED	6	BUZ-
7	NC	8	SPK+

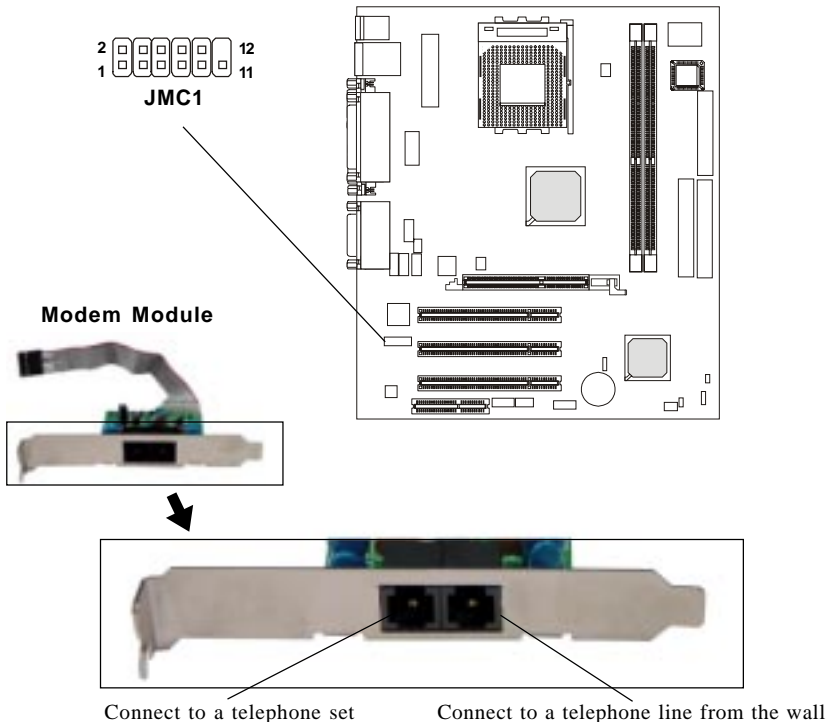
## Chapter 2

### Modem Connector: JMC1

This connector is connected to a modem module. The modem module functions in the same way as a modem, which allows users to connect to the internet via the telephone line.

**JMC1 Pin Definition**

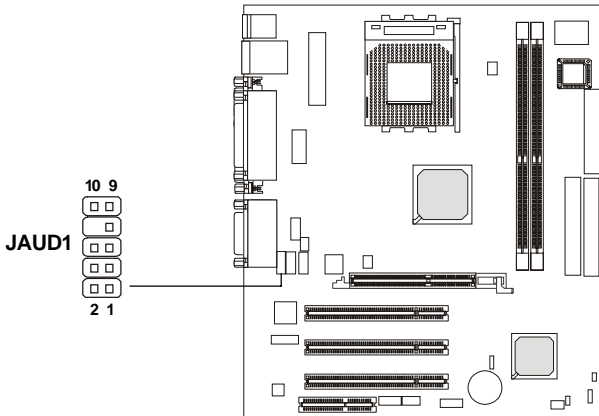
PIN	SIGNAL	DESCRIPTION
1	BIT_CLK (to LAN controller)	Serial port bit clock output/input
2	SYNC (from LAN controller)	Frame Sync input
3	RESET (from LAN controller)	Reset input (active low)
4	SDATA_OUT (from LAN controller)	Serial port data input
5	SDATA_IN (to LAN controller)	Serial port data output
6	Ground (from M/B)	Connect to System Digital Ground
7	Ground (from M/B)	Connect to System Digital Ground
8	Aout (to M/B)	Analog speaker output
9	+3.3Vaux (from M/B)	+3.3V Vaux power input
10	Ground (from M/B)	Connect to System Digital Ground
11	+3.3Vaux (from M/B)	+3.3V Vaux power input
12	PIN REMOVE	PIN REMOVE





## Front Panel Audio Connector: JAUD1

The JAUD1 front panel audio connector allows you to connect to the front panel audio and is compliant with Intel® Front Panel I/O Connectivity Design Guide.



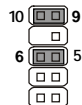
### Pin Definition

PIN	SIGNAL	DESCRIPTION
1	AUD_MIC	Front panel microphone input signal
2	AUD_GND	Ground used by analog audio circuits
3	AUD_MIC_BIAS	Microphone power
4	AUD_VCC	Filtered +5V used by analog audio circuits
5	AUD_FPOUT_R	Right channel audio signal to front panel
6	AUD_RET_R	Right channel audio signal return from front panel
7	HP_ON	Reserved for future use to control headphone amplifier
8	KEY	No pin
9	AUD_FPOUT_L	Left channel audio signal to front panel
10	AUD_RET_L	Left channel audio signal return from front panel



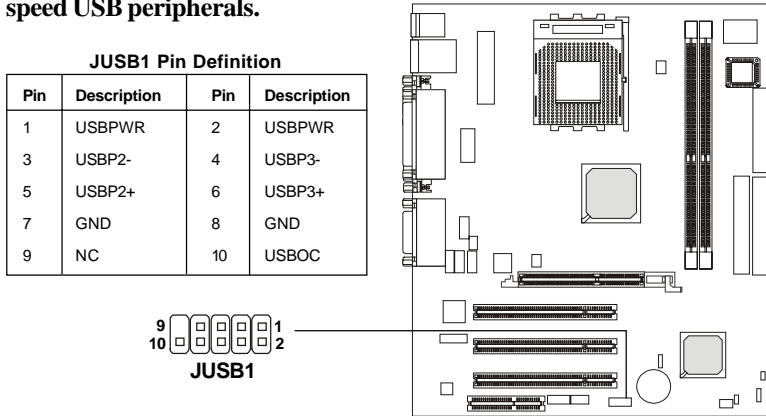
**Note:**

*If you don't want to connect to the front audio header, pins 5 & 6, 9 & 10 have to be jumpered in order to have signal output directed to the rear audio ports. Otherwise, the Line-Out connector on the back panel will not function.*



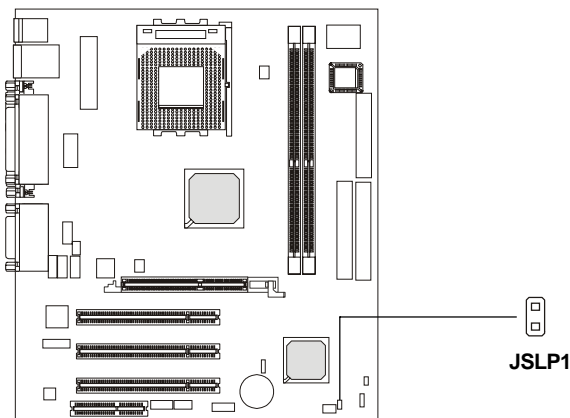
## Front USB Connector: JUSB1

The mainboard provides one front Universal Serial Bus connector for users to connect to USB ports. JUSB1 is compliant to Intel® Front Panel I/O Connectivity Design Guide. **If your motherboard uses 8235 South Bridge, this connector will be compatible with USB2.0 spec and can connect high-speed USB peripherals.**



## Power Saving Switch Connector: JSLP1

Attach a power saving switch to this connector. Pressing the switch once will have the system enter the sleep/suspend state. Press any key to wake up the system.



### **CD-In Connector: JCD1**

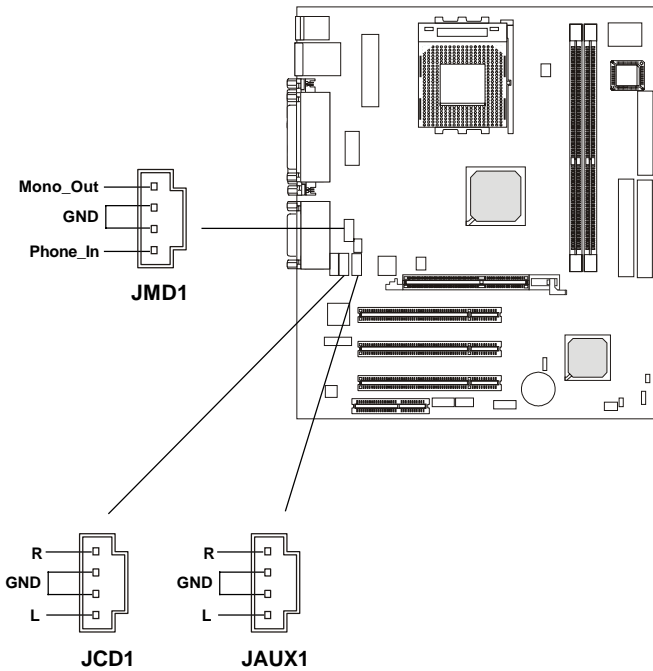
The connector is for CD-ROM audio connector.

### **Aux Line-In Connector: JAUX1**

The connector is for DVD add-on card with Line-in connector.

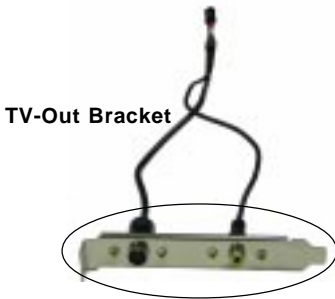
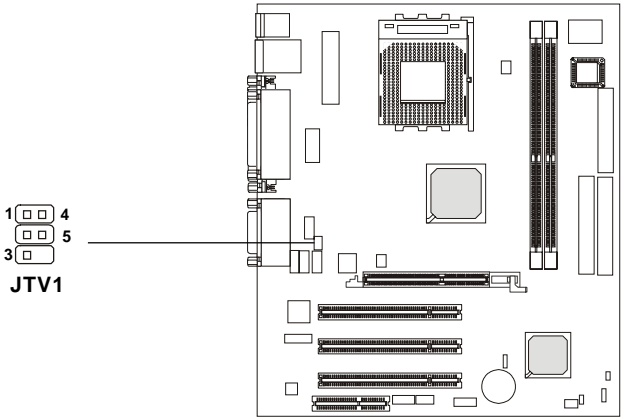
### **Modem-In Connector: JMD1**

The connector is for modem with internal audio connector.



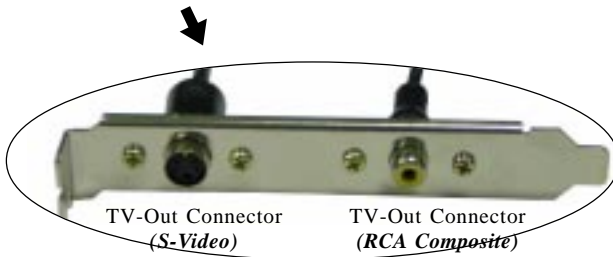
**TV-Out Connector: JTV1 (Optional)**

The mainboard optionally provides a TV-Out connector for you to attach a TV-Out bracket. The TV-Out bracket offers two types of TV-Out connectors: S-Video and RCA Composite connector. Select the appropriate one to connect to the television and the television will be able to display PC's information.



**JTV1 Pin Definition**

Pin	Description	Pin	Description
1	GND	4	CVBS
2	Yout	5	GND
3	Cout		



TV-Out Connector  
(S-Video)

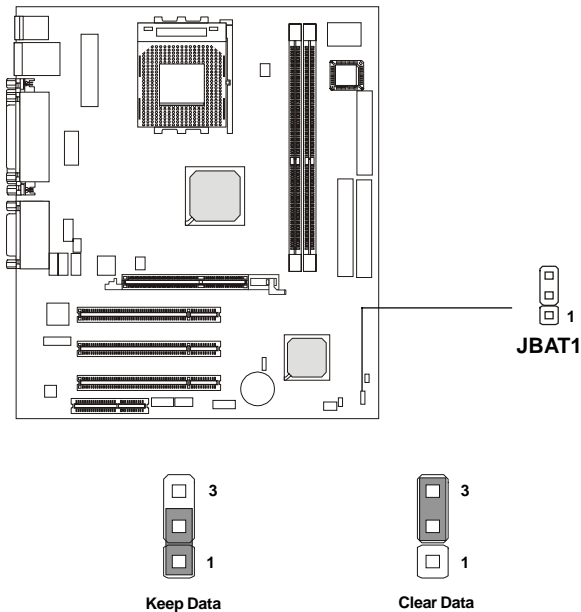
TV-Out Connector  
(RCA Composite)

## Jumpers

The motherboard provides the following jumpers for you to set the computer's function. This section will explain how to change your motherboard's function through the use of the jumpers.

### 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 it is turned on. If you want to clear the system configuration, use the JBAT1 (Clear CMOS Jumper ) to clear data. Follow the instructions below to clear the data:

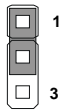
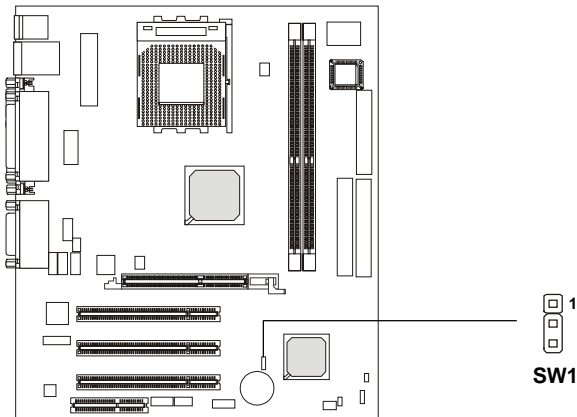


*You can clear CMOS by shorting 2-3 pin while the system is off. Then return to 1-2 pin position. Avoid clearing the CMOS while the system is on; it will damage the mainboard.*

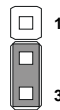
## Chapter 2

### CPU FSB Clock Jumper: SW1

The jumper is used to set the CPU Front Side Bus (FSB) frequency for the CPU installed on the board. If you install a 100MHz CPU, then set the jumper to 100MHz, and the CPU will run at 100MHz; if you install a 133MHz CPU, set the jumper to 133MHz, and the CPU will run at 133MHz.



FSB = 100MHz

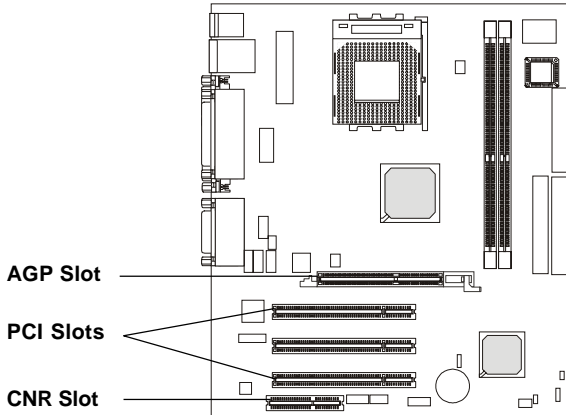


FSB = 133MHz

## Slots

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The motherboard provides one AGP slot, three 32-bit Master PCI bus slots, and one CNR slot.



### **AGP (Accelerated Graphics Port) Slot**

The AGP slot allows you to insert the AGP graphics card. AGP is an interface specification designed for the throughput demands of 3D graphics. It introduces a 66MHz, 32-bit channel for the graphics controller to directly access main memory and provides three levels of throughputs: 1x (266Mbps), 2x (533Mbps) and 4x (1.07Gbps).

### **PCI Slots**

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

### **CNR (Communication Network Riser) Slot**

The CNR slot allows you to insert the CNR expansion cards. CNR is a specially designed network, audio, or modem riser card for ATX family motherboards. Its main processing is done through software and controlled by the motherboard's chipset. Please note the CNR slot of the mainboard **supports audio and modem only**.

## Chapter 2

### PCI Interrupt Request Routing

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 “AGP/PCI” IRQ pins are typically connected to the PCI bus INT A# ~ INT D# pins as follows:

	Order 1	Order 2	Order 3	Order 4
AGP	INT A#	INT B#	INT C#	INT D#
PCI Slot 1	INT A#	INT B#	INT C#	INT D#
PCI Slot 2	INT B#	INT C#	INT D#	INT A#
PCI Slot 3	INT C#	INT D#	INT A#	INT B#

AGP & PCI Slot 1 shared.

*PCI Slot 1~3: Bus Master*



---

# *BIOS Setup*

# 3

This chapter provides information on the BIOS Setup program and allows you to configure the system for optimum use.

You may need to run the Setup program when:

- An error message appears on the screen during the system booting up, and requests you to run SETUP.
- You want to change the default settings for customized features.

## **TOPICS**

<i>Entering Setup</i>	3-2
<i>The Main Menu</i>	3-4
<i>Standard CMOS Features</i>	3-6
<i>Advanced BIOS Features</i>	3-8
<i>Advanced Chipset Features</i>	3-11
<i>Integrated Peripherals</i>	3-16
<i>Power Management Setup</i>	3-21
<i>PnP/PCI Configurations</i>	3-25
<i>PC Health Status</i>	3-27
<i>Frequency/Voltage Control</i>	3-28
<i>Load Fail-Safe/Optimized Defaults</i>	3-29
<i>Set Supervisor/User Password</i>	3-30

## Chapter 3

# Entering Setup

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Power on the computer and the system will start POST (Power On Self Test) process. When the message below appears on the screen, press <DEL> key to enter Setup.

Press DEL to enter SETUP

If the message disappears before you respond and you still wish to enter Setup, restart the system by turning it OFF and On or pressing the RESET button. You may also restart the system 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 menu, the first menu 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 containing additional options can be launched from this field. 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 <Esc >.



### 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

# The 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 accept or enter the sub-menu.



### Standard CMOS Features

Use this menu for basic system configurations.

### Advanced BIOS Features

Use this menu to set the Advanced Features available on your system.

### 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 Configurations

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 minimal but stable system performance.

**Load Optimized Defaults**

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

**Set Supervisor Password**

Use this menu to set Supervisor Password.

**Set User Password**

Use this menu to set User Password.

**Save & Exit Setup**

Save CMOS value changes to CMOS and exit setup.

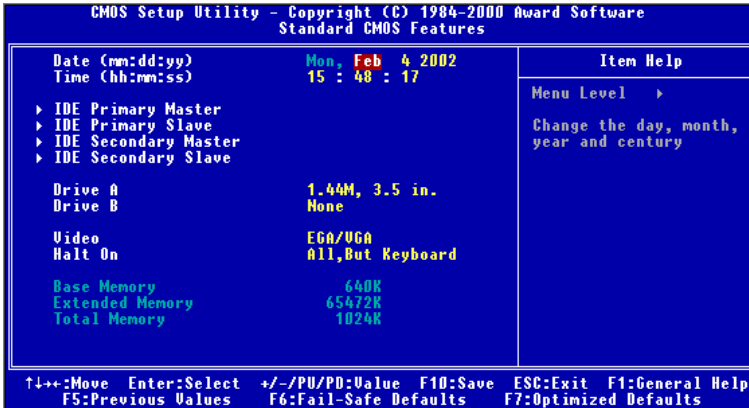
**Exit Without Saving**

Abandon all CMOS value changes and exit setup.

## Standard CMOS Features

---

The items in Standard CMOS Features Menu are divided into 10 categories. Each category includes no, 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.



### Date

The date 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 can be adjusted by users.

### Time

The time format is <hour> <minute> <second>.

### IDE Primary/Secondary Master/Slave

Press PgUp/<+> or PgDn/<-> to select *Manual*, *None* or *Auto* type. Note that the specifications of your drive must match with the drive table. The hard disk will not work properly if you enter improper information for this category. If your hard disk drive type is not matched or listed, you can use *Manual* to define your own drive type manually.

If you select *Manual*, related information is asked to be entered to the follow-

ing items. Enter the information directly from the keyboard. This information should be provided in the documentation from your hard disk vendor or the system manufacturer.

<b>Access Mode</b>	The settings are CHS, LBA, Large, Auto.
<b>Capacity</b>	The formatted size of the storage device.
<b>Cylinder</b>	Number of cylinders.
<b>Head</b>	Number of heads.
<b>Precomp</b>	Write precompensation.
<b>Landing Zone</b>	Cylinder location of the landing zone.
<b>Sector</b>	Number of sectors.

### **Drive A/B**

This item allows you to set the type of floppy drives installed. Available options: *None, 360K, 5.25 in., 1.2M, 5.25 in., 720K, 3.5 in., 1.44M, 3.5 in., 2.88M, 3.5 in.*

### **Video**

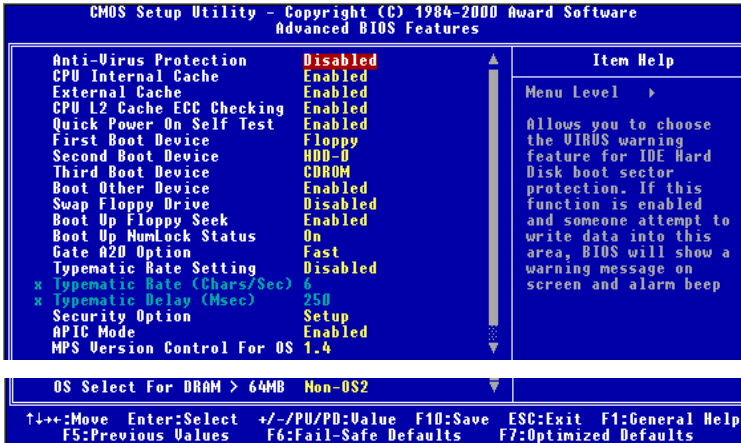
The setting controls the type of video adapter used for the primary monitor of the system. Available options: *EGA/VGA, CGA 40, CGA 80, MONO.*

### **Halt On**

The setting determines whether the system will stop if an error is detected at boot. Available options are:

<i>All Errors</i>	The system stops when any error is detected.
<i>No Errors</i>	The system doesn't stop for any detected error.
<i>All, But Keyboard</i>	The system doesn't stop for a keyboard error.
<i>All, But Diskette</i>	The system doesn't stop for a disk error.
<i>All, But Disk/Key</i>	The system doesn't stop for either a disk or a keyboard error.

## Advanced BIOS Features



### Anti-Virus Protection

The item is to set the Virus Warning feature for IDE Hard Disk boot sector protection. If the function is enabled and any attempt to write data into this area is made, BIOS will display a warning message on screen and beep. Settings: *Disabled, Enabled*.

### CPU Internal/External Cache

The item allows you to turn on or off CPU's internal (L1) and external (L2) cache. Settings: *Enabled, Disabled*.

### CPU L2 Cache ECC Checking

This allows you to enable or disable the ECC (Error-Correcting Code) feature for error detection and correction when data passes through L2 cache memory. Settings: *Enabled, Disabled*.

### Quick Power On Self Test

The option speeds up Power On Self Test (POST) after you power on the computer. When setting the item to *Enabled*, BIOS will shorten or skip some check items during POST. Settings: *Enabled, Disabled*.



**First/Second/Third Boot Device**

The items allow you to set the sequence of boot devices where BIOS attempts to load the disk operating system. The settings are:

<i>Floppy</i>	The system will boot from floppy drive.
<i>LS120</i>	The system will boot from LS-120 drive.
<i>HDD-0</i>	The system will boot from the first HDD.
<i>SCSI</i>	The system will boot from the SCSI.
<i>CDROM</i>	The system will boot from the CD-ROM.
<i>HDD-1</i>	The system will boot from the second HDD.
<i>HDD-2</i>	The system will boot from the third HDD.
<i>HDD-3</i>	The system will boot from the fourth HDD.
<i>ZIP</i>	The system will boot from ATAPI ZIP drive.
<i>LAN</i>	The system will boot from the Network drive.
<i>Disabled</i>	Disable this sequence.

**Boot Other Device**

Setting the option to *Enabled* 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**

Setting to *Enabled* will swap floppy drives A: and B:.

**Boot Up Floppy Seek**

Setting to *Enabled* will make BIOS seek floppy drive A: before booting the system. Settings: *Disabled, Enabled*.

**Boot Up NumLock Status**

This setting is to set the Num Lock status when the system is powered on. Setting to *On* will turn on the Num Lock key when the system is powered on. Setting to *Off* will allow users to use the arrow keys on the numeric keypad. Setting options: *On, Off*.

**Gate A20 Option**

This item is to set the Gate A20 status. A20 refers to the first 64KB of extended memory. When *Fast* is selected, the Gate A20 is controlled by Port92 or chipset specific method resulting in faster system performance. When *Normal* is selected, A20 is controlled by a keyboard controller or chipset hardware.

**Typematic Rate Setting**

This item is used to enable or disable the typematic rate setting including

## Chapter 3

Typematic Rate & Typematic Delay.

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

After *Typematic Rate Setting* is enabled, this item allows you to set the rate (characters/second) at which the keys are accelerated. Settings: 6, 8, 10, 12, 15, 20, 24, 30.

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

This item allows you to select the delay between when the key was first pressed and when the acceleration begins. Settings: 250, 500, 750 and 1000.

### **Security Option**

This specifies the type of BIOS password protection that is implemented. Settings are described below:

<b>Option</b>	<b>Description</b>
<i>Setup</i>	The password prompt appears only when end users try to run Setup.
<i>System</i>	A password prompt appears every time when the computer is powered on or when end users try to run Setup.

### **APICMode**

This field is used to enable or disable the APIC (Advanced Programmable Interrupt Controller). Due to compliance to PC2001 design guide, the system is able to run in APIC mode. Enabling APIC mode will expand available IRQs resources for the system. Settings: *Enabled, Disabled*.

### **MPS Version Control For OS**

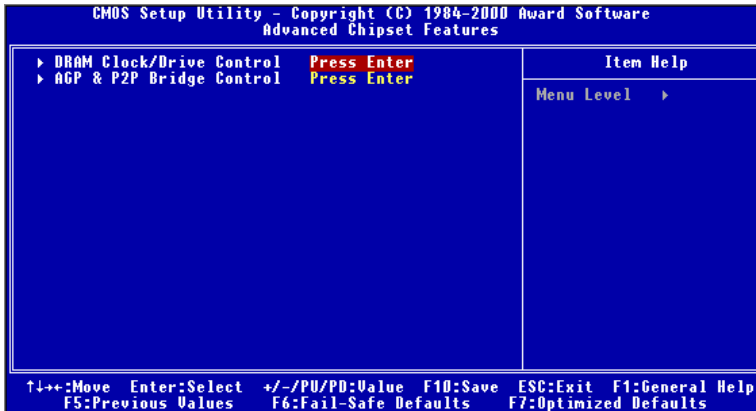
This field allows you to select which MPS (Multi-Processor Specification) version to be used for the operating system. You need to select the MPS version supported by your operating system. To find out which version to use, consult the vendor of your operating system. Settings: *1.4, 1.1*.


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

This allows you to run the OS/2® operating system with DRAM greater than 64MB. Setting options: *Non-OS2, OS2*.

## Advanced Chipset Features

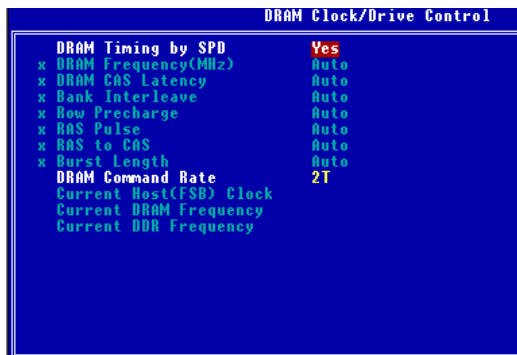
The Advanced Chipset Features setup options are used to change the values of the chipset registers. These registers control most of the system options in the computer.



 **Note:** Change these settings only if you are familiar with the chipset.

### DRAM Clock/Drive Control

Press <Enter> and the following sub-menu screen will appear.



### DRAM Timing by SPD

Selects whether DRAM timing is controlled by the SPD (Serial Presence

## Chapter 3

Detect) EEPROM on the DRAM module. Setting to *Yes* enables DRAM Frequency(MHz), DRAM CAS Latency, Bank Interleave, Row Precharge, RAS Pulse, RAS to CAS and Burst Length automatically to be determined by BIOS based on the configurations on the SPD. Selecting *No* allows users to configure these fields manually.

### **DRAMFrequency(MHz)**

The chipset supports synchronous and asynchronous mode between host clock and DRAM clock frequency. Settings are:

- HCLK*           The DRAM clock will be equal to the Host Clock.
- HCLK-33*       The DRAM clock will be equal to the Host Clock minus 33MHz. For example, if the Host Clock is 133MHz, the DRAM clock will be 100MH.
- HCLK+33*       The DRAM clock will be equal to the Host Clock plus 33MHz. For example, if the Host Clock is 100MHz, the DRAM clock will be 133MHz.
- Auto*            BIOS will automatically determine the clock frequency.

### **DRAMCASLatency**

This controls the timing delay (in clock cycles) before SDRAM starts a read command after receiving it. Settings: *2, 2.5, 3, Auto*. *2* (clocks) increases the system performance the most while *3* (clocks) provides the most stable performance.

### **Bank Interleave**

This field enables or disables bank interleave for the installed SDRAM. Disable the function if 16MB SDRAM is installed. Settings: *Disabled, Auto*.

### **Row Precharge**

This item controls the number of cycles for Row Address Strobe (RAS) to be allowed to precharge. If insufficient time is allowed for the RAS to accumulate its charge before DRAM refresh, refresh may be incomplete and DRAM may fail to retain data. This item applies only when synchronous DRAM is installed in the system. Available settings: *3T, 2T, Auto*.

### **RAS Pulse**

This setting allows you to select the number of clock cycles

allotted for the RAS pulse width, according to DRAM specifications. The less the clock cycles, the faster the DRAM performance. Settings: *6T, 5T, Auto*.

**RAS to CAS**

This field allows you to set the number of cycles for a timing delay between the CAS and RAS strobe signals, used when DRAM is written to, read from or refreshed. Faster speed offers faster performance while slower speed offers more stable performance. Settings: *3T, 2T, Auto*.

**Burst Length**

This setting allows you to set the size of Burst-Length for DRAM. Bursting feature is a technique that DRAM itself predicts the address of the next memory location to be accessed after the first address is accessed. To use the feature, you need to define the burst length, which is the actual length of burst plus the starting address and allows internal address counter to properly generate the next memory location. The bigger the size, the faster the DRAM performance. Settings: *4, 8, Auto*.

**DRAMCommandRate**

This setting controls the SDRAM command rate. Selecting *1T* allows SDRAM signal controller to run at 1T (T=clock cycles) rate. Selecting *2T* makes SDRAM signal controller run at 2T rate. *1T* is faster than *2T*. Setting options: *1T, 2T*.

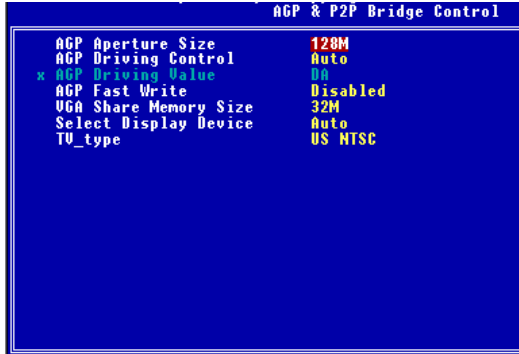
**Current Host(FSB) Clock, Current DRAM Frequency, Current DDR Frequency**

These items show the current clock frequency of Front Side Bus and installed DRAM.

**AGP & P2P Bridge Control**

Press <Enter> to enter the following sub-menu screen.

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### AGP Aperture Size (MB)

This setting controls just how much system RAM can be allocated to AGP for video purposes. The aperture is a portion of the PCI memory address range dedicated to graphics memory address space. Host cycles that hit the aperture range are forwarded to the AGP without any translation. The option allows the selection of an aperture size of *4MB*, *8MB*, *16MB*, *32MB*, *64MB*, *128MB*, and *256 MB*.

### AGP Driving Control

This field is used to adjust the AGP driving force. Selecting *Manual* allows you to select an AGP driving force in *AGP Driving Value*. It is strongly suggested to select *Auto* to avoid causing any system error.

#### AGP Driving Value

This item specifies an AGP driving force.

### AGP Fast Write

Use the field to enable or disable the AGP Fast Write feature. The Fast Write technology allows CPU to write directly into the graphics card without passing anything through system memory and improves 4X speed accordingly. Select *Enabled* only when your AGP card supports the feature.

### VGA Share Memory Size

The field specifies the size of system memory allocated for video memory. Settings: *8M*, *16M*, *32M*, *Disabled*.

**Select Display Device**

Use the field to select the type of device you want to use as the display(s) of the system. Settings: *Auto, CRT, LCD, CRT+LCD, TV, CRT+TV.*

**TV\_type**

Select the TV standard which is used as the video signal format of your TV if you have connected a TV to the system. Three TV standards are available for the field:

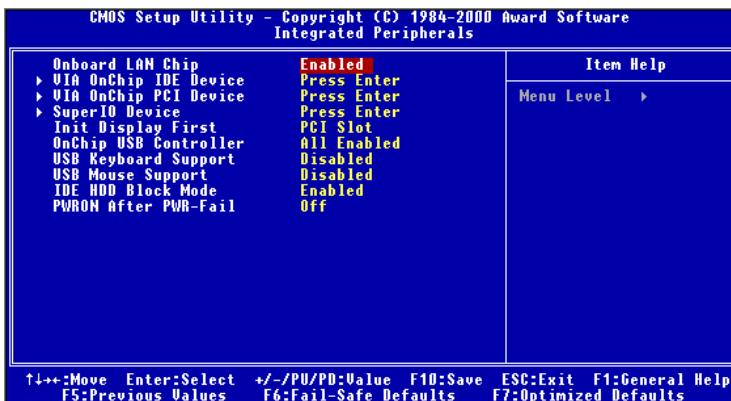
*JP NTSC* NTSC format which is used in Japan.

*US NTSC* NTSC format which is used in United States.

*PAL* PAL format. This is a dominant standard in Europe.

## Integrated Peripherals

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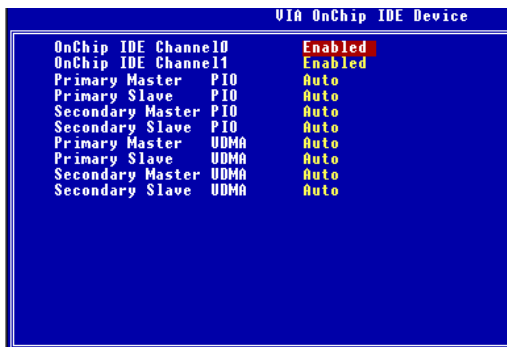


### Onboard LAN Chip

This is used to determine whether the onboard LAN controller is activated. Settings: *Enabled, Disabled*.

### VIA OnChip IDE Device

Press <Enter> to enter the following sub-menu screen.



### OnChip IDE Channel0/1

The integrated peripheral controller contains an IDE interface with support for two IDE channels. Choose *Enabled* to activate each channel



separately.

**Primary/Secondary Master/Slave PIO**

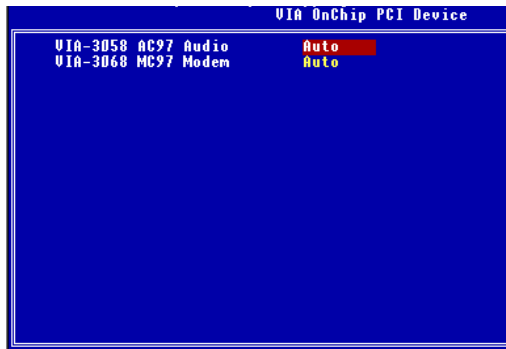
The four IDE PIO (Programmed Input/Output) fields let you set a PIO mode (0-4) for each of the four IDE devices that the onboard IDE interface supports. Modes 0 through 4 provide successively increased performance. In *Auto* mode, the system automatically determines the best mode for each device. The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

**Primary/Secondary Master/Slave UDMA**

Ultra DMA/33/66/100 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, Ultra DMA/66 or even Ultra DMA/100, select *Auto* to enable BIOS support. Settings: *Auto, Disabled.*

**VIA OnChip PCI Device**

Press <Enter> to enter the following sub-menu screen.



**VIA-3058 AC97 Audio**

*Auto* allows the mainboard to detect whether an audio device is used. If an audio device is detected, the onboard AC'97 (Audio Codec'97) controller will be enabled; if not, it is disabled. Disable the controller if you want to use other controller cards to connect an audio device. Settings: *Auto, Disabled.*

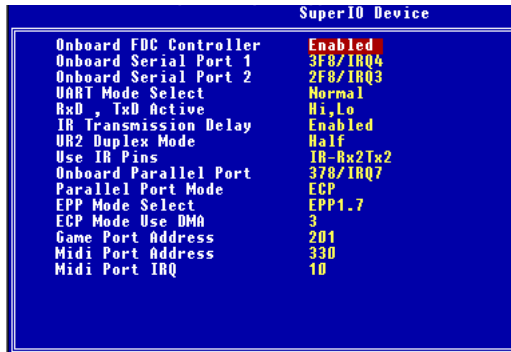
## Chapter 3

### VIA-3068 MC97 Modem

*Auto* allows the mainboard to detect whether a modem is used. If a modem is detected, the onboard MC'97 (Modem Codec'97) controller will be enabled; if not, it is disabled. Disable the controller if you want to use other controller cards to connect a modem. Settings: *Auto, Disabled*.

### SuperIO Device

Press <Enter> to enter the following sub-menu screen.



### Onboard FDC Controller

The item is used to enable or disable the onboard Floppy controller. Select *Enabled* when you have installed a floppy disk drive and want to use it.

### Onboard Serial Port 1/2

The items specify the base I/O port address and IRQ for the onboard Serial Port 1 (COM A)/Serial Port 2 (COM B). Selecting *Auto* allows BIOS to automatically determine the correct base I/O port address. Settings: *Disabled, 3F8/IRQ4, 2F8/IRQ3, 3E8/IRQ4, 2E8/IRQ3, Auto*.

### UART Mode Select

This setting allows you to specify the operation mode for serial port 2. Setting options: *IrDA, ASKIR, Normal*.

<i>IrDA</i>	IrDA-compliant Serial Infrared Port
<i>ASKIR</i>	Amplitude Shift Keyed Infrared Port
<i>Normal</i>	RS-232C Serial Port

**RxD, TxD Active**

This setting controls the receiving and transmitting speed of the IR peripheral in use. Setting options: *Hi,Hi, Hi,Lo, Lo,Hi, Lo,Lo.*

**IR Transmission Delay**

This setting determines whether the IR transmission rate will be delayed while converting to receiving mode. Setting options: *Disabled, Enabled.*

**UR2DuplexMode**

This setting controls the operating mode of IR transmission/reception. Setting options: *Full, Half.* Under Full Duplex mode, synchronous, bi-directional transmission/reception is allowed. Under Half Duplex mode, only asynchronous, bi-directional transmission/reception is allowed.

**Use IR Pins**

Please consult your IR peripheral documentation to select the correct setting of the TxD and RxD signals. Setting options: *RxD2,TxD2, IR-Rx2Tx2.*

**Onboard Parallel Port**

This specifies the I/O port address and IRQ of the onboard parallel port. Settings: *378/IRQ7, 278/IRQ5, 3BC/IRQ7, Disabled.*

**Parallel Port Mode**

This item selects the operating mode for the parallel port: *SPP, EPP, ECP,* or *ECP+EPP.*

SPP: Standard Parallel Port

EPP: Enhanced Parallel Port

ECP: Extended Capability Port

ECP + EPP: Extended Capability Port + Enhanced Parallel Port

**EPP Mode Select**

The onboard parallel port is EPP Spec. compliant, so after the user chooses the onboard parallel port with the EPP function, the setting “EPP Version” should be set. At this time either *1.7 spec* or *1.9 spec* can be chosen.

**ECP Mode Use DMA**

The ECP mode has to use the DMA channel, so after the user chooses the onboard parallel port with the ECP feature, the setting “ECP Mode User DMA” should be set. At this time, the user can choose between DMA

## Chapter 3

channel 3 or 1.

### Game Port Address

This item is used to specify the address for the onboard game port.

### Midi Port Address

The field specifies the base I/O port address for the onboard Midi Port.

### Midi Port IRQ

The item is used to select the IRQ line for onboard Midi port.

### Init Display First

This item specifies which VGA card is your primary graphics adapter. Settings: *PCI Slot* and *AGP*.

### OnChip USB Controller

This setting is used to enable/disable the onboard USB ports. Setting options: *All Enabled*, *All Disabled*, *1&2 USB Port*, *2&3 USB Port (optional)*, *1&3 USB Port (optional)*, *1 USB Port*, *2 USB Port*, *3 USB Port (optional)*.



*Note: “3 USB Port”, “1&3 USB Port”, and “2&3 USB Port” options appear only when your motherboard uses 8235 South Bridge.*

### USB Keyboard/Mouse Support

Set to *Enabled* if you need to use a USB keyboard/mouse in the operating system that does not support or have any USB driver installed, such as DOS and SCO Unix.

### 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. Settings: *Enabled*, *Disabled*.

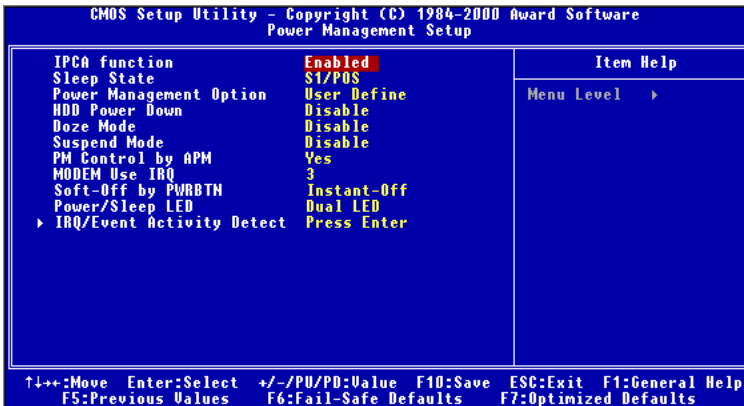
### PWRON After PWR-Fail

This item specifies whether your system will reboot after a power failure or interrupt occurs. Available settings are:

- |                   |   |
|-------------------|---|
| <i>Off</i>        | Leaves the computer in the power off state.                                   |
| <i>On</i>         | Reboots the computer.   |
| <i>Former-Sts</i> | Restores the system to the status before power failure or interrupt occurred. |

## Power Management Setup

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



### IPCA Function

This item is to activate the ACPI (Advanced Configuration and Power Management Interface) Function. If your operating system is ACPI-aware, such as Windows® 98SE/2000/ME, select *Enabled*. Settings: *Enabled, Disabled*.

### Sleep State

This item specifies the power saving modes for ACPI function. Options are:

- S1/POS*      The S1 sleep mode is a low power state. In this state, no system context (CPU or chipset) is lost and hardware maintains all system context.
  
- S3/STR*      The S3 sleep mode is a power-down state in which power is supplied only to essential components such as main memory and wake-capable devices and all system context is saved to main memory. The information stored in memory will be used to restore the PC to the previous state when a “wake up” event occurs.

## Chapter 3

### Power Management Option

This item is used to select the degree (or type) of power saving and is related to these modes: *Doze Mode* and *Suspend Mode*. There are three options for power management:

- Min Saving* Minimum Power Management. Doze Mode = 1 Hour, Suspend Mode = 1 Hour.
- Max Saving* Maximum Power Management. Doze Mode = 1 Min., Suspend Mode = 1 Min.
- User Define* Allows end users to configure each mode separately.

### HDD Power Down

If HDD activity is not detected for the length of time specified in this field, the hard disk drive will be powered down while all other devices remain active. Settings: *Disable* and *1* through *15 Min.*

### Doze Mode

If system activity is not detected for the length of time specified in this field, the CPU clock will run at slower speed while other devices still run at full speed. Settings: *Disable, 1 Min, 2 Min, 4 Min, 6 Min, 8 Min, 10 Min, 20 Min, 30 Min, 40 Min, 1 Hour.*

### Suspend Mode

If system activity is not detected for the length of time specified in this field, all devices except CPU will be shut off. Settings: *Disable, 1 Min, 2 Min, 4 Min, 8 Min, 12 Min, 20 Min, 30 Min, 40 Min, 1 Hour.*

### PM Control by APM

Setting to *Yes* will activate an Advanced Power Management (APM) device to enhance Max Saving mode and stop CPU internal clock. Settings: *Yes, No.*

### MODEM Use IRQ

This setting names the interrupt request (IRQ) line assigned to the modem (if any) on your system. Activity of the selected IRQ always awakens the system. Setting options: *3, 4, 5, 7, 9, 10, 11, NA.*

### Soft-Off by PWRBTN

This feature allows users to configure the power button function. Settings are:

- Instant-Off* The power button functions as a normal power-on/-

*Delay 4 Sec* off button.  
When you press the power button, the computer enters the suspend/sleep mode, but if the button is pressed for more than four seconds, the computer is turned off.

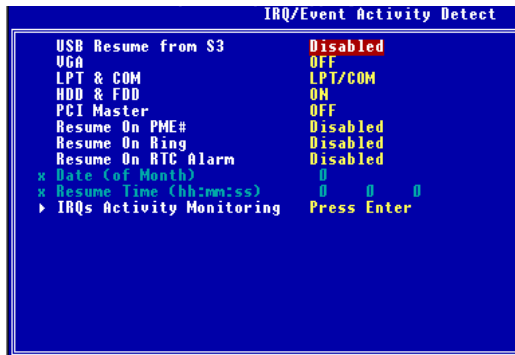
**Power/Sleep LED**

This item configures how the system uses power LED on the case to indicate the sleep/suspend state. Available options are:

- Single LED* The power LED turns off during the sleep/suspend mode.
- Dual LED* The power LED changes its color to indicate the sleep/suspend state.


**IRQ/Event Activity Detect**

Press <Enter> to enter the sub-menu and the following screen appears.



**USB Resume from S3, VGA, LPT & COM, HDD & FDD, PCI Master, Resume On PME#/Ring**

These fields specify whether the system will be awakened from power saving modes when activity or input signal of the specified hardware peripheral or component is detected.

 *Note: To use the function of “Resume On Ring”, you need to install a modem card supporting power on function.*

**Resume On RTC Alarm**

The field is used to enable or disable the feature of booting up the system on a scheduled time/date.

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### Date(of Month)

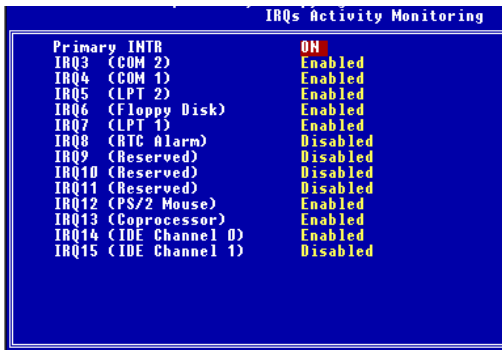
The field specifies the date for *RTC Alarm Resume*. Settings: 0~31.

### Resume Time(hh:mm:ss)

The field specifies the time for *RTC Alarm Resume*. Format is <hour><minute><second>.

### IRQs Activity Monitoring

Press <Enter> to enter the sub-menu and the following screen appears.



IRQ	Device	Status
Primary INTR		ON
IRQ3	(COM 2)	Enabled
IRQ4	(COM 1)	Enabled
IRQ5	(LPT 2)	Enabled
IRQ6	(Floppy Disk)	Enabled
IRQ7	(LPT 1)	Enabled
IRQ8	(RTC Alarm)	Disabled
IRQ9	(Reserved)	Disabled
IRQ10	(Reserved)	Disabled
IRQ11	(Reserved)	Disabled
IRQ12	(PS/2 Mouse)	Enabled
IRQ13	(Coprocessor)	Enabled
IRQ14	(IDE Channel 0)	Enabled
IRQ15	(IDE Channel 1)	Disabled

### Primary INTR

When this is set to *ON*, any event occurring will wake up the system which has been powered down.

### IRQ3 ~ IRQ15

Enables or disables the monitoring of the specified IRQ line. If set to *Enabled*, the activity of the specified IRQ line will prevent the system from entering power saving modes or awaken it from power saving modes.

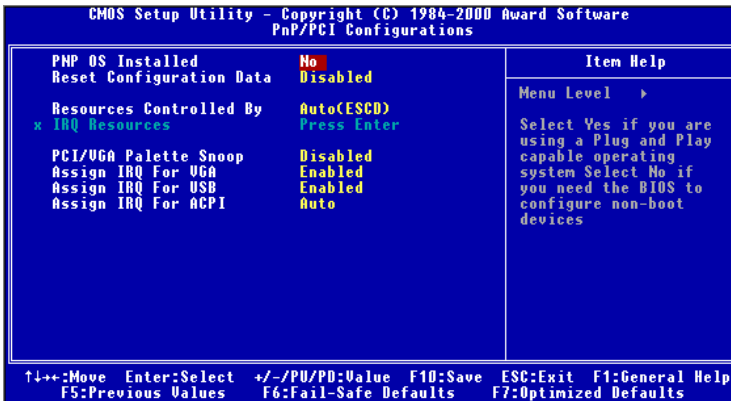


*Note: IRQ (Interrupt Request) lines are system resources allocated to I/O devices. When an I/O device needs to gain attention of the operating system, it signals this by causing an IRQ to occur. After receiving the signal, when the operating system is ready, the system will interrupt itself and perform the service required by the I/O device.*



## PnP/PCI Configurations

This section describes configuring the PCI bus system. PCI, or Peripheral Component 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.



### 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® 98. When set to *NO*, BIOS will initialize all the PnP cards. So, select *Yes* if the operating system is Plug & Play aware.

### Reset Configuration Data

Normally, you leave this field *Disabled*. Select *Enabled* to reset Extended System Configuration Data (ESCD) when you exit Setup if you have installed a new add-on card and the system reconfiguration has caused such a serious conflict that the operating system can not boot. Settings: *Enabled, Disabled*.

### Resources 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

## Chapter 3

system such as Windows® 98/2000. If you set this field to “manual”, choose specific resources by going into each sub-menu that follows this field. Settings: *Auto(ESCD)*, *Manual*.

### IRQ Resources

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

<i>PCI Device</i>	For Plug & Play compatible devices designed for PCI bus architecture.
<i>Reserved</i>	The IRQ will be reserved for further request.

### PCI/VGA Palette Snoop

PCI VGA palette is the set of colors currently used by the video device. Some special VGA cards may not show colors correctly and need to look into the video device’s VGA palette to determine what colors are in use. Then you have to turn on the palette “snoop”, permitting the palette registers of both VGA devices to be identical. The setting must be set to *Enabled* if any non-standard VGA adapter card, such as MPEG card, installed in the system requires VGA palette snooping.

### Assign IRQ For VGA/USB

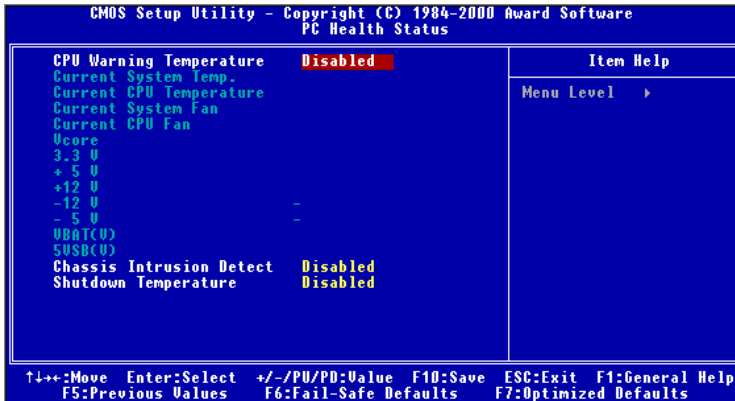
Set to *Enabled* allows BIOS to assign an IRQ to VGA card/USB device. Choose *Disabled* if you want to release the IRQ.

### Assign IRQ For ACPI

Selecting *Auto* allows BIOS to automatically assign an IRQ for SCI (System Control Interrupt) of ACPI spec. Settings: *Auto*, *IRQ 9*, *IRQ 10*, *IRQ 11*.

## PC Health Status

This section shows the status of your CPU, fan, and warning for overall system status. Monitor function is available only if there is hardware monitoring mechanism onboard.



### CPU Warning Temperature

If the CPU temperature reaches the upper limit preset in this setting, the warning mechanism will be activated. This helps you to prevent the CPU overheating problem.

### Current System Temp., Current CPU Temperature, Current System/CPU Fan, Vcore, 3.3 V, +5 V, +12 V, -12 V, -5 V, VBAT(V), 5VSB(V)

These items display the current status of all of the monitored hardware devices/components such as CPU voltages, temperatures and all fans' speeds.

### Chassis Intrusion Detect

The field enables or disables the feature of recording the chassis intrusion status and issuing a warning message if the chassis is once opened. To clear the warning message, set the field to *Reset*. The setting of the field will automatically return to *Enabled* later. Settings: *Enabled*, *Reset*, *Disabled*.

### Shutdown Temperature

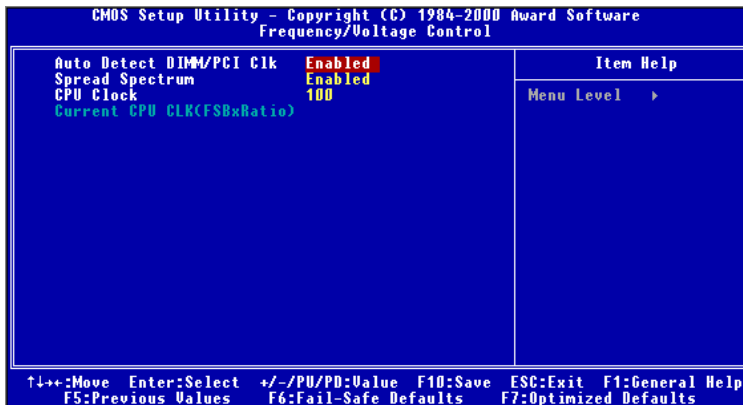
The item allows ACPI-aware OS to automatically shutdown if the system temperature reaches a thermal level preset in the field. This can prevent the system components from being damaged due to overheating.

## Chapter 3

# Frequency/Voltage Control

---

This section describes how to set the CPU FSB frequency, spread spectrum etc.



### Auto Detect DIMM/PCI Clk

This item is used to auto detect the DIMM/PCI slots. When set to *Enabled*, the system will remove (turn off) clocks from empty DIMM/PCI slots to minimize the electromagnetic interference (EMI). Settings: *Enabled*, *Disabled*.

### Spread Spectrum

This item is used to configure the clock generator's Spread Spectrum feature. Settings: *Disabled*, *Enabled*. Always disable the feature when overclocking the processor.

### CPU Clock

This item specifies the clock frequency of CPU host bus (FSB). It provides a method for end users to overclock the processor.

### Current CPU CLK(FSBxRatio)

This item displays the current CPU clock frequency including Front Side Bus (FSB) and clock multiplier (ratio).

## **Load Fail-Safe/Optimized Defaults**

---

The two options on the main menu allow users to restore all of the BIOS settings to the default Fail-Safe or Optimized values. The Optimized Defaults are the default values set by the mainboard manufacturer specifically for optimal performance of the mainboard. The Fail-Safe Defaults are the default values set by the BIOS vendor for stable system performance.

When you select Load Fail-Safe Defaults, a message as below appears:



Pressing *Y* loads the BIOS default values for the most stable, minimal system performance.

When you select Load Optimized Defaults, a message as below appears:



Pressing *Y* loads the default factory settings for optimal system performance.

## **Set Supervisor/User Password**

---

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



**Enter Password:**

Type the password, up to eight characters in length, and press <Enter>. The password typed now will replace any previously set password from CMOS memory. You will be prompted to confirm the password. Retype the password and press <Enter>. You may also press <Esc> to abort the selection and not enter a password.

To clear a set password, just press <Enter> when you are prompted to enter the password. A message will show up confirming the password will be disabled. Once the password is disabled, the system will boot and you can enter Setup without entering any password.

When a password has been set, 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 have BIOS to request a password each time the system is booted. This would prevent unauthorized use of your computer. The setting to determine when the password prompt is required is the SECURITY OPTION field of the ADVANCED BIOS FEATURES menu. If the SECURITY OPTION field is set to *System*, the password is required both at boot and at entry to Setup. If set to *Setup*, password prompt only occurs when you try to enter Setup.



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

*Supervisor password:* Can enter and change the settings of the setup menu.

*User password:* Can only enter but do not have the right to change the settings of the setup menu.

# *Glossary*

## **ACPI** (*Advanced Configuration & Power Interface*)

This power management specification enables the OS (operating system) to control the amount of power given to each device attached to the computer. Windows 98/98SE, Windows 2000 and Windows ME can fully support ACPI to allow users managing the system power flexibly.

## **AGP** (*Accelerated Graphics Port*)

A new, high-speed graphics interface that based on PCI construction and designed especially for the throughput demands of 3-D graphics. AGP provides a direct channel (32-bit wide bus) between the display controller and main memory for high graphics quality and performance.

## **ATX**

A modern shape and layout of mainboard that supersedes the widely-used Baby AT form factor. It improves many placement of components and makes a more efficient design.

## **BIOS** (*basic input/output system*)

On PCs, an essential software that contains all the control code of input/output interface (such as keyboard, disk drives, etc.). It executes hardware test on booting the system, starts the OS, and provides an interface between the OS and the components. The BIOS is stored in a ROM chip.

## **Bus**

A set of hardware lines within the computer system, through which the data is transferred among different components. In a PC, the term **bus** usually refers to a local bus that connects the internal components to the CPU and main memory.

## **Cache**

A special memory subsystem that is used to speed up the data transfer. It stores the contents of frequently accessed RAM locations and the addresses where these data items are stored.

## **Chipset**

A collection of integrated chips designed to perform one or more related functions. For

## Glossary

example, a modem chipset contains all the primary circuits for transmitting and receiving data; a PC chipset provides the electronic interfaces between all subsystems.

### **CMOS** (*complementary metal-oxide semiconductor*)

CMOS is a widely used type of semiconductor, which features high speed and low power consumption. PCs usually contain a small amount of battery-powered CMOS memory to retain the date, time, and system setup parameters.

### **COM**

In MS-DOS system, the name of a serial communications port. DOS supports four serial ports. For example, if a modem is connected to one serial port and a serial mouse to another, they are identified as COM1 and COM2.

### **DIMM** (*dual in-line memory module*)

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

### **DRAM** (*Dynamic RAM*)

A most common type of computer memory. It usually uses one transistor and a capacitor to represent a bit. As the development of technology, the memory type and specification used in computer becomes variety, such as SDRAM, DDR SDRAM, and RDRAM. For further instruction, please see the table below:

Dynamic RAM (DRAM) Memory Technologies					
Type	First Used	Clock Rate	Bus* Width	Peak Bandwidth	Volts
FPM (60,70ns)	1990	25MHz	64 bits	200 MBps	5v
EDO (50,60,70ns)	1994	40MHz	64 bits	320 MBps	5v
SDRAM (66MHz)	1996	66MHz	64 bits	528 MBps	3.3v
SDRAM (100MHz)	1998	100MHz	64 bits	800 MBps	3.3v
SDRAM (133MHz)	1999	133MHz	64 bits	1.1 GBps	3.3v
RDRAM (Direct Rambus)	1999	400MHz	16 bits	1.6 GBps	2.5v
DDR SDRAM (100MHz)	2000	100MHz	64 bits	1.6 GBps	3.3v
DDR SDRAM (133MHz)	2000	133MHz	64 bits	2.1 GBps	3.3v

\* Memory channel width (64 bits started with 75MHz Pentium)

Source: *Computer Desktop Encyclopedia*



**ECC Memory** (*error correcting code memory*)

A type of memory that contains special circuitry for testing the accuracy of data and correcting the errors on the fly.

**IDE** (*Integrated Drive Electronics*)

A type of disk-drive interface widely used to connect hard disks, CD-ROMs and tape drives to a PC, in which the controller electronics is integrated into the drive itself, eliminating the need for a separate adapter card. The IDE interface is known as the ATA (AT Attachment) specification.

**IEEE 1394**

A new, high speed external bus standard, also known as *FireWire* or *iLink*, which supports data transfer rates of up to 400 Mbps for connecting up to 63 external devices.

**IrDA** (*Infrared Data Association*)

A group of device vendors, including computer, component and telecommunications, who have developed a standard for transmitting data via infrared light waves. This enables you to transfer data from one device to another without any cables.

**LAN** (*local area network*)

A computer network that covers a relatively smaller area, such as in a building or an enterprise. It is made up of servers, workstations, shared resources, a network operating system and a communications link. These individual PCs and devices on a LAN are known as “nodes”, and are connected by cables to access data and devices anywhere on the LAN, so that many users can share expensive devices and data.

**LED** (*light emitting diode*)

A semiconductor device that converts electrical energy into light. Since it lights up (usually red) when electricity is passed through it, it is usually used for the activity lights on computer’s component, such as disk drivers.

**LPT** (*line printer terminal*)

Logical device name for a line printer; a name reserved by the MS-DOS for up to three parallel printer ports: LPT1, LPT2, and LPT3. It is frequently used by the OS to identify a printer.

## *Glossary*

### **PCI** (*Peripheral Component Interconnect*)

A local bus standard developed by Intel that first appeared on PCs in late 1993. PCI provides “plug and play” capability and allows IRQs to be shared. The PCI controller can exchange data with the system's CPU either 32 bits or 64 bits at a time.

### **PnP** (*Plug and Play*)

A set of specifications that allows a PC to configure itself automatically to work with peripherals. The user can “plug” in a peripheral device and “play” it without configuring the system manually. To implement this useful feature, both the BIOS that supports PnP and a PnP expansion card are required.

### **POST** (*Power On Self Test*)

During booting up your system, the BIOS executes a series of diagnostic tests, include checking the RAM, the keyboard, the disk drives, etc., to see if they are properly connected and operating.

### **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 modern PCs equipped with PS/2 ports so that the special port can be used by another device, such as a modem.

### **USB** (*universal serial bus*)

A hardware interface for low-speed peripherals such as the keyboard, mouse, joystick, etc. USB provides a maximum bandwidth of 12 Mbit/sec (Mbps) for connecting up to 127 peripheral devices to PC. USB features hot swap capability and multiple data streams, allows external devices to be plugged in and unplugged without turning the system off.

### **Virus**

A program or a piece of code that infects computer files by inserting in those files copies of itself. The virus code is buried within an existing program, and is activated when that program is executed. All the viruses are man-made, and often have damaging side effects.