

MSI

MICRO-STAR INTERNATIONAL

MS-6382 (v2.X) Micro ATX Mainboard



Version 2.0
G52-MA00563

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Release Date: March 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.

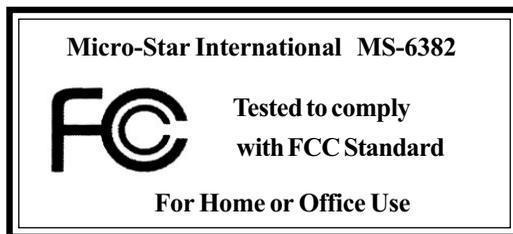
Notice 1

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

March 2002

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Revision History

Revision	Revision History	Date
2.0	First Release for PCB 2.X	March 2002

Safety Instructions

1. Read the safety instructions carefully.
2. Save this User's Guide for possible use later.
3. Keep this equipment away from humidity.
4. Lay this equipment on a stable and flat surface before setting it up.
5. The openings on the enclosure are used for air convection and to prevent the equipment from overheating. Note: Do not cover the openings.
6. Make sure that the power voltage is within its safety range and has been adjusted properly to the value of 110/220V before connecting the equipment to the power inlet.
7. Place the power cord in a way that people are unlikely to step on it. Do not place anything on 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 the equipment or cause an 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 Guide
 - the equipment was dropped and damaged
 - the equipment has obvious signs of breakage
12. Do not leave the equipment in an unconditioned environment with a storage temperature of 60°C (140°F) or above, which may damage the equipment.



CAUTION: To prevent explosion caused by improper battery replacement, use the same or equivalent type of battery recommended by the manufacturer only.

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Getting Started

1

The MS6382 v2.X Micro-ATX mainboard is a high performance computer mainboard based on **VIA KT266A & VT8233A** chipsets. The KT266A chipset is ideal for high quality and high integration desktop and notebook AGP/PCI/LPC computer systems based on Socket A processors.

The VT8233A V-Link Client controller is a highly integrated PCI/LPC controller. It supports three PCI slots of arbitration and decoding for all integrated functions and LPC bus.

For sophisticated power management, the KT266A chipset provides independent clock stop control for the SDRAM, PCI buses and Dynamic CKE control for powering down of the SDRAM. A separate suspend-well plane is implemented for the SDRAM control signals for the Suspend-to-DRAM operation.

TOPICS

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Mainboard Specification

CPU

- Socket 462 (Socket A) for AMD® Duron™/Athlon™ processor with 200/266MHzFSB
- Support 600MHz up to 1.5GHz processor

Chipset

- VIA® KT266A Chipset
 - Support 66MHz V-Link Host interface with peak bandwidth of 266MB/s
 - Advanced ECC memory controller supporting PC133/PC100 SDR SDRAM and PC2100/1600 DDR SDRAM
 - Full featured AGP Controller: AGP v2.0 compliant
- VIA® VT8233A Chipset
 - High bandwidth V-Link client controller
 - Integrated faster Ethernet controller
 - Direct sound ready AC97 digital audio controller
 - Ultra DMA 33/66/100/133 master mode EIDE controller
 - Support both ACPI and legacy APM power management

Clock Generator

- Cypress CY28341OC rev. D (support 2 DDR DIMM)

Main Memory

- Support four memory banks using two 184-pin (100/133MHz) DDR DIMM
- Support a maximum memory size of 2GB

Slots

- One (Accelerated Graphics Port) AGP slot
- One CNR (Communication Network Riser) slot
- Three 32-bit Master PCI Bus slots
 - 3rd PCI with "MEDION" specification reserved
- Supports 3.3v/5v PCI bus Interface

On-Board IDE

- Dual Channel master mode IDE controller on the VIA® VT8233A Chipset provides IDE HDD/CD-ROM with PIO, Bus Master and Ultra DMA 33/66/100/133 operation modes
- Can connect up to four IDE devices

Audio

- 2 channels S/W Audio CODEC, Realtek ALC201A
- AC97's digital link controller was integrated in VIA VT8233A

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 + COM B)
 - 1 parallel port supports SPP/EPP/ECP mode
 - 4 USB ports (2 x Rear / 2x Front)
 - 1 Audio/Game port
 - 1 optional RJ-45 LAN jack (Reaktek RTL8100BL)

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

- M-ATX Form Factor: 9.6 in. x 8.25 in.

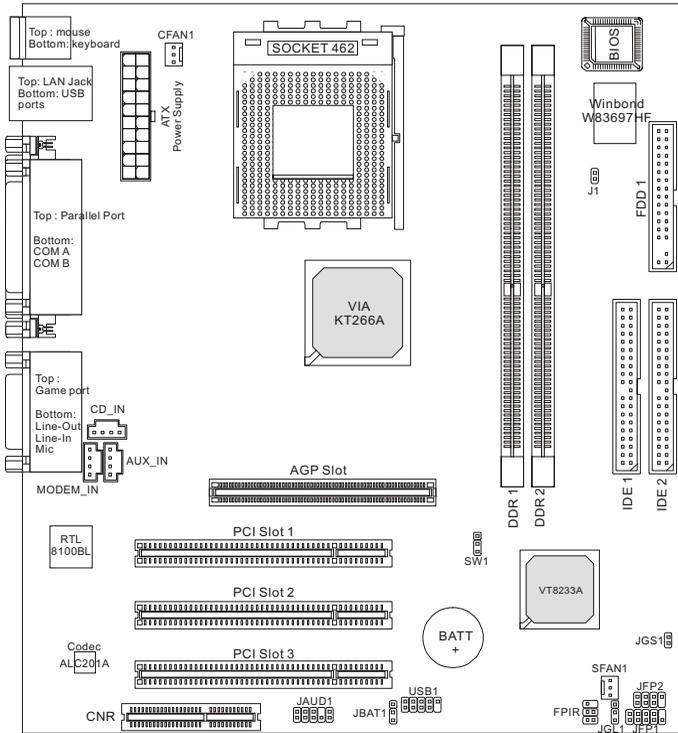
Mounting

- 6 mounting holes

Others

- Support STR/STD (S3/S4)
- Support PS2/USB KBD/Mouse Wakeup function in S3 mode
- PC 2001 Compliance
- Support Chassis Intrusion Detection & SIR

Mainboard Layout



MS-6382 v2.X Micro ATX Mainboard

Quick Components Guide

Component	Function	Reference
JWR1	ATX 20-pin Power Connector	See p. 2-6
USB Connectors	Connecting to USB devices	See p. 2-8
COM A & B Connector	Connecting to Serial ports	See p. 2-9
Game/Audio Connectors	Connecting to Game/Audio devices	See p. 2-9
LPT1	Parallel port connector	See p. 2-10
RJ-45 LAN Jack	Connecting to LAN devices	See p. 2-11
FDD1	Floppy disk drive connector	See p. 2-12
J1	Chassis intrusion switch	See p. 2-12
IDE1~ IDE2	Hard disk connectors	See p. 2-13
CD_IN	CD-in connector	See p. 2-14
AUX_IN	Aux line-in connector	See p. 2-14
MODEM_IN	Modem-in connector	See p. 2-14
CFAN1/SFAN1	Fan power connectors	See p. 2-15
JGL1	Power Saving LED Connector	See p. 2-16
JGS1	Power Saving Switch Connector	See p. 2-17
FPIR	IrDA infrared module connector	See p. 2-17
JAUD1	Front panel audio connector	See p. 2-18
JFP1 & JFP2	Front panel connectors	See p. 2-19
USB1	Front USB connector	See p. 2-20
JBAT1	Clear CMOS jumper	See p. 2-21
SW1	CPU FSB jumper	See p. 2-22
AGP Slot	Connecting to expansion cards	See p. 2-23
PCI Slots	Connecting to expansion cards	See p. 2-23
CNR Slots	Connecting to expansion cards	See p. 2-23

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

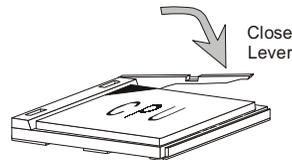
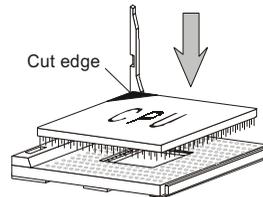
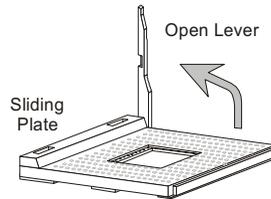
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Central Processing Unit: CPU

The mainboard supports AMD® Duron™/Athlon™ processor. The mainboard uses a CPU socket called Socket-462 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.

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 recommends the use of high performance thermal interface material.

AMD Athlon™ 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.

You can check AMD's web site for more information on proper cooling.

CPU Core Speed Derivation Procedure

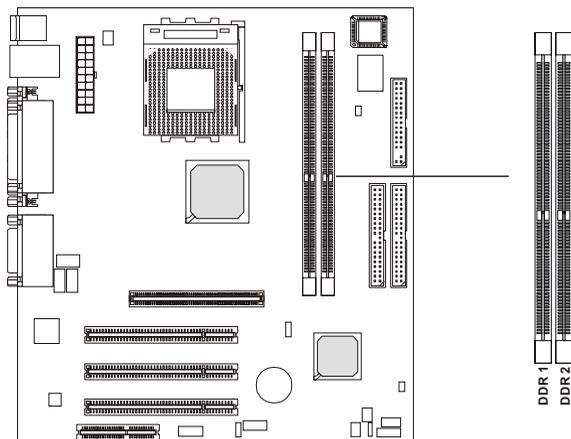
If	CPU Clock	=	100MHz
	Core/Bus ratio	=	7
then	CPU core speed	=	Host Clock x Core/Bus ratio
		=	100MHz x 7
		=	700MHz



While replacing the CPU, always turn off the ATX power supply or unplug the power cable of the ATX power supply from grounded outlet first to ensure the safety of CPU.

Memory

The mainboard provides 2 slots for 184-pin, 2.5V unbuffered DDR DIMM with 4 memory banks. You can install **PC1600 or PC2100** DDR SDRAM modules on the DDR DIMM slots (DDR 1~2). To operate properly, at least one DIMM module must be installed.



Note: The DDR DIMM slots DO NOT support PC2700 modules.

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. Two types of DDR SDRAM are available at the time of writing: PC1600, PC2100.

The following table shows the clock and peak bandwidth of each type of DDR SDRAM module:

	PC2100 (DDR266)	PC1600 (DDR200)
Clock	133MHz	100MHz
Peak Bandwidth	2133MB/s	1600MB/s

DDR Module Combination

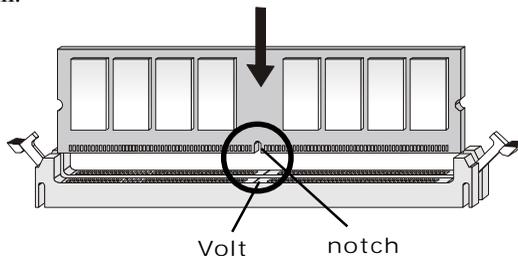
You can install either single sided or double sided 184-pin DDR DIMM modules into DDR DIMM slots to meet your needs. Different from the SDR DIMM, the DDR DIMM has only one notch on the center of module. The number of pins on either side of the breaks are different. The module will only fit in the right orientation.

You can install memory modules in any combination as follows:

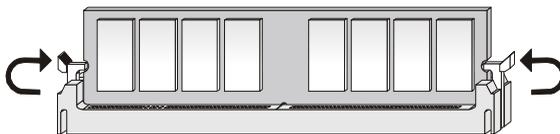
Slot	Memory Module	Total Memory
Slot 1 (Bank 0 & Bank 1)	64MB, 128MB, 256MB, 512MB, 1GB	64MB~1GB
Slot 2 (Bank 2 & Bank 3)	64MB, 128MB, 256MB, 512MB, 1GB	64MB~1GB
Maximum System Memory Supported		64MB~2GB

Installing DDR Modules

1. The DDR DIMM has only one notch on the center of module. The module will only fit in the right orientation.
2. Insert the DIMM memory module vertically into the DIMM slot. Then push it in.



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

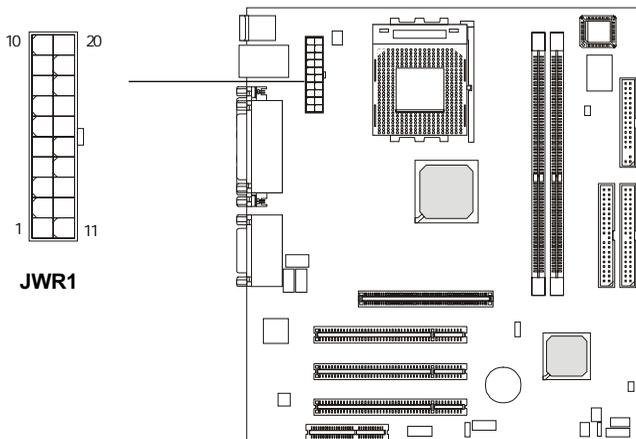


Power Supply

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: JWR1

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 is inserted in the proper orientation and the pins are aligned. Then push down the power supply firmly into the connector. The power connector supports **instant power on** function which means that system will boot up immediately when the power supply connector is inserted on the board.

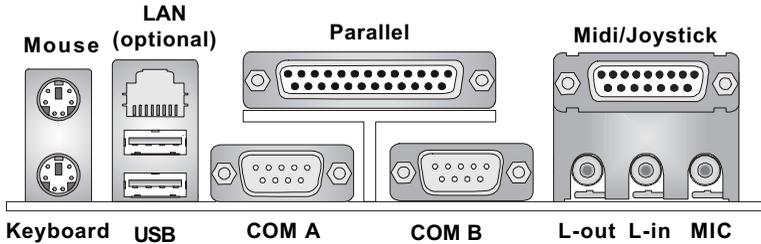


JWR1 Pin Definition

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

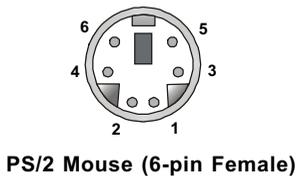
The Back Panel provides the following connectors:



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. The connector location and pin assignments are as follows:

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[®] keyboard mini DIN connector for attaching a PS/2[®] keyboard. You can plug a PS/2[®] keyboard directly into this connector.



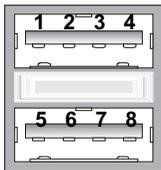
PS/2 Keyboard (6-pin Female)

Pin 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 port for attaching USB devices such as keyboard, mouse or other USB-compatible devices. You can plug the USB device directly into the connector.



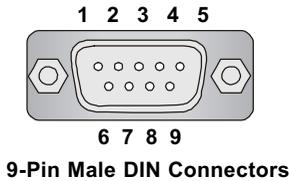
USB Ports

USB Port Description

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

Serial Port Connector: COM A & COM B

The mainboard offers two 9-pin male DIN connectors as serial port COM A and COM B. 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 them.

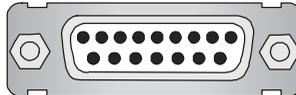


Pin Definition

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

Joystick/Midi Connectors

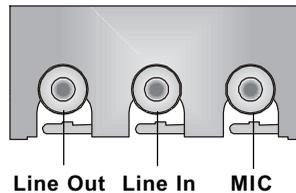
You can connect a joystick or game pad to this connector.



Audio Port Connectors

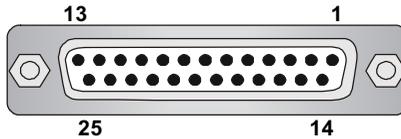
Line Out is a connector for Speakers or Headphones. **Line In** is used for external CD player, Tape player, or other audio devices. **Mic** is a connector for microphones.

1/8" Stereo Audio Connectors



Parallel Port Connector: LPT1

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

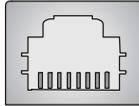


Pin Definition

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	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

RJ-45 LAN Jack (optional)

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.



RJ-45 LAN Jack

Pin Definition

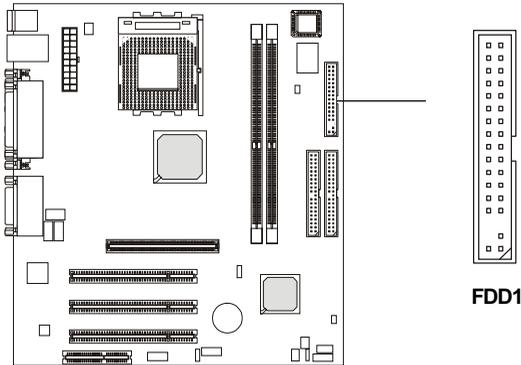
PIN	SIGNAL	DESCRIPTION
1	TDP	Transmit Differential Pair
2	TDN	Transmit Differential Pair
3	RDP	Receive Differential Pair
4	NC	Not Used
5	NC	Not Used
6	RDN	Receive Differential Pair
7	NC	Not Used
8	NC	Not Used

Connectors

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

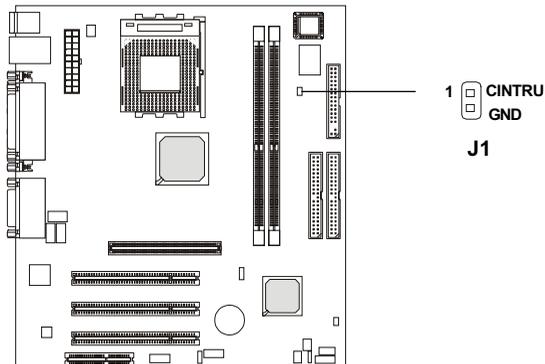
Floppy Disk Drive Connector: FDD1

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



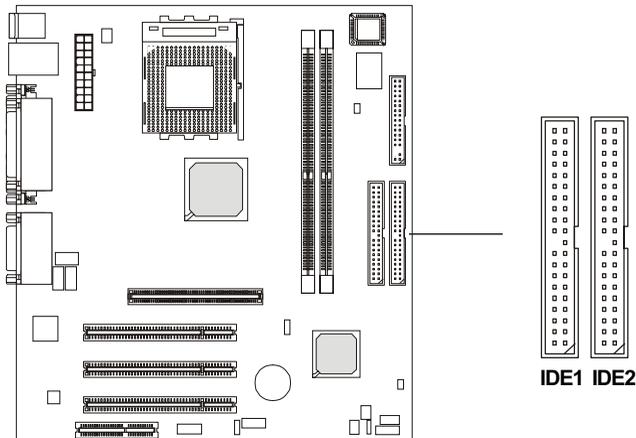
Chassis Intrusion Switch Connector: J1

This connector is connected to 2-pin connector chassis switch. If the Chassis is open, the switch will be short. The system will record this status. To clear the warning, you must enter the BIOS setting and clear the status. J1 is compliant with Intel® Front Panel I/O Connectivity Design Guide.



Hard Disk Connectors: IDE1 & IDE2

The mainboard has a 32-bit Enhanced PCI IDE and Ultra DMA 33/66/100/133 controller that provides PIO mode 0~4, Bus Master, and Ultra DMA33/66/100/133 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.

CD-In Connector: CD_IN

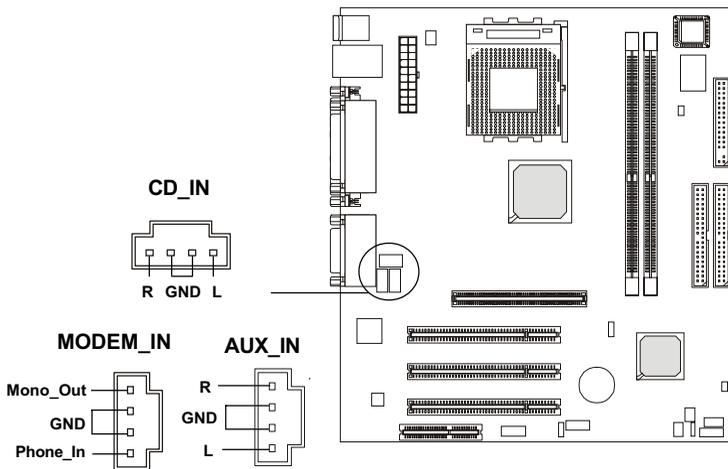
The connector is for CD-ROM audio connector.

Aux Line-In Connector: AUX_IN

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

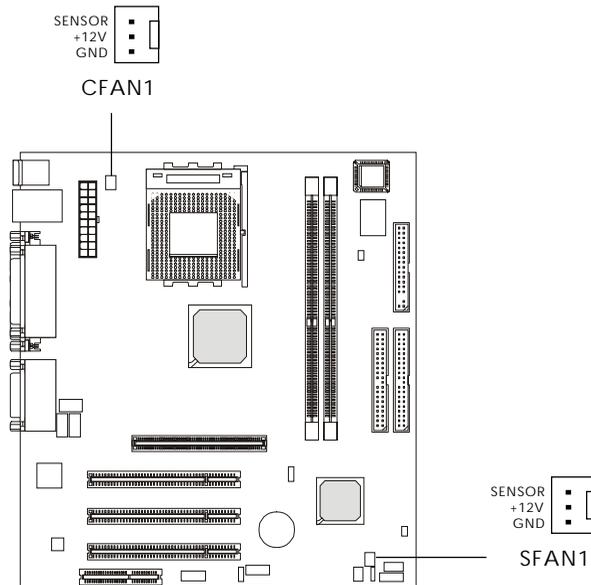
Modem-In Connector: MODEM_IN

The connector is for modem with internal audio connector.



Fan Power Connectors: CFAN1/SFAN1

The CFAN1 (processor fan) and SFAN1 (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.

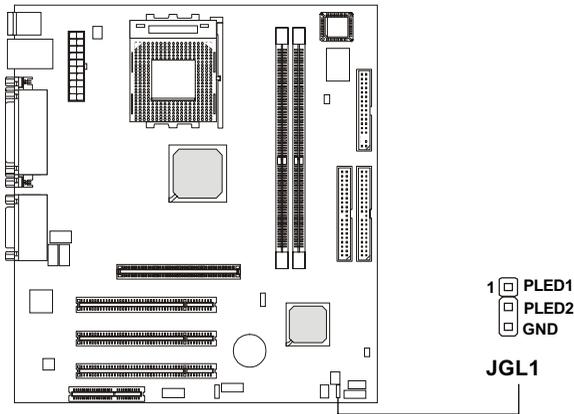


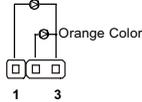
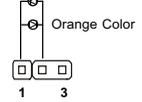
Note:

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.

Power Saving LED Connector: JGL1

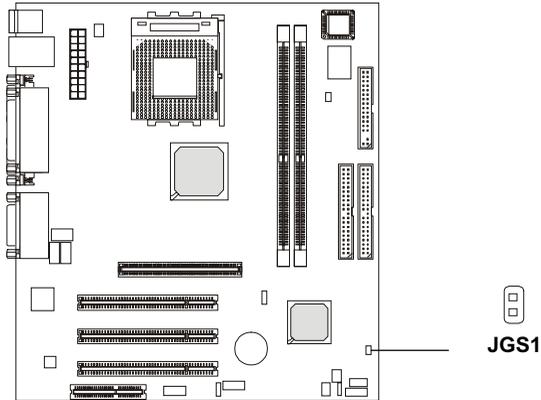
JGL1 is connected to a power saving LED. There are three types of LED that you can use: 3-pin dual color or 2-pin single/dual color LED. If connected to a dual color LED, the LED light is green when system is turned on, and turns to orange color while entering the sleep state. For single color LED, the LED is lit when the system is on, and blinks during the sleep state.



3-Pin LED	2-Pin LED
<p data-bbox="359 997 437 1012">Green Color</p> <p data-bbox="412 1036 501 1052">Orange Color</p>  <p data-bbox="367 1107 381 1122">1</p> <p data-bbox="400 1107 415 1122">3</p>	<p data-bbox="628 997 706 1012">Green Color</p> <p data-bbox="680 1036 770 1052">Orange Color</p>  <p data-bbox="636 1107 650 1122">1</p> <p data-bbox="680 1107 695 1122">3</p>
<p data-bbox="314 1138 516 1161">Green: Full-on Mode</p> <p data-bbox="314 1169 538 1193">Orange: Sleep Mode</p>	<p data-bbox="622 1138 734 1161">Dual Color</p>

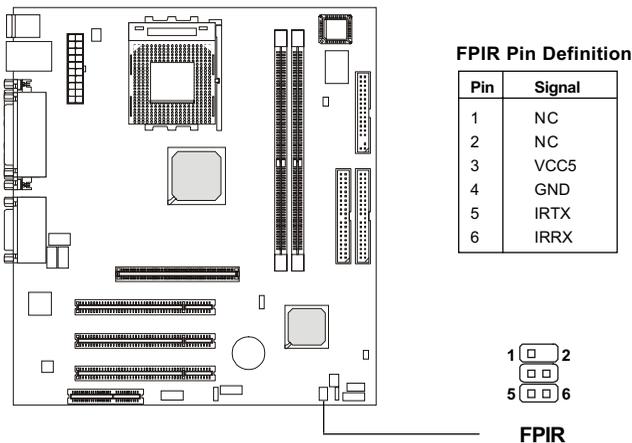
Power Saving Switch Connector: JGS1

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.



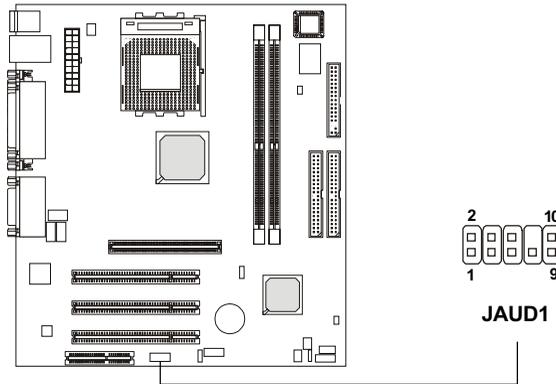
IrDA Infrared Module Header: FPIR

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



Front Panel Audio Connector: JAUD1

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



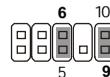
Pin Definition

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



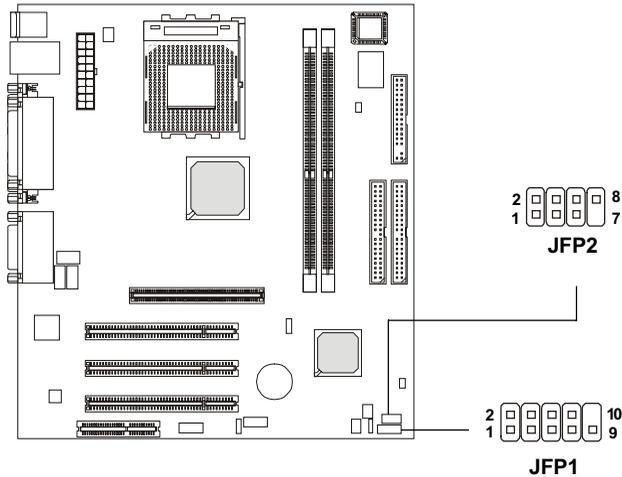
CAUTION!!!

If you don't want to connect to the front audio header, pins 5 and 6, 9 and 10 have to be shorted by jumper caps in order to have signal output directed to the rear audio ports.



Front Panel Connectors: JFP1 & JFP2

The mainboard provides two front panel connectors for electrical connection to the front panel switches and LEDs. JFP1 and JFP2 are compliant with Intel® Front Panel I/O Connectivity Design Guide.



JFP2 Pin Definition

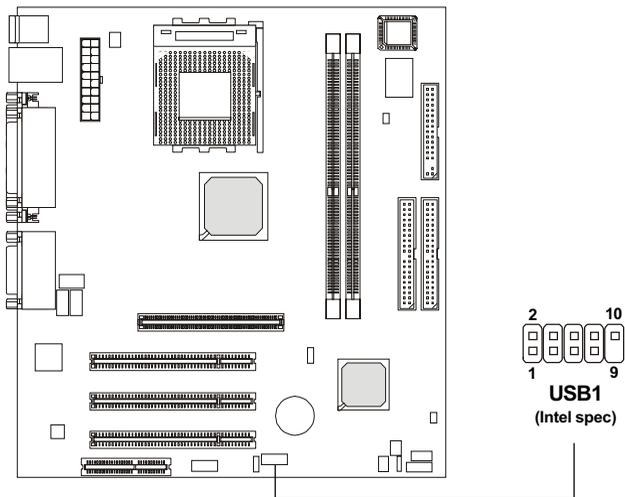
Pin	Signal	Pin	Signal
1	GND	5	PLED
2	SPK-	6	BUZ-
3	SLED	7	NC
4	BUZ+	8	SPK+

JFP1 Switch/LED Front Panel Electrical Connection

PIN	SIGNAL	DESCRIPTION
1	HD_LED_P	Hard disk LED pull-up to +5V
2	FP PWR/SLP	MSG LED pull-up (330ohm) to +5V
3	HD_LED_N	Hard disk active LED
4	FP PWR/SLP	MSG LED pull-up (330ohm) to +5V
5	RST_SW_N	Reset Switch low reference pull-down to GND
6	PWR_SW_P	Power Switch high reference pull-up to +5V
7	RST_SW_P	Reset Switch high reference pull-up to +5V
8	PWR_SW_N	Power Switch low reference pull-down to GND
9	RSVD_DNU	Reserved. Do not use.

Front USB Connector: USB1

The mainboard provides one front Universal Serial Bus connector for users to connect to USB devices. USB1 is compliant with Intel® Front Panel I/O Connectivity Design Guide.



USB1 Pin Definition

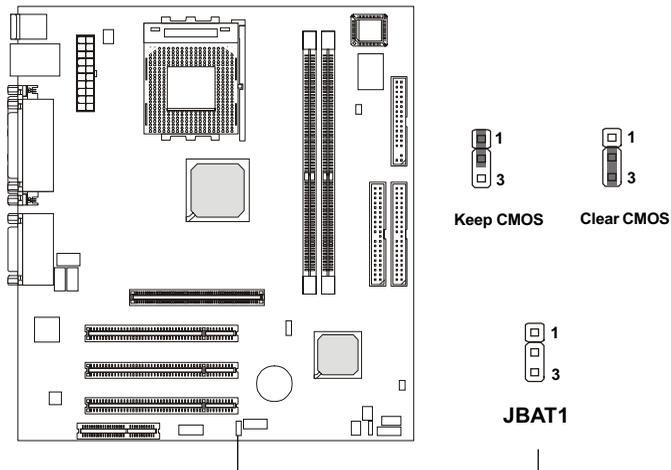
Pin	Description	Pin	Description
1	USBPWR	2	USBPWR
3	USBP0-	4	USBP1-
5	USBP0+	6	USBP1+
7	GND	8	GND
9	NC	10	USBOC-

Jumpers

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

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. That battery has long life time for at least 5 years. 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:

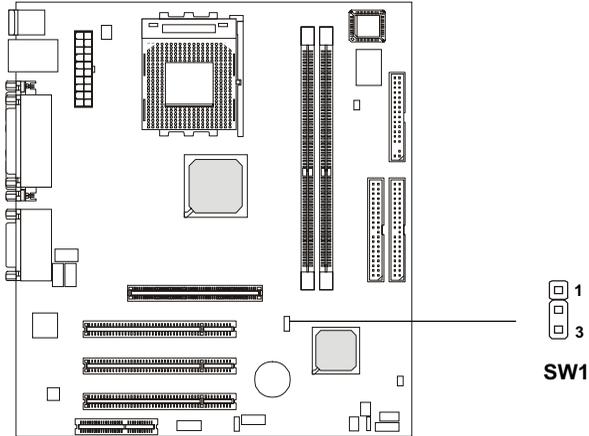


WARNING!

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.

CPU Clock Frequency Selection: SW1

The default hardware configuration for CPU Clock Frequency is set at 100 MHz. To use a 133 MHz CPU, you need to adjust the CPU clock up to 133 MHz by setting the SW1 jumper.



133MHz



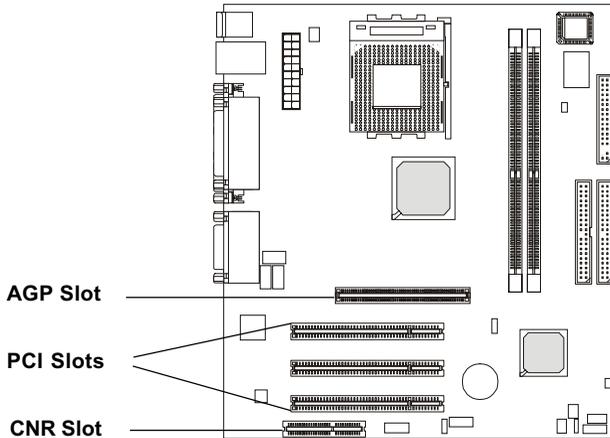
100MHz



While replacing the CPU, always turn off the ATX power supply or unplug the power cable of the ATX power supply from grounded outlet first to ensure the safety of CPU.

Slots

The motherboard provides three 32-bit Master PCI bus slots, one AGP slot 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. The slot supports **1.5V/3.3V 2x/4x** AGP card.

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)

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

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 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
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#

AWARD® BIOS Setup

3

This chapter provides information on the AWARD® 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

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<i>Standard CMOS Features</i>	3-6
<i>Advanced BIOS Features</i>	3-8
<i>Advanced Chipset Features</i>	3-12
<i>Integrated Peripherals</i>	3-16
<i>Power Management Setup</i>	3-21
<i>PNP/PCI Configurations</i>	3-26
<i>PC Health Status</i>	3-29
<i>Frequency/Voltage Control</i>	3-30
<i>Load Fail-Safe/Optimized Defaults</i>	3-31
<i>Set Supervisor/User Password</i>	3-32

Entering Setup

Power on the computer and the system will start POST (Power On Self Test) process. When the message below appears on the screen, press 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 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



```

▶ IDE Primary Master
▶ IDE Primary Slave
▶ IDE Secondary Master
▶ IDE Secondary Slave
  
```

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>.

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.

The Main Menu

Once you enter Award® BIOS CMOS Setup Utility, the Main Menu (Figure 1) 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/User Password

Use this menu to set User and Supervisor Passwords.

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, depends on the year of the BIOS

Time

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

IDE Primary/Secondary Master/Slave

Press PgUp/<+> or PgDn/<-> to select Manual, None, 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 following 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.

If the controller of HDD interface is SCSI, the selection shall be “None”.

If the controller of HDD interface is CD-ROM, the selection shall be “None”.

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

Drive A/B

This item allows you to set the type of floppy drives installed. Available options are *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 are *EGA/VGA*, *CGA 40*, *CGA 80* and *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.

Base/Extended/Total Memory

The three items show the memory status of your system (read only).

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 the screen and beep. Settings: *Enabled* and *Disabled*.

CPU Internal Cache

Cache memory is additional memory that is much faster than the system memory. This item allows you to enable or disable the level 1 (L1) cache. The internal cache is built in the processor. Available settings: *Disabled* and *Enabled*.

External Cache

This item allows you to enable or disable the level 2 (L2) cache. Available options: *Disabled*, *Enabled*.

CPU L2 Cache ECC Checking

This allows you to enable or disable the ECC (Error-Correcting Code) feature to check the data when it passes through L2 cache memory. Settings are *Enabled* and *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. Available options: *Disabled, Enabled*.

1st/2nd/3rd 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. Setting options are *Disabled* and *Enabled*. Default is *Enabled*.

Boot Up Num-Lock Status

This item 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 end users to use the arrow keys on the numeric keypad. Settings: *On* and *Off*.

Gate A20 Option

This item is to set the Gate A20 status. A20 refers to the first 64KB of extended memory. When the default value *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 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* and *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:

Option	Description
<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.

APIC Mode

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

MPS Version Control For OS

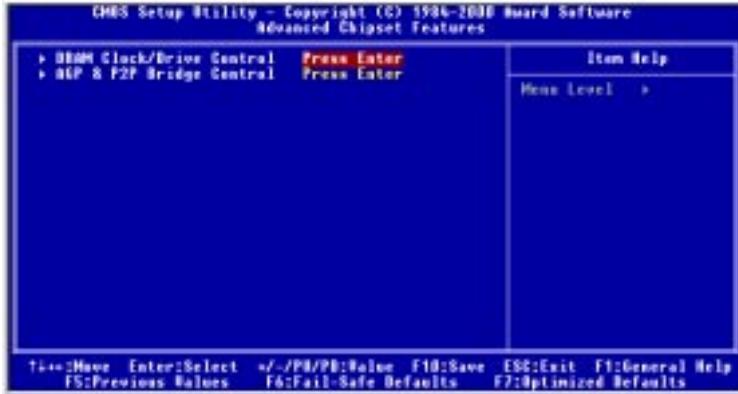
This field allows you to select which MPS (Multi-Processor Specification) version to be used for the operating system. You need to select the MPS version supported by your operating system. To find out which version to use, consult the vendor of your operating system. Settings: *1.4* and *1.1*.

OS Select For DRAM > 64MB

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

Advanced Chipset Features

The Advanced Chipset Features Setup option is 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> to enter the sub-menu and the following screen appears:



DRAM Timing by SPD

If the setting is set to [Yes], the BIOS will set DRAM Frequency, DRAM CAS Latency, Bank Interleave, Row Precharge, RAS Pulse, RAS to CAS and Burst Length to follow the SPD configuration of memory modules automatically. If the setting is set to [No], you can change the settings of the items mentioned earlier as you want.

DRAM Frequency (MHz)

Use this item to configure the clock frequency of the installed SDRAM.

Settings options 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 33 MHz. For example, if the host clock is 133 MHz, the DRAM clock will be 100 MHz.
- HCLK+33* The DRAM clock will be equal to the host clock plus 33MHz. For example, if the host clock is 100 MHz, the DRAM clock will be 133 MHz.
- Auto* DRAM clock frequency is determined by the contents of SPD EEPROM on the DRAM module.

DRAM CAS Latency

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

Bank Interleave

Set the option to *Auto* for the system to select the appropriate 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 of 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: *2T*, *3T*, *Auto*.

RAS Pulse

This setting allows you to select the number of clock cycles allotted for the RAS pulse width, according the DRAM specifications. The less the clock cycles, the faster the DRAM performance. Settings: *6T*, *5T*, *Auto*.

RAS to CAS

Use this feature 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. Fast speed offers faster performance while slow 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: *Auto, 4, 8*.

DRAM Command Rate

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

Current Host (FSB) Clock/DRAM Frequency

These features show the current host clock and DRAM clock frequency. (read only)

Current DDR Frequency

This read-only feature will show up only if DDR is installed.

AGP & P2P Bridge Control

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

```
AGP Aperture Size      128M
AGP Mode               2X
AGP Driving Control   Auto
* AGP Driving Value    00
AGP Fast Write        Disabled
AGP Master 1 WS Write Disabled
AGP Master 1 WS Read  Disabled
```

AGP Aperture Size

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 4, 8, 16, 32, 64, 128, and 256 (MB).

AGPMode

The item sets an appropriate mode for the installed AGP card. Setting options: *1x*, *2x*, *4x*, *Auto*. Select *4x* only if your AGP card supports it.

AGP Driving Control

This item allows you to adjust the AGP driving force. Choose *Manual* to key in a AGP Driving Value in the next selection. This feature is recommended to set to *Auto* for avoing any error in your system.

AGP Driving Value

This item allows you to adjust the AGP driving force.

AGP Fast Write

This option enables or disables the AGP Fast Write feature. The Fast Write technology allows the CPU to write directly to the graphics card without passing anything through the system memory and improves the AGP 4X speed. Select *Enabled* only when the installed AGP card supports this function. Settings: *Enabled*, *Disabled*.

AGP Master 1 W/S Write

The option allows users to insert one wait state into the AGP write cycle. Settings: *Enabled*, *Disabled*.

AGP Master 1 W/S Read

The option allows users to insert one wait state into the AGP read cycle. Settings: *Enabled*, *Disabled*.

Integrated Peripherals



Onboard Realtek LAN

This function is activated only when LAN is integrated on the board. This is used to enable or disable the onboard Realtek LAN controller. Settings: *Enabled, Disabled*.

VIA OnChip IDE Device

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



OnChip IDE Channel 0/1

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

IDE Prefetch Mode

The onboard IDE drive interfaces support prefetching, for faster drive access. Set to *Disabled* if your primary and/or secondary add-in IDE interface does not support prefetching.

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. The settings are: *Auto, Mode 0, Mode 1, Mode 2, Mode 3, Mode 4.*

Primary/Secondary Master/Slave UltraDMA

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, Ultra DMA/66 and Ultra DMA/100 select Auto to enable BIOS support. The settings are: *Auto, Disabled.*

VIA OnChip PCI Device

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

```

VIA-3058 AC97 Audio      Auto
VIA-3068 MC97 Modem    Auto

```

VIA-3058 AC97 Audio

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

VIA-3068 MC97 Modem

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

Super IO Device

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

```
Onboard FDC Controller      Enabled
Onboard Serial Port 1      3F8/IRQ4
Onboard Serial Port 2      2F8/IRQ3
UART Mode Select           Normal
Rx0 , Tx0 Active          Hi,Lo
IR Transmission Delay      Enabled
UR2 Duplex Mode           Half
Use IR Pins               IR-Rx2Tx2
Onboard Parallel Port      378/IRQ7
Parallel Port Mode        ECP
EPP Mode Select           EPP1.7
ECP Mode Use DMA          3
Game Port Address         201
Midi Port Address         330
Midi Port IRQ             10
```

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. Options: *Enabled, Disabled*.

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*.

- IrDA* IrDA-compliant Serial Infrared Port
- ASKIR* Amplitude Shift Keyed Infrared Port
- Normal* 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*.

UR2 Duplex Mode

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 *EPPI.7* or *EPPI.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 channel 3 or 1.

Game Port Address

This item is used to specify the address for the onboard game port. Settings: *Disabled, 201, 209*.

Midi Port Address

The field specifies the base I/O port address for the onboard Midi Port. Available settings: *Disabled, 330, 300, 290.*

Midi Port IRQ

This will determine which IRQ the midi port will use. Settings: *5, 10.*

Init Display First

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

OnChip USB Controller

Select *Enabled* if your system contains a Universal Serial Bus (USB) controller and you have USB peripherals. Settings: *All Enabled, All Disabled, 1 USB Port, 2 USB Port.*

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. Settings: *Enabled, Disabled.*

IDE HDD Block Mode

Block mode is also called block transfer, multiple commands, or multiple sector read/write. If your 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:

- Off* Leaves the computer in the power off state.
- On* Reboots the computer.
- Former-Sts* 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* and *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 an “wake up” event occurs.

Power Management Option

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

- Min Saving* Minimum Power Management. Suspend Mode = 1 Hour.
- Max Saving* Maximum Power Management. 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 are *Disabled* and *1 through 15 Min*.

Doze Mode

After the selected period of system inactivity, the CPU clock runs at slower speed while all other devices still operate at full speed. Settings are *Disabled, 1 Min, 2 Min, 4 Min, 6 Min, 8 Min, 10 Min, 20 Min, 30 Min, 40 Min* and *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 are *Disabled, 1 Min, 2 Min, 4 Min, 6 Min, 8 Min, 10 Min, 20 Min, 30 Min, 40 Min* and *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 are *Yes, No*.

Video Off Option

This setting is used to control the mode in which the monitor will shut down. Setting options:

- Always On* Always turn on
- Suspend --> Off* During suspend mode, the monitor will shut down
- All Modes --> Off* The monitor is turned off during doze, standby, or suspend mode.

Video Off Method

This determines the manner in which the monitor is blanked.

- Blank Screen* This option only writes blanks to the video buffer.
- V/H SYNC+Blank* The selection will cause the system to turn off the vertical and horizontal synchronization ports and write blanks to the video buffer.
- DPMS Support* Initial display power management signaling.

Modem Use IRQ

Name the interrupt request (IRQ) line assigned to the modem (if any) on your system. Activity of the selected IRQ always awakens the system. Settings are *NA, 3, 4, 5, 7, 9, 10, 11*.

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/-off button.
- Delay 4 sec.* 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 suspend state.

IRQ/Event Activity Detect

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

```

PS2KB Wakeup Select      Hot key
PS2KB Wakeup from S3    Disabled
PS2MS Wakeup from S3    Disabled
USB Resume from S3      Disabled
UGA                      OFF
LPT & COM                LPT/COM
HDD & FDD                ON
PCI Master                OFF
PowerOn by PCI Card      Disabled
Modem Ring Resume        Disabled
RTC Alarm Resume        Disabled
* Date (of Month)        0
* Resume Time (hh:mm:ss) 0 0 0
▶ IRQs Activity Monitoring Press Enter
    
```

PS2KB Wakeup Select

This feature allows you to specify the method of how the keyboard will be awakened. Options: *Hot Key, Password.*

PS2KB Wakeup from S3

This feature allows you to set up the hot key combination for keyboard to wake up from S3 state. Options: *Disabled, Ctrl+F1/F2/F3/F4/F5/F6/F7/F8,/F9/F10/F11/F12, Power, Wake, Any Key.*

PS2MS Wakeup from S3, USB Resume from S3, VGA, LPT & COM, HDD & FDD, PCI Master, PowerOn by PCI Card, Modem Ring Resume

These features 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 Modem Ring Resume, you need to install a modem supporting power-on function.

RTC Alarm Resume

This is to enable or disable the feature of booting up the system on a scheduled time/date. Settings are *Enabled* and *Disabled*.

Date (of Month)

Specify the date for RTC Alarm Resume. Settings are *0~31*.

Resume Time (hh:mm:ss)

Specify the time for RTC Alarm Resume. Forat is <hour><minute><second>.

IRQs Activity Monitoring

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

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

Selecting *ON* will cause the system to wake up from power saving modes if activity is detected from any enabled IRQ channels.

Settings: *ON, OFF*.

IRQ 3~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. Available options are: *Enabled, Disabled*.



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 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. Settings are: *Yes* and *No*.

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 and the system reconfiguration has caused such a serious conflict that the operating system can not boot. The settings are: *Enabled* and *Disabled*.

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® 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 “>”). The settings are: *Auto (ESCD)*, *Manual*.

IRQ 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 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:

- PCI Device* For Plug & Play compatible devices designed for PCI bus architecture.
- Reserved* The IRQ will be reserved for further request.

PCI/VGA Palette Snoop

When set to *Enabled*, multiple VGA devices operating on different buses can handle data from the CPU on each set of palette registers on every video device. Bit 5 of the command register in the PCI device configuration space is the VGA Palette Snoop bit (0 is disabled). For example, if there are two VGA devices in the computer (one PCI and one ISA) and the:

VGA Palette Snoop Bit Setting	Action
<i>Disabled</i>	Data read or written by the CPU is only directed to the PCI VGA device’s palette registers.
<i>Enabled</i>	Data read or written by the CPU is directed to both the PCI VGA device’s palette registers and the ISA VGA device’s palette registers, permitting the palette registers of both VGA devices to be identical.

The setting must be set to *Enabled* if any ISA bus adapter in the system requires VGA palette snooping.

Assign IRQ for VGA/USB

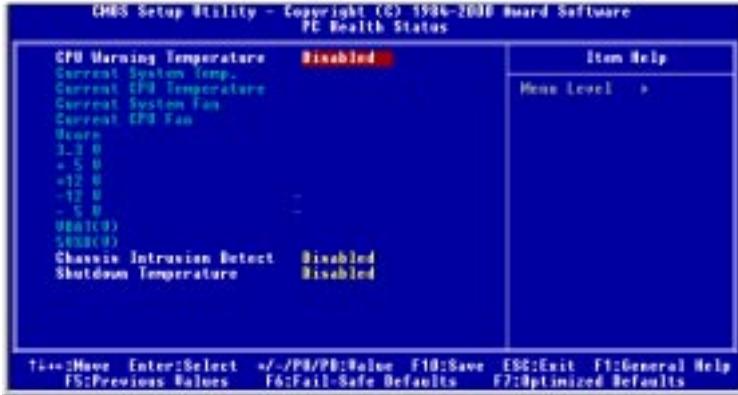
Set to Enabled allows BIOS to assign an IRQ to VGA card/USB device. Choose Disabled if you want to release the IRQ. The settings are: *Enabled, Disabled*.

Assign IRQ for ACPI

Selecting Auto allows BIOS to automatically assign an IRQ for SCI (System Control Interrupt) of ACPI spec. Settings are *Auto, IRQ 9, IRQ10* and *IRQ11*.

PC Health Status

This section shows the status of your CPU, fan, warning for overall system status.



CPU Warning Temperature

This item is used to specify a thermal limit for CPU. If CPU temperature reaches the specified limit, the system will issue a warning which allows you to prevent the CPU overheat problem. Settings: *Disabled, 50°C/122°F, 53°C/127°F, 56°C/133°F, 60°C/140°F, 63°C/145°F, 66°C/151°F* and *70°C/158°F*.

Current SystemTemp., Current CPU Temperature, Current System Fan, Current CPU Fan, Vcore, 3.3V, +5V, +12V, -12V, -5V, 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

This 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 option 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, thus preventing the system components from being damaged due to overheat. Settings: *Disabled, 80°C/176°F, 85°C/185°F, 90°C/194°F*.

Frequency/Voltage Control

This section describes how to set the Chassis Intrusion feature, CPU FSB frequency, monitor the current hardware status including CPU/system temperatures, CPU/System Fan speeds, Vcore etc. Monitor function is available only if there is hardware monitoring mechanism onboard.



Auto Detect PCI/DIMM Clk

This option allows you to enable/disable the feature of auto detecting the clock frequency of DIMM and PCI bus. The settings are: *Enabled*, *Disabled*.

Spread Spectrum

When the motherboard's clock generator pulses, the extreme values (spikes) of the pulses creates EMI (Electromagnetic Interference). The Spread Spectrum function reduces the EMI generated by modulating the pulses so that the spikes of the pulses are reduced to flatter curves. If you do not have any EMI problem, leave the setting at *Disabled* for optimal system stability and performance. But if you are plagued by EMI, change the setting for EMI reduction. Remember to disable Spread Spectrum if you are overclocking because even a slight jitter can introduce a temporary boost in clockspeed which may just cause your overclocked processor to lock up. Options: *Disabled*, *-1.50%*, *-1.00%*, *-0.70%*, *-0.50%*, *+/-0.25%*, *+/-0.35%*, *+/-0.50%*, *+/-0.75%*.

CPU/PCI Clock

This setting controls the clock frequency of the CPU/PCI bus on the motherboard. Options: *Default*.

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:



Load Fail-Safe Defaults (Y/N)? N

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:



Load Optimized Defaults (Y/N)? N

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 of the Advanced BIOS Feature menu. If the Security Option 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.