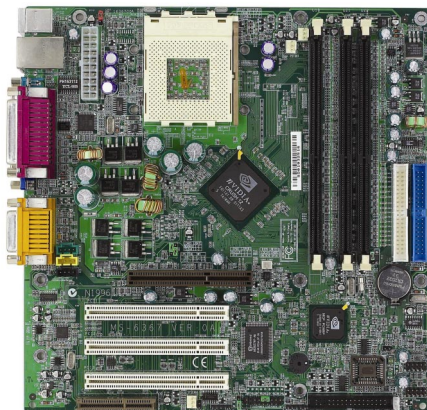# MSI

MICRO-STAR INTERNATIONAL

MS-6367 Micro-ATX Mainboard

Version 1.0

G52-MA00302

Manual Rev: 1.0
Release Date: October 2001

$C\mathcal{E}$ **N1996**

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.
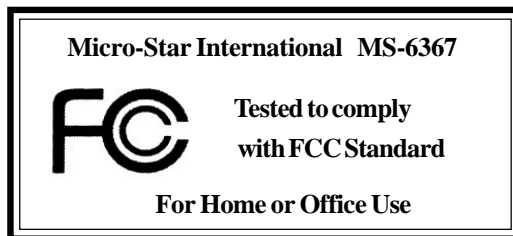
Notice 1
The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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

October 2001

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PS/2 and OS/2 are registered trademarks of IBM Corporation.
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Netware is a registered trademark of Novell.
Award is a registered trademark of Award Software Inc.

Revision History

Revision	Revision History	Date
1.0	First release	October 2001

Safety Instructions

1. Always read the safety instructions carefully.
2. Keep this User's Manual for future reference.
3. Keep this equipment away from humidity.
4. Lay this equipment on a reliable flat surface before setting it up.
5. The openings on the enclosure are for air convection hence protects the equipment from overheating. DO NOT COVER THE OPENINGS.
6. Make sure the voltage of the power source and adjust properly 110/220V before connecting the equipment to the power inlet.
7. Place the power cord such a way that people can not step on it. Do not place anything over the power cord.
8. Always Unplug the Power Cord before inserting any add-on card or module.
9. All cautions and warnings on the equipment should be noted.
10. Never pour any liquid into the opening that could damage or cause electrical shock.
11. If any of the following situations arises, get the equipment checked by a service personnel:
    - The power cord or plug is damaged
    - Liquid has penetrated into the equipment
    - The equipment has been exposed to moisture
    - The equipment has not work well or you can not get it work according to User's Manual.
    - The equipment has dropped and damaged
    - If the equipment has obvious sign of breakage
12. DO NOT LEAVE THIS EQUIPMENT IN AN ENVIRONMENT UNCONDITIONED, STORAGE TEMPERATURE ABOVE 60^0C (140^0F), 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.

CONTENTS

Introduction *1*

Thank you for purchasing the MS-6367 Micro-ATX motherboard. The mainboard, based on **nVIDIA® nForce™ IGP 64/128 & MCP/MCP-D** chipsets, is a high-performance computer mainboard designed for AMD® Duron™/Athlon™/Athlon XP processor in the 462 pin package that provides a high-end and professional desktop platform solution.

This chapter includes the following topics:

Mainboard Specification

CPU
- Supports Socket A for AMD® Duron™/Athlon™/Athlon XP processor
- Supports 650MHz, 700MHz, up to 1.5GHz or higher

Chipset
- nVIDIA® nForce™ IGP 64/128 chipset
    - AGP 4x (**1.5V only**)
    - Supports 200/266 MHz FSB
    - 64-bit / 128-bit DDR memory controller
    - Integrated GeForce2 MX-class advanced Graphics Processing Unit
    - LDT interface to MCP (800MB/sec max)
    - Multiplex DVI / TV Interface with AGP Slot (MS-6952 option)

- MCP / MCP-D (Media Communications Processor)
    - Dual ATA100
    - USB OHCI 1.0a up to 6 ports
    - IEEE 802.3 compatible MAC (MII)
    - Integrated Audio Processor Unit (MCP-D)
    - AC '97 2.1 Compliant Interface
    - Dolby Digital SPDIF OUT (MCP-D)

Main Memory
- Supports 2/3 DDR DIMM (IGP 64/128)
- Supports a maximum memory size of 1/1.5GB (IGP 64/128)
- Supports either 64- or 128-bit system memory (IGP 64/128)

Slots
- One AGP 2.0 4x **1.5V** slot
- One CNR 1.0 slot
- Three 32-bit Master PCI 2.2 Slots
- Supports 3.3/5V PCI bus Interface

On-Board IDE
- An IDE controller on the MCP/MCP-D chipset provides IDE HDD/CD-ROM with PIO, Bus Master and Ultra DMA 100 operation modes.
- Can connect up to four IDE devices

Audio
- Chip integrated nVidia Audio
- APU integrated in MCP-D (Audio Processing Unit)
    - Supports up to 256 hardware-processed voices or 64 hardware voices in 3D
    - Dolby Digital output with S/P DIF interface

Video
- Integrated nVidia Geforce2 MX
- 256-bit 3D and 2D graphics accelerator
- 2nd generation T&L engine, NVIDIA Shading Rasterizer - NSR
- Multiplex DVI / TV interface with the AGP slot (MS-6952 option)

Network (Optional)
- Chip Integrated
    - 10/100 BaseT Ethernet/Fast Ethernet

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 (COMA)
    - 1 parallel port supports SPP/EPP/ECP mode
    - 6 USB ports (2 rear connectors and 2 USB front pin headers- 4 ports)
    - 1 IrDA connector
    - 1 Audio/Game Port
    - 1 VGA Port
    - 1 SPDIF Connector (MCP-D)

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
- 9.6 inch x 9.6 inch

Chapter 1

Mounting
- 6 mounting holes

Key Features

- Micro ATX Form Factor
- CPU: Socket A for AMD® Duron™/Athlon™/Athlon XP processor
- Memory: PC1600/PC2100 DDR DIMMs
- Slot: 1 AGP slot, 1 CNR slot, 3 PCI slots
- I/O: 1 serial port, 1 parallel port, 6 USB 1.1 ports, 1 floppy port, 1 IrDA connector, 1 Audio/Game port, 1 VGA port
- Supports Ultra DMA/ATA100

Mainboard Layout
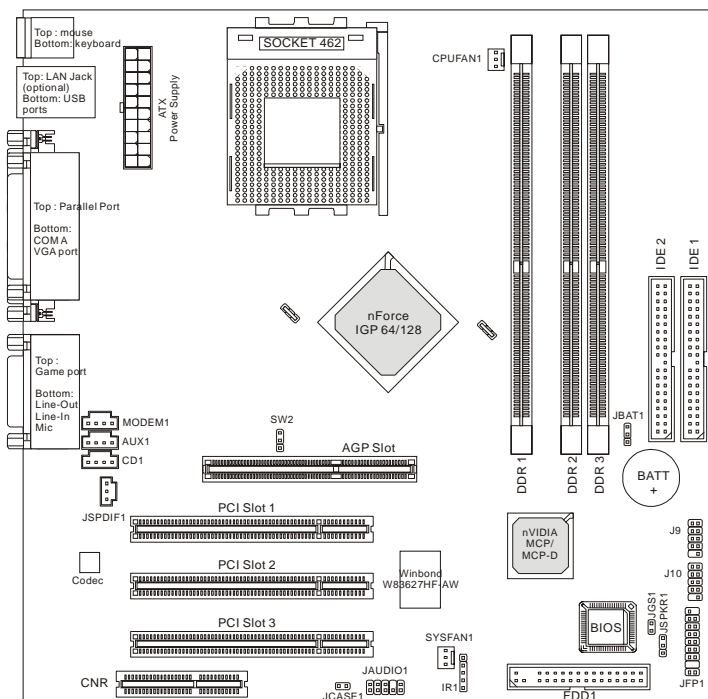
MS-6367 Micro ATX Mainboard

Note 1: DDR 1 slot exists only when nForce™ IGP 128 (Crush 12) Northbridge is used.
*Note 2: One unique **MAC Address** label is attached on PCI Slot 3 of the motherboard that supports LAN. The label looks like the picture below but its number varies depending on the board you purchased.*

MAC Address Label

Quick Components Guide

Component	Function	Reference
DDR1~3	Installing DDR SDRAM modules	See p. 2-5~2-6
Socket 462	Installing CPU	See p. 2-2~2-4
CPUFAN1	Connecting to CPUFAN	See p. 2-20
SYSFAN1	Connecting to SYSTEM FAN	See p. 2-20
PSFAN1	Connecting to Power Supply FAN	See p. 2-20
ATX Power Supply	Installing power supply	See p. 2-7
IDE 1/2	Connecting to IDE hard disk drive	See p.2-14
FDD1	Connecting to floppy disk drive	See p.2-13
J9 & J10	Connecting to USB interfaces	See p. 2-18
PCI Slot 1~3	Installing expansion cards	See p. 2-25
AGP Slot	Installing AGP cards	See p. 2-25
CNR Slot	Installing expansion cards	See p. 2-25
JBAT1	Clearing CMOS data	See p. 2-23
JFP1	Connecting to case	See p. 2-15
JGS1	Connecting to power saving switch	See p. 2-17
IR1	Connecting to IR module	See p. 2-17
JCASE1	Connecting to chassis intrusion switch	See p. 2-18
JSPDIF1	Connecting to SPDIF interfaces	See p. 2-21
JSPKR1	Setting beep sound output device	See p. 2-24
SW2	Setting CPU FSB clock	See p. 2-4
JAUDIO1	Connecting to front audio connector	See p. 2-22

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.

    This chapter contains the following topics:

Central Processing Unit: CPU

The mainboard supports AMD® Athlon™, Athlon XP and Duron™ processors. It uses a CPU socket called Socket A for easy CPU installation. **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 firmly, and then press the lever down to complete the installation.

STOP
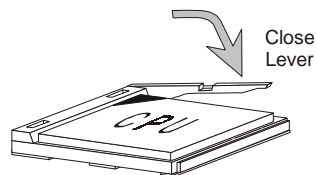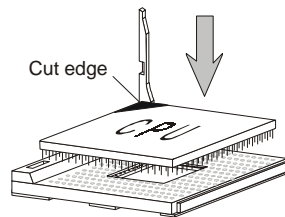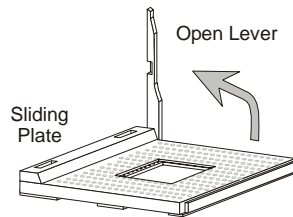
WARNING! Thermal Issue for CPU

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.

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

CPU FSB Selection Jumper: SW2

To use a 133MHz CPU, you need to set the SW2 jumper to short 1-2 pin. To use a 100MHz CPU, set the SW2 jumper to short 2-3 pin.

SW2

FSB = 133MHz   FSB = 100MHz
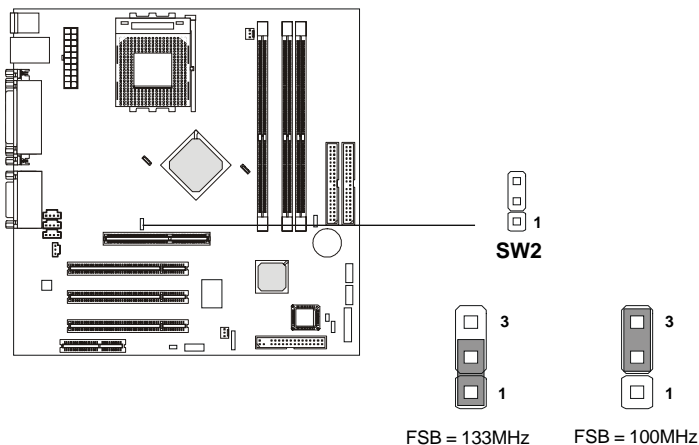
STOP
WARNING!

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

Depending on the model you have purchased, the mainboard provides 2 or 3 sockets for 184-pin DDR DIMM (Double In-Line Memory Module) modules and supports a maximum memory size of 1GB (2 DIMM slots) or 1.5GB (3 DIMM slots). You can install PC1600/PC2100 DDR SDRAM modules on the DDR DIMM slots (DIMM 1~3).

**DDR DIMM Slots
(DIMM 1~3)**
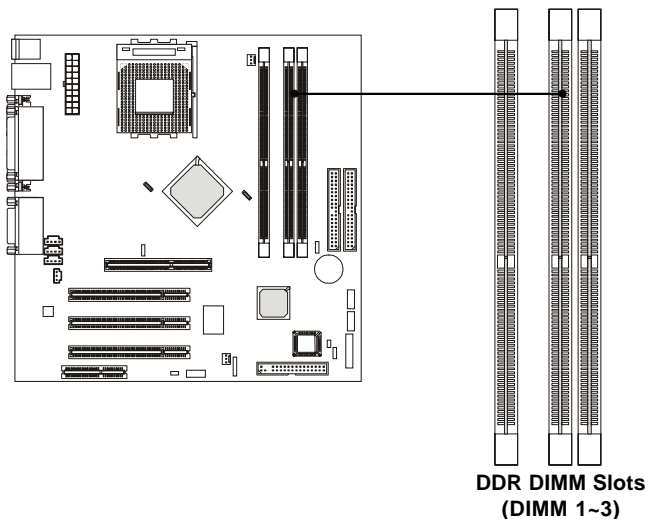
Introduction to DDR SDRAM

DDR (Double Data Rate) SDRAM is similar to conventional SDRAM, but doubles the rate by transfering data twice per cycle. It transfers data on both the rising and falling edges of the clock. Conventional SDRAM only uses the rising edge of the clock to transfer data. Therefore, conventional SDRAM is called SDR (Single Data Rate) SDRAM.

DDR SDRAM 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. DDR SDRAM is also known as SDRAM-II, DDR DRAM and DSDRAM (Double-Speed DRAM).

Two types of DDR are available at the time of writing: PC1600 & PC2100. PC1600 DDR SDRAM running at 100MHz will produce about 1.6GB/s memory bandwidth. PC2100 running at 133MHz will produce 2.1GB/s memory bandwidth. High memory bandwidth makes DDR an ideal solution for high performance PC, workstations and servers.

DIMM Modules Combination

At least one DIMM module should be installed on the motherboard. Memory modules can be installed on the slots in any order. The single-/double-sided module each DIMM slot supports is listed below:

Socket	Memory Module	Total Memory
DDR 1 (Bank0 & Bank1)	S/D	64MB ~ 512MB
DDR 2 (Bank2 & Bank3)	S/D	64MB ~ 512MB
DDR 3 (Bank4 & Bank5)	S/D	64MB ~ 512MB
Maximum System Memory Supported		64MB ~ 1.5GB

S: Single Side   D: Double Side

> *Note: DDR 1 slot exists only when nForce™ IGP 128 (Crush 12) Northbridge is used.*
>
> **Warning: We don't recommend to install DOUBLE-SIDED DDR266 module on DDR 3 slot** *because it will cause all memory modules to slower down and run at 200MHz.*

Installing DIMM Modules

1. The DDR DIMM has only one notch on the center of module. The module will only fit in the right orientation.
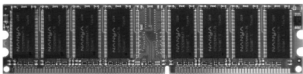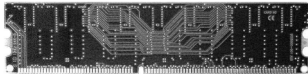
Front Side   **Rear Side**

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

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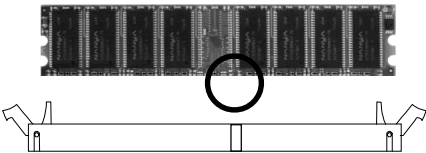
3. The plastic clip at each side of the DIMM slot will automatically close.

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 Supply

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.

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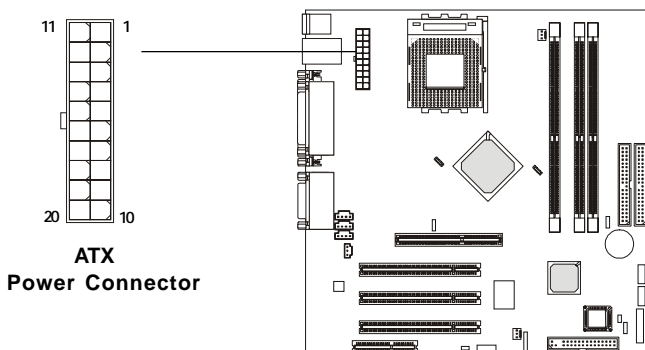
PIN	SIGNAL	PIN	SIGNAL
1	3.3V	11	3.3V
2	3.3V	12	-12V
3	GND	13	GND
4	5V	14	PS_ON
5	GND	15	GND
6	5V	16	GND
7	GND	17	GND
8	PW_OK	18	-5V
9	5V_SB	19	5V
10	12V	20	5V

Back Panel

The Back Panel provides the following connectors:
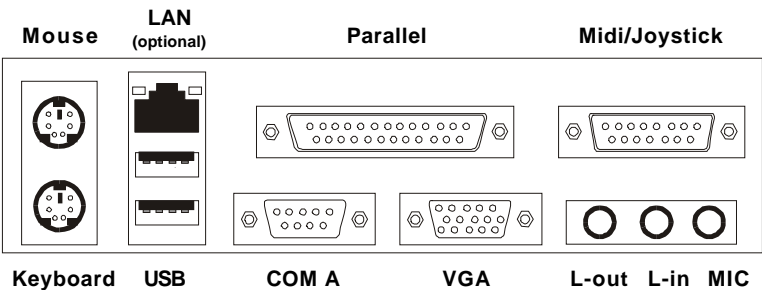
Mouse Connector

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.

PS/2 Mouse (6-pin Female)
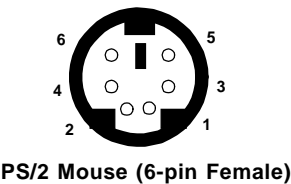
Pin Definition

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

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
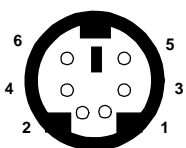
PS/2 Keyboard (6-pin Female)

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 ths connector.
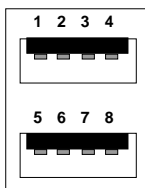
USB Port Description

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

USB Ports

Parallel Port Connector

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.
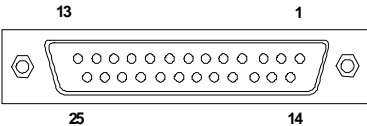
Pin Definition

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

Serial Port Connector: COM A

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

Pin Definition

1 2 3 4 5

6 7 8 9
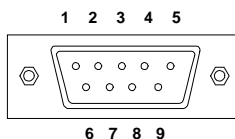
9-Pin Male DIN Connector

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

VGA DB 15 Pin Connector

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

Pin Definition

5   1

15   11
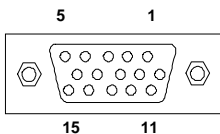
DB 15-Pin Female Connector

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

Joystick/Midi Connectors

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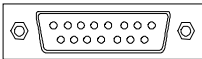
Audio Port Connectors

Line Out is to connect speakers or headphones. *Line In* is a connector for external CD player, Tape player or other audio devices. *Mic* is used to connect to a microphone.

Line
Out
Line
In
MIC
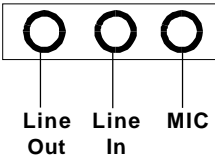
LAN (RJ-45) Jack (Optional)

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.

LAN RJ-45 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, 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.

FDD1
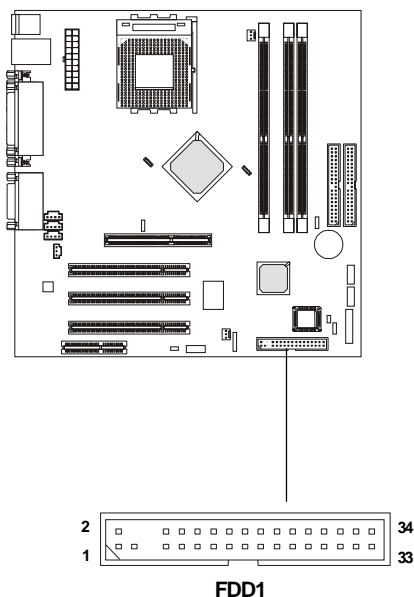
Hard Disk Connectors: IDE1 & IDE2

The mainboard uses an IDE controller on the nVIDIA® MCP/MCP-D chipset that provides PIO mode 0-4, Bus Master, and Ultra DMA 33/66/100 modes. It has two HDD connectors IDE1 (Primary) and IDE2 (Secondary). You can connect up to four hard disk drives, CD-ROM or 120MB Floppy to IDE1 and IDE2.

IDE1 (Primary IDE Connector)
 - The first hard disk drive should always be connected to IDE1. You can
   connect a Master and a Slave drive to IDE1.
IDE2 (Secondary IDE Connector)
 - You can connect a Master and a Slave drive to IDE2.
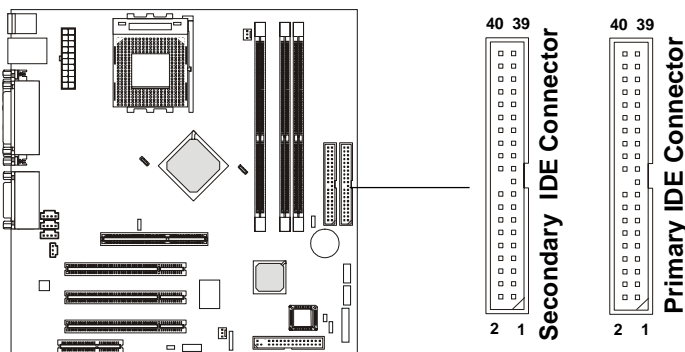
TIP

If you install two hard disks 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.

Case Connector: JFP1

The case connector block JFP1 allows you to connect to the Power Switch, Reset Switch, Keylock, Speaker, Power LED, and HDD LED on the case.
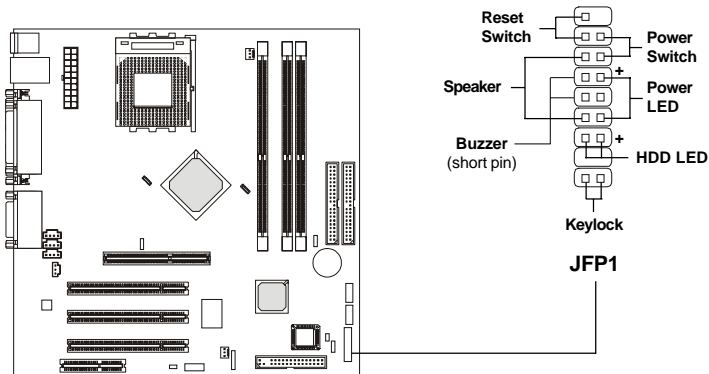
Power Switch
Connect to a 2-pin push button switch.

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

Power LED
The Power LED is lit while the system power is on. Connect the Power LED from the system case to this pin.

Speaker
Speaker from the system case is connected to this pin.
If on-board Buzzer is available, then:

Short pin 14-15:   On-board Buzzer Enabled.
Open pin 14-15:   On-board Buzzer Disabled

HDDLED

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

Keylock

Keylock allows you to disable the keyboard for security purpose. You can connect the keylock to this pin.

IrDA Infrared Module Connector: IR1

This connector allows you to connect to an IrDA Infrared module. You must configure the setting through the BIOS setup to use the IR function.

PIN	SIGNAL
1	VCC
2	NC
3	IRRX
4	GND
5	IRTX

IR1
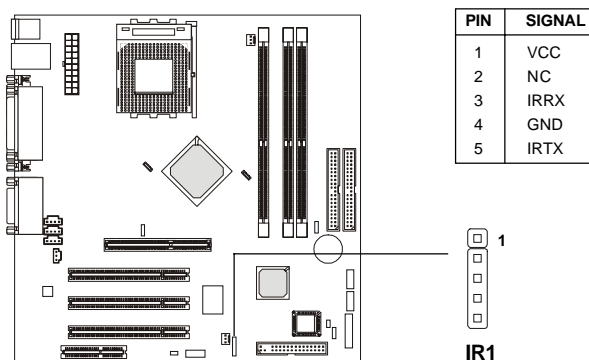
Power Saving Switch Connector: JGS1

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.

JGS1
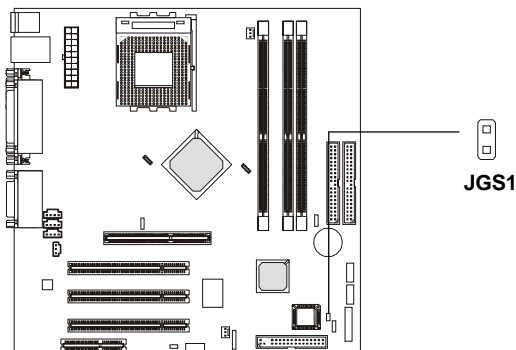
Chassis Intrusion Switch Connector: JCASE1

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.

JCASE1
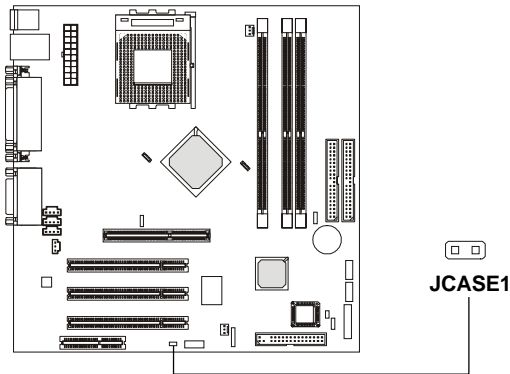
Front USB Connectors: J9 & J10

The mainboard provides two USB (Universal Serial Bus) pin headers, that allow you to connect optional USB ports for front panel. These connectors are **compliant to Intel Front Panel I/O Connectivity Design Guide.**

J9

J10
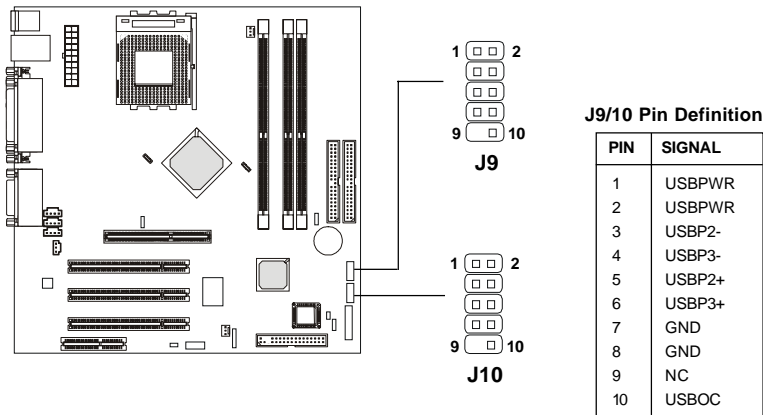
J9/10 Pin Definition

PIN	SIGNAL
1	USBPWR
2	USBPWR
3	USBP2-
4	USBP3-
5	USBP2+
6	USBP3+
7	GND
8	GND
9	NC
10	USBOC

CD-In/Aux Line-In/Modem-In Connector: CD1/AUX1/MO-DEM1

CD1 connector is for CD-ROM audio connector.
AUX1 connector is for DVD add-on card with Line-in connector.
MODEM1 connector is for modem with internal audio connector.
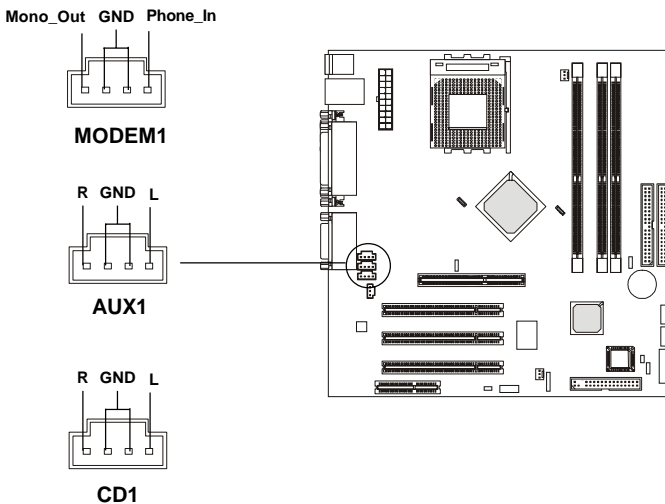
Note:

Mono_Out is connected to the Modem speaker-out connector.
Phone_In is connected to the Modem Microphone-In connector.

2-19

Fan Power Connectors: CPUFAN1/SYSFAN1

The CPUFAN1 (processor fan) and SYSFAN1 (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.

```
SENSOR   □
  +12V   □
   GND   □
```
CPUFAN1

```
SENSOR   □
  +12V   □
   GND   □
```
SYSFAN1
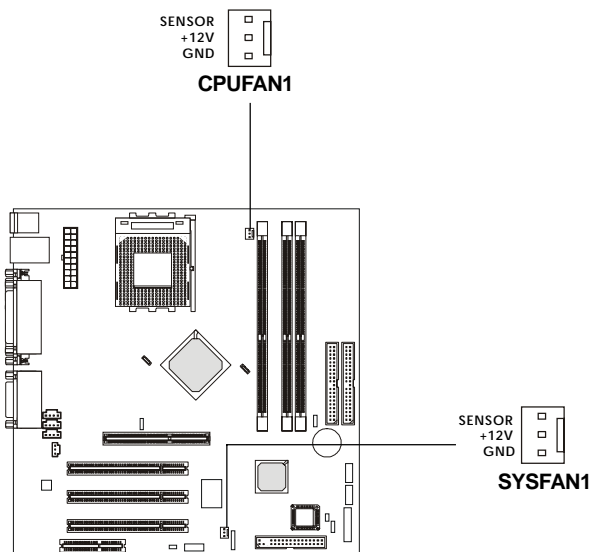
Note:
1. Always consult the vendor for proper CPU cooling fan.
2. CPU Fan supports the fan control. You can install the PC Alert utility that will automatically control the CPU Fan speed according to the actual CPU temperature.

SPDIF Connector: JSPDIF1

The connector is used to connect SPDIF (Sony & Philips Digital Inter-connect Format) interface for digital audio transmission.

1
3
JSPDIF1
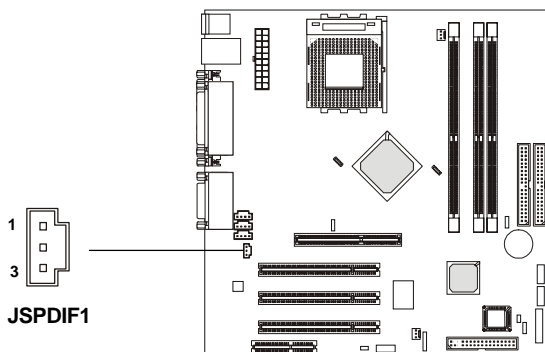
JSPDIF1 Pin Definition

PIN	SIGNAL
1	VCC
2	SPDIF
3	NC

Connected to JSPDIF1

SPDIF Bracket

Front Panel Audio Connector: JAUDIO1

The 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**.

JAUDIO1
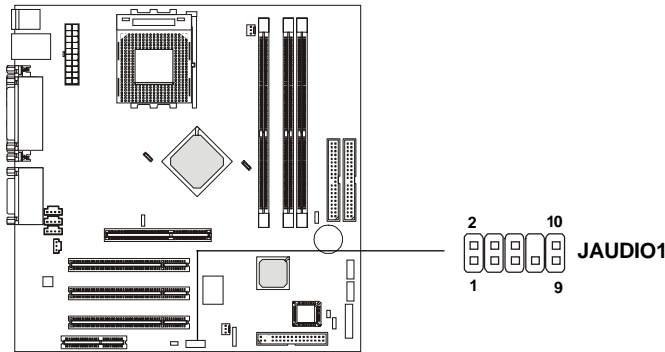
Pin Definition

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

STOP *CAUTION!!!*
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.
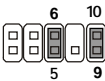
Jumpers

      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 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:

JBAT1

3

1

Clear Data

3

1

Keep Data

STOP
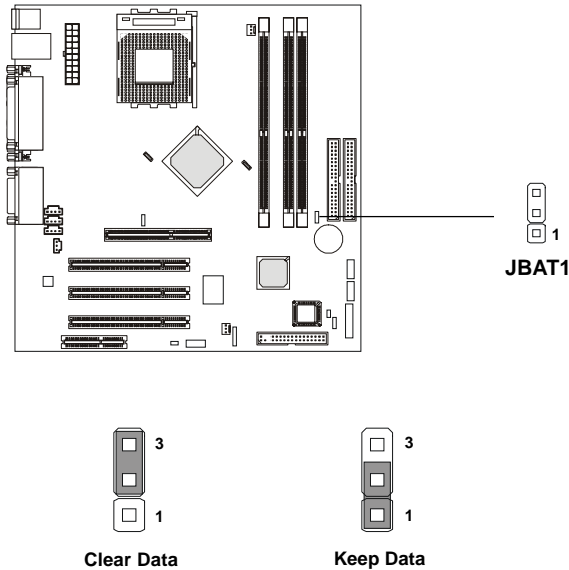
WARNING!

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.

Beep Device Jumper: JSPKR1

The jumper is used to select the device for beep sound output.

JSPKR1

Output to Buzzer

Output to External Speaker
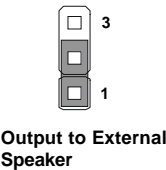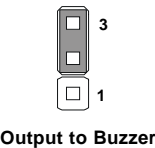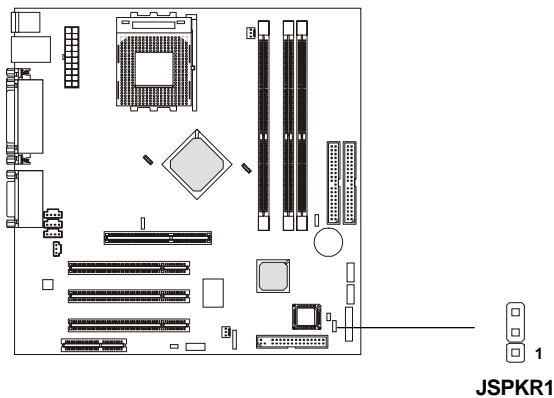
Slots

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

AGP Slot
PCI Slots
CNR Slot
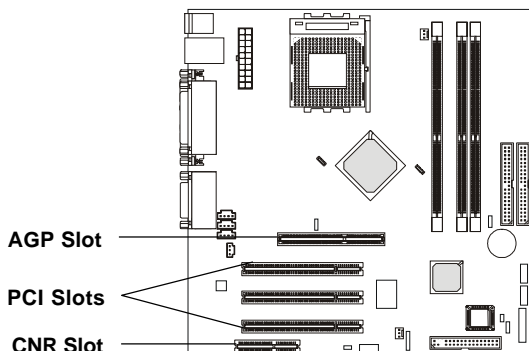
AGP (Accelerated Graphics Port) Slot

The AGP slot allows you to insert the AGP **1.5V** 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).

> **STOP**
> **WARNING**
>
> *The AGP slot **only supports 4x 1.5V AGP card**. Use of 3.3V AGP card may cause damages to the mainboard.*

PCI Slots

The 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 network, audio, or modem riser card for ATX family motherboards. Its main processing is done through software and controlled by the motherboard's chipset. The CNR slot of the mainboard supports audio, modem and **MII-interfaced network card** only.

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 INTA#-INTE# pins as follows:

	Order 1	Order 2	Order 3	Order 4
AGP	INT E#	INT A#		
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#

PCI Slot 1~3: Bus Master.

AWARD® *BIOS Setup*

3

The mainboard uses AWARD® BIOS ROM that provides a Setup utility for users to modify the basic system configuration. The information is stored in a battery-backed CMOS RAM so it retains the Setup information when the power is turned off.

The chapter contains the following topics:

Chapter 3

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 <DEL> key to enter Setup.

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

If the message disappears before you respond and you still wish to enter Setup, restart the system by turning it OFF 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, only for Option Page Setup Menu
<F10>	Save all the CMOS changes and exit

Getting Help

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

Main Menu
The main menu displays the setup categories the BIOS supplies. You can use the up/down arrow keys (↑↓) to select the item. The on-line description for the selected setup category is displayed on the bottom of the screen.

Sub-Menu
If you find a right pointer symbol appears to the left of certain fields (as shown in the right view), that means a sub-menu containing additional options for the field can be launched from this field. To enter the sub-menu, highlight the field and press <Enter>. Then you can use control keys to move be-

> ▸ IDE Primary Master
> ▸ IDE Primary Slave
> ▸ IDE Secondary Master
> ▸ IDE Secondary Slave

tween and change the settings of the sub-menu. To return to the main menu, 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 displays twelve configurable functions and two exit choices. Use arrow keys to move among the items and press <Enter> to enter the sub-menu.

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

  ▶ Standard CMOS Features            Load Fail-Safe Defaults

  ▶ Advanced BIOS Features            Load Optimized Defaults

  ▶ Advanced Chipset Features         Set Supervisor Password

  ▶ Integrated Peripherals            Set User Password

  ▶ Power Management Setup            Save & Exit Setup

  ▶ PnP/PCI Configurations            Exit Without Saving

  ▶ PC Health Status

  Esc : Quit        F9 : Menu in BIOS      ↑ ↓ → ←   : Select Item
  F10 : Save & Exit Setup

                    Time, Date, Hard Disk Type...
```

Standard CMOS Features
Use this menu for basic system configurations, such as time, date etc.

Advanced BIOS Features
Use this menu to setup the items of Award® special enhanced features.

Advanced Chipset Features
Use this menu to change the values in the chipset registers and optimize your system's performance.

Integrated Peripherals
Use this menu to specify your settings for integrated peripherals.

Power Management Setup
Use this menu to specify your settings for power management.

PnP/PCI Configurations

This entry appears if your system supports PnP/PCI.

PC Health Status

This entry displays the current status of your PC.

Load Fail-Safe Defaults

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

Load Optimized Defaults

Use this menu to load the default factory settings for BIOS for optimal system performance.

Set Supervisor Password

Use this menu to set Supervisor Password.

Set User Password

Use this menu to set User Password.

Save & Exit Setup

Save changes to CMOS and exit setup.

Exit Without Saving

Abandon all changes and exit setup.

Chapter 3

Standard CMOS Features

The items inside Standard CMOS Features menu are divided into 13 categories. Each category includes none, one or more setup items. Use the arrow keys to highlight the item you want to modify and use the <PgUp> or <PgDn> keys to switch to the value you prefer.

```
        CMOS Setup Utility - Copyright (C) 1984-2001 Award Software
                         Standard CMOS Features
   Date (mm:dd:yy)           Thu, Sep 13 2001        Item Help
   Time (hh:mm:ss)           15 : 30 : 17
                                                  Menu Level   ▶
 ▶ IDE Primary Master
 ▶ IDE Primary Slave                              Change the day, month,
 ▶ IDE Secondary Master                           year and century
 ▶ IDE Secondary Slave

   Drive A                   [1.44M, 3.5 in.]
   Drive B                   [None]

   Video                     [EGA/VGA]
   Halt On                   [All , But Keyboard]

   Base Memory                    640K
   Extended Memory              65472K
   Total Memory                  1024K

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

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

day	Day of the week, from Sun to Sat, determined by BIOS. Read-only.
month	The month from Jan. through Dec.
date	The date from 1 to 31 can be keyed by numeric function keys.
year	The year can be adjusted by users.

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

IDE Primary Master/Primary Slave/Secondary Master/Secondary Slave
Press PgUp/<+> or PgDn/<-> to select the hard disk drive type. The

3-6

specification of hard disk drive will show up on the right hand according to your selection.

```
       CMOS Setup Utility - Copyright (C) 1984-2001 Award Software
                         IDE Primary Master
 ┌────────────────────────────────────────────┬─────────────────────────┐
 │  IDE HDD Auto-Detection    [Press Enter]    │       Item Help         │
 │                                             ├─────────────────────────┤
 │  IDE Primary Master        [Auto]           │  Menu Level    ▶▶       │
 │  Access Mode               [Auto]           │                         │
 │                                             │  To auto-detect the     │
 │  Capacity                  0 MB             │  HDD's size, head... on │
 │                                             │  this channel           │
 │  Cylinder                  0                │                         │
 │  Head                      0                │                         │
 │  Precomp                   0                │                         │
 │  Landing Zone              0                │                         │
 │  Sector                    0                │                         │
 │                                             │                         │
 │                                             │                         │
 │                                             │                         │
 ├─────────────────────────────────────────────┴────────────────────────┤
 │ ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help │
 │ F5: Previous Values      F6: Fail-Safe Defaults    F7: Optimized Defaults    │
 └────────────────────────────────────────────────────────────────────────┘
```

Access Mode	The settings are Auto, CHS, LBA and Large.
Capacity	The formatted size of the storage device.
Cylinder	Number of cylinders.
Head	Number of heads.
Precomp	Write precompensation cylinder.
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 item sets 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 item determines whether the system will stop if an error is detected at boot. Available options are:

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

Advanced BIOS Features

```
       CMOS Setup Utility - Copyright (C) 1984-2001 Award Software
                         Advanced BIOS Features
    Anti-Virus Protection       [Disabled]        ▲        Item Help
    CPU Internal Cache          [Enabled]
    External Cache              [Enabled]            Menu Level    ▶
    Quick Power On Self Test    [Enabled]
    First Boot Device           [Floppy]             Allows you to choose
    Second Boot Device          [HDD-0]              the VIRUS warning
    Third Boot Device           [LS120]              feature for IDE Hard
    Boot Other Device           [Enabled]            Disk boot sector
    Swap Floppy Drive           [Disabled]           protection. If this
    Boot Up Floppy Seek         [Disabled]           function is enabled
    Boot Up NumLock Status      [On]                 and someone attempt to
    Gate A20 Option             [Fast]               write data into this
    Typematic Rate Setting      [Disabled]           area , BIOS will show
  x Typematic Rate (Chars/Sec) 6                     a warning message on
  x Typematic Delay (Msec)      250                  screen and alarm beep
    Security Option             [Setup]
    APIC Mode                   [Disabled]
  x MPS Version Control For OS 1.4
    OS Select For DRAM > 64MB [Non-OS2]
    HDD S.M.A.R.T. Capability [Disabled]
    Video BIOS Shadow           [Enabled]
    C8000-CBFFF Shadow          [Disabled]
    CC000-CFFFF Shadow          [Disabled]
    D0000-D3FFF Shadow          [Disabled]
    D4000-D7FFF Shadow          [Disabled]
    D8000-DBFFF Shadow          [Disabled]
    DC000-DFFFF Shadow          [Disabled]
    Full Screen LOGO Show       [Disabled]  ▼
 ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
      F5: Previous Values    F6: Fail-Safe Defaults   F7: Optimized Defaults
```

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: *Disabled* and *Enabled*.

CPU Internal Cache/External Cache
Cache memory is additional memory that is much faster than conventional DRAM (system memory). When the CPU requests data, the system transfers the requested data from the main DRAM into cache memory, for even faster access by the CPU. The settings enable/disable the internal cache (also known as L1 or level 1 cache) and external cache (also known as L2 or level 2 cache). Settings: *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. Settings: *Enabled* and *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:

Floppy	The system will boot from floppy drive.
LS120	The system will boot from LS-120 drive.
HDD-0	The system will boot from the first HDD.
SCSI	The system will boot from the SCSI.
CDROM	The system will boot from the CD-ROM.
HDD-1	The system will boot from the second HDD.
HDD-2	The system will boot from the third HDD.
HDD-3	The system will boot from the fourth HDD.
ZIP100	The system will boot from ATAPI ZIP drive.
LAN	The system will boot from the Network drive.
Disabled	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
This setting causes the BIOS to search for floppy disk drives at boot time.
When enabled, the BIOS will activate the floppy disk drives during the boot
process: the drive activity light will come on and the head will move back
and forth once. First A: will be done and then B: if it exists. Settings:
Disabled and *Enabled*.

Boot Up NumLock 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 *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
Setup	The password prompt appears only when end users try to run Setup.
System	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 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* 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 more than 64MB
DRAM. When you choose *Non-OS2*, you cannot run the OS/2® operating
system with more than 64MB DRAM. But it is possible if you choose *OS2*.

HDD S.M.A.R.T. Capability
This allows you to activate the S.M.A.R.T. (Self-Monitoring Analysis &
Reporting Technology) capability for the hard disks. S.M.A.R.T is a utility
that monitors your disk status to predict hard disk failure. This gives you an
opportunity to move data from a hard disk that is going to fail to a safe place
before the hard disk becomes offline. Settings: *Enabled* and *Disabled*.

Video BIOS Shadow
This item sets if the Video BIOS will be copied to RAM and increase video
speed accordingly. Settings: *Enabled* and *Disabled*.

**C8000-CBFFF/CC000-CFFFF/D0000-D3FFF/D4000-C7FFF/D8000-
DBFFF/DC000-DFFFF Shadow**
These items specify whether the contents of the adapter ROM named in the
items will be copied into RAM to improve the performance of ROM firmware
for adapters. You need to know the address of each adapter ROM occupies
to shadow (copy) it into the correct area of RAM. Settings: *Enabled* and
Disabled.

Small Logo (EPA) Show
This item enables you to show the EPA logo (brand specific graphics) on the
bootup screen. Settings are:

Disabled	Shows the normal POST screen at boot.
Enabled	Shows a still image (EPA logo) on the screen at boot.

Advanced Chipset Features

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

    System BIOS Cacheable       [Disabled]              Item Help
    Video RAM Cacheable         [Disabled]
    DDRAM Auto Precharge(W/R)   [Enabled]          Menu Level    ▶
    CAS Latency Override        [Auto]
    AGP Aperture Size (MB)      [64MB]
    Monochrome Access           [AGP]
    AGP BUS Driving Control     [Auto]
  x AGP BUS Driving Value        Weakest
    Frame Buffer Size           [32M]




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

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

System BIOS Cacheable

System BIOS ROM at F0000h-FFFFFh is always copied to RAM for faster execution. Selecting *Enabled* allows the contents of F0000h RAM memory segment to be written to and read from cache memory, resulting in better system performance. However, if any program writes to this memory area, a system error may result. The settings: *Enabled* and *Disabled*.

Video RAM Cacheable

Selecting *Enabled* allows caching of the video memory (RAM) at A0000h to AFFFFh, resulting in better video performance. However, if any program writes to this memory area, a memory access error may result. Settings: *Enabled* and *Disabled*.

DDRAM Auto Precharge

Auto Precharge is a SDRAM feature that allows the memory to close a page (bits along one row) automatically at the end of the burst. You can enable the Auto Precharge function of the installed DDR SDRAM to provide a selftimed row precharge for each burst access. Settings: *Enabled* and *Disabled*.

CAS Latency Override
The option lets you override the SPD timing to control the CAS latency, which determines the timing delay before SDRAM starts a read command after receiving it. Settings: *2 Clocks*, *2.5 Clocks*, *3 Clocks* and *Disabled*. *2 Clocks* increases system performance while *3 Clocks* provides more stable system performance.

AGP Aperture Size (MB)
The item is used to select the size of Accelerated Graphics Port (AGP) aperture. Aperture is a portion of PCI memory address range dedicated for graphics memory address space. Host cycles that hit the aperture range are forwarded to AGP without any translation. Settings: *32MB*, *64MB*, *128MB*, *256MB*, *512MB* and *Disabled*.

Monochrome Access
This allows you to control when MDA (Monochrome Display Adapter) accesses are sent to the AGP device or to PCI bus. Settings: *AGP* and *PCI*.

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

AGP BUS Driving Value
This item specifies an AGP driving force.

Frame Buffer Size
Frame Buffer is the video memory that stores data for video display (frame). This field is used to determine the memory size for Frame Buffer. Larger frame buffer size increases video performance. Settings: *8M*, *16M*, *32MB* and *Disabled*.

Integrated Peripherals

```
         CMOS Setup Utility - Copyright (C) 1984-2001 Award Software
                          Integrated Peripherals
 ▶ MCP OnChip IDE Device        [Press Enter]              Item Help
 ▶ MCP OnChip PCI Device        [Press Enter]
 ▶ Onboard SuperIO Device       [Press Enter]        Menu Level    ▶
   Init Display First           [PCI Slot]
   OnChip USB                   [Enabled]
   USB Keyboard Support         [Disabled]
   BIOS Protect                 [Disabled]
   IDE HDD Block Mode           [Enabled]
   POWER ON Function            [BUTTON ONLY]
   KB Power ON Password         [Enter]
   Hot Key Power ON             [Ctrl-F1]




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

MCP OnChip IDE Device

Press <Enter> to enter its submenu similar to the following screen.

```
         CMOS Setup Utility - Copyright (C) 1984-2001 Award Software
                          MCP OnChip IDE Device
   OnChip IDE Channel0          [Enabled]               Item Help
   OnChip IDE Channel1          [Enabled]
   IDE Prefetch Mode            [Enabled]         Menu Level    ▶▶
   Primary Master   PIO         [Auto]
   Primary Slave    PIO         [Auto]
   Secondary Master PIO         [Auto]
   Secondary Slave  PIO         [Auto]
   Primary Master   UDMA        [Auto]
   Primary Slave    UDMA        [Auto]
   Secondary Master UDMA        [Auto]
   Secondary Slave  UDMA        [Auto]




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

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.

IDE Prefetch Mode

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

Primary/Secondary Master/Slave PIO

The four items allow you to set a PIO (Programmed Input/Output) mode for each of the four IDE devices that the onboard IDE interface supports. Modes 0~4 provide increased performance. In *Auto* mode, BIOS automatically determines the best mode for each IDE device.

Primary/Secondary Master/Slave UDMA

Ultra DMA implementation is possible only if your IDE device supports it and your operating environment contains a DMA driver. If both your hard drive and software support Ultra DMA 33/66/100, select *Auto* to enable BIOS support.

MCP OnChip PCI Device

Press <Enter> and the following submenu screen will appear.
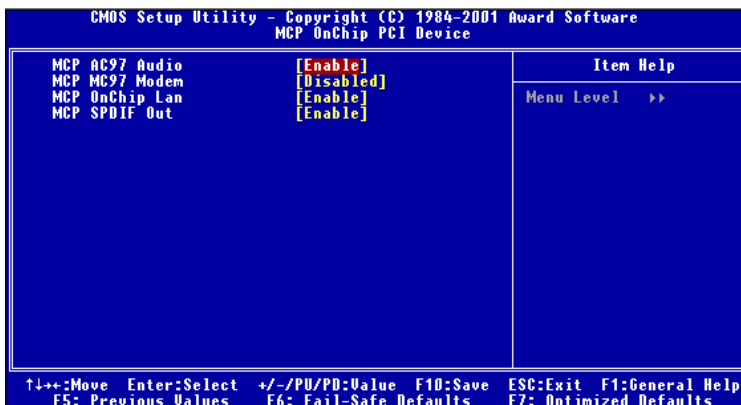
MCP AC97 Audio

This item is used to enable or disable the AC'97 (Audio Codec'97) feature.   Disable the function if you want to use other controller cards to connect an audio device. Settings: *Disabled* and *Enable*.

MCP MC97 Modem

This item is used to enable or disable the MC'97 (Modem Codec'97) feature. Disable the controller if you want to use other controller cards to connect modems. Settings: *Disabled* and *Enable*.

MCP OnChip Lan (Optional)

The field is optional. It is used to enable or disable the onchip LAN controller. Settings: *Enable* and *Disabled*.

MCP SPDIF Out

This item enables or disables the SPDIF digital audio output function. Settings: *Disabled* and *Enable*.

Onboard SuperIO Device

Press <Enter> to enter the submenu screen as the following.

```
          CMOS Setup Utility - Copyright (C) 1984-2001 Award Software
                            Onboard SuperIO Device

     Onboard FDC Controller      [Enabled]                   Item Help
     Onboard Serial Port 1       [3F8/IRQ4]
     UART Mode Select            [Normal]          Menu Level    ▶▶
     RxD , TxD Active            [Hi,Lo]
     IR Transmission Delay       [Enabled]
     UR2 Duplex Mode             [Half]
     Use IR Pins                 [IR-Rx2Tx2]
     Onboard Parallel Port       [378/IRQ7]
     Parallel Port Mode          [SPP]
     EPP Mode Select             [EPP1.7]
     ECP Mode Use DMA            [3]
     Game Port Address           [201]
     Midi Port Address           [330]
     Midi Port IRQ               [10]



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

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

UART Mode Select
The field allows you to specify the operation mode for serial port "COM B". Settings are:

IrDA:	IrDA-compliant Serial Infrared Port
ASKIR :	Amplitude Shift Keyed Infrared Port
Normal:	RS-232C Serial Port

RxD, TxD Active
The item determines the active of RxD, TxD. Settings are "*Hi, Hi*", "*Hi, Lo*", "*Lo, Hi*" and "*Lo, Lo*".

IR Transmission Delay
The field enables or disables IR transmission delay function. Settings: *Enabled* and *Disabled*.

UR2 Duplex Mode
The field specifies a duplex value for the IR device connected to COM B. Full Duplex mode permits silmutaneous two-direction transmission. Half Duplex mode permits transmission in one direction only at a time. Settings: *Half* and *Full*.

Use IR Pins
Consult your IR peripheral documentation to select the correct setting of TxD and RxD signals. Settings: *IR-Rx2Tx2* and *RxD2, TxD2*.

TX, RX inverting enable
This item allows you to enable the TX, RX inverting which depends on

different H/W requirement. This field is not recommended to change its default setting for avoiding any error in your system. Settings: "*No, No*", "*No, Yes*", "*Yes, No*" and "*Yes, Yes.*"

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

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

EPP Mode Select
The item selects the EPP version used by the parallel port if it is set to *EPP* or *ECP+EPP* mode. Settings: *EPP1.7* and *EPP1.9*.

ECP Mode Use DMA
The item specifies the DMA channel 1 or 3 for the parallel port when it is set to *ECP* or *ECP+EPP* mode.

Game Port Address
The item disables the Joystick/Game port or sets its I/O port address. Settings: *Disabled*, *201* and *209*.

Midi Port Address
The item disables the Midi port or sets its I/O port address. Settings: *Disabled, 330*, *300* and *290*.

Midi Port IRQ
The item specifies an IRQ for the Midi port.

Init Display First
This item specifies which VGA device is your primary graphics adapter. Settings: *PCI Slot* and *Onboard/AGP*.

OnChip USB
The item enables or disables the USB (Universal Serial Bus) Ports. Settings: *Enabled* and *Disabled*.

USB Keyboard Support
Set to *Enabled* if your need to use an USB keyboard in the operating system that does not support or have any USB driver installed, such as DOS and SCO Unix.

BIOS Protect
This function protects the BIOS from accidental corruption by unauthorized users or computer viruses. When enabled, the BIOS' data cannot be changed when attempting to update the BIOS with a Flash utility. To successfully update the BIOS, you'll need to disable this BIOS Protec function.

You should enable this function at all times. The only time when you need to disable it is when you want to update the BIOS. After updating the BIOS, you should immediately re-enable it to protect it against viruses. Settings: *Enabled* and *Disabled*.

IDE HDD Block Mode
This allows your hard disk controller to use the fast block mode to transfer data to and from the hard disk drive. Block mode is also called block transfer, multiple commands or multiple sector read/write. *Enabled* enables IDE controller to use block mode; *Disabled* allows the controller to use standard mode.

POWER ON Function
This controls how the PS/2 mouse or keyboard can power on the system. Settings: *Password*, *Hot KEY*, *Any KEY*, *BUTTON ONLY* and *Keyboard 98*.

KB Power ON Password
If **POWER ON Function** is set to *Password*, then you can set a password in the field for the PS/2 keyboard to power on the system.

Hot Key Power ON
If **POWER ON Function** is set to *Hot KEY*, you can assign a hot key combina-
tion in the field for the PS/2 keyboard to power on the system. Settings: *Ctrl-
F1* through *Ctrl-F12*.

Power Management Setup

```
        CMOS Setup Utility - Copyright (C) 1984-2001 Award Software
                          Power Management Setup
   IPCA function                [Enabled]              Item Help
   Sleep State                  [S1(POS)]
   Power Management Option      [User Define]      Menu Level  ▶
   Video Off Method             [DPMS Support]
   HDD Power Down               [Disabled]
   HDD Down In Suspend          [Disabled]
   PM Control by APM            [Yes]
   PWRON After PWR-Fail         [Off]
   MODEM Use IRQ                [3]
   Soft-Off by PBTN             [Instant-Off]
 ▶ IRQ/Event Activity Detect    [Press Enter]



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

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. If your operating system supports ACPI, such as Windows 98SE, Windows 2000 and Windows ME, you can choose to enter the Standby mode in S1(POS) or S3(STR) fashion through the setting of this field. 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 the mode: HDD Power Down. There are three options for power management:

Min Saving	Minimum Power Management. HDD Power Down = 15 Min.
Max Saving	Maximum Power Management. HDD Power Down = 1 Min.
User Define	Allows end users to configure HDD Power Down.

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	This 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.

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: *Disabled* and *1 Min* through *15 Min*.

HDD Down In Suspend

This item determines whether the hard disk drive will be turned off during suspend mode.   Settings: *Disabled* and *Enabled*.

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* and *No*.

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 previous status before power failure or interrupt occurred.

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: *3*, *4*, *5*, *7*, *9*, *10*, *11* and *NA*.

Soft-Off by PBTN

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.

IRQ/Event Activity Detect

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

```
        CMOS Setup Utility - Copyright (C) 1984-2001 Award Software
                        IRQ/Event Activity Detect :
      USB Resume from S3/S4/S5  [Disabled]              Item Help
      PowerOn by PCI Card       [Disabled]
      RTC Resume                [Disabled]          Menu Level    ▶▶
    x Time(hh:mm:ss) Alarm        0 :  0 :  0
    ▶ IRQs Activity Monitoring  [Press Enter]




    ↑↓←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
       F5: Previous Values    F6: Fail-Safe Defaults  F7: Optimized Defaults
```
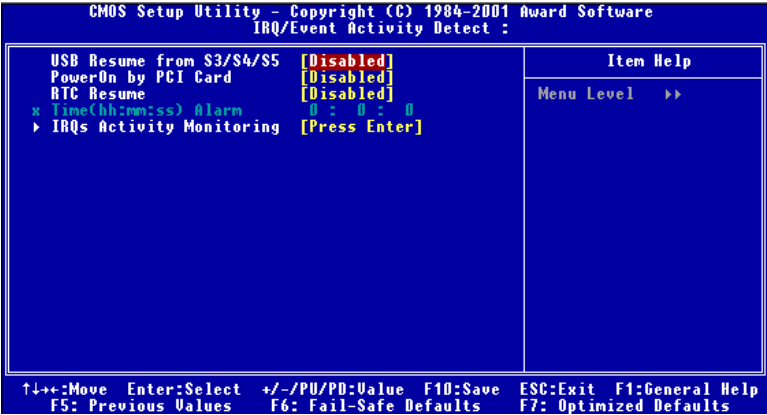
USB Resume from S3/S4/S5, PowerOn by PCI Card
These items specify whether the system will be awakened from power
saving modes when activity or input signal of the specified hardware
peripheral or component is detected.

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

Time(hh:mm:ss) Alarm
Specifies the time for **RTC Resume**. Format is <hour><minute>
<second>.

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

```
         CMOS Setup Utility - Copyright (C) 1984-2001 Award Software
                          IRQs Activity Monitoring
   ┌───────────────────────────────────────────────┬─────────────────────┐
   │ IRQs Activity              [Primary]           │     Item Help       │
   │ IRQ3  (COM 2)              [Enabled]           │                     │
   │ IRQ4  (COM 1)              [Enabled]           │  Menu Level   ▶▶▶    │
   │ IRQ5  (LPT 2)              [Enabled]           │                     │
   │ IRQ6  (Floppy Disk)        [Enabled]           │                     │
   │ IRQ7  (LPT 1)              [Enabled]           │                     │
   │ IRQ8  (RTC Alarm)          [Disabled]          │                     │
   │ IRQ9  (Reserved)           [Enabled]           │                     │
   │ IRQ10 (Reserved)           [Enabled]           │                     │
   │ IRQ11 (Reserved)           [Enabled]           │                     │
   │ IRQ12 (PS/2 Mouse)         [Enabled]           │                     │
   │ IRQ13 (Coprocessor)        [Enabled]           │                     │
   │ IRQ14 (IDE Channel 0)      [Enabled]           │                     │
   │ IRQ15 (IDE Channel 1)      [Disabled]          │                     │
   │                                                │                     │
   │                                                │                     │
   ├───────────────────────────────────────────────┴─────────────────────┤
   │ ↑↓←→:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help │
   │    F5: Previous Values    F6: Fail-Safe Defaults    F7: Optimized Defaults   │
   └───────────────────────────────────────────────────────────────────┘
```

IRQs Activity

Select which INTR Channel of IRQs is monitored and able to wake up the system from power saving modes. Settings are:

Primary	Primary INTR Channel of each IRQ
Secondary	Secondary INTR Channel of each IRQ
Disabled	No IRQ is monitored; therefore, any IRQ activity cannot wake up the system.

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

```
         CMOS Setup Utility - Copyright (C) 1984-2001 Award Software
                          PnP/PCI Configurations

      PNP OS Installed          [No]                   Item Help
      Reset Configuration Data  [Disabled]
                                                 Menu Level    ▶
      Resources Controlled By   [Auto(ESCD)]
    x IRQ Resources             Press Enter      Select Yes if you are
                                                 using a Plug and Play
      PCI/VGA Palette Snoop     [Disabled]       capable operating
                                                 system Select No if
                                                 you need the BIOS to
                                                 configure non-boot
                                                 devices




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

PNP OS Installed

When set to *YES*, BIOS will only initialize the PnP cards used for booting (VGA, IDE, SCSI). The rest of the cards will be initialized by the PnP operating system like Windows® 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

The ESCD (Extended System Configuration Data) is a method that the BIOS uses to store resource information for both PNP and non PNP devices in a bit string format. When *Enabled*, the system will rebuild ESCD and you will see the message "ESCD Update Successfully" on boot up.

Resources Controlled By

When selecting *Auto(ESCD)*, BIOS will automatically configure all the boot and PnP (Plug & Play) compatible devices and assigns system resources like IRQ to these devices. However, this feature means absolutely nothing unless you are using a Plug and Play operating system such as Windows® 98. If you want to configure the system by yourself, select *Manaul*.

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 or ISA bus architecture.
Reserved	For devices compliant with the PC AT bus specification, requiring a specific interrupt.

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.

PC Health Status

This section is to monitor the current hardware status including CPU temperature, CPU Fan speed, Vcore etc. This is available only if there is hardware monitoring mechanism onboard.

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

  Current System Temp.                          Item Help
  System fan
  CPU fan                                  Menu Level   ▶
  Vcore
  3.3 V
  + 5 V
  +12 V
  -12 V
  - 5 V
  VBAT(V)
  5VSB(V)
  Chassis Intrusion Detect  [Disabled]
  Shutdown Temperature      [Disabled]
  Warning_Beep              [Enabled]


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

Current System Temp., 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 monitored hardware devices/ components such as voltages, temperatures and all fans' speeds.

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

Shutdown Temperature
The item allows the ACPI-aware system to automatically shutdown if the system temperature reaches a thermal level preset here. This can prevent the system components from being damaged due to overheating. Settings: *Disabled*, *80°C/176°F*, *85°C/185°F* and *90°C/194°F.*

Warning_Beep
The item controls whether the system beeps when any warning such as system overheating problem or chassis intrusion event occurs. Settings: *Enabled* and *Disabled*.

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 the optimal performance of the mainboard. The Fail-Safe Defaults are the default values set by the BIOS vendor for the stable system performance.

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

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

   ▶ Standard CMOS Features              Load Fail-Safe Defaults
   ▶ Advanced BIOS Features              Load Optimized Defaults
   ▶ Advanced Chipset Features           Set Supervisor Password
   ▶ Integrated Peripherals              Set User Password
   ▶ Power Management                              etup
   ▶ PnP/PCI Configura  Load Fail-Safe Defaults (Y/N)? N   Saving
   ▶ PC Health Status

   Esc : Quit        F9 : Menu in BIOS       ↑ ↓ → ←   : Select Item
   F10 : Save & Exit Setup

                       Load Fail-Safe Defaults
```

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:

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

   ▶ Standard CMOS Features              Load Fail-Safe Defaults

   ▶ Advanced BIOS Features              Load Optimized Defaults

   ▶ Advanced Chipset Features           Set Supervisor Password

   ▶ Integrated Peripherals              Set User Password

   ▶ Power Management              ┌──────────────────────────┐ etup
                                   │
   ▶ PnP/PCI Configura             │ Load Optimized Defaults (Y/N)? N  Saving
                                   │
   ▶ PC Health Status              └──────────────────────────┘

   Esc : Quit       F9 : Menu in BIOS      ↑ ↓ → ←   : Select Item
   F10 : Save & Exit Setup

                        Load Optimized Defaults
```

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:

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

    ▶ Standard CMOS Features           Load Fail-Safe Defaults

    ▶ Advanced BIOS Features           Load Optimized Defaults

    ▶ Advanced Chipset Features        Set Supervisor Password

    ▶ Integrated Peripherals           Set User Password

    ▶ Power Management Setup           Save & Exit Setup

    ▶ PnP/PCI Configurati┌────────────────────┐ut Saving
                         │ Enter Password:    │
    ▶ PC Health Status   └────────────────────┘

    Esc : Quit      F9 : Menu in BIOS    ↑ ↓ → ←   : Select Item
    F10 : Save & Exit Setup

                      Change/Set/Disable Password
```
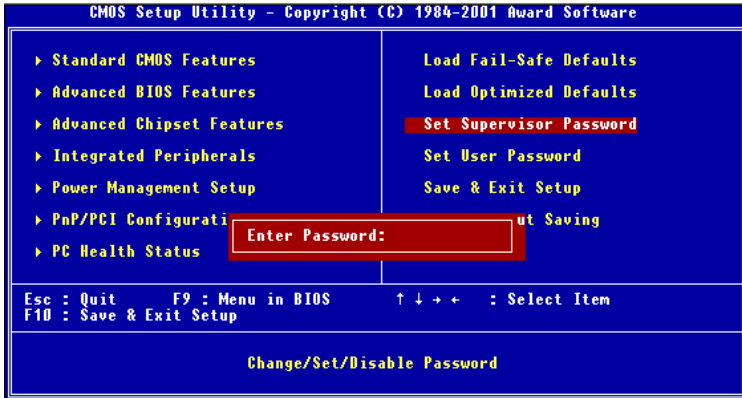
Type the password, up to eight characters in length, and press <Enter>. The password typed now will replace any previously set password from CMOS memory. You will be prompted to confirm the password. Re-type the password and press <Enter>. You may also press <Esc> to abort the selection and not enter 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 in the Advanced BIOS Features 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 trying to enter Setup.

About Supervisor Password & User Password:

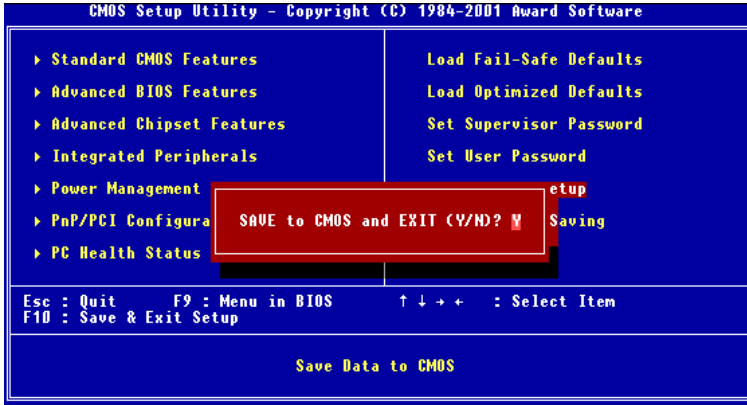*Supervisor password :*   *Can enter and change the settings of the setup menu.*

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

Save & Exit Setup

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

```
     CMOS Setup Utility - Copyright (C) 1984-2001 Award Software
  ┌──────────────────────────────────────────────────────────────────┐
  │ ▶ Standard CMOS Features          Load Fail-Safe Defaults          │
  │ ▶ Advanced BIOS Features          Load Optimized Defaults          │
  │ ▶ Advanced Chipset Features       Set Supervisor Password          │
  │ ▶ Integrated Peripherals          Set User Password                │
  │ ▶ Power Management                                        etup      │
  │ ▶ PnP/PCI Configura   SAVE to CMOS and EXIT (Y/N)? Y      Saving    │
  │ ▶ PC Health Status                                                  │
  │                                                                     │
  ├──────────────────────────────────────────────────────────────────┤
  │ Esc : Quit      F9 : Menu in BIOS      ↑ ↓ → ←  : Select Item       │
  │ F10 : Save & Exit Setup                                             │
  ├──────────────────────────────────────────────────────────────────┤
  │                       Save Data to CMOS                             │
  └──────────────────────────────────────────────────────────────────┘
```

Typing *Y* will allow you to quit the Setup Utility and save the user setup changes to RTC CMOS.
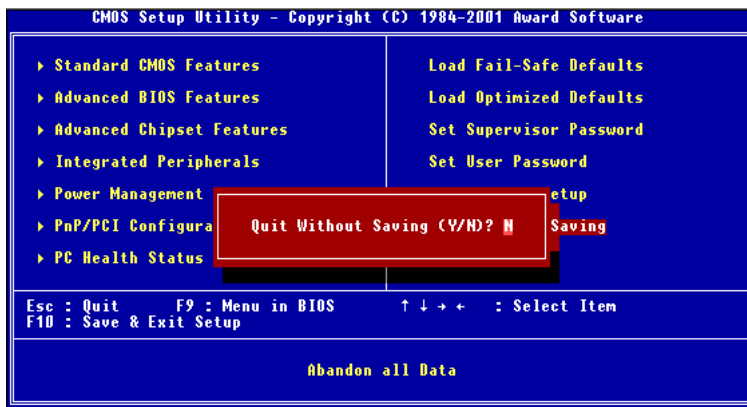
Typing *N* will return to the Setup Utility.

Chapter 3

Exit Without Saving

When you want to quit the Setup menu, you can select this option to abandon the changes. A message as below will appear on the screen:

Typing *Y* will allow you to quit the Setup Utility without saving any changes to RTC CMOS.

Typing *N* will return to the Setup Utility.