1

Getting Started

Thank you for purchasing the 648M-IL (MS-6703 v2.X) M-ATX mainboard. The MS-6703 v2.X mainboard is based on **SiS® 648 B-step** & **963** chipsets for optimal system efficiency. Designed to fit the advanced **Intel® Pentium® 4** processors in the 478 pin package, the MS-6703 v2.X mainboard delivers a high performance and professional desktop platform solution.

Mainboard Specifications

CPU
➤ Supports Socket 478 for Intel Pentium 4/Celeron processors (Willamette, Northwood and Northwood with Hyper-threading)
➤ Supports 400/533MHz CPU FSB
➤ Supports Willamette and Northwood core frequency from 1.3 GHz to 2.8 GHz and up, Northwood with HT from 3.0 GHz and up

Chipset
➤ SiS® 648 B-step chipset
   - Supports Intel Pentium 4 processors with data transfer rate up to 533 MHz
   - Supports 64-bit high performance DDR333/DDR266 memory controller
   - Supports AGP 8X/4X interface
   - Supports Hyper Threading technology
➤ SiS® 963 chipset
   - Supports Dual-IDE ATA 66/100/133
   - Integrated audio controller with AC97 interface
   - Low pin count interface for SIO
   - Advanced power management and PC2001 compliance

Main Memory
➤ Supports two 184-pin DDR DIMMs
➤ Supports up to 2GB PC2700/2100/1600 DDR SDRAMs
➤ Supports 2.5v DDR SDRAM

Slots
➤ One AGP (Accelerated Graphics Port) 4x/8x slot.
➤ Three 32-bit PCI bus slots (support 3.3v/5v PCI bus interface)

On-Board IDE
➤ Dual-IDE controller integrated in SiS 963 chipset
➤ Supports PIO, Bus Master and Ultra DMA133/100/66/33 operation modes
➤ Can connect up to four IDE devices

On-Board Peripherals
➤ On-Board Peripherals include:
   - 1 floppy port supports 2 FDDs with 360K, 720K, 1.2M, 1.44M and 2.88Mbytes

- 2 serial ports
- 1 parallel port
- 1 IrDA connector
- 3 vertical audio ports
- 6 USB ports (2 front and 4 rear)
- 1 RJ-45 Lan Jack (optional)

IEEE1394
➤ Realtek RTL8801B (can support up to 2 ports)

Audio
➤ Realtek ALC650 6-channel audio codec

LAN (optional)
➤ Realtek 8201B MII PHY

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.

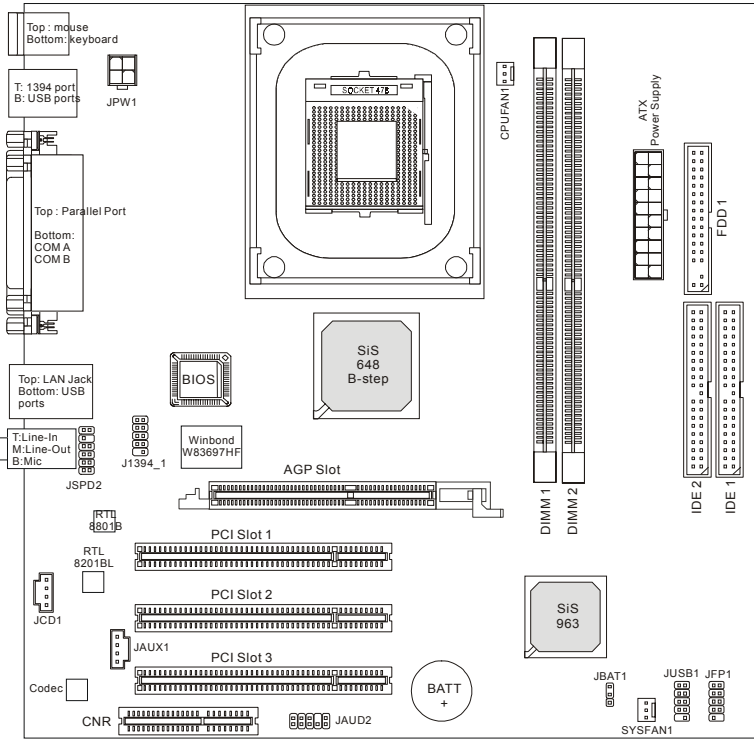**Dimension**
➤ M-ATX Form Factor: 9.6" x 9.6"

Mounting
➤ 6 mounting holes

Others
➤ Suspend to RAM/Disk (S3/S4)
➤ PC2001 compliant
➤ Supports WOL (optional)

Mainboard Layout

Top : mouse
Bottom: keyboard

T: 1394 port
B: USB ports

JPW1

Top : Parallel Port

Bottom:
COM A
COM B

Top: LAN Jack
Bottom: USB
ports

T:Line-In
M:Line-Out
B:Mic

JSPD2

RTL
8801B

RTL
8201BL

JCD1

Codec

CNR

BIOS

J1394_1

Winbond
W83697HF

AGP Slot

PCI Slot 1

PCI Slot 2

JAUX1

PCI Slot 3

JAUD2

SOCKET 478

SiS
648
B-step

CPUFAN1

DIMM 1

DIMM 2

ATX
Power Supply

FDD1

IDE 2

IDE 1

SiS
963

BATT
+

JBAT1

SYSFAN1
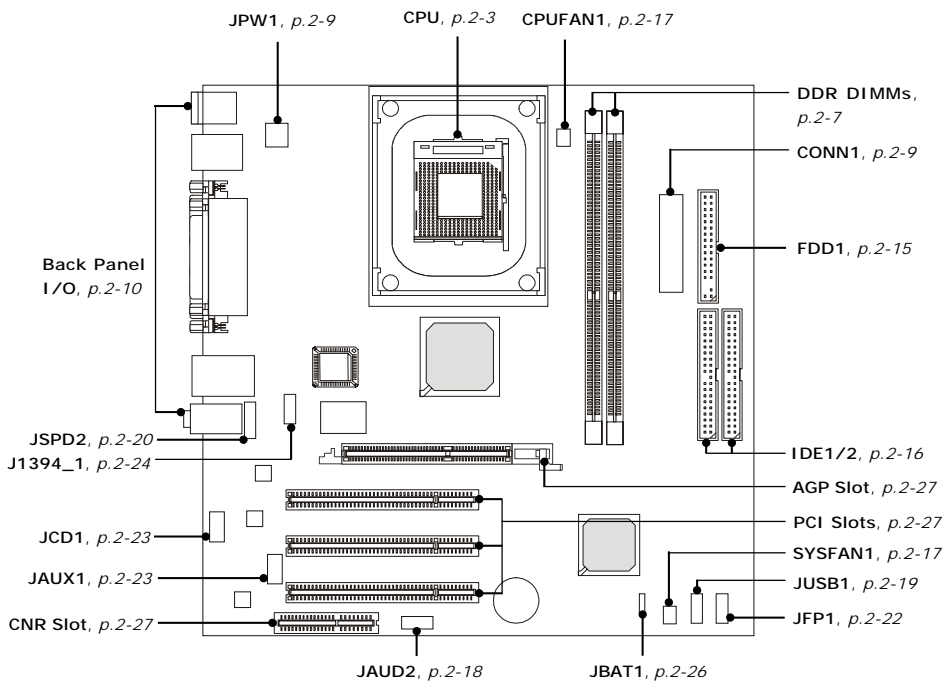
JUSB1 JFP1

MS-6703 v2.X M-ATX Mainboard

2

Hardware Setup

This chapter tells you how to install the CPU, memory modules, and expansion cards, as well as how to setup the jumpers on the mainboard. Also, it provides the instructions on connecting the peripheral devices, such as the mouse, keyboard, etc.

While doing the installation, be careful in holding the components and follow the installation procedures.

Quick Components Guide

JPW1, *p.2-9*   CPU, *p.2-3*   CPUFAN1, *p.2-17*

DDR DIMMs, *p.2-7*

CONN1, *p.2-9*

FDD1, *p.2-15*

Back Panel I/O, *p.2-10*

JSPD2, *p.2-20*
J1394_1, *p.2-24*

IDE1/2, *p.2-16*

AGP Slot, *p.2-27*

PCI Slots, *p.2-27*

JCD1, *p.2-23*

SYSFAN1, *p.2-17*

JAUX1, *p.2-23*

JUSB1, *p.2-19*

CNR Slot, *p.2-27*

JFP1, *p.2-22*

JAUD2, *p.2-18*   JBAT1, *p.2-26*

Central Processing Unit: CPU

The mainboard supports Intel® Pentium® 4 processor in the 478 pin package. The mainboard uses a CPU socket called PGA478 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 Core Speed Derivation Procedure

CPU Clock multiplied by **Core/Bus ratio** equals the CPU core speed.

For example:

If	CPU Clock	=	100MHz
	Core/Bus ratio	=	14
then	CPU core speed	=	Host Clock x Core/Bus ratio
		=	100MHz x 14
		=	1.4 GHz

MSI

MSI Reminds You...

Overheating
Overheating will seriously damage the CPU and system, always make sure the cooling fan can work properly to protect the CPU from overheating.
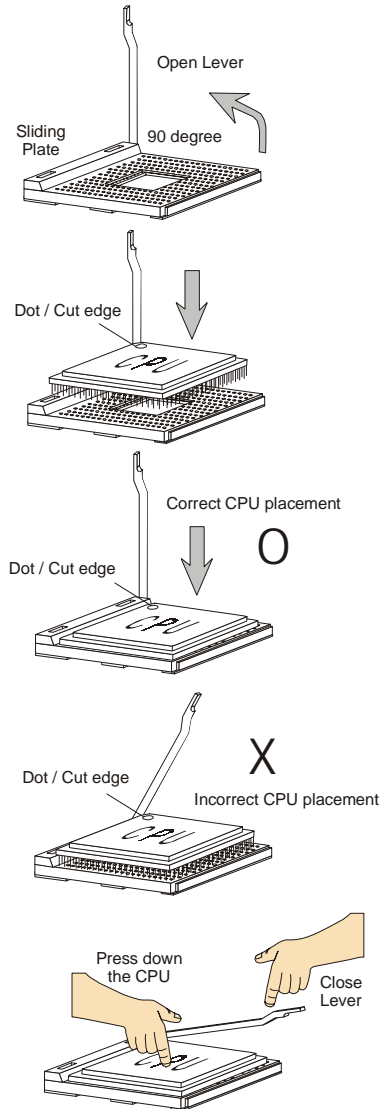
Replacing the CPU
While replacing the CPU, always turn off the ATX power supply or unplug the power supply's power cord from grounded outlet first to ensure the safety of CPU.

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.***

CPU Installation Procedures for Socket 478

1. Please turn off the power and unplug the power cord before installing the CPU.

2. Pull the lever sideways away from the socket. Make sure to raise the lever up to a 90-degree angle.

3. Look for the cut edge. The cut edge should point towards the lever pivot. The CPU can only fit in the correct orientation.

4. If the CPU is correctly installed, the pins should be completely embedded into the socket and can not be seen. Please note that any violation of the correct installation procedures may cause permanent damages to your mainboard.

5. Press the CPU down firmly into the socket and close the lever. As the CPU is likely to move while the lever is being closed, always close the lever with your fingers pressing tightly on top of the CPU to make sure the CPU is properly and completely embedded into the socket.

Open Lever

Sliding Plate   90 degree

Dot / Cut edge

Correct CPU placement

O

Dot / Cut edge

X

Dot / Cut edge   Incorrect CPU placement

Press down the CPU   Close Lever

Installing the CPU Fan

As processor technology pushes to faster speeds and higher performance, thermal management becomes increasingly important. To dissipate heat, you need to attach the CPU cooling fan and heatsink on top of the CPU. Follow the instructions below to install the Heatsink/Fan:

1. Locate the CPU and its retention mechanism on the motherboard.

retention mechanism

**2.** Position the heatsink onto the retention mechanism.
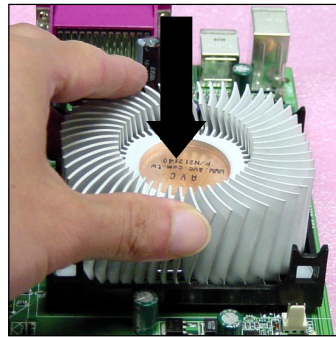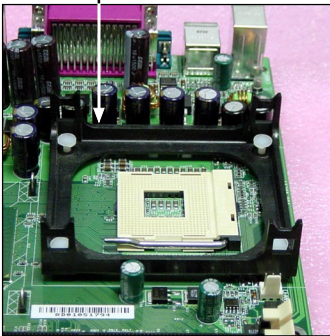
3. Mount the fan on top of the heatsink. Press down the fan until its four clips get wedged in the holes of the retention mechanism.

4. Press the two levers down to fasten the fan. Each lever can be pressed down in only ONE direction.

levers
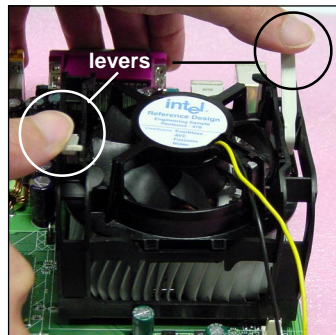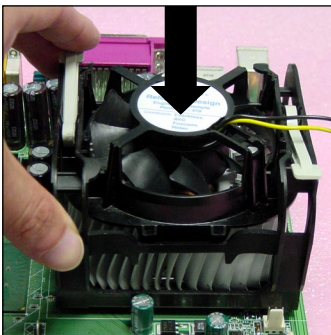
5. Connect the fan power cable from the mounted fan to the 3-pin fan power connector on the board.
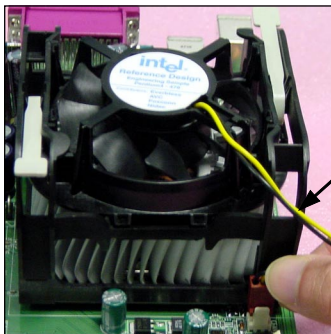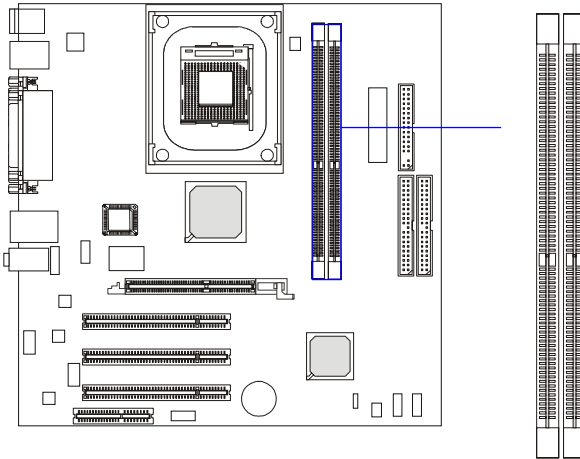

fan power cable

NOTES

Memory

The mainboard provides 2 slots for 184-pin DDR SDRAM DIMM (Double In-Line Memory Module) modules and supports the memory size up to 2GB. You can install DDR333/DDR266/DDR200 modules on the DDR DIMM slots.

DDR DIMM Slots

Introduction to DDR SDRAM

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

DIMM Module Combination

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

Memory modules can be installed in any combination as follows:

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

S: Single Side   D: Double Side

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 until the golden finger on the memory module is deeply inserted in the socket.
3. The plastic clip at each side of the DIMM slot will automatically close.

Volt   Notch
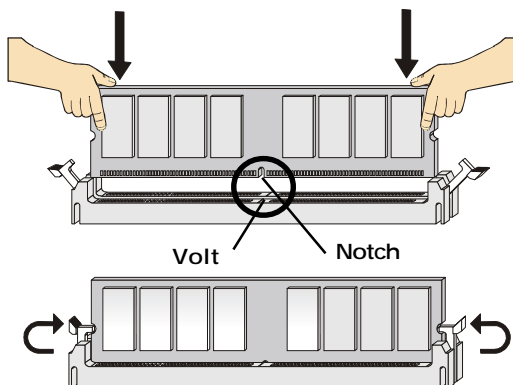
MSI Reminds You...
You can barely see the golden finger if the module is properly inserted in the socket.

Power Supply

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

ATX 20-Pin Power Connector: CONN1

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

ATX 12V Power Connector: JPW1

This 12V power connector is used to provide power to the CPU.
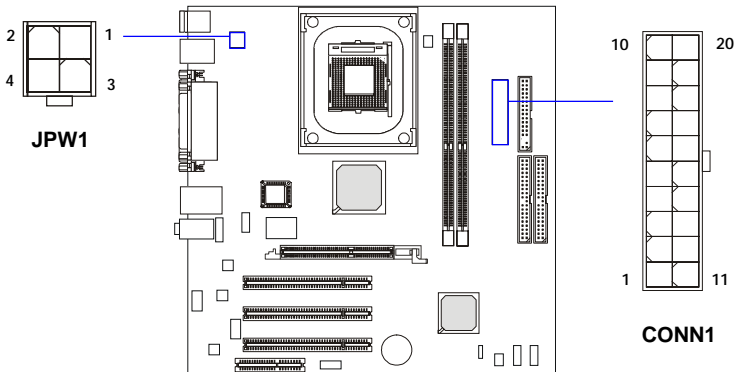
JPW1 Pin Definition

PIN	SIGNAL
1	GND
2	GND
3	12V
4	12V

CONN1 Pin Definition

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

Back Panel

The back panel provides the following connectors:

Mouse **IEEE1394 Port** **Parallel** **LAN**

L-in

L-out

MIC

Keyboard **USB** **COM A** **COM B** **USB**
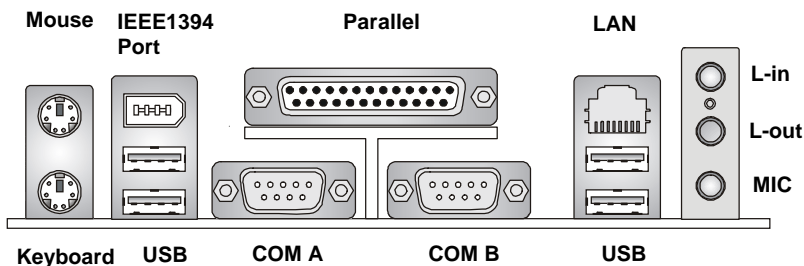
Serial Port Connectors: COM A & COM B

The mainboard offers two 9-pin male DIN connectors as serial ports COM A and COM B. Both ports are 16550A high speed communication ports that send/receive 16 bytes FIFOs. You can attach a serial mouse or other serial device directly to them.

1 2 3 4 5

6 7 8 9
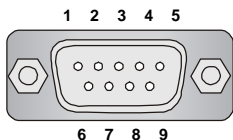
9-Pin Male DIN Connector
COM A & COM B

Pin Definition

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

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
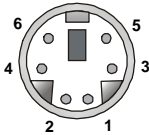
PS/2 Mouse (6-pin Female)

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
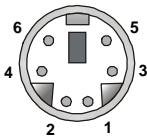
PS/2 Keyboard (6-pin Female)

RJ-45 LAN Jack (Optional)

The mainboard provides a RJ-45 connector that allows your computer to be connected to a network environment.
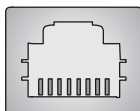
LAN Jack
(RJ-45)

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

USB Connectors

The mainboard provides an OHCI (Open Host Controller Interface) Universal Serial Bus root for attaching USB devices such as keyboard, mouse or other USB-compatible devices. You can plug the USB device directly into the connector.
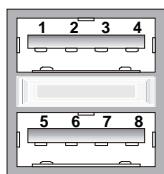
USB Ports

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

Parallel Port Connector: LPT1

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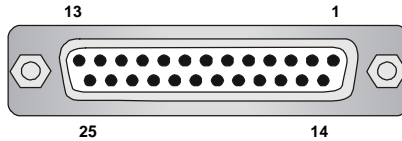
Pin Definition

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

IEEE1394 Port

The mainboard provides one standard IEEE1394 port. The standard IEEE1394 port connects to IEEE1394 devices without external power. The IEEE1394 high-speed serial bus complements USB by providing enhanced PC connectivity for a wide range of devices, including consumer electronics audio/video (A/V) appliances, storage peripherals, other PCs, and portable devices.
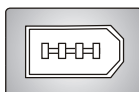
Audio Port Connectors

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

Line In

Line Out

MIC
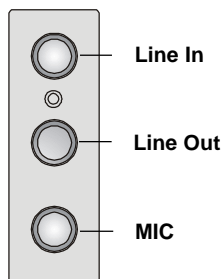
MSI   **MSI Reminds You...**
*For advanced audio application, Realtek ALC650 audio chip is provided to offer support for **6-channel audio operation** and can turn rear audio connectors from 2-channel to 4-/6-channel audio.*

Connectors

The mainboard provides connectors to connect to FDD, IDE HDD, case, modem, LAN, USB Ports, IR module and CPU/System/Power Supply 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
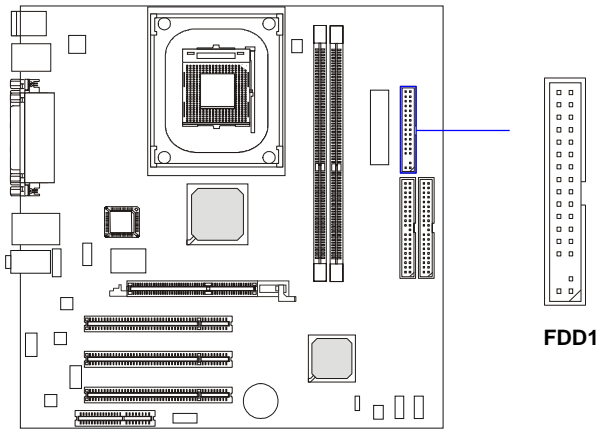
Hard Disk Connectors: IDE1 & IDE2

The mainboard 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 DMA 33/66/100/133 function. You can connect up to four hard disk drives, CD-ROM, 120MB Floppy (reserved for future BIOS) and other devices.

IDE2 IDE1
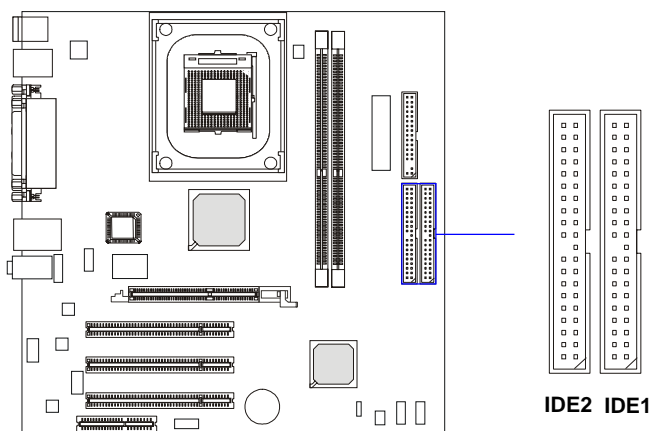
IDE1 (Primary IDE Connector)

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.

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

Fan Power Connectors: 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    □    CPUFAN1
   GND    □
```

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

SYSFAN1

MSI
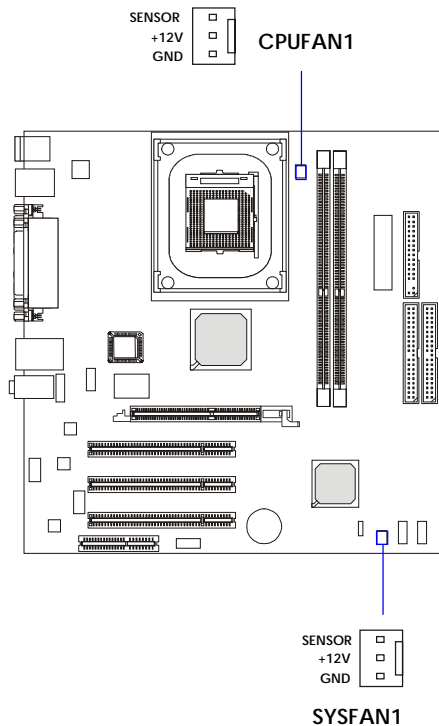
MSI Reminds You...
Always consult the vendors for proper CPU cooling fan.

Front Panel Audio Connector: JAUD2

The front panel audio connector allows you to connect to the front panel audio. JAUD2 is compliant with Intel® Front Panel I/O Connectivity Design Guide.

2   10

1   9

JAUD2
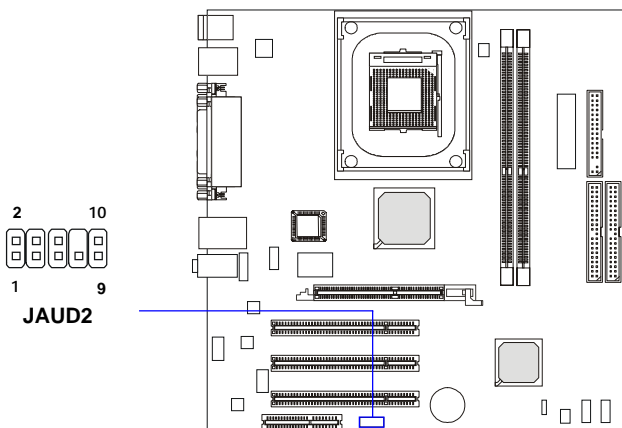
Pin Definition

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

MSI

MSI Reminds You...

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.

6   10

5   9

Front USB Connector: JUSB1

The mainboard provides one front Universal Serial Bus connector for you to connect to USB devices. JUSB1 is compliant with Intel® Front Panel I/O Connectivity Design Guide.
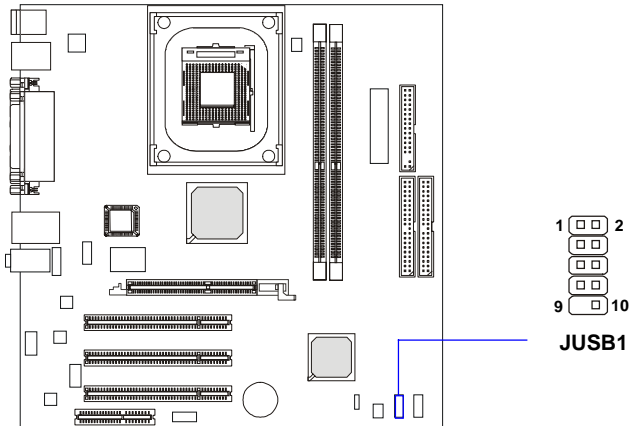
JUSB1

JUSB1 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

SPDIF Bracket Connector: JSPD2

The connector allows you to connect a S-Bracket for Sony & Philips Digital Interface (SPDIF). The S-Bracket offers 2 SPDIF jacks for digital audio transmission (one for optical fiber connection and the other for coaxial), and 2 analog Line-Out jacks for 4-channel audio output.

To attach the fiber-optic cable to optical SPDIF jack, you need to remove the plug from the jack first. The two SPDIF jacks support *SPDIF output* only.

2   12
1   11
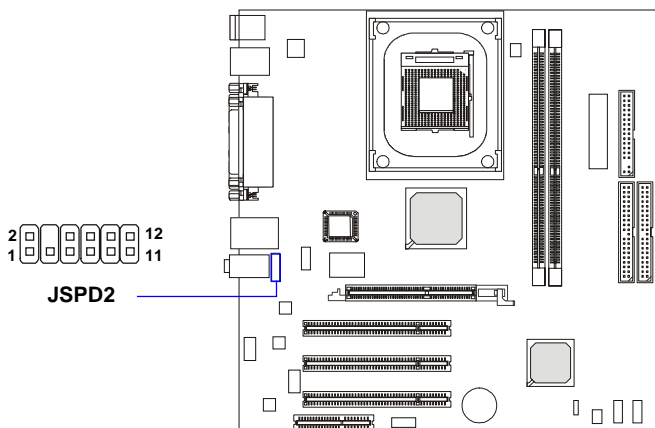
JSPD2

JSPD2 Pin Definition

PIN	SIGNAL	DESCRIPTION	PIN	SIGNAL	DESCRIPTION
1	VCC5	VCC 5V	2	VDD3	VDD 3.3V
3	SPDFO	S/PDIF output	4	(No Pin)	Key
5	GND	Ground	6	SPDFI	S/PDIF input
7	LFE-OUT	Audio bass output	8	SOUT-R	Audio right surrounding output
9	GET-OUT	Audio center output	10	SOUT-L	Audio left surrounding output
11	GND	Ground	12	GND	Ground

Connect to PORT 1 (IEEE)

Connect to JSP2

SPDIF Bracket

Rear R/L   CEN/SUB

SPDIFJack (optical)   SPDIF Jack (coaxial)

Connect to Center/
Subwoofer speakers

Port 1394

Connect to Rear 2-channel
output speakers
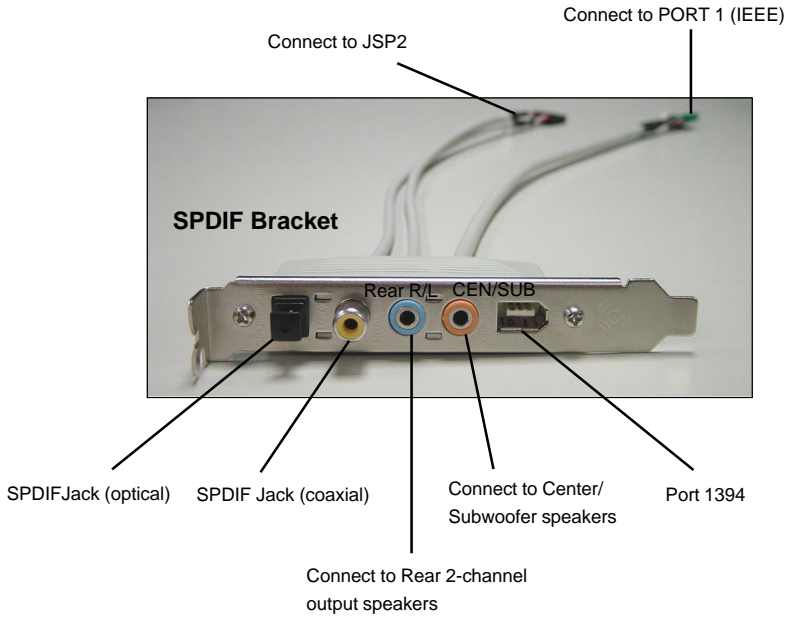
Front Panel Connector: JFP1

The mainboard provides one front panel connector for establishing electrical connection to the front panel switches and LEDs. JFP1 is compliant with Intel® Front Panel I/O Connectivity Design Guide.
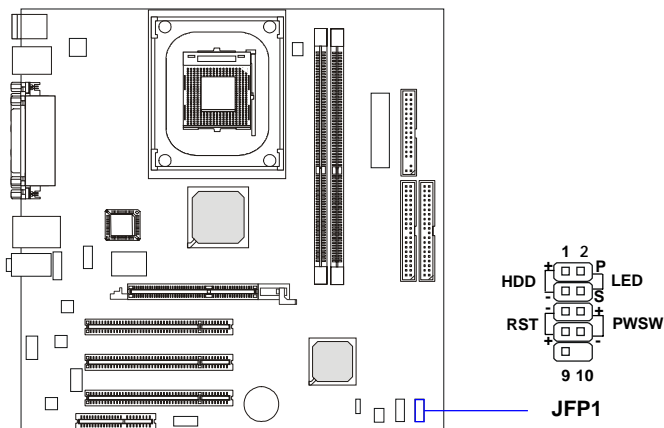
JFP1 Switch/LED Front Panel Electrical Connection

PIN	SIGNAL	DESCRIPTION
1	HD_LED_P	Hard disk LED pull-up to +5V
2	FP PWR/SLP	MSG LED pull-up to +5V
3	HD_LED_N	Hard disk active LED
4	FP PWR/SLP	MSG LED pull-up 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.

CD-In Connector: JCD1

The connector is for CD-ROM audio connector.

Aux Line-In Connector: JAUX1

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

JAUX1

JCD1
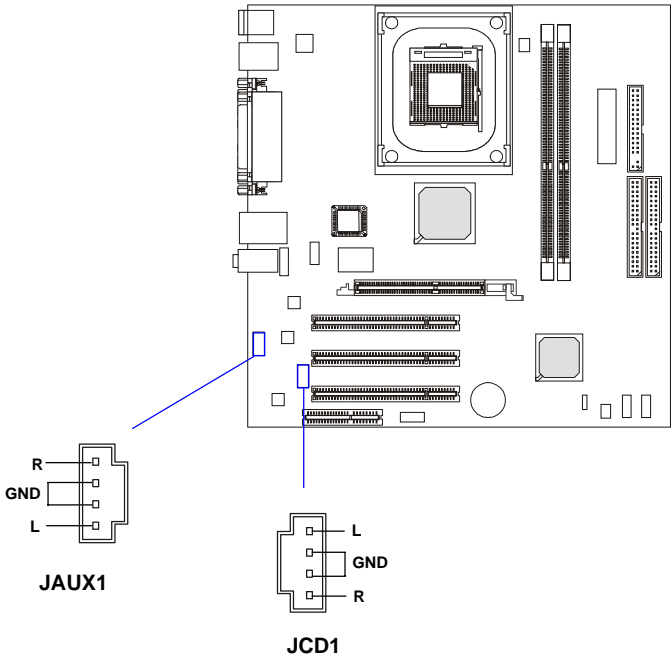
IEEE 1394 Connector: J1394_1

The mainboard provides one 1394 pin header that allows you to connect optional IEEE 1394 ports.
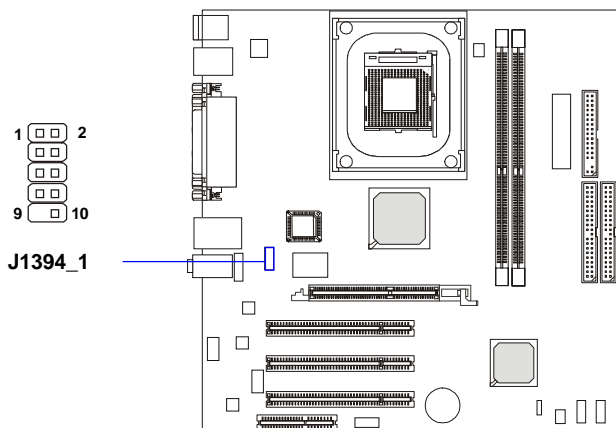
Pin Definition

PIN	SIGNAL	PIN	SIGNAL
1	TPA+	2	TPA-
3	Ground	4	Ground
5	TPB+	6	TPB-
7	Cable power	8	Cable power
9	Key (no pin)	10	Ground

MSI Reminds You...
The installation procedures shown here are for your reference only. For the actual position of the IEEE1394 connector, please refer to the mainboard.

How to attach the IEEE 1394 Port:

1. Take out the IEEE 1394 Port.

2. Locate the IEEE 1394 connector(s) on the mainboard.
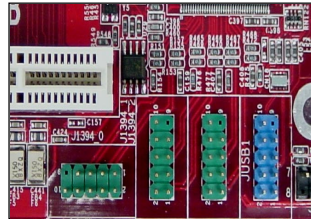
3. Insert the IEEE 1394 Port into the connector(s).
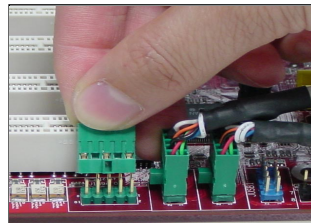
4. Place the IEEE 1394 Port into the first slot of your system case.
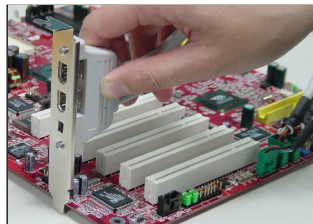
Jumpers

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

Keep Data

3

1

Clear Data

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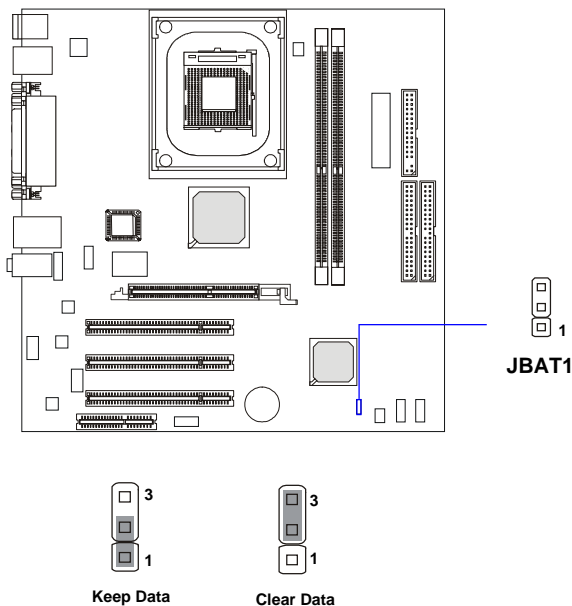
MSI Reminds You...
You can clear CMOS by shorting 2-3 pin while the system is off. Then return to 1-2 pin position. Avoid clearing the CMOS while the system is on; it will damage the mainboard.

Slots

The motherboard provides one AGP slot, one CNR slot and three 32-bit Master PCI bus slots.
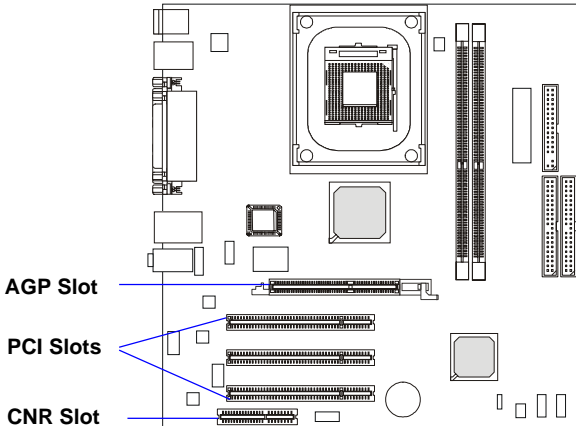
AGP (Accelerated Graphics Port) Slot

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 mainboard supports 4x/8x 1.5V AGP card.

PCI (Peripheral Component Interconnect) 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) Slot

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

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 B#	INT C#	INT D#	INT A#
PCI Slot 2	INT C#	INT D#	INT A#	INT B#
PCI Slot 3	INT D#	INT A#	INT B#	INT C#

3

BIOS Setup

This chapter provides information on the BIOS Setup program and allows you to configure the system for optimum use. You may need to run the Setup program when:

◈ An error message appears on the screen during the system booting up, and requests you to run SETUP.

◈ You want to change the default settings for customized features.

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.

<div align="center">Press DEL to enter SETUP</div>

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

Control Keys

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

Getting Help

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

Main Menu

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

Sub-Menu

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

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

General Help <F1>

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

MSI

MSI Reminds You...
The items under each BIOS category described in this chapter are under continuous update for better system performance. Therefore, the description may be slightly different from the latest BIOS and should be held for reference only.

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, 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 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 factory default settings into the BIOS for stable system performance operations.

Load Optimized Defaults
Use this menu to load the BIOS values for the best system performance, but the system stability may be affected.

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.

Standard CMOS Features

The items in Standard CMOS Features Menu are divided into 11 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.
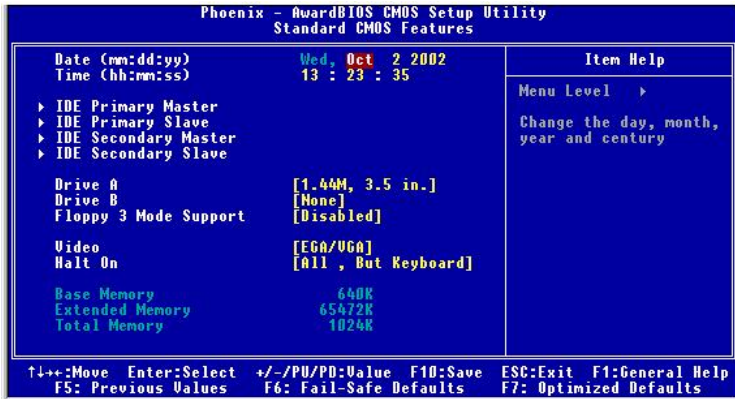
Date

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>.

Primary/Secondary IDE Master/Slave

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

If your hard disk drive type is not matched or listed, you can use *Manual* to define your own drive type manually.

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

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.

Floppy Drive A:/B:
This item allows you to set the type of floppy drives installed. Available options: *Not Installed*, *1.2 MB 5¼*, *720 KB 3½*, *1.44 MB 3½* and *2.88 MB 3½*.

Floppy 3 Mode Support
This item allows you to set the Floppy 3 Mode. Available options: *Both, .*

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

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

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.

Base/Extended/Total Memory
The three items show the memory status of your system (read only).

Advanced BIOS Features

```
        Phoenix - Award WorkstationBIOS CMOS Setup Utility
                     Advanced BIOS Features
  Quick Boot                  [Enabled]              Item Help
  Anti-Virus Protection       [Disabled]
  CPU L1 & L2 Cache           [Enabled]      Menu Level    ▶
  CPU L2 Cache ECC Checking   [Enabled]
  1st Boot Device             [Floppy]       Allows the system to
  2nd Boot Device             [HDD-0]        skip certain tests
  3rd Boot Device             [CDROM]        while booting. This
  Boot Other Device           [Enabled]      will decrease the time
  Swap Floppy                 [Disabled]     needed to boot the
  Seek Floppy                 [Disabled]     system
  Boot Up NumLock Status      [On]
  Gate A20 Option             [Fast]
  Typematic Rate Setting      [Disabled]
x Typematic Rate (Chars/Sec) 6
x Typematic Delay (Msec)      250
  Security Option             [Setup]
  HDD S.M.A.R.T. Capability   [Disabled]
  HT CPU Function             [Enabled]
  APIC Mode                   [Enabled]
  MPS Table Version           [1.4]

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

Quick Boot
Setting the item to *Enabled* allows the system to boot within 5 seconds since it will skip some check items. Available options: *Enabled*, *Disabled*.

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

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

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

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:

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.
USB-FDD	The system will boot from USB-interfaced floppy drive.
USB-ZIP	The system will boot from any USB-interfaced ATAPI ZIP drive
USB-CDROM	The system will boot from the USB-interfaced CD-ROM.
USB-HDD	The system will boot from the USB-interfaced HDD.
LAN	The system will boot from the Network drive.
Disabled	Disable this sequence.

MSI Reminds You...

Available settings for "1st/2nd/3rd Boot Device" vary depending on the bootable devices you have installed. For example, if you did not install a floppy drive, the setting "Floppy" does not show up.

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

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

Seek Floppy

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

Boot Up NumLock Status

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

Gate A20 Option

This item is to set the Gate A20 status. A20 refers to the first 64KB of extended memory. When 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
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.

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*.

HT CPU Function
The Intel processor uses Hyper-Threading technology to increase transaction rates and reduces end-user response times. The technology treats the two cores inside the processor as two logical processors that can execute instructions simultaneously. In this way, the system performance is highly improved. If you disable the function, the processor will use only one core to execute the instructions. Settings: *Enabled, Disabled.*

MSI Reminds You...
Enabling the functionality of Hyper-Threading Technology for your computer system requires ALL of the following platform Components:
*CPU: An Intel® Pentium® 4 Processor with HT Technology;
*Chipset: An Intel® Chipset that supports HT Technology;
*BIOS: A BIOS that supports HT Technology and has it enabled; and
*OS: An operating system that supports HT Technology.
For more information on Hyper-threading Technology, go to:
www.intel.com/info/hyperthreading

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

Advanced Chipset Features

```
        Phoenix - AwardBIOS CMOS Setup Utility
                Advanced Chipset Features

  ▶ DRAM Clock/Timing Control [Press Enter]        Item Help
  ▶ AGP & P2P Bridge Control  [Press Enter]
                                              Menu Level  ▶




↑↓←→:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
     F5: Previous Values    F6: Fail-Safe Defaults   F7: Optimized Defaults
```
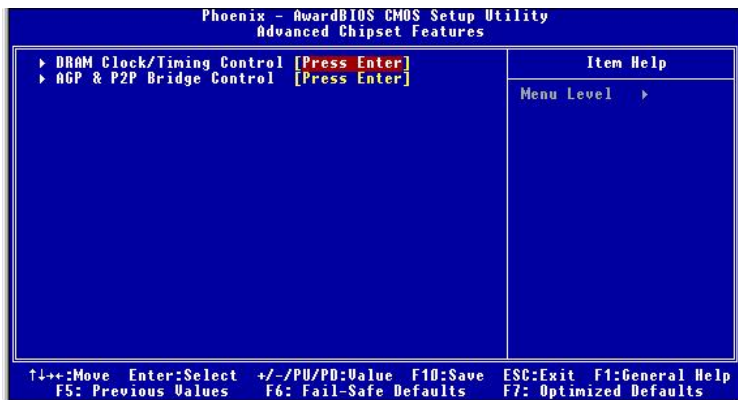
MSI Reminds You...
Change these settings only if you are familiar with the chipset.

DRAM Clock/Timing Control
Press <Enter> and the following sub-menu appears.

```
    Current CPU Frequency
    Current DRAM Frequency
    Current DDR Frequency
    DRAM Frequency          [By SPD]
    DRAM Timing Control     [By SPD]
  x DRAM CAS Latency         2.5T
  x RAS Active Time(tRAS)    6T
  x RAS Precharge Time(tRP)  3T
  x RAS to CAS Delay(tRCD)   3T
    MA 1T/2T Select         [AUTO]
```

Current CPU/DRAM/DDR Frequency
It shows the current CPU/DRAM/DDR frequency. (read only)

DRAM Frequency
This item is used to configure the clock frequency of the installed DRAM.
Settings: *By SPD, 100MHz, 133MHz, 166MHz, 200MHz*.

DRAM Timing Control
Selects whether DRAM timing is controlled by the SPD (Serial Presence
Detect) EEPROM on the DRAM module. Setting to *By SPD* enables

DRAM timings to be determined by BIOS based on the configurations on the SPD. Selecting *Manual* allows users to configure the DRAM timings manually.

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

RAS Active Time (tRAS)
This setting controls the number of clock cycles for DRAM to be allowed to precharge from the active state. Settings: *4,T, 5T, 6T, 7T, 8T, 9T*.

RAS Precharge Time (tRP)
This item controls the number of cycles for Row Address Strobe (RAS) to be allowed to precharge. If insufficient time is allowed for the RAS to accumulate its charge before DRAM refresh, refresh may be incomplete and DRAM may fail to retain data. This item applies only when synchronous DRAM is installed in the system. Available settings: *2T, 3T, 4T, 5T*.

RAS to CAS Delay (tRCD)
When DRAM is refreshed, both rows and columns are addressed separately. This setup item allows you to determine the timing of the transition from RAS (row address strobe) to CAS (column address strobe). The less the clock cycles, the faster the DRAM performance. Setting options: *2T, 3T, 4T, 5T*.

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

AGP & P2P Bridge Control
Press <Enter> and the following sub-menu appears.

AGP Aperture Size   [64MB]

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 *4MB, 8MB, 16MB, 32MB, 64MB, 128MB, and 256 MB.*

Integrated Peripherals


```
        Phoenix - Award WorkstationBIOS CMOS Setup Utility
                    Integrated Peripherals

  ▶ SIS OnChip IDE Device      [Press Enter]         Item Help
  ▶ SIS OnChip PCI Device      [Press Enter]
  ▶ Onboard SuperIO Device     [Press Enter]       Menu Level  ▶
    Init Display First         [AGP]








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

SIS OnChip IDE Device
Press <Enter> to enter the sub-menu and the following screen appears:


```
Internal PCI/IDE           [Both]
IDE Primary Master PIO     [Auto]
IDE Primary Slave  PIO     [Auto]
IDE Secondary Master PIO   [Auto]
IDE Secondary Slave  PIO   [Auto]
Primary Master  UltraDMA   [Auto]
Primary Slave   UltraDMA   [Auto]
Secondary MasterUltraDMA   [Auto]
Secondary Slave UltraDMA   [Auto]
IDE DMA transfer access    [Enabled]
```

Internal PCI/IDE
This setting enables or disables the internal primary and secondary PCI
& IDE controllers. Setting options: *Disabled, Primary, Secondary, Both*.

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*.

IDE DMA Transfer Access
This item allows users to enable or disable the DMA transfer function of the IDE hard drive. The settings are: *Enabled, Disabled*.

SIS OnChip PCI Device
Press <Enter> to enter the sub-menu and the following screen appears:


```
SIS USB Controller       [Enabled]
USB 2.0 Supports         [Enabled]
USB Keyboard Support     [Disabled]
USB Mouse Support        [Disabled]
SIS AC97 AUDIO           [Auto]
SIS S/W Modem            [Auto]
SIS 1394 Controller      [Auto]
SIS 10/100M ETHERNET     [Auto]
Onboard Lan Boot ROM     [Disabled]
```

SIS USB Controller
This setting is used to enable/disable the onboard USB controller. Setting options: *Disabled*, *Enabled*.

USB 2.0 Supports
Set to *Enabled* if you need to use any USB 2.0 device in the operating system that does not support or have any USB 2.0 driver installed, such as DOS and SCO Unix. Setting options: *Disabled*, *Enabled*.

SIS Keyboard Support
Select *Enabled* if you need to use a keyboard in the operating system. Setting options: *Enabled, Disabled*.

SIS Mouse Support
Select *Enabled* if you need to use a mouse in the operating system. Setting options: *Enabled, Disabled*.

SIS AC97 AUDIO
Auto allows the motherboard's BIOS to detect whether you're using any

audio device. If so, the onboard audio controller will be enabled. If not, the onboard audio controller will be disabled. If you want to use different controller cards to connect audio connectors, set the field to *Disabled*. Setting options: *Disabled, Auto*.

SIS S/W Modem
Auto allows the mainboard to detect whether a modem is used. If a modem is detected, the onboard S/W modem controller will be enabled; if not, it is disabled. Disable the controller if you want to use other controller cards to connect a modem. Settings: *Auto*, *Disabled*.

SIS 1394 Controller
This item allows you to enable/disable the onboard IEEE1394 controller. Setting options: *Enabled* and *Disabled*.

SIS 10/100M ETHERNET
The field determines whether the onboard LAN controller is activated. Setting options: *Enabled*, *Disabled*.

Onboard Lan Boot ROM
The items enable or disable the initialization of the onboard LAN Boot ROM during bootup. Selecting *Disabled* will speed up the boot process.

Onboard Super IO Device
Press <Enter> to enter the sub-menu and the following screen appears:

```
Onboard FDC Controller    [Enabled]
Onboard Serial Port 1     [Auto]
Onboard Serial Port 2     [Auto]
Onboard Parallel Port     [378/IRQ7]
Parallel Port Mode        [ECP]
EPP Mode Select           [EPP1.7]
ECP Mode Use DMA          [3]
```

Onboard FDC Controller
Select Enabled if your system has a floppy disk controller (FDD) installed on the system board and you wish to use it. If you install add-on FDC or the system has no floppy drive, select Disabled in this field. The settings are: *Enabled* and *Disabled*.

Onboard Serial Port 1/Port 2
Select an address and corresponding interrupt for the first and second

serial ports. The settings are: *3F8/IRQ4, 2E8/IRQ3, 3E8/IRQ4, 2F8/IRQ3, Disabled, Auto*.

Onboard Parallel Port

There is a built-in parallel port on the on-board Super I/O chipset that provides Standard, ECP, and EPP features. It has the following options:

Disabled	
3BC/IRQ7	Line Printer port 0
278/IRQ5	Line Printer port 2
378/IRQ7	Line Printer port 1

Parallel Port Mode

SPP : Standard Parallel Port
EPP : Enhanced Parallel Port
ECP : Extended Capability Port
ECP + EPP: Extended Capability Port + Enhanced Parallel Port

To operate the onboard parallel port as Standard Parallel Port only, choose "SPP." To operate the onboard parallel port in the EPP mode simultane-ously, choose "EPP." By choosing "ECP", the onboard parallel port will operate in ECP mode only. Choosing "ECP + EPP" will allow the onboard parallel port to support both the ECP and EPP modes simultaneously.

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 following message will be displayed on the screen: "EPP Mode Select." At this time either *EPP 1.7* spec or *EPP 1.9* spec can be chosen.
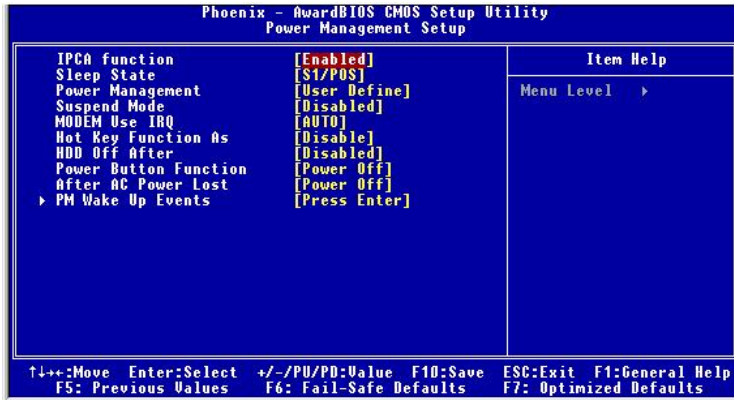
ECP Mode Use DMA

The ECP mode has to use the DMA channel, so choose the onboard parallel port with the ECP feature. After selecting it, the following mes-sage will appear: "ECP Mode Use DMA." At this time, the user can choose between DMA channel *3* or *1*.

Init Display First

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

Power Management Setup

```
        Phoenix - AwardBIOS CMOS Setup Utility
               Power Management Setup

  IPCA function            [Enabled]         ┌─────────────────┐
  Sleep State              [S1/POS]          │    Item Help    │
  Power Management         [User Define]     ├─────────────────┤
  Suspend Mode             [Disabled]        │ Menu Level    ▶ │
  MODEM Use IRQ            [AUTO]            
  Hot Key Function As      [Disable]        
  HDD Off After            [Disabled]       
  Power Button Function    [Power Off]      
  After AC Power Lost      [Power Off]      
▶ PM Wake Up Events        [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
```

MSI **MSI Reminds You...**
S3-related functions described in this section are available only when your BIOS supports S3 sleep mode.

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*. Available options: *Enabled*, *Disabled*.

Sleep State
This item specifies the power saving modes for ACPI function. If your operating system supports ACPI, such as Windows 98SE, Windows ME and Windows 2000, 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 is lost (CPU or chipset) and hardware maintains all system context.

  S3/STR   The S3 sleep mode is a lower power state where the information of system configuration and open applications/ files is saved to main memory that remains powered while most other hardware components turn off to save

energy. The information stored in memory will be used to restore the system when a "wake up" event occurs.

Power Management
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.

Suspend Mode
After the selected period of system inactivity, all devices except the CPU shut off. Settings: *Disabled, 1Min, 2Min, 4Min, 8Min, 12Min, 20Min, 30Min, 40Min, 1 Hour.*

MODEM Use IRQ
This determines the IRQ in which the MODEM can use. Activity of the selected IRQ always awakens the system. Settings: *3, 4, 5, 7, 9, 10, 11, NA..*

Hot Key Function As
This setting specifies the function of the preset hot key. Settings: *Disabled, Power Off, Suspend.*

HDD Off After
If enabled and after the set time of system inactivity, the hard disk drive will be powered down while all other devices remian active. Settings: *Disabled, 1 Min ~ 15Min.*

Power Button Function
This feature sets the function of the power button. Settings are:

Power Off	The power button functions as normal power off button.
Suspend	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.

After AC Power Lost
This setting specifies whether your system will reboot after a power failure or

interrupt occurs. Available settings are:

Power Off	Leaves the computer in the power off state.
Power On	Reboots the computer.
Last State	Restores the system to the previous status before power failure or interrupt occurred.

PM Wake Up Events
Press <Enter> and the following sub-menu appears.

IRQ [3-7, 9-15], NMI & IRQ 8 Break Suspend

This setting enables/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. Setting options: *Disabled, Enabled.*

> **MSI Reminds You...**
>
> *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.*

MACPME Power Up Control

This item is used to activate the south bridge LAN controller. When set to *Enabled*, any signal from the LAN controller will awaken the system from power saving modes. Settings are: *Enabled* and *Disabled*.

Wake Up On PME
When set to *Enabled*, the feature allows your system to be awakened from the power saving modes through any event on PME (Power Management Event). Settings are: *Enabled* and *Disabled*.

USB Wake Up from S3
This item allows the activity of the USB device to wake up the system from S3 (Suspend to RAM) sleep state. Settings are: *Enabled* and *Disabled*.

PS2KB Wake Up from S3/S4/S5
This setting allows you to enter "Any Key" (max. 8 numbers) to wake up the system from S3/S4/S5 state. Settings are: *Hot Key* and *Disabled*.

PS2MS Wake Up from S3/S4/S5
This setting allows the activity of the mouse to wake up the system from S3/S4/S5 state. Settings are: *Enabled* and *Disabled*.

MSI Reminds You...
If you have enabled the "PS2MS Wake Up from S3/S4/S5" function, you need to click the mouse to power on the system.

Resume By Alarm
This function is for setting date and time for your computer to boot up. During *Disabled*, you cannot use this function. During *Enabled*, choose the Month, Day, and Time Alarm:

    Month Alarm You can choose which month the system will boot up.

    Day of Month Alarm You can choose which day of the preset month the system will boot up. Set to 0, to boot every day.

    Time (hh:mm:ss) Alarm You can choose what hour, minute and second the system will boot up.

MSI Reminds You...
If you have changed this setting, you must let the system boot up until it enters the operating system, before this function will work.

Reload Global Timer Events
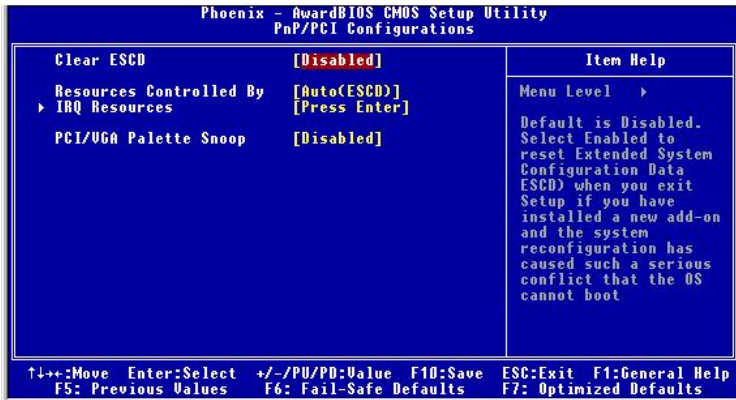**Primary/Secondary IDE 0/1, FDD, COM, LPT Port, PCI PIRQ [A-D] #**
The global timer is the hardware timer that counts down to the power saving modes. If the monitoring of the listed hardware peripherals or components is enabled, the activity of the specified peripherals or components will awaken the system or reload the original count of global timer when they are accessed.

PNP/PCI Configurations

This section describes configuring the PCI bus system and PnP (Plug & Play) feature. PCI, or **P**eripheral **C**omponent **I**nterconnect, is a system which allows I/O devices to operate at speeds nearing the speed the CPU itself uses when communicating with its 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.

```
              Phoenix - AwardBIOS CMOS Setup Utility
                     PnP/PCI Configurations

   Clear ESCD               [Disabled]              │      Item Help
                                                    │
   Resources Controlled By  [Auto(ESCD)]            │  Menu Level    ▶
 ▶ IRQ Resources            [Press Enter]           │
                                                    │  Default is Disabled.
   PCI/UGA Palette Snoop     [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 OS
                                                    │  cannot boot

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

Clear ESCD
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
Disabled	Data read or written by the CPU is only directed to the PCI VGA device's palette registers.
Enabled	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.

PC Health Status

This section shows the status of your CPU, fan, overall system status, etc. Monitor function is available only if there is hardware monitoring mechanism onboard.
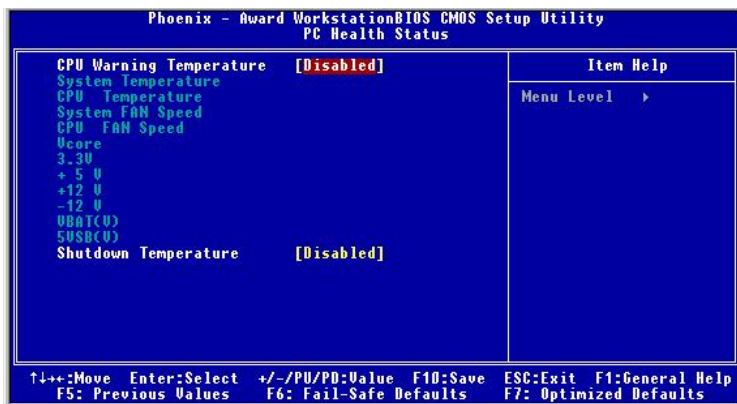
CPU Warning Temperature
This item is used to specify a thermal limit for CPU. If CPU temperature reaches the specified limit, the system will issue a warning which allows you to prevent the CPU overheat problem. Settings: *Disabled, 50ºC/122ºF, 53ºC/ 127ºF, 56ºC/133ºF, 60ºC/140ºF, 63ºC/145ºF, 66ºC/151ºF* and *70ºC/158ºF*.

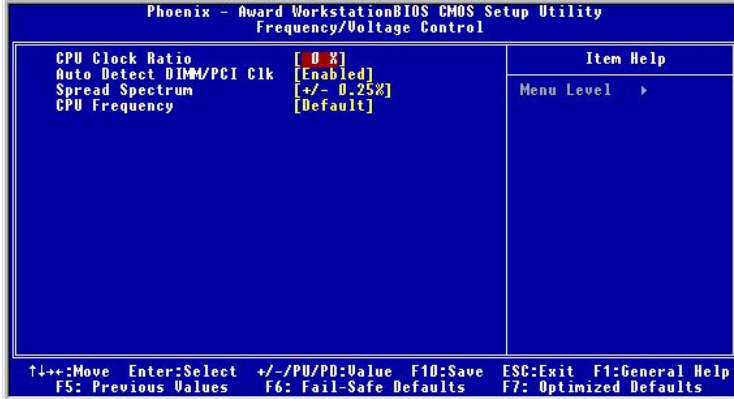**System/CPU Temperature, System/CPU FAN Speed, Vcore, 3.3V, +5V, +12V, -12V, VBAT(V), 5VSB(V)**
These items display the current status of all of the monitored hardware devices/components such as CPU voltages, temperatures and all fans' speeds.

Shutdown Temperature
When the processor reaches the preset temperature, the ACPI-aware system will be shut down. Settings: *Disabled, 60ºC/140ºF, 65ºC/149ºF, 70ºC/158ºF, 75ºC/167ºF*.

Frequency/Voltage Control

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

```
          Phoenix - Award WorkstationBIOS CMOS Setup Utility
                    Frequency/Voltage Control

    CPU Clock Ratio           [ 0 X]              Item Help
    Auto Detect DIMM/PCI Clk  [Enabled]
    Spread Spectrum           [+/- 0.25%]      Menu Level    ▶
    CPU Frequency             [Default]








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

CPU Clock Ratio
This setting controls the multiplier that is used to determine the internal clock speed of the processor relative to the external or motherboard clock speed.

Auto Detect DIMM/PCI Clk
This option allows you to enable/disable the feature of auto detecting the clock frequency of the installed DIMM/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, activate the Spread Spectrum 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, +/-0.25%, +/-0.30%, +/-0.35%, +/-0.40%*.

CPU Frequency
Use this item to select the appropriate frequency for your CPU FSB. Options are: *Default, 100MHz, 133MHz*.

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.

MSI	**MSI Reminds You...**
	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.*