Introduction *1*

The MS-6523 ATX mainboard is a high-performance computer mainboard based on Intel® 82850 chipset. The MS-6523 is optimized to support the Intel® Pentium® 4 processor for high-end business/personal desktop markets.

The Intel® Tehama chipset supports 64B cache line size and a 32-bit host addressing, allowing the processor to access the entire 4GB of the chipset's memory address space. It also provides 4x AGP data transfers and AGP Fast Writes capability.

The Intel® Tehama chipset features a dual channel Direct RDRAM memory operating in lock-step using RSL technology. It is a highly-flexible chipset which is designed to extend the basic graphics/multimedia PC platform up to the mainstream performance desktop platform.

The Intel® 82801BA (ICH2) chipset is a highly integrated multifunctional I/O Controller Hub that provides the interface to the PCI Bus and integrates many of the functions needed in today's PC platforms. It communicates with the host controller over a dedicated hub interface and provides added flexibility in designing cost-effective system solutions.

This chapter includes the following topics:

Mainboard Specification

CPU
- Supports Intel® Willamette processor
- Supports 1.3GHz, 1.4GHz, 1.5GHz, 1.7GHz, 2.0GHz or faster

Chipset
- Intel® Tehama chipset
  - Up to 2GB maximum memory (Rambus)
  - AGP interface with 4x SBA/Data Transfer
- Intel® ICH2 chipset
  - AC'97 Controller Integrated
  - 2 Full IDE channels, up to ATA100
  - Low pin count interface for SIO

Main Memory
- Supports four 184-pin gold-lead RIMM sockets
- Supports a maximum memory size of 2GB

Slots
- One AGP (Accelerated Graphics Port) slot
  - supports 4x mode
- One CNR (Communication Network Riser) slot
- Four 32-bit/33MHz Master PCI Bus slots.
- Supports 3.3v/5v PCI bus Interface

On-Board IDE
- An IDE controller on the Intel® ICH2 chipset provides IDE HDD/CD-ROM with PIO, Bus Master and Ultra DMA 33/66/100 operation modes.
- Can connect up to four IDE devices

Integrated Super I/O Controller
- Winbond W83627HF-AW I/O controller
  - 1 floppy port supports 2 FDDs with 360K, 720K, 1.2M, 1.44M and 2.88M bytes.
  - 2 serial ports (COM A + COM B)
  - 1 parallel port supports SPP/EPP/ECP mode
  - 4 USB ports (Rear*2 / Front*2)

- 1 IrDA connector for SIR

Audio
- ICH2 chip integrated
- AC'97 Codec

BIOS
- The mainboard BIOS provides "Plug & Play" BIOS which detects the peripheral devices and expansion cards of the board automatically.
- IDE drive auto configure, Advanced Power Management (APM) 1.2, ACPI 1.0, DMI 2.0, ECC/Parity support, LS-120 support.
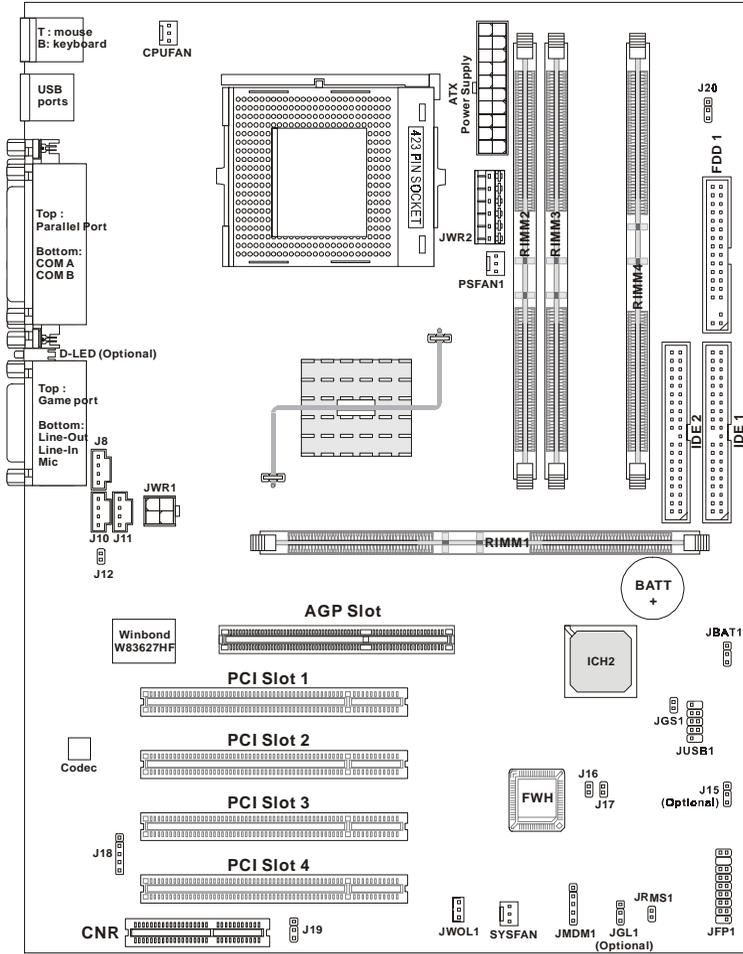
Dimension
- ATX Form Factor : 12 inches (L) x 9 inches (W) x 4 layers PCB

Mounting
- 10 mounting holes

Mainboard Layout

MS-6523 ATX Mainboard

Quick Components Guide

Component	Function	Reference
RIMM1~4	Installing RIMM modules	See p. 2-4~2-5
Socket 423	Installing CPU	See p. 2-2~2-3
CPUFAN	Connecting to CPU FAN	See p. 2-20
SYSFAN	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. 2-6
JWR1	Connecting to 12V ATX power supply	See p. 2-7
JWR2	Connecting to 5V/3V ATX power supply	See p. 2-7
IDE1& IDE2	Connecting to IDE hard disk drives	See p. 2-13
FDD1	Connecting to floppy disk drive	See p. 2-12
JUSB1	Connecting to USB interfaces	See p. 2-22~2-24
PCI Slot 1~4	Installing expansion cards	See p. 2-30
AGP Slot	Installing AGP cards	See p. 2-30
CNR Slot	Installing CNR cards	See p. 2-30
JMDM1	Connecting to modem module	See p. 2-18
JWOL1	Connecting to LAN module	See p. 2-18
JBAT1	Clearing CMOS data	See p. 2-25
JFP1	Connecting to case	See p. 2-14
JGS1	Connecting to power saving switch	See p. 2-17
JGL1	Connecting to power saving LED	See p. 2-16
J18	Connecting to IR module	See p. 2-19
J12	Connecting to chassis intrusion switch	See p. 2-19
JRMS1	Connecting to power switch	See p. 2-17
J15	Setting beep output device	See p. 2-29
J16	Enabling BIOS flash function	See p. 2-28
J17	Clearing BIOS password	See p. 2-28
J19	Enabling onboard audio codec	See p. 2-27
J20	Setting RDRAM voltage	See p. 2-26

Key Features

- ATX Form Factor
- CPU: Socket 423 for Intel® Willamette Processors
- Memory: 4 RIMM DIMMs
- Slot: 1 AGP slot, 1 CNR slot, 4 PCI slots
- I/O: 2 serial ports, 1 parallel port, 4 USB 1.1 ports, 1 floppy port, 1 IrDA connector, 1 Audio/Game port
- USB Interface: USB 1.1 PC to PC Networking (Optional)
- LAN Wake up Function
- Modem (External/Internal) Ring Wake up Function
- D-LED™ -- 4 Diagnostics LEDs embedded on the mainboard (Optional)
- PC Alert™ III system hardware monitor (Optional)
- Audio: Chip integrated

MSI Special Features

The MSI special features are designed by MSI R&D which are only available in MSI mainboards. The MS-6523 mainboard is **optionally** equipped with PC Alert™ III and D-LED™.

PC Alert™ III (Optional)

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

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

If one of the items above is abnormal, the program main screen will be immediately shown on the screen, with the abnormal item highlighted in red. This will continue to be shown,until user disables the warning.
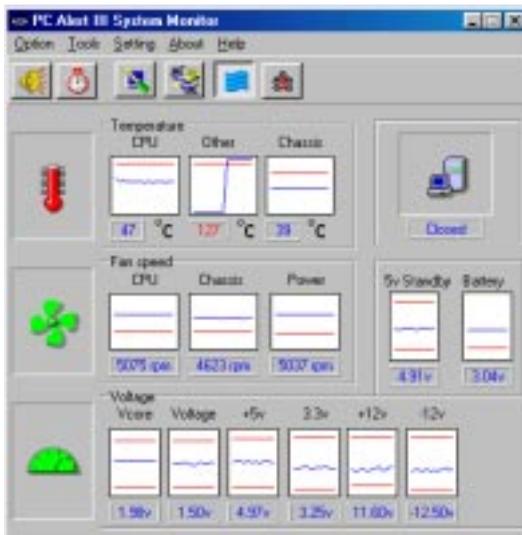
*Note: Items shown on PC Alert III vary depending on your system's status.*

Features:
- Network Management
  - Monitoring & remote control
- Basic System Utilities
  - Scandisk & Defragment to maintain your HDD
- 3D Graphics Design
  - Enables a more friendly user interface
- Sofware Utilities
  - SoftCooler Optimized Cooling

D-LED™ (Optional)

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

4
3
2
1
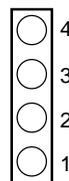
Diagnostic LED

● **Red**   ○ **Green**

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

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

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 Intel® Pentium® 4 processor. The mainboard uses a CPU socket called Socket 423 for easy CPU installation. Make sure that the CPU has a Heat Sink and a cooling fan attached to prevent overheating. If you do not find the Heat Sink and cooling fan, contact your dealer or purchase them before turning on the computer.

CPU Installation Procedures

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

Open Lever

Sliding Plate

2. Look for the gold arrow. The gold arrow should point towards the end of lever. The CPU will only fit in the correct orientation.

Gold Arrow

3. Hold the CPU down firmly, and then close the lever to complete the installation.

Close Lever

!
WARNING!
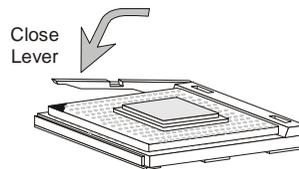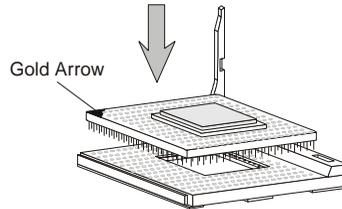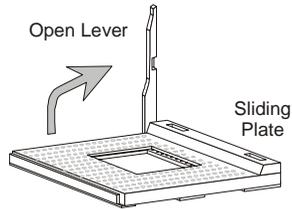
Overheating will seriously damage the CPU and system, always make sure the cooling fan can work properly to protect the CPU from overheating.

CPU Core Speed Derivation Procedure

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

> ⚠️ **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 Installation

The mainboard provides 4 gold-lead sockets for 184-pin RIMM modules. To operate properly, at least two RIMM modules must be installed. The mainboard supports the memory size up to 2 GB.

**RIMM Slots
(RIMM 2~4)**

**RIMM Slot
(RIMM 1)**
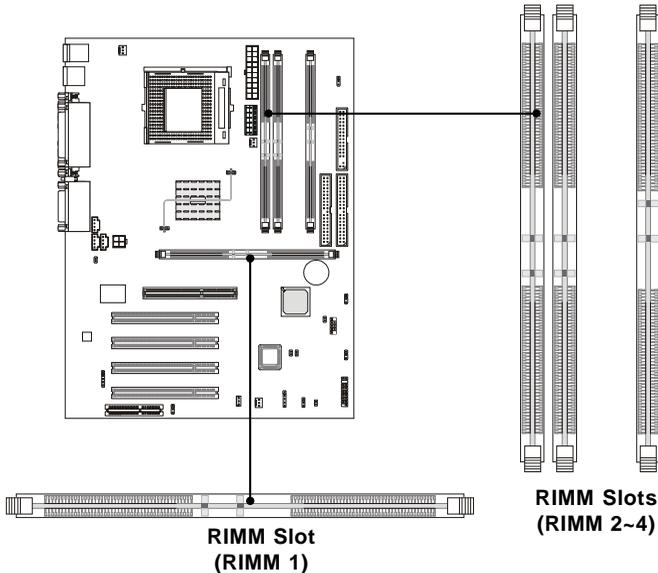
Memory Population Rules

- Support RIMM only.
- To operate properly, make sure that the RIMM banks are using the same type and equal size density memory.
- Support FSB 100MHz: PC800 RIMM.
- Support up to 32 Direct Rambus Device.
- Support ECC Single bit Correction and Multiple bit error detection (Setting in BIOS).
- Install two RIMM modules either on "RIMM 1and RIMM 2" or on "RIMM3 and RIMM4" slots.
- If only two RIMM slots are populated, you must install CRIMM modules on the other unused RIMM slots.

Installing the RIMM Modules

You can install two or four RIMM modules into RIMM slots according to your needs.

RIMM Module

1. The RIMM slot has 2 Notch Keys, so the RIMM memory module can only fit in one direction.

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

NOTCH
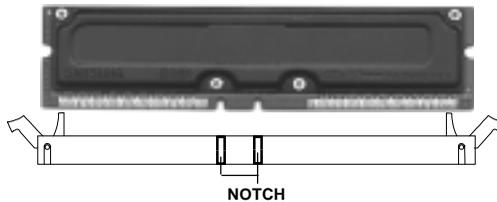
3. The plastic clips at sides of the RIMM slot will automatically close.
4. If you won't insert any RIMM modules on the other two RIMM slots, you must install CRIMM modules on the empty slots.

CRIMM Module

Note: To setup the RDRAM voltage for overclocking use, refer to "RDRAM Over Voltage Jumper: J20".

Power Supply

The mainboard supports ATX power supply for the power system. Before inserting the power supply connectors, always make sure that all components are installed properly to ensure that no damage will be caused. 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 20-Pin Power Connector

This connector allows you to connect to an ATX power supply.   The power connector supports **instant power on** function which means that system will boot up immediately when the power supply connector is inserted on the board.

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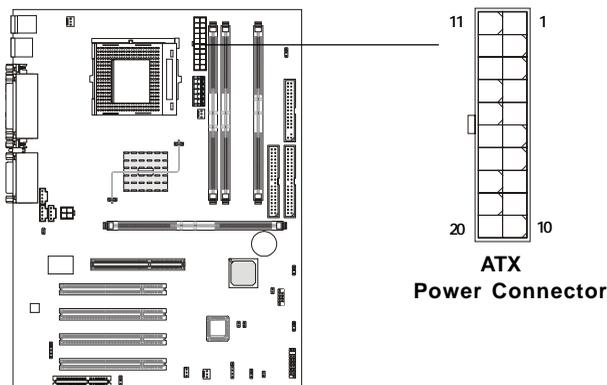
PIN	SIGNAL	PIN	SIGNAL
1	3.3V	11	3.3V
2	3.3V	12	-12V
3	GND	13	GND
4	5V	14	PS_ON
5	GND	15	GND
6	5V	16	GND
7	GND	17	GND
8	PW_OK	18	-5V
9	5V_SB	19	5V
10	12V	20	5V

ATX 12V Power Connector: JWR1

Attaching the ATX power supply to the connector help offer sufficient voltage to Pentium 4 CPU. This power connector also supports **instant power on** function.

JWR1

PIN	SIGNAL
1	GND
2	GND
3	12V
4	12V
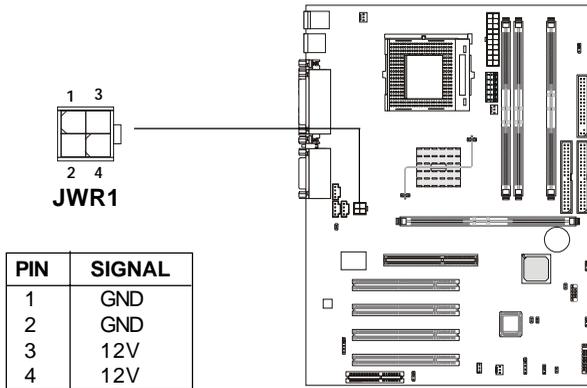
ATX 5V/3V Power Connector: JWR2

The mainboard provides an extra 5V/3V power connector for you to connect to the ATX power supply.

JWR2

PIN	SIGNAL	PIN	SIGNAL
1	GND	4	3.3V
2	GND	5	3.3V
3	GND	6	5V
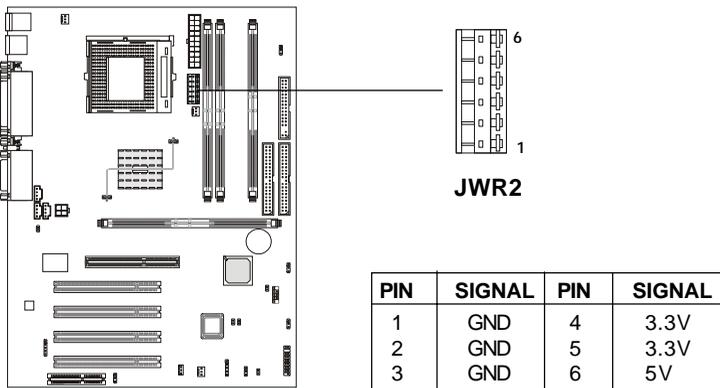
Back Panel

The Back Panel provides the following connectors:

Mouse   **Parallel**   **Midi/Joystick**

Keyboard   **USB**   **COM A**   **COM B**   **L-out   L-in   MIC**
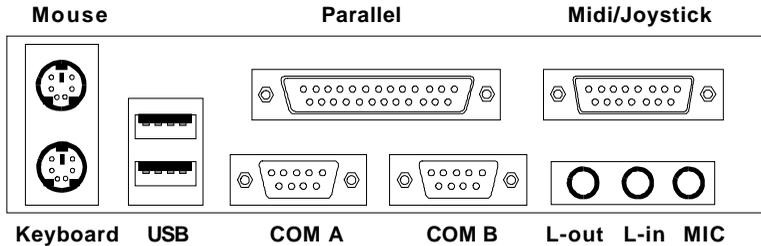
Mouse Connector

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.

Pin Definition

PS/2 Mouse (6-pin Female)

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

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
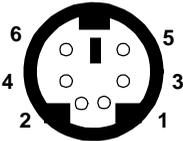
PS/2 Keyboard (6-pin Female)

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.
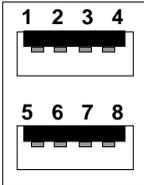
USB Port Description

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.
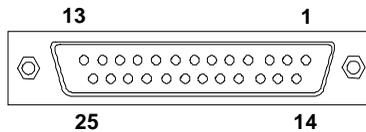
Pin Definition

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	Ground1

Serial Port Connectors: COM A & COM B

The mainboard has two 9-pin male DIN connectors for serial port COM A and COM B. You can attach a serial mouse or other serial devices.

1 2 3 4 5

6 7 8 9
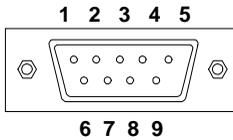
9-Pin Male DIN Connectors

Pin Definition

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

Joystick/Midi Connector

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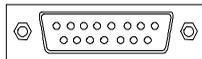
Audio Port Connectors

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

2-11
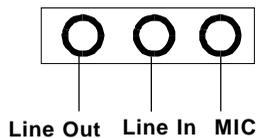
Connectors

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

Floppy Disk Drive Connector: FDD1

The mainboard provides a standard floppy disk drive connector that supports 360K, 720K, 1.2M, 1.44M and 2.88M floppy disk types.
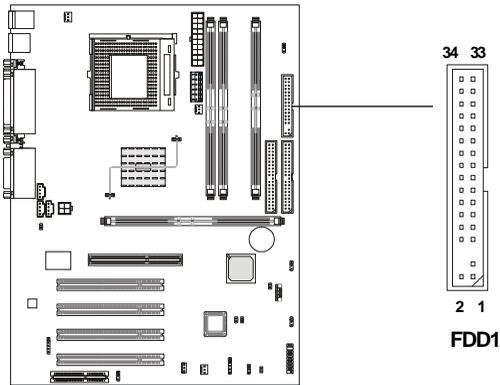
Hard Disk Connectors: IDE1 & IDE2

The mainboard uses an IDE controller on the Intel® ICH2 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.
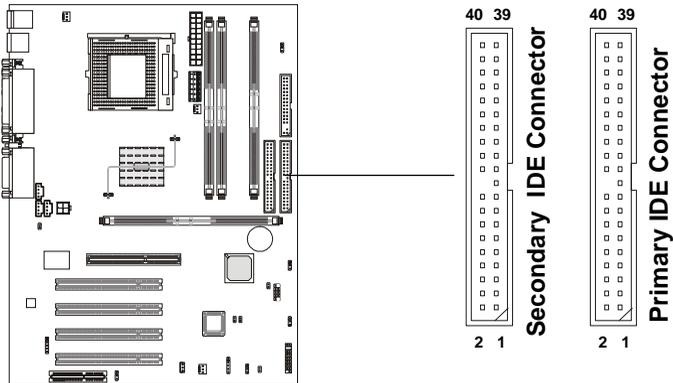
🖹 TIP:
If you install two hard disks on cable, you must configure the second drive to Slave mode by setting its jumper. Refer to the hard disk documentation supplied by hard disk vendors for jumper setting instructions.

Case Connector: JFP1

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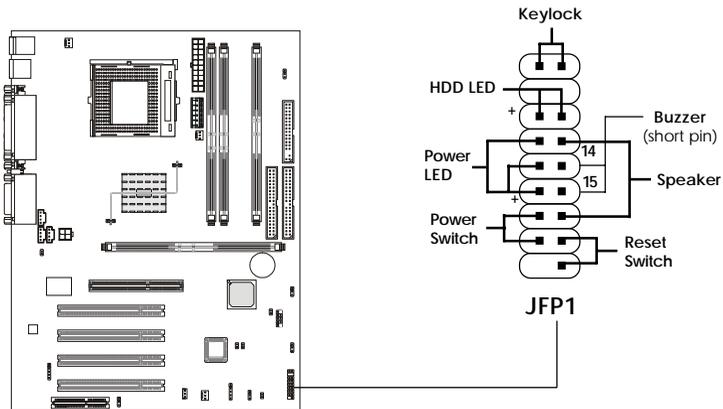
Power Switch

Connect to a 2-pin push button switch. The switch has the same feature as JRMS1.

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. There are three types of LEDs you can connect from the system case to the pin:

> **2-pin single color power LED:** Connected to pin 5 & 6. When the system enters the suspend/sleep mode, the 2-pin power LED blinks.

2-pin dual color power LED: Connected to pin 5 & 6. The 2-pin power LED changes its color to indicate different system states:
> GREEN color indicates full-on mode.
> ORANGE color indicates suspend/sleep mode.

3-pin dual color power LED: Connected to pin 4, 5 & 6. The 3-pin power LED changes its color to indicate different system states:
> GREEN color indicates full-on mode.
> ORANGE color indicates suspend/sleep mode.

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.

HDD LED
HDD LED shows the activity of a hard disk drive connected to the IDE1 or IDE2 connector. 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 connector.

Power Saving LED Connector: JGL1 (Optional)

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

1 GND
Suspend LED
PLED1

JGL1
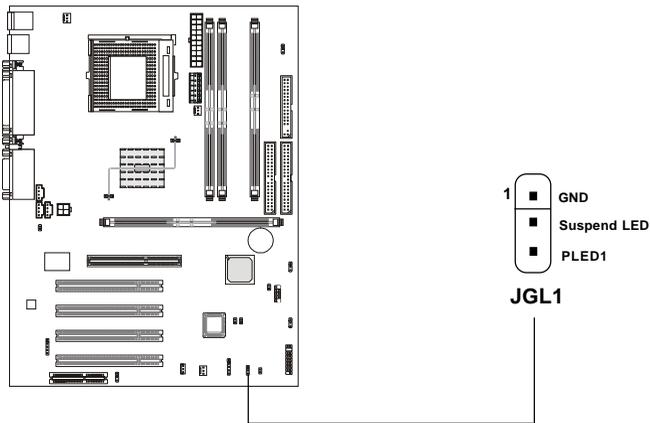
3-Pin LED	2-Pin LED
Green Color Orange Color **1 3**	Green Color Orange Color **1 3**
1-2 Single Color **1-3 Blink**	**1-2 Dual Color**

Remote Power On/Off Switch Connector: JRMS1

Connect to a 2-pin push button switch. When OFF, pressing the button can turn the system on. When ON, pressing the button once will make the system enter the sleep/suspend state. If the button is pressed for more than four seconds, the system will be turned off. To change the setup, go to the BIOS Power Management Setup.

JRMS1
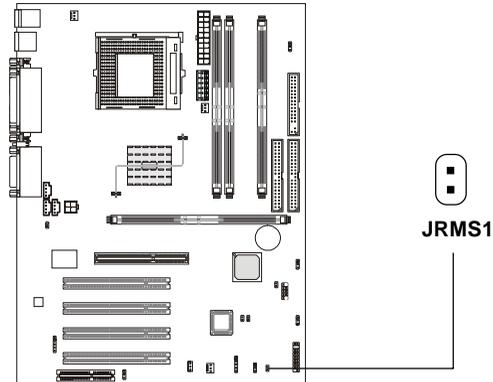
Power Saving Switch Connector: JGS1

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
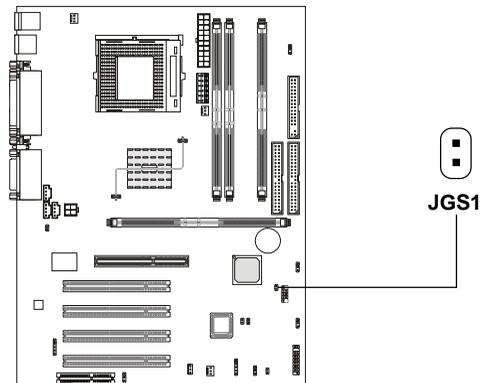
Wake On Ring Connector: JMDM1

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

1   NC

GND

MDM_WAKEUP

NC

5VSB

JMDM1
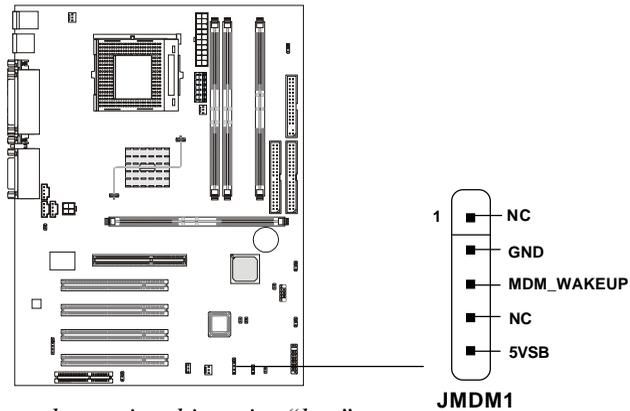
Note: Modem wake-up signal is active "low".

Wake On LAN Connector: JWOL1

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

1   5VSB

GND

MP_WAKEUP

JWOL1
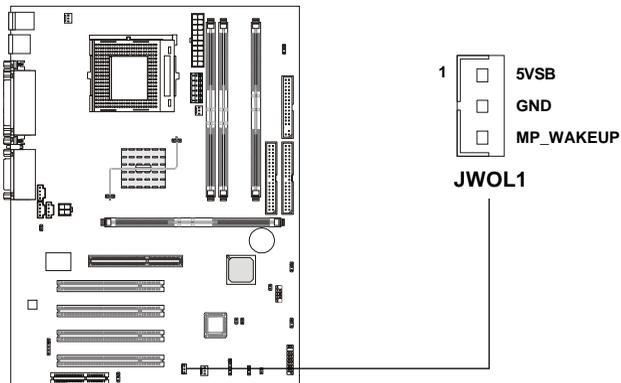
IrDA Infrared Module Connector: J18

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

J18
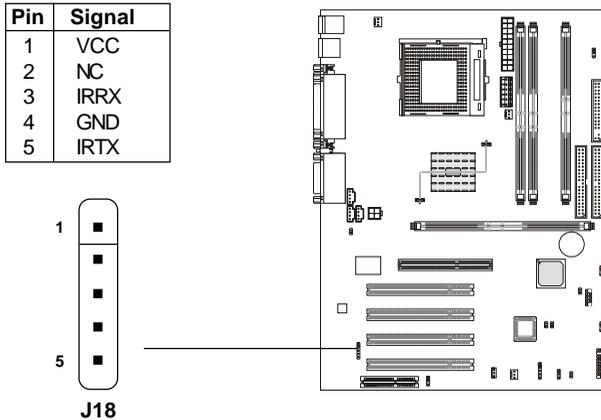
Chassis Intrusion Switch Connector: J12

The 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.

J12
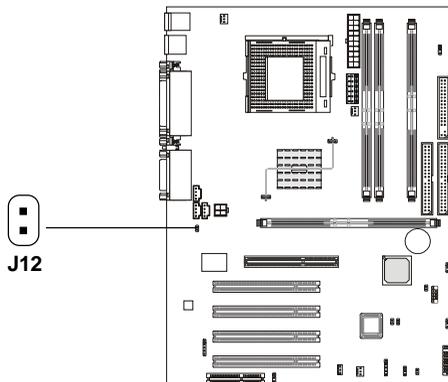
Fan Power Connectors: CPUFAN/SYSFAN/PSFAN

The CPUFAN (processor fan), SYSFAN (system fan) and PSFAN1 (power supply 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.

GND
+12V
SENSOR

CPUFAN

GND
+12V
SENSOR

PSFAN1

GND
+12V
SENSOR

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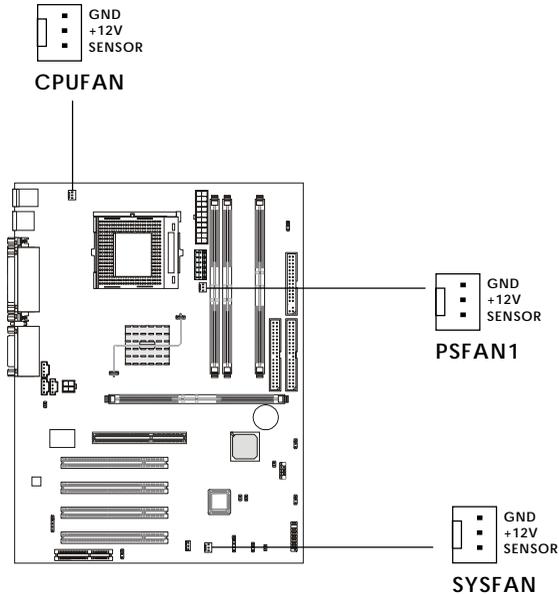
Note:
1. Always consult the vendor for proper CPU cooling fan.
2. CPU Fan supports the fan control. You can install the PC Alert utility that will automatically control the CPU Fan speed according to the actual CPU temperature.

CD-In/Aux Line-In/Modem-In Connector: J8/J10/J11

J8 connector is for CD-ROM audio connector.

J10 connector is for DVD add-on card with Line-in connector.

J11 connector is for modem with internal audio connector.

R

GND

L

J8

R

GND

L

J10

Mono_Out

GND

Phone_In

J11
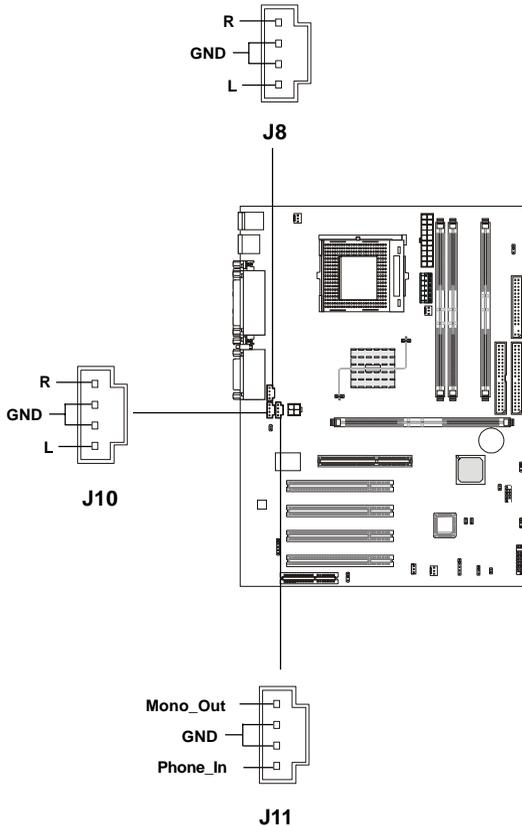
☛*Note:*

Mono_Out is connected to the Modem speaker-out connector.

Phone_In is connected to the Modem Microphone-In connector.

USB PC To PC Connector: JUSB1 (Optional)

The mainboard provides one USB (Universal Serial Bus) pin header that allows you to connect optional USB ports. JUSB1 is **optionally** implemented with USB PC to PC Networking function.

Depending on the model you purchased, the mainboard may offer **three USB 1.1 ports** and **one USB PC2PC port**, or just **four USB 1.1 ports**. This topic focuses on USB PC2PC function.

(USB 1.1) **(USB PC to PC Networking)**
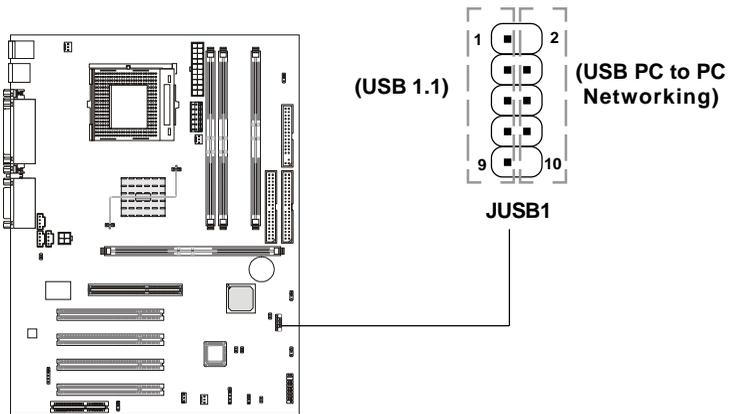
JUSB1

JUSB1 Pin Definition

Pin	Description	Pin	Description
1	VCC	2	NC
3	USB3-	4	GND
5	USB3+	6	USB2+
7	GND	8	USB2-
9	GND	10	NC

Note: USB PC to PC Networking feature allows users to transfer and receive data from other computers or share system resources with other computers without using any network adapter. See below for instructions.

To Attach the USB PC to PC cable

1. Check whether the package includes the following items. If any is missing, contact your dealer.

USB PC to PC Bracket   USB PC to PC Cable

2. Connect the USB Bracket cable to the JUSB1 pin header on the mainboard. Locate the pin position marked with the ARROW on the connector of USB Bracket and Pin# 2 of JUSB1. Then align the marked pin position with Pin# 2 to attach the USB Bracket.
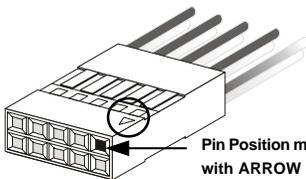
Pin Position marked with ARROW
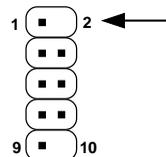
JUSB1

3. Identify the **B Type Connector** on the bracket used for PC to PC Networking function.

B Type Connector for PC to PC Networking

A Type Connector for attaching USB 1.1 Peripherals
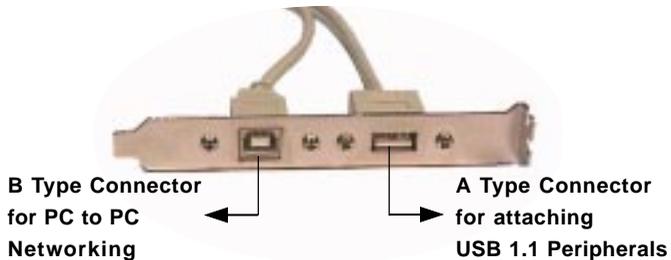
4. Connect your PC to another PC via USB PC to PC cable. The transfer rate will run at USB 1.1 speed (12Mbps/s).

Connect to the B Type Connector on your PC

Connect to the USB 1.1 port of another PC

B Type Connector
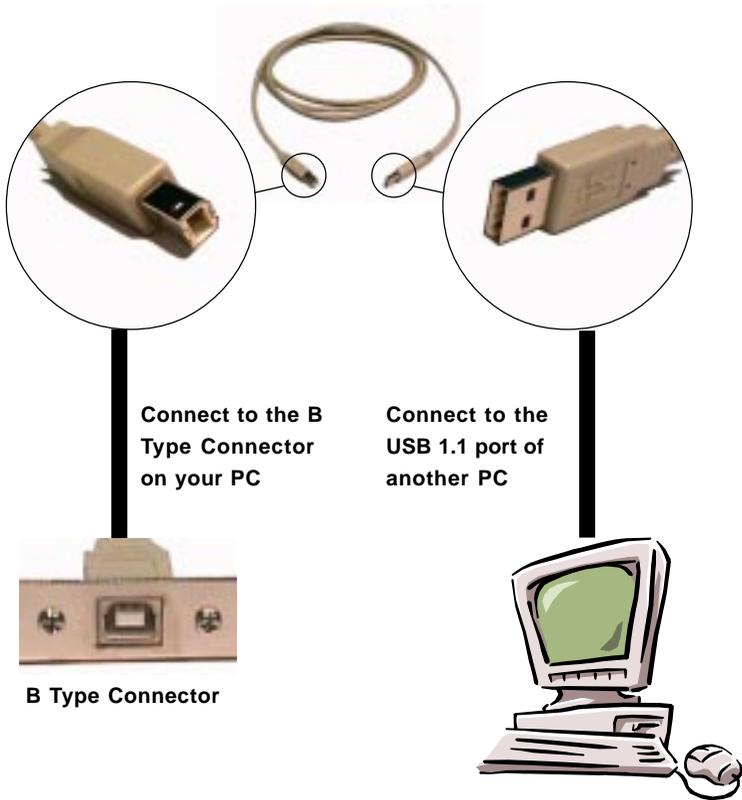
For more information on USB PC to PC Networking function, refer to Appendix A: USB PC to PC Networking Function.

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
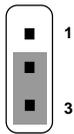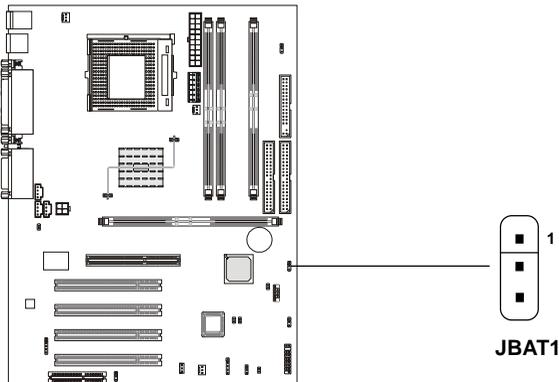
clear data
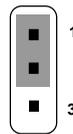
keep data

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

RDRAM Over Voltage Jumper: J20

The jumper is used to set the RDRAM voltage for overclocking purpose.

J20
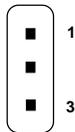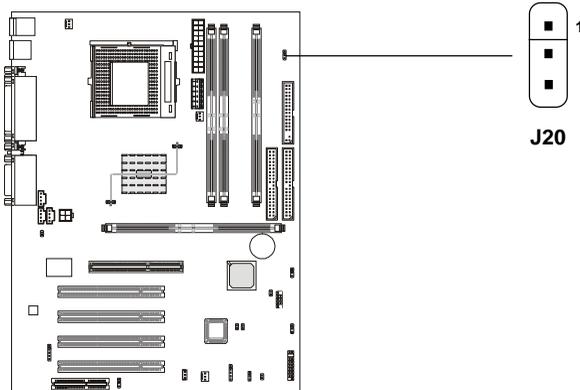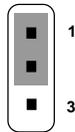
Normal
(2.5V)

Over Voltage
(2.58V)
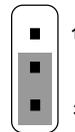
Over Voltage
(2.68V)

WARNING!

Over Voltage
This motherboard is designed to support over voltage.
However, please make sure your components are able to
tolerate such abnormal setting, while doing over voltage.
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.
Avoid setting J20 while the sytem is on. It will damage the
RDRAM.

Onboard Audio Codec Jumper: J19

The jumper is used to enable or disable the onboard software audio codec. When enabling the onboard audio codec, the system will use the onboard codec as the PRIMARY audio adapter and the installed CNR card as the SECONDARY one. But some types of CNR cards cannot be set to the secondary one, then the onboard audio codec must be disabled to resolve the system conflict.

J19

Enable onboard
audio codec

Disable onboard
audio codec
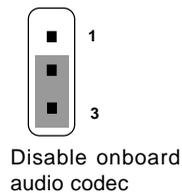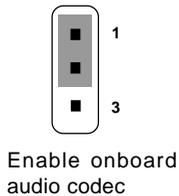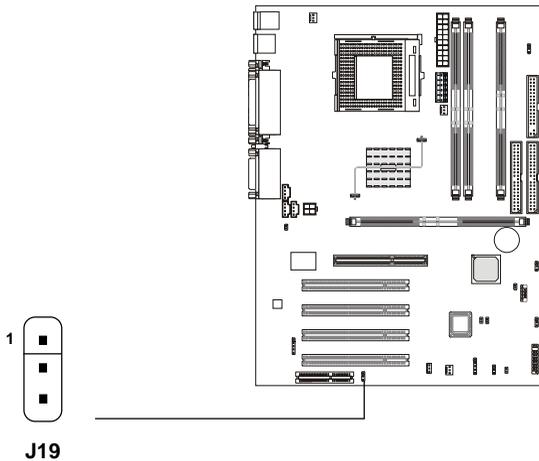
Clear BIOS Password Jumper: J17

The jumper is used to clear the BIOS password. To clear the password, open the jumper and restart your computer.

Normal   Clear

J17
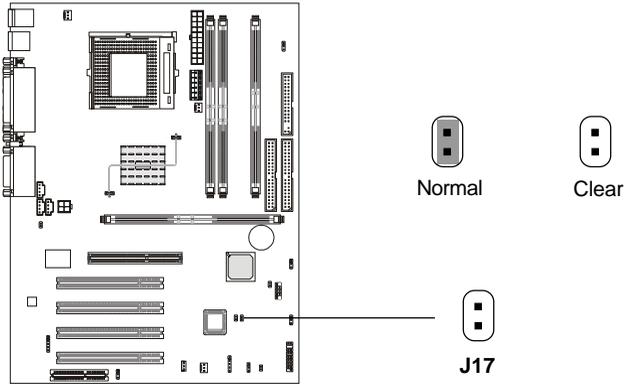
BIOS Flash Jumper: J16

This jumper is used to lock or unlock the boot block area on BIOS. When unlocked, the BIOS boot block area can be updated. When locked, the BIOS boot block area cannot be updated.

BIOS Flash   BIOS Flash
Locked   Unlocked

J16
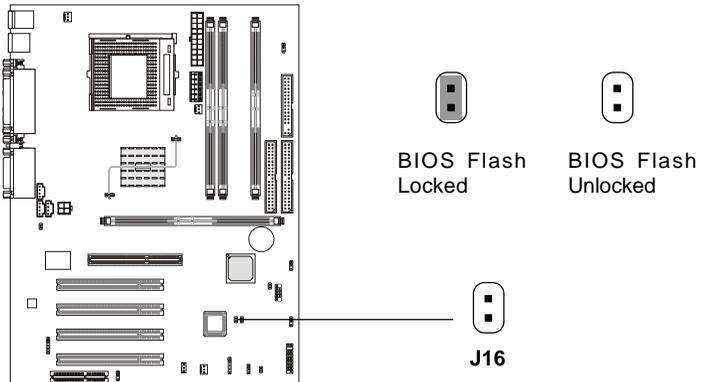
Beep Device Jumper: J15 (Optional)

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

J15
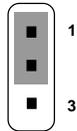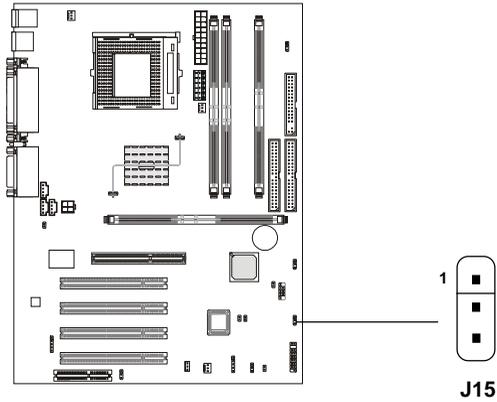
Output to External
Speaker
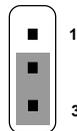
Output to Onboard
Buzzer

Slots

The motherboard provides four 32-bit Master PCI Bus Slots, one AGP and one CNR slot.
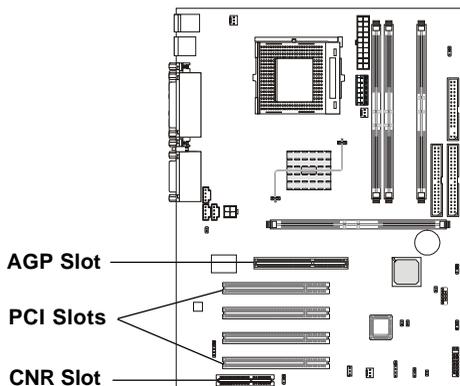
AGP (Accelerated Graphics Port) Slot

The AGP slot allows you to insert the AGP graphics card only. 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). The slot only supports **1.5V** AGP card.

PCI Slots

Four 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 as follows:

	Order 1	Order 2	Order 3	Order 4
PCI Slot 1	INT C#	INT F#	INT G#	INT A#
PCI Slot 2	INT F#	INT G#	INT A#	INT C#
PCI Slot 3	INT G#	INT A#	INT C#	INT F#
PCI Slot 4	INT A#	INT C#	INT F#	INT G#

PCI Slot 1~4: 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.

Chapter 3 contains the following topics:

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.

```
Press DEL to enter SETUP
```

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

Control Keys

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

Getting Help

After entering the Setup 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 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

```
‣ IDE  Primary  Master
‣ IDE  Primary  Slave
‣ IDE  Secondary  Master
‣ IDE  Secondary  Slave
```

field and perss <Enter>. Then you can use control keys to move between 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.

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.

```
           CMOS Setup Utility - Copyright(C) 1984-2001 Award Software
 ┌─────────────────────────────────────────────────────────────────────┐
 │                                                                       │
 │  ‣ Standard CMOS Features      ‣ Frequency/Voltage Control            │
 │                                                                       │
 │  ‣ Advanced BIOS Features        Load Fail-Safe Defaults              │
 │                                                                       │
 │  ‣ Advanced Chipset Features     Load Optimized Defaults              │
 │                                                                       │
 │  ‣ Integrated Peripherals        Set Supervisor Password              │
 │                                                                       │
 │  ‣ Power Management Setup         Set User Password                   │
 │                                                                       │
 │  ‣ PnP/PCI Configurations        Save & Exit Setup                    │
 │                                                                       │
 │  ‣ PC Health Status              Exit Without Saving                  │
 │                                                                       │
 ├─────────────────────────────────────────────────────────────────────┤
 │  ESC : Quit    F9: Menu in BIOS     ↑↓←→ : Select Item                │
 │  F10 : Save & Exit Setup                                              │
 ├─────────────────────────────────────────────────────────────────────┤
 │                   Time, Date, Hard Disk Type...                       │
 └─────────────────────────────────────────────────────────────────────┘
```

Standard CMOS Features
Use this Menu for basic system configurations.

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

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

Integrated Peripherals

Use this menu to specify your settings for integrated peripherals.

Power Management Setup

Use this menu to specify your settings for power management.

PnP/PCI Configurations

This entry appears if your system supports PnP/PCI.

PC Health Status

This entry shows your PC health status.

Frequency/Voltage Control

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

Load Fail-Safe Defaults

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

Load Optimized Defaults

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

Set Supervisor/User Password

Use this menu to set User and Supervisor Passwords.

Save & Exit Setup

Save CMOS value changes to CMOS and exit setup.

Exit Without Saving

Abandon all CMOS value changes and exit setup.

Standard CMOS Features

The items in Standard CMOS Setup Menu are divided into 10 categories. Each category includes no, one or more than one setup items. Use the arrow keys to highlight the item and then use the <PgUp> or <PgDn> keys to select the value you want in each item.

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

```
Date(mm:dd:yy):        Fri, Feb 28,1999
Time(hh:mm:ss):        00:00:00                      Item Help


IDE Primary Master     Press Enter 2557MB    Menu Level  >
IDE Primary Slave      Press Enter None
IDE Secondary Master   Press Enter None
IDE Secondary Slave    Press Enter None


Drive A                1.44M, 3.5in.
Drive B                None


Video                  EGA/VGA
Halt On                All , But Keyboard


Based Memory           640K
Extended Memory        64512K
Total Memory           65536K


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

Date

      The date format is <day><month> <date> <year>.

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

Time

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

PrimaryMaster/PrimarySlave
SecondaryMaster/Secondary Slave

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

      If you select Manual, related information is asked to be entered to the following items. Enter the information directly from the keyboard. This information should be provided in the documentation from your hard disk vendor or the system manufacturer.

Access Mode	The settings are Auto, CHS, Large,LBA.
Cylinder	number of cylinders
Head	number of heads
Precomp	write precom
Landing Zone	landing zone
Sector	number of sectors

Chapter 3

Advanced BIOS Features

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

```
┌─────────────────────────────────────────┬─────────────────────┐
│ Virus Warning              Disabled      │                     │
│ BIOS Flash Write Control   Disabled      │      Item Help       │
│ CPU L1 & L2 Cache          Enabled       │                     │
│ Quick Power On Self Test   Enabled       ├─────────────────────┤
│ First Boot Device          Floppy        │                     │
│ Second Boot Device         HDD-0         │ Menu Level   >       │
│ Third Boot Device          LS120         │                     │
│ Boot Other Device          Enabled       │                     │
│ Swap Floppy Drive          Disabled      │                     │
│ Boot Up Floppy Seek        Enabled       │                     │
│ Boot Up Numlock Status     On            │                     │
│ Gate A20 Option            Fast          │                     │
│ Typematic Rate Setting     Disabled      │                     │
│ Typematic Rate (Chars/Sec) 6            │                     │
│ Typematic Delay (Msec)     250          │                     │
│ Security Option            Setup         │                     │
│ OS Select for DRAM > 64MB  Non-OS2       │                     │
│ HDD S.M.A.R.T. Capability  Disabled      │                     │
│ Report No FDD for Win 95   No            │                     │
├─────────────────────────────────────────┴─────────────────────┤
│ ↑↓→←Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help │
│   F5:Previous Values F6:Fail-safe defaults F7:Optimized Defaults │
└────────────────────────────────────────────────────────────────┘
```

Virus Warning

Allows you to choose the VIRUS Warning feature for IDE Hard Disk boot sector protection. If this function is enabled and someone attempt to write data into this area, BIOS will show a warning message on screen and alarm beep.

Disable (default) No warning message to appear when anything attempts to access the boot sector or hard disk partition table.

Enable Activates automatically when the system boots up causing a warning message to appear when anything attempts to access the boot sector of hard disk partition table.

BIOS Flash Write Control

This option allows you to enable or disable the BIOS flash write control.

Enabled Allows you to update the BIOS with flash

utility.

Disabled (default)   BIOS cannot be updated.

CPU L1 & L2 Cache

Cache memory is additional memory that is much faster than the 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.

Enabled (default)   Enable cache

Disabled   Disable cache

Note: The internal cache is built in the processor.

Quick Power On Self Test

This category speeds up Power On Self Test (POST) after you power on the computer. If this is set to Enabled, BIOS will shorten or skip some check items during POST.

Enabled (default)   Enable quick POST

Disabled   Normal POST

First/Second/Third Boot Device/Boot Other Device

The BIOS attempts to load the operating system from the devices in the sequence selected in these items. The settings are Floppy, LS120, HDD-0/SCSI, CD-ROM, HDD-1/HDD-2/HDD-3, ZIP100, USB-FDD, USB-ZIP, USB-CDROM, USB-HDD, LAN, Disabled.

Swap Floppy Drive

Switches the floppy disk drives between being designated as A and B. Default is Disabled.

Boot Up Floppy Seek

During POST, BIOS will determine if the floppy disk drive installed is 40 or 80 tracks. 360K type is 40 tracks while 760K, 1.2M and 1.44M are all 80 tracks.

Boot Up NumLock Status

The default value is On.

On (default)   Keypad is numeric keys.
Off   Keypad is arrow keys.

Gate A20 Option

Normal   The A20 signal is controlled by keyboard
                    controller or chipset hardware.
Fast (default) The A20 signal is controlled by port 92 or
                    chipset specific method.

Typematic Rate Setting

Key strokes repeat at a rate determined by the keyboard controller. When enabled, the typematic rate and typematic delay can be selected. The settings are Enabled and Disabled.

Typematic Rate (Chars/Sec)

Sets the number of times a second to repeat a key stroke when you hold the key down. The settings are 6, 8, 10, 12, 15, 20, 24 and 30.

Typematic Delay (Msec)

Sets the delay time after the key is held down before it begins to repeat the keystroke   The settings are 250, 500, 750 and 1000.

Security Option

This category allows you to limit access to the system and Setup, or just to Setup.

System   The system will not boot and access to Setup
                    will be denied if the correct password is not
                    entered at the prompt.
Setup(default) The system will boot, but access to Setup will
                    be denied if the correct password is not entered
                    at the prompt.

OS Selection for DRAM > 64MB

Allows OS2® to be used with > 64 MB of DRAM. Settings are Non-OS/2 (default) and OS2. Set to OS/2 if using more than 64MB and running OS/2®.

HDD S.M.A.R.T Capability

This item allows you to Enabled or Disabled the HDD S.M.A.R.T (Self-Monitoring Analysis and Reporting Technology) Capability. The default setting is Disabled.

Report No FDD For Win 95

Whether report no FDD for Win 95 or not. The settings are: Yes, No.

Advanced Chipset Features

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

Choose the "ADVANCED CHIPSET FEATURES" from the Main Menu and the following screen will appear.

```
          CMOS Setup Utility - Copyright(C) 1984-2001 Award Software
                         Advanced Chipset Features
 ┌─────────────────────────────────────────┬─────────────────────────┐
 │ RDRAM Bus Frequency          Auto        │                         │
 │ DRAM Data Integrity Mode     Non-ECC     │       Item Help         │
 │ System BIOS Cacheable        Disabled    │                         │
 │ Video BIOS Cacheable         Disabled    ├─────────────────────────┤
 │ Delayed Transaction          Enabled     │                         │
 │ AGP Aperture Size (MB)       64          │ 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   │
 └─────────────────────────────────────────────────────────────────────┘
```

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

RDRAM Bus Frequency

This will show the RDRAM Bus Frequency during boot-up. The settings are Auto, 400MHz and 300MHz.

DRAM Data Integrity Mode

This option allows you to select the Parity or ECC (Error-Checking and Correcting), according to the type of installed RDRAM.

System BIOS Cacheable

Selecting *Enabled* allows caching of the system BIOS ROM at F0000h-FFFFFh, resulting in better system performance. However, if any program writes to this memory area, a system error may result. The settings are: Enabled and Disabled.

Video BIOS Cacheable

Select Enabled allows caching of the video BIOS , resulting in better system performance. However, if any program writes to this memory area, a system error may result. The settings are: Enabled and Disabled.

Delayed Transaction

The chipset has an embedded 32-bit posted write buffer to support delay transactions cycles. Select *Enabled* to support compliance with PCI specification version 2.1. The settings are Enabled and Disabled.

AGP Aperture Size (MB)

This option determines the effective size of the graphics aperture used in the particular PAC configuration. The AGP aperture is memory-mapped, while graphics data structure can reside in a graphics aperture. The aperture range should be programmed as not cacheable in the processor cache, accesses with the aperture range are forwaded to the main memory, then PAC will translate the original issued address via a translation table that is maintained on the main memory. The option allows the selection of an aperture size of 4MB, 8MB, 16MB, 32MB, 64MB, 128MB and 256MB.

Integrated Peripherals

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Integrated Peripherals

```
OnChip Primary PCI IDE      Enabled
OnChip Secondary PCI IDE    Enabled            Item Help
IDE Primary Master PIO      Auto
IDE Primary Slave PIO       Auto
IDE Secondary Master PIO    Auto          Menu Level  >
IDE Secondary Slave PIO     Auto
IDE Primary Master UDMA     Auto
IDE Primary Slave UDMA      Auto
IDE Secondary Master UDMA   Auto
IDE Secondary Slave UDMA    Auto
USB Controller              Enabled
USB Keyboard Support        Disabled
Init Display First          AGP
AC97 Audio                  Auto
AC97 Modem                  Auto
IDE HDD Block Mode          Enabled
POWER ON Function           BUTTON ONLY
KB Power ON Password        Enter
Hot Key Power ON            Ctrl-F1
Onboard FDC Controller      Enabled
Onboard Serial Port 1       3F8/IRQ4
Onboard Serial Port 2       2F8/IRQ3
```

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

```
UART Mode Select            Normal
RxD, TxD Active             Hi, Lo
IR Transmission Delay       Enabled
UR2 Duplex Mode             Half
Use IR Pins                 IR-Rx2Tx2
Onboard Parallel Port       378/IRQ7
Parallel Port Mode          SPP
EPP Mode Select             EPP 1.7
ECP Mode Use DMA            3
PWRON After PWR-Fail        Off
Game Port Address           201
Midi Port Address           330
Midi Port IRQ               10
Power Status Led            Blinking
```

OnChip Primary/Secondary PCI IDE

The integrated peripheral controller contains an IDE interface with support for two IDE channels. Select *Enabled* to activate each channel separately. The settings are: Enabled and Disabled.

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.

IDE Primary/Secondary Master/Slave UDMA

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

USB Controller

Select *Enabled* if your system contains a Universal Serial Bus (USB) controller and you have USB peripherals. The settings are Enabled and Disabled.

USB Keyboard Support

Select *Enabled* if your system contains a Universal Serial Bus (USB) controller and you have a USB keyboard. The settings are Enabled and Disabled.

Init Display First

Initialize the AGP video display before initializing any other display device on the system. Thus the AGP display becomes the primary display. The settings are PCI slot and AGP.

AC97 Audio

This item allows you to decide to Enable/Disable the 850 chipset family to support AC97 Audio.

AC97 Modem

This item allows you to Enabled or Disabled the AC97 Modem.

IDE HDD Block Mode

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

POWER ON Function

This function allows you to select the item to power on the system. The settings are Button Only, Mouse Left, Mouse Right, Password, Hotkey and Keyboard 98.

KB Power ON Password

Normally, this item is unselectable. To Enabled this function choose the "Password" setting in the Power On Function. This will allow you to input the password for the KB Power On.

Hot Key Power ON

If **Power On Function** is set to *Hot KEY*, then you can assign a hot key combination in the field for the PS/2 keyboard to power on the system. Settings are Ctrl-F1 through Ctrl-F12.

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.

UART Mode Select

This item allows you to determine which InfraRed(IR) function of the onboard I/O chip, this functions uses.

RxD, TxD Active

This item allows you to determine the active of RxD, TxD. The settings are "Hi,Hi", "Lo,Lo", "Lo,Hi" and "Hi,Lo".

IR Transmission Delay

This item allows you to Enabled/Disabled the IR transmission delay. The settings are Enabled or Disabled.

UR2 Duplex Mode

This item allows you to select the IR half.full duplex function. The settings are Half and Full.

Use IR Pins

Consult your IR peripheral documentation to select the correct setting pf the TxD and RxD signals.

Onboard Parallel Port

Select a logical LPT port address and corresponding interrupt for the physical parallel port.

Parallel Port Mode

To operate the onboard parallel port as Standard Parallel Port only, choose "SPP." To operate the onboard parallel port in the EPP modes simultaneously, 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. The ECP mode has to use the DMA channel, so choose the onboard parallel port with the ECP feature. After selecting it, the following message will appear: "ECP Mode Use DMA" At this time, the user can choose between DMA channels 3 or 1. 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.

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

PWRON After PWR-FAIL

This option will determine how the system will power on after a power failure.

Game Port Address/Midi Port Address

This will determine which Address the Game Port/Midi Port will use.

Midi Port IRQ

This determines the IRQ in which the MIDI Port can use.

Power Status Led

This item determines which state the Power LED will use. The settings are Blinking (default), Dual, and Single. During blinking, the power LED will blink when the system enters the suspend mode. When the mode is in Dual, the power LED will change its color. Choose the single and the power LED will always remain lit.

Power Management Setup

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

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

```
┌──────────────────────────────────────────┬───────────────────────────┐
│ ACPI Suspend Type          S1(POS)        │                           │
│ Power Management           User Define    │        Item Help          │
│ Video Off Method           DPMS           │                           │
│ Video Off In Suspend       Yes            │                           │
│ Suspend Type               Stop Grant     ├───────────────────────────│
│ Modem Use IRQ              3              │ Menu Level  >             │
│ Suspend Mode               Disabled       │                           │
│ HDD Power Down             Disabled       │                           │
│ Soft-Off by PWR-BTTN       Instant-Off    │                           │
│ Wake-Up by PCI card        Enabled        │                           │
│ Power On by Ring           Enabled        │                           │
│ Wake Up On LAN             Enabled        │                           │
│ USB KB/MS Wake-Up from S3  Disabled       │                           │
│ CPU THRM-Throttling        50.0%          │                           │
│ Resume By Alarm            Disabled       │                           │
│ Date(of Month) Alarm       0              │                           │
│ Date(hh:mm:ss)             0 0 0          │                           │
│                                           │                           │
│ **Reload Global Timer Events**            │                           │
│ Primary IDE 0              Disabled       │                           │
│ Primary IDE 1              Disabled       │                           │
│ Secondary IDE 0            Disabled       │                           │
│ Secondary IDE 1            Disabled       │                           │
│ FDD, COM, LPT Port         Disabled       │                           │
│ PCI PIRQ[A-D]#             Disabled       │                           │
├───────────────────────────────────────────────────────────────────────│
│ ↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help│
│    F5:Previous Values F6:Fail-safe defaults F7:Optimized Defaults       │
└────────────────────────────────────────────────────────────────────────┘
```

ACPI Suspend Type

This item will set which ACPI suspend type will be used.

S1 (POS)

The S1 sleeping state is low wake-up latency sleeping state. In this state, no system context is lost (CPU or chipset) and hardware maintains all system context.

S3 (STR)

The S3 state is a low wake-up latency sleeping state where all system context is lost except system memory. CPU, cache, and chipset context are lost in this state. Hardware maintains memory context and restores some CPU and L2 configuration context.

Power Management

This category allows you to select the type (or degree) of power saving and is directly related to the following modes:

1. Suspend Mode
2. HDD Power Down

There are three selections for Power Management, two of which have fixed mode settings.

Min. Power Saving   Minimum power management. Suspend Mode = 1 hr., and HDD Power Down = 15 min.

Max. Power Saving   Maximum power management — Suspend Mode = 1 min., and HDD Power Down = 1 min.

User Defined (default)   Allows you to set each mode individually. When not disabled, each of the ranges are from 1 min. to 1 hr. except for HDD Power Down which ranges from 1 min. to 15 min. and disable.

Video Off Method

This determines the manner in which the monitor is blanked.

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.

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

DPMS (default)   Initial display power management signaling.

Video Off In Suspend

This determines the manner in which the monitor is blanked.
The settings are Yes and No.

Suspend Type

Select the Suspend Type. The settings are: PWRON Suspend, Stop Grant.

Modem Use IRQ

This determines the IRQ in which the MODEM can use.
The settings are 3, 4, 5, 7, 9, 10, 11and NA.

Suspend Mode

When enabled and after the set time of system inactivity, all devices except the CPU will be shut off. The settings are 1/2/4/8/12/20/30/40 Min, 1 Hour and Disabled.

HDD Power Down

When enabled and after the set time of system inactivity, the hard disk drive will be powered down while all other devices remain active.
The settings are: 1/2/3/4/5/6/7/8/9/10/11/12/13/14/15Min and Disabled.

Soft-Off by PWR-BTTN

Pressing the power button for more than 4 seconds forces the system to enter the Soft-Off state. The settings are Delay 4 Sec and Instant-Off.

Wake-Up by PCI Card

This will enable the system to wake up through PCI Card peripheral. The settings are Enabled and Disabled.

Power On by Ring

During Disabled, the system will ignore any incoming call from the modem. During Enabled, the system will boot up if there's an incoming call from the modem.

Wake-Up on LAN

To use this function, you need a LAN add-on card which support power on functions. It should also support the wake-up on LAN jumper (JWOL1).

Enabled	Wake up on LAN supported.
Disabled	Wake up on LAN not supported.

USB KB/MS Wake-Up from S3

This item allows the USB keyboard/mouse to wake up the system from S3 sleep state. S3 is STR (Suspend to RAM) mode for ACPI, which saves different amount of system power. Settings are *Enabled* and *Disabled*. Default value: *Disabled*.

CPU THRM-Throttling

Select the CPU THRM-Throttling rate. The settings are: 12.5%, 25.0%, 37.5%, 50.0%, 62.5%, 75.0%, 87.5%.

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 Date and Time Alarm:

Date(of month) Alarm	You can choose which date 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.

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

<Reload Global Timer Events>

Reload Global Timer events are I/O events whose occurrence can prevent the system from entering a power saving mode or can awaken the system from such a mode. In effect, the system remains alert for anything which occurs to a device which is configured as *Enabled* , even when the system is in a power down mode.

Primary IDE 0

Primary IDE 1

Secondary IDE 0

Secondary IDE 1

FDD, COM, LPT Port

PCI PIRQ[A-D] #

PnP/PCI Configurations

This section describes configuring the PCI bus system. PCI, or **P**ersonal **C**omputer **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 own special components. This section covers some very technical items and it is strongly recommended that only experienced users should make any changes to the default settings.

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

```
 Reset Configuration Data      Disabled
                                                    Item Help
 Resources Controlled By       Auto (ESCD)
 IRQ Resources                 Press Enter
                                              Menu Level   >
 PCI/VGA Palette Snoop         Disabled




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

Reset Configuration Data

Normally, you leave this field to 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) and Manual.

IRQ Resources

When resources are controlled manually, assign each system interrupt a type, depending on the type of device using the interrupt.

PCI/VGA Palette Snoop

Leave this field at *Disabled*. The settings are Enabled and Disabled.

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 onboard.

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

```
┌─────────────────────────────────────────────┬─────────────────────────┐
│ Chassis Intrusion Detect    Disabled         │                         │
│ CPU Warning Temperature     Disabled         │        Item Help        │
│ Current System Temp.        39°C/102°F        │                         │
│ Current CPU Temperature     66°C/150°F        │                         │
│ Current CPU FAN Speed       5532RPM           ├─────────────────────────┤
│ Current SYS FAN Speed       0RPM              │ Menu Level  >           │
│ Current PSFAN1 Speed        0RPM              │                         │
│ Vcore                       1.65V             │                         │
│ +1.80V                      1.88V             │                         │
│ Vio                         3.24V             │                         │
│ +5V                         4.89V             │                         │
│ +12V                        11.79V            │                         │
│ -12V                        -12.19V           │                         │
│ -5V                         -4.53V            │                         │
│ VBAT(V)                     3.10V             │                         │
│ 5VSB(V)                     5.37V             │                         │
│ Shutdown Temperature        Disabled          │                         │
│                                               │                         │
│                                               │                         │
│                                               │                         │
│                                               │                         │
├─────────────────────────────────────────────┴─────────────────────────┤
│ ↑↓→←Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help │
│    F5:Previous Values F6:Fail-safe defaults F7:Optimized Defaults       │
└────────────────────────────────────────────────────────────────────────┘
```

Chassis Intrusion Detect

Set this option to Enabled, Reset, or Disabled the chassis intrusion detector. During Enabled, any intrusion on the system chassis will be recorded. The next time you turn on the system, it will show a warning message. To be able to clear those warning, choose reset. After clearing the message it will go back to Enabled.

CPU Warning Temperature

Select the combination of lower and upper limits for the CPU temperature. If the CPU temperature extends beyond either limit, any warning mechanism programmed into your system will be activated.

Current System Temp./Current CPU Temperature/Current CPU FAN Speed/SYS FAN Speed/PSFAN1 Speed/Vcore/ +1.80V/Vio/+5V/+12V/-12V/-5V/VBAT(V)/5VSB(V)

This will show the CPU/FAN/System voltage chart and FAN Speeds.

Shutdown Temperature

This option is for setting the Shutdown temperature level for the processor. When the processor reaches the temperature you set, this will shutdown the system.

Frequency/Voltage Control

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

```
┌─────────────────────────────────────────┬──────────────────────┐
│ CPU Clock Ratio          x8              │                      │
│ CPU Vcore Select         Default         │      Item Help       │
│ Auto Detect PCI CLK      Enabled         │                      │
│ Spead Spectrum           +/-0.25%        ├──────────────────────┤
│ CPU Clock                100             │ 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 │
└─────────────────────────────────────────────────────────────────┘
```

CPU Clock Ratio

The CPU Clock Ratio provides flexibility for overclockers from x8 to x 23.

Note: Most of the Pentium® 4 processor doesn't support clock ratio adjustment. Always consult your reseller for further instructions.

CPU Vcore Select

The CPU Vcore Select allows you to adjust CPU Vcore Voltage. Setting options: Defatult, +25mv, +50mv, +75mv, +100mv.

Auto Detect PCI Clk

Use this item to enable or disable the feature of auto detecting the clock frequency of the installed PCI cards. Settings are: Enabled (default) and Disabled.

Spread Spectrum

This item is used to enable or disable the clock generator's Spread Spectrum feature. When overclocking the processor, always set it to Disabled. Settings are: Disabled, +/– 0.25% (default), – 0.5%, +/– 0.5% and +/– 0.38%.

CPU Clock

This item specifies the clock frequency of CPU host bus (FSB) and provides a method for end users to overclock the processor accordingly. You are allowed to overclock the CPU at any frequency between 100MHz and 200MHz.

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          │ ‣ Frequency/Voltage Control       │
│ ‣ Advanced BIOS Features          │   Load Fail-Safe Defaults         │
│ ‣ Advanced Chipset Features       │   Load Optimized Defaults         │
│ ‣ Integrated Peripherals          │   Set Supervisor Password         │
│ ‣ Power Managemen  Load Fail-Safe Defaults (Y/N)? N  ord             │
│ ‣ PnP/PCI Configurations          │   Save & Exit Setup               │
│ ‣ PC Health Status                │   Exit Without Saving             │
├──────────────────────────────────┴──────────────────────────────────┤
│ 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          │ ▸ Frequency/Voltage Control       │
  │ ▸ Advanced BIOS Features          │   Load Fail-Safe Defaults         │
  │ ▸ Advanced Chipset Features       │   Load Optimized Defaults         │
  │ ▸ Integrated Peripherals          │   Set Supervisor Password         │
  │ ▸ Power Managemen  Load Optimized Defaults (Y/N)? N  ord             │
  │ ▸ PnP/PCI Configurations          │   Save & Exit Setup               │
  │ ▸ PC Health Status                │   Exit Without Saving             │
  ├─────────────────────────────────────────────────────────────────────┤
  │ 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          ▸ Frequency/Voltage Control            │
  │                                                                           │
  │  ▸ Advanced BIOS Features             Load Fail-Safe Defaults             │
  │                                                                           │
  │  ▸ Advanced Chipset Features          Load Optimized Defaults             │
  │                                                                           │
  │  ▸ Integrated Peripherals             Set Supervisor Password             │
  │                                                                           │
  │  ▸ Power Managemen  Enter Password:                      ord              │
  │                                                                           │
  │  ▸ PnP/PCI Configurations             Save & Exit Setup                   │
  │                                                                           │
  │  ▸ PC Health Status                   Exit Without Saving                 │
  ├─────────────────────────────────────────────────────────────────────────┤
  │  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 clear 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 of 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 menus.*
User password:	*Can only enter but do not have the right to change the settings of the setup menus*

USB PC to PC Networking Function

A

USB PC to PC is the best solution for providing the easiest network connection service to you. By connecting multiple PCs through USB PC to PC port, you can build up a local area network without any network adapter. We give this Ethernet emulation environment a name — USB PC to PC. USB PC to PC supports TCP/IP, NetBEUI and IPX protocols. These features make your PCs able to share their resources such as files or printers to each other. Furthermore, USB PC to PC also gives you the ability of connecting to your existing Home or Office LAN for network resource or Internet sharing.

The section includes the following topics:

Installing GeneLink™ LAN Driver

Before you use the function, you need to install the GeneLink™ LAN Driver to all PCs connected via USB PC to PC cables.

Step 1. Installing driver

1. Insert the driver CD and click "USB PC to PC" button to install the driver.
2. The welcome dialog box appears and click <u>N</u>ext > button.
3. Choose the destination folder and click <u>N</u>ext > button.
4. Select components that you want to install and then click <u>N</u>ext > button. (GeneLink™ LAN Driver is used only for those PCs connected via USB PC to PC port so that resources are shared between these PCs; GeneLink™ Software Router allows your PC to connect to another existing Home/Office LAN for network resource or Internet sharing.)
5. The Setup Program will install all necessary components automatically.
6. Setup completes. Then select 'Yes, I want to restart my computer now' and click "FInish" button to reboot your computer for updating your driver configuration.

After you complete the installation procedures, you'll find Setup Program has installed GeneLink™ network driver in your computer. It binds TCP/IP, NetBEUI and IPX protocols to GeneLink™ device.

Step 2 – Connect your PCs via the USB PC to PC cable

Step 3 - Network Login

When you restart your computer, you will be prompted for a user name and password to login your network. Please enter an unique name for your PC.

Step 4 – Sharing your resources and Connecting to Internet

You need to manually share your resources (files, folders, drives and printers) to make them accessible for other computers. For Internet accessing, you must define which computer (That has already been connected to Internet) should install GeneLink™ Software Router. And all clients accessing Internet resources through GeneLink™ USB port should have installed GeneLink™ LAN driver.

Notice:

1. *You should use the same network protocol (TCP/IP, NetBEUI or IPX) for connecting GeneLink™ LAN to existing Home/Office LAN.*
2. *If you've already configured your [IPX/SPX] and [Client for Netware Networks] before installing GeneLink™ driver, we strongly recommend that you should also install **Software Router** while installing GeneLink™ driver into your system.*

Using USB PC to PC Networking Function

How to share your files, folders, drives and printers

a. Go to the file, folder, drive or printer that you want to share.
b. Right click your mouse pointer on the resource you want to share, you'll see a POP-UP Menu.

c. Select " Sharing" and you'll see another POP-UP Menu.

d. In "Sharing" tag, select "Share As".
e. Enter a name to help others recognize your sharing file or device (optional).
f. Select "Access Type". If you select " Depend on Password", your need to assign an access password for this device.
g. Click "OK" button.

How to check if you have already shared your resources

Go to the resource and check if Windows had added a hand on its icon or not. If yes, it means you've successfully shared your resource and others can access it through USB PC to PC; if not, you need to repeat the steps described in "**How to share your files, folders, drives and printers***" to complete your sharing processes.

Connecting to your existing Home or Office LAN

To connect your USB PC to PC to another existing Home of Office LAN via USB PC to PC port, you need to install **GeneLink™ Software Router** in addition to GeneLink™ LAN driver. GeneLink™ Software Router is responsible for handling all network packets between USB PC to PC and your Home/Office LAN. So only the computer that is physically connected to both LANs needs to install GeneLink™ Software Router (i.e., this computer should install both GeneLink™ LAN and one network adapter for Home/ Office LAN). For those computers on USB PC to PC, you only need to follow installation procedures on the manual to install GeneLink™ LAN driver. The following procedures will show you how to install drivers to the computer that will link both PC and your existing Home/Office LAN:

Notice: If you want to connect your GeneLink™ LAN to your existing Home/Office LAN, you should use the same protocol for the two LANs. For example, if your Home/Office LAN uses TCP/IP protocol, you should also use TCP/IP protocol for your GeneLink™ LAN. Otherwise, these two LANs cannot communicate to each other. The Setup Program installs TCP/IP, NetBEUI and IPX protocols for GeneLink™ LAN by default. If your Home/ Office LAN uses other protocol, please install the same protocol for those computers within GeneLink™ LAN.

Connecting to Internet through USB PC to PC & Office/Home LAN

If you would like to access Internet resources through USB PC to PC, here are some things you should notice:

      a.   You must define which computer should install GeneLink™ Software Router.

      b.   The computer which has installed GeneLink™ Software Router should have already been connected to internet.

      c.   All clients which would like to access Internet resources through USB cable should have installed GeneLink™ driver.

Now we need to make some network configurations on the Desktop/ Notebook which connect to GeneLink™ Software Router to make your Internet access possible (maybe you need to consult you Network Administrator for doing that):

      a.   If your existing home/office network is NOT using DHCP to assign client's IP address, your need to:
              - Move your mouse pointer on Network Neighborhood icon and right click on it. You'll see a pop-up menu.
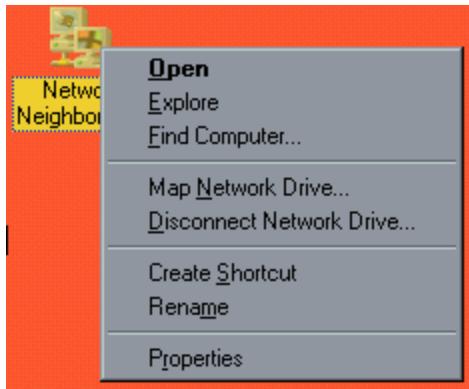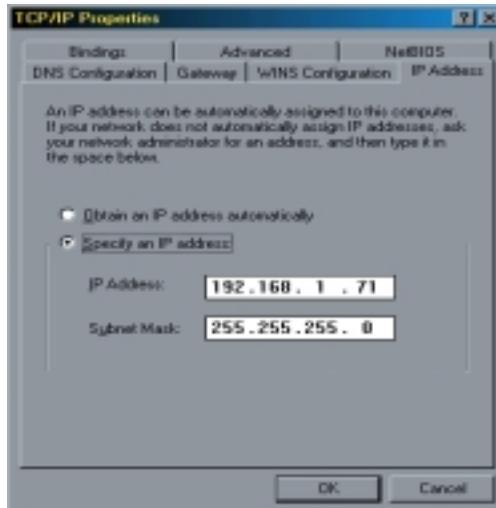
- Click on "Properties", you'll see another menu.
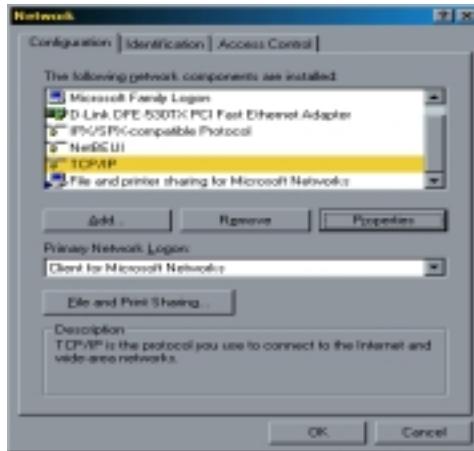
- Choose TCP/IP in Configuration tag, and then press "Proper-ties" button. You'll see "TCP/IP Properties" menu.

- Now you need to navigate between "IP Address", "Gateway",
and "DNS Configuration" tags to specify "IP Address", "Subnet
Mask", "Gateway" and "DNS Server". If you don't know their
values, pleases consult your Network Administrator.

- Press "OK" button to go back to "Network" pop-up menu.
Choose "Identification" tag. Specify an unique name for your
computer if it doesn't have and fill in the name of your
workgroup. If you are not sure what's the name of your compu-
ter or Workgroup, please consult your Network Administrator.

- Press "OK" to complete your network configuration. Restart
your computer and you'll be ready to connect to Internet.

b.   If your existing HOME/OFFICE network is using DHCP to
assign client's IP address, your Network Sever will configure
your network configuration automatically. So you can skip
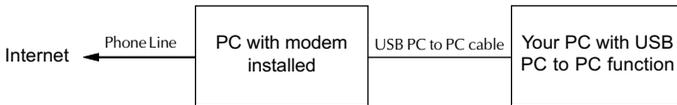those procedures described in the previous session.

SPECIAL NOTICE for those users who have already installed Network Adapter in their system:

If you've already configured your [IPX/SPX] and [Client for Netware Networks] before installing GeneLink™ driver, we strongly recommend that you should also install *Software Router* when you install GeneLink™ driver into your system. If you decide not to install *Software Router*, then the OS will not allow two IPX/SPX configurations co-exist in the same system. This will cause GeneLink™ Driver Install Program overwrite your original IPX/SPX configuration and make your original network configuration malfunction.

**Connecting to internet through USB PC to PC & remote modem**

If there is no existing Office/Home LAN and your computer does not have a modem, you still can connect USB PC to PC to internet through another computer with a modem installed. **The function is available in Windows® 98SE and ME.**

```
                        ┌──────────────────┐                    ┌──────────────────┐
            Phone Line   │  PC with modem   │ USB PC to PC cable │ Your PC with USB │
Internet ◄──────────────│    installed     │───────────────────│  PC to PC function│
                        └──────────────────┘                    └──────────────────┘
```

To access internet through another computer with modem, you need to setup "Internet Connection Sharing" on all computers connected via USB PC to PC cables. Instructions are as follows:

    a.   Go to "Control Panel".

    b.   Double click "Add/Remove Programs" and the "Add/Remove Programs Properties" window appears.

    c.   Select "Windows Setup" tag and double click
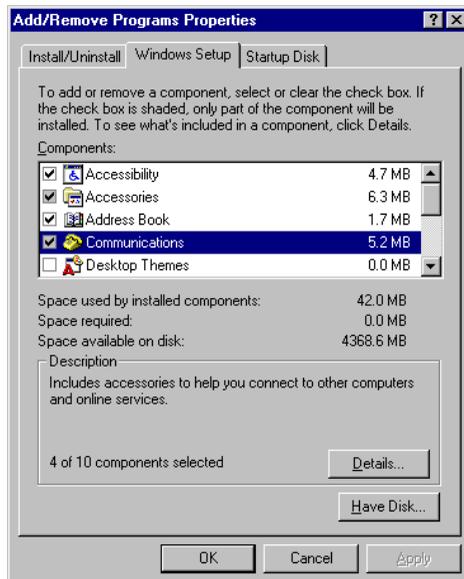
"Communications". The "Communications" window appears.
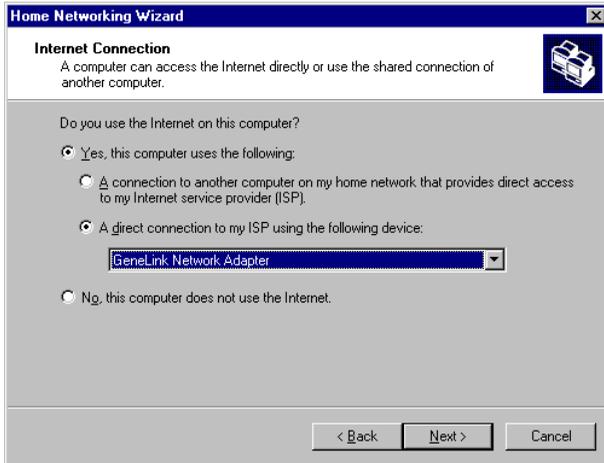
d.   Check "Internet Connection Sharing" and click "OK".
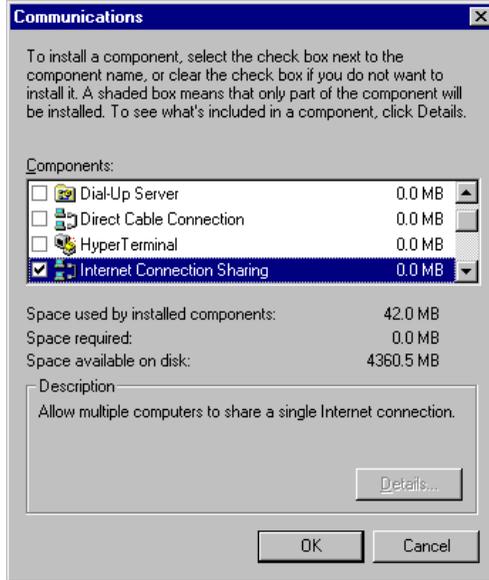
e.   The "Home Networking Wizard" starts. Click "Next".

f.   Click "Adirect connection to my ISP using the following device", and select "GeneLink Network Adapter" from the pull-down menu. Click "Next".

Note: For the computer with a modem installed, you need to select "**My Connection**" instead of "GeneLink Network Adapter" on the step, and after finishing installation of "My Connection", select "GeneLink Network Adapter" when the above window returns.

g.   Continue to click "Next".

h.   Click "Finish."

i.   Restart the computer.

Note: In Windows® 98SE, you can access internet through the shared connection of another computer, but it is unable for you to control the remote modem. However, in *Windows® ME*, you are allowed to dial the remote modem of another computer using the dialing program built in Windows®.