Overview

The 1stMainboard PAG-2130 is a MicroATX-sized Super 7 solution offering high performance, the highest speeds for super 7 processors and the very latest in quality onboard features. It supports the AMD® K6ᴹIII 400-450 MHz @ 100 MHz Front Side Bus and Pentium® MMX, AMD® K6, AMD® K6-2,Cryix MII 300-366, IBM and IDT WinChip processors.

The PAG-2130 is based around the advanced architecture of the VIA MVP4 and Super South chipset, giving advanced levels of performance with high quality audio/visual capabilities. The PAG-2130 comes with a standard 1MB (manufacturing option: 2MB/512KB) of on-board cache. With up to 2MB of SRAM cache on-board, the AMD K6-III 400-450MHZ processors will significantly boot the PC's performance.

The Super South chipset is a PC98 compliant PCI Super-I/O integrated peripheral controller with integrated super-I/O, USB controller (with support for four USB ports), keyboard controller, RTC, plug and play, ACPI, enhanced power management, and temperature, voltage, and fan-speed monitoring. With support for the new Ultra DMA66 protocol and its high-speed interface, data transfer speeds and hard drive performance are significantly improved.
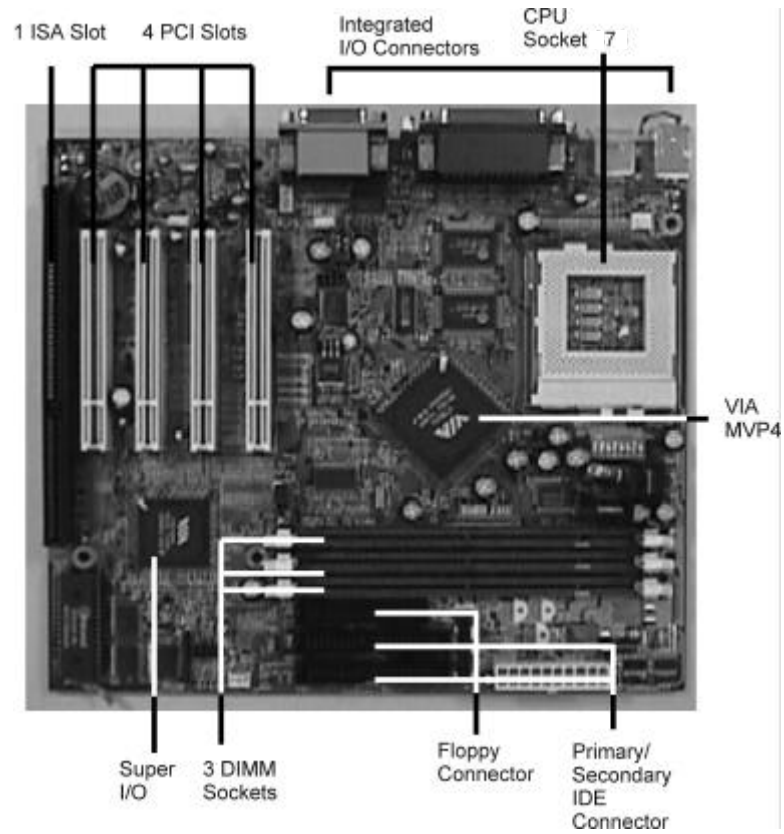
The PAG-2130 has 3 DIMM for up to 768 MB SDRAM, and also offers ECC memory support. It is equipped with, 4 PCI, and 1 ISA expansion slot. The PAG-2130 is fully PC99 and Y2K compliant, and is ACPI ready, ensuring improved energy efficiency. Other features include Wake-On-LAN, IrDA, Intel LDCM software (manufacturing option) and CD Pro with enhanced drivers. For the most up-to-date information about your mainboard and the latest FAQs and BIOS updates, visit FIC Online at http://ww.fic.com.tw.

Package Checklist

Please check that your package contains all the items listed below. If you discover that any item is damaged or missing, please contact your vendor.

- ✓ The PAG-2130 mainboard
- ✓ This user's manual
- ✓ One IDE ribbon cable
- ✓ One floppy disk drive ribbon cable
- ✓ One ribbon cable with bracket for COM2 connector
- ✓ Software utilities

The PAG-2130 Mainboard

1 ISA Slot   4 PCI Slots   Integrated
                             I/O Connectors   CPU
                                              Socket 7

VIA
MVP4

Super   3 DIMM   Floppy   Primary/
I/O   Sockets   Connector Secondary
                             IDE
                             Connector

Main Features

The mainboard comes equipped with the most advanced new features that not only optimize the performance of the latest processors but also enhance the manageability, power management capabilities, and user-friendliness of your system. This section provides detailed information on these features, and how they are implemented on the mainboard.

- **Easy Installation**
  Award BIOS with support for Plug and Play, auto detection of IDE hard drives, LS-120 drives, MS Windows® 95, Windows® 98, Windows® NT, and OS/2.

- **Flexible Processor Support**
  Onboard 321-pin ZIF socket and switching voltage regulator support complete range of leading-edge processors:
  Intel Pentium 100 -160MHz, AMD K5 100 – 200MHz, Intel Pentium MMX 166 – 233MHz, Cyrix /IBM PR166 – PR266MHz, AMD K6 166 - 300MHz, AMD K6-2 266 – 475MHz, AMD K6-3 400/450MHz, or Cyrix MII 300 – 366MHz processors.

- **Various External Bus and CPU/Bus Frequency Ratio Support**
  The motherboard supports the Bus frequency of 66/66.8/75/83/95/100/105MHz and the CPU/Bus frequency ratio of 1.5x//2x/2.5x/3x/3.5x/4x/4.5 x/5x/5.5x by a switching voltage regulator which accepts from 1.8V to 3.5V. (Please read **Install the CPU** in Chapter 2 for more information).

- **Ultra-fast Level II Cache**
  Supports up to 2MB onboard Pipeline Burst Level II write-back cache.

- **Leading Edge Chipset**
  VIA APOLLO MVP4 chipset with integrated DRAM and L2 cache controllers as well as support for Intel's new Dynamic Power Management Architecture (DPMA), Concurrent PCI (PCI 2.0 and 2.1), AGP 1.0 compliant, and USB.

■ **Versatile Main Memory Support**
Accepts up to 768MB DRAM in three banks using DIMMs of 8, 16, 32, 64, 128, and 256MB with support SDRAM (66MHz and 100MHz) memory.

■ **Onboard IrDA Connector**
An IrDA connector for wireless infrared connections is available.

■ **Lightning-fast SDRAM Performance**
The mainboard supports 66MHz and the new generation of lightning-fast 100MHz SDRAM via its onboard 168-pin DIMM sockets. SDRAM delivers an added boost to overall system performance by increasing the CPU-to-memory data transfer rate. SDRAM performance on the mainboard is further boosted by it's integrated I^2C controller, which optimizes the memory timing settings. Besides, the latest Virtual Channel Memory (VCM) is also supported on the mainboard.

■ **USB Support**
Two USB ports integrated in the rear I/O panel allow convenient and high-speed Plug and Play connections to the growing number of USB compliant peripheral devices on the market. One manufacturing optional USB connector that shared with one USB port for the front panel.

■ **Super Multi Input/Output (I/O) Support**
Integrated VT82C686 super multi-I/O chipset features one high-speed UART 16550 compatible serial port and one serial connector, one EPP/ECP capable parallel port, and one Floppy Disk Drive connector. It is also IrDA 1.0 compliant.

■ **Remote Wake On LAN Support**
Onboard WOL connector allows remote management on your network even the system is power off. This feature provides a simpler and convenient control to LAN-based networks.

■ **Intel LANDesk Client Manager (LDCM) Software Support (optional)**
    LDCM is a DMI-compliant application for local and network management of desktop client systems. The application reduces the number of help desk calls by supplying the user with self diagnostics such as a PC health meter and local alert of potential problems.

ACPI Ready

This mainboard fully implements the new ACPI (Advanced Configuration and Power Interface) 1.0 Hardware and BIOS requirement. If you install ACPI-aware operating systems, such as Windows® 98, you can fully utilize the power saving features under ACPI. It is compatible with all other non ACPI-aware operating systems.

If you want to setup ACPI features under Windows® 98, please follow the instructions below:
Run Windows® 98 setup by typing **setup /p j** at the command prompt for installing Windows® 98 with the ACPI control features.
If you type **setup** without the parameter **/p j**, Windows® 98 will be installed as APM, PnP mode, no ACPI will be used.
For more detailed information, please visit the web site of Microsoft. The URL is http://www.microsoft.com/hwtest/.

The following are a few examples about the advantages of ACPI -

■ Soft-Off Support
    The mainboard's Soft-Off feature allows you to turn off your computer using the operating system. This feature requires a power supply with a soft-off power controller.

■ Remote Ring-On
    The Remote Ring-On function allows your computer to be turned on remotely via a modem while it is in sleep mode. This feature is particularly useful when you are expecting a fax late at night and leave only your modem on to minimize power consumption. As soon as the phone rings, the modem automatically turns on the system, which answers the phone and downloads the fax. Then the computer shuts

down again, thereby minimizing its power consumption. The Remote Ring-On function requires a power supply with a soft-off power controller.

■ RTC Alarm
The RTC alarm feature allows you to preset the computer to wake-up at a certain time to implement a number of useful functions, such as sending out a fax late a night automatically.

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Installation Procedures

The mainboard has several user-adjustable jumpers/switches on the board that allow you to configure your system to suit your requirements. This chapter contains information on the various hardware settings on your mainboard.

To set up your computer, you should follow these installation steps:

■   Step 1 - Set system jumpers/switches

■   Step 2 - Install memory modules

■   Step 3 - Install the CPU

■   Step 4 - Install expansion cards

■   Step 5 - Connect devices

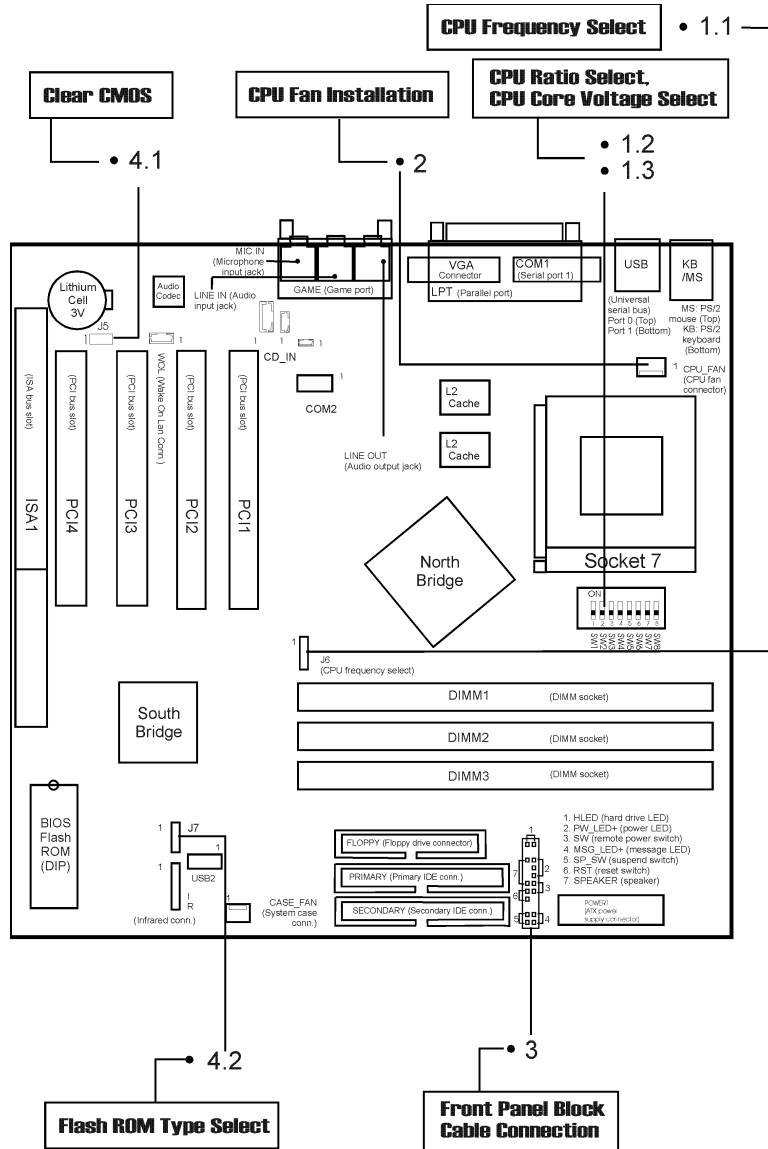■   Step 6 - Set up BIOS features

WARNING: If you use an electric drill to install this mainboard on your chassis, please wear a static wrist strap. The recommended electric drill torque is from 5.0 to 8.0 kg/cm to avoid damaging the chips' pins.

PAG-2130

▶ QUICK REFERENCE

*This Chapter is intended to aid quick and easy installation.
In the event that more detailed information is required, please
consult the Installation Procedures Chapter.*

CPU Frequency Select • 1.1

Clear CMOS

CPU Fan Installation

**CPU Ratio Select,
CPU Core Voltage Select**

• 4.1

• 2

• 1.2
• 1.3

**Chapter 2
Installation
Procedures**

• 4.2

• 3

Flash ROM Type Select

**Front Panel Block
Cable Connection**

1.1 J6 (CPU Frequency Select)
NOTE: ON is short, OFF is open

CLOCK (MHz)	1-2	3-4	5-6	7-8
60	OFF	OFF	OFF	OFF
66.8	ON	OFF	OFF	OFF
75	OFF	OFF	OFF	ON
83	OFF	ON	OFF	ON
95.25	OFF	ON	ON	OFF
100	ON	ON	ON	OFF
*105	ON	ON	OFF	ON
*110	OFF	OFF	ON	ON
*115	ON	OFF	ON	ON
*120	OFF	ON	ON	ON
*124	ON	ON	ON	ON

1.2 SW1/2/3 (CPU Ratio Select)

Ratio	SW1	SW2	SW3
1.5/3.5 x	OFF	OFF	OFF
2.0 x	ON	OFF	OFF
2.5 x	ON	ON	OFF
3.0 x	OFF	ON	OFF
4.0 x	ON	OFF	ON
4.5 x	ON	ON	ON
5.0 x	OFF	ON	ON
5.5 x	OFF	OFF	ON

* These settings are not guaranteed by FIC!

1.3 SW4/5/6/7/8 (CPU Core Voltage Select)

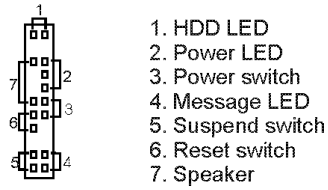| CLOCK (MHz)	SW4	SW5	SW6	SW7	SW8
2.1V	ON	OFF	OFF	OFF	OFF
2.2V	OFF	ON	OFF	OFF	OFF
2.3V	ON	ON	OFF	OFF	OFF
2.4V	OFF	OFF	ON	OFF	OFF
2.5V	ON	OFF	ON	OFF	OFF
2.6V	OFF	ON	ON	OFF	OFF
2.7V	ON	ON	ON	OFF	OFF
2.8V	OFF	OFF	OFF	ON	OFF
2.9V	ON	OFF	OFF	ON	OFF
3.0V	OFF	ON	OFF	ON	OFF
3.1V	ON	ON	OFF	ON	OFF
3.2V	OFF	OFF	ON	ON	OFF
3.3V	ON	OFF	ON	ON	OFF
3.4V	OFF	ON	ON	ON	OFF
3.5V	ON	ON	ON	ON	OFF

2). CPU Fan Installation

This connector is linked to the CPU fan. When the system is in suspend mode, the CPU fan will turn off; when it reverts back to full on mode, the fan will turn back on. Without sufficient air circulation, the CPU may overheat and cause damage to both the CPU and the mainboard.

NOTE: Damage may occur to the mainboard and/or the CPU fan if these pins are incorrectly used. These are not jumpers, do not place jumper caps over these pins.
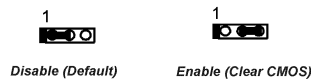
3). Front Panel Block Cable Connection

This connector is linked to the CPU fan. When the system is in suspend mode,

1. HDD LED
2. Power LED
3. Power switch
4. Message LED
5. Suspend switch
6. Reset switch
7. Speaker

4). Other Enabled/Disabled Jumpers

4.1 J5 (Clear CMOS if not Power On)

Disable (Default)   Enable (Clear CMOS)

4.2 J7 (Flash ROM Type Select)
J7 (Flash ROM Voltage Select)

12V   1   5V   1

5). Load BIOS Setup Default

Load BIOS Defaults

BIOS defaults contain the most appropriate values of the system parameters that allow minimum system performance. The OEM manufacturer may change the defaults through MODBIN before the binary image burns into the ROM.

Load Setup Defaults

Selecting this field loads the factory defaults for BIOS and Chipset Features which the system automatically detects.

6). How to Upgrade BIOS

1. Format a bootable system floppy diskette by typing **format a:/s** at the command prompt.
2. Visit the the web site of the vendor and visit the BIOS Update page in the related Technical Support section.
3. Select the BIOS file you need and download it to your bootable floppy diskette.
4. Insert the bootable diskette containing the BIOS file into the floppy diskette drive.
5. Assuming that the floppy diskette drive is A, reboot the system by using the A: drive. At the A: > prompt, run the BIOS upgraded file by executing the Flash BIOS utility and the BIOS file with its appropriate extension.

Do not turn off or reset the computer during the flash process or there will be a problem booting up your system.

Mainboard Layout
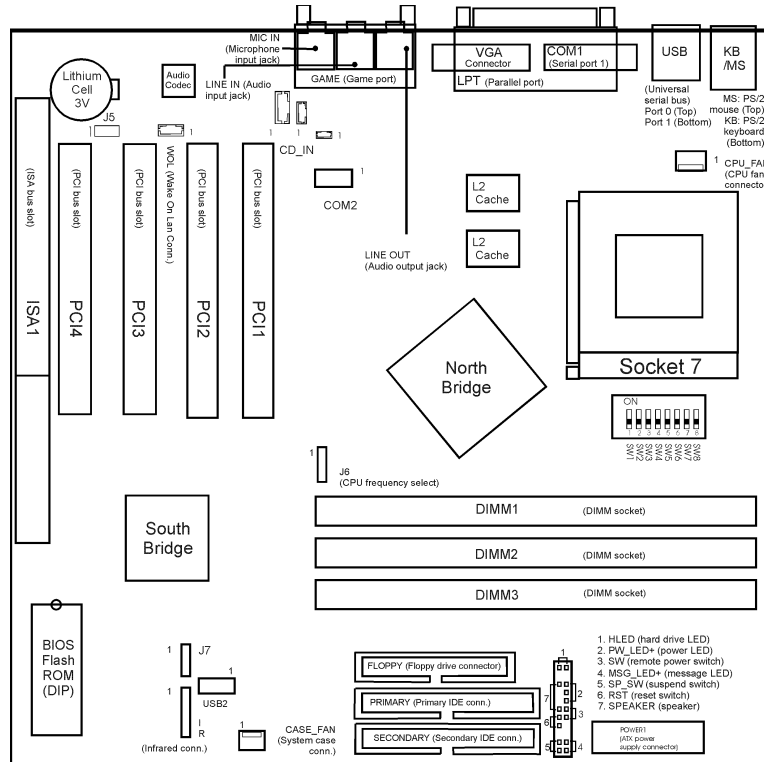
**Chapter 2
Installation
Procedures**

Onboard Mark	FUNCTION	PAGE
J5	Clear CMOS Data	2-9
J7	Flash ROM Type Selection	2-10
DIMM1/2/3	DIMM Memory Module Support	2-11
J6	CPU Internal Frequency Selection	2-14
SW1/2/3	CPU Ratio Selection	2-15
SW4/5/6/7/8	CPU to Bus Frequency Ratio Selection	2-16
PCI1/2/3/4	PCI Bus Expansion Slot (32-bit)	2-17
ISA1	ISA Bus Expansion Slot (16-bit)	2-17
FLOPPY	Floppy Diskette Drive Connector	2-18
PRIMARY, SECONDARY	IDE Device Connector	2-18
POWER	ATX Power Connector	2-19
CPU_FAN	CPU Fan Connector	2-20
WOL	Wake-On-LAN Connector	2-22
*Front Panel Block Connector	Connectors for LEDs and Switches on Front Panel	2-23
CASE_FAN	Power Supply Fan Connectors	2-24
KB	PS/2 Keyboard Connector	2-25
MS	PS/2 Mouse Connector	2-25
COM1/2	Serial Port	2-25
USB0/1/2	Universal Serial Bus Connector	2-26
IR	Infrared Port Module Connector	2-27
CD_IN	CD-ROM Drive Audio-out Connector	2-27
LPT	Printer Connector	2-28
GAME	Joystick/MIDI Connector	2-28
MIC IN	Audio Microphone Jack	2-29
LINE IN	Audio Line-In Jack	2-29
LINE OUT	Audio Line-Out Jack	2-29

* includes IDE LED, power LED, remote power button, message LED, suspend button, reset button and speaker (See Page 2-23 for more information.)

1). Set System Jumpers/Switches

Clear CMOS: J5

The CMOS RAM is powered by the onboard button cell battery. To clear the RTC data: (1). Turn off your computer, (2). Enable this feature by placing the jumper cap to 2-3 pins on J5, or (3). Disable this feature by placing the jumper cap to 1-2 pins on J5, (4). Turn on the computer, (5). Hold down the Delete key when boots and enter BIOS Setup to re-enter user preferences.

1

Disable (Default)

1

Enable (Clear CMOS)
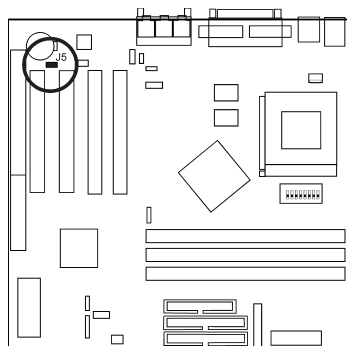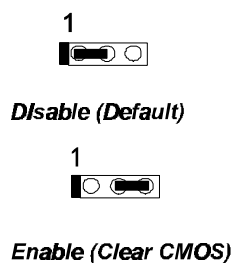
Flash ROM Type Selection: J7

This jumper allows you to configure the type of flash ROM chip. This jumper setting is correct by manufactory default. If you want to know the flash ROM type installed on this mainboard, remove the sticker from the chip to see its type.
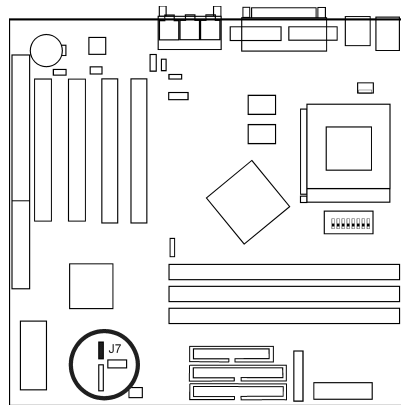
2). Install RAM Modules

RAM Module Configuration

PC100 modules may have a serial EEPROM containing a number of critical timing parameters and data regarding the chip and module vendor. This guarantees that the VIA MVP4 chipset will properly recognize the module by reading all of the important timing parameters specified in the EEPROM over the serial presence detect interface. The module supplier must understand these differences in detail and provide the correct information so that the VIA MVP4 chipset will be programmed properly to control the memory.

This mainboard provides three onboard DIMM sockets for allowing only 3.3V (unbuffered) SDRAM DIMM modules and supports DIMMs with data access time of 12ns, 10ns, 8ns or less. ECC memory and parity check are also supported. If DIMM runs at the speed of 100MHz, it must meet the PC100 Specification. Either 8, 16, 32, 64, 128MB, or 256MB DIMM can be installed on these three sockets. (Please use the same memory sizes of DIMM on each socket for better performance.) The maximum total memory supported is up to 768MB.

Socket	*Acceptable Memory Module*		*Total Memory*
1	8/16/32/64/128/256MB 168-pin 3.3V SDRAM	x1	
2	8/16/32/64/128/256MB 168-pin 3.3V SDRAM	x1	
3	8/16/32/64/128/256MB 168-pin 3.3V SDRAM	x1	

Total System Memory allowed up to 768MB   =

NOTE: The latest Virtual Channel Memory (VCM) SDRAM is also supported on this mainboard. Thus with the use of VCM-SDRAMs, memory performance can be greatly enhanced.

Install and Remove DIMMs

This mainboard supports 100MHz SDRAM DIMMs; when the system frequency set to 100MHz, PC100-compliant SDRAM should be used.

Complete the following procedures to install DIMMs:
1. Locate the DIMM slots on the mainboard.

Top View of DIMM Socket
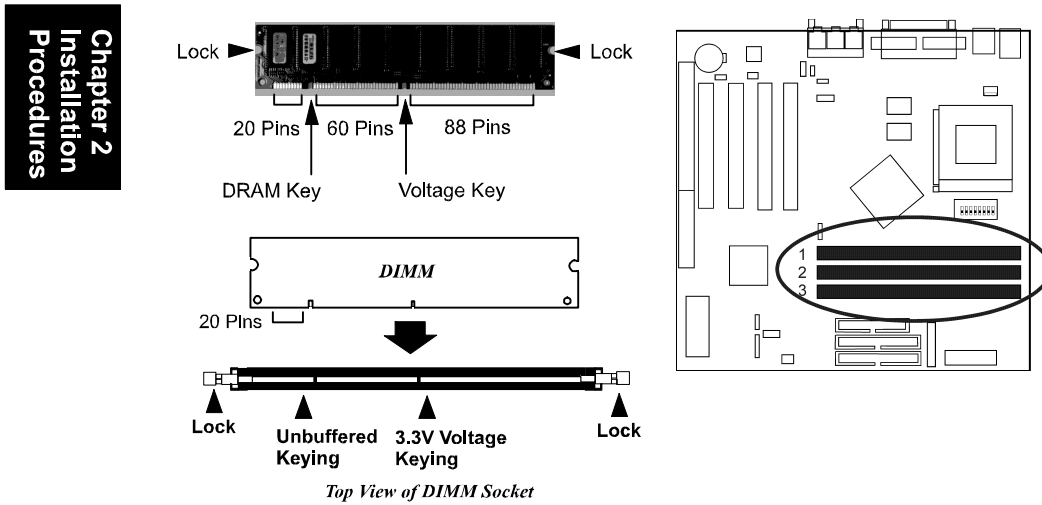
2. Install the DIMM straight down into the DIMM slot with both hands.

3. The clips of the slot will close up to hold the DIMM in place when the DIMM touches the slot's bottom.

Press the clips with both hands to remove the DIMM.

3). Install the CPU

The CPU module resides in the Zero Insertion Force (ZIF) socket on the motherboard.

PIN1

WARNING:
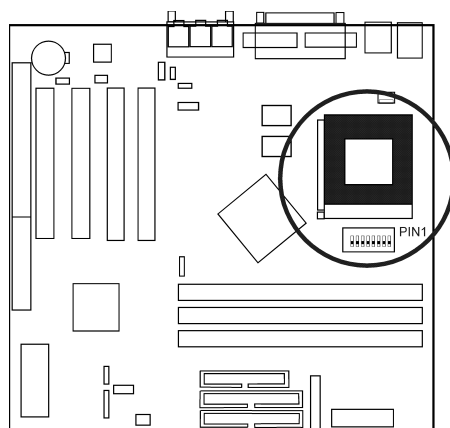1. Always turn the system power off before installing or removing any device.
2. Always observe static electricity precautions.
3. See "Handling Precautions" at the start of this manual.
Inserting the CPU chip incorrectly may damage the chip.

To install the CPU, do the following:
1. Lift the lever on the side of the CPU socket.
2. Handle the chip by its edges and try not to touch any of the pins.
3. Place the CPU in the socket. The chip has a notch to correctly locate the chip. Align the notch with pin one of the socket. Pin one is located in the blank triangular area. Do not force the chip. The CPU should slide easily into the socket.
4. Swing the lever to the down position to lock the CPU in place.

CPU Internal Frequency Selection: J6

These eight pins in four rows are used to decide the internal frequency of the CPU.
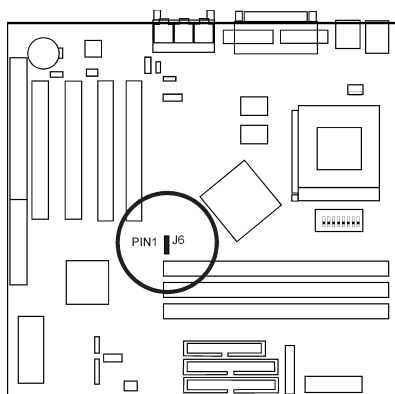
Note: ON is short;   OFF is open

CPU (MHz)	PCI (MHz)	1-2	3-4	5-6	7-8
124.00	41.33	ON	ON	ON	ON
120.00	40.00	OFF	ON	ON	ON
114.99	38.33	ON	OFF	ON	ON
109.99	36.66	OFF	OFF	ON	ON
105.00	35.00	ON	ON	OFF	ON
100.00	33.33	ON	ON	ON	OFF
97.00	32.33	OFF	OFF	ON	OFF
83.31	27.77	ON	OFF	ON	OFF
75.00	37.50	OFF	OFF	OFF	ON
70.00	35.50	OFF	ON	OFF	OFF
66.82	33.41	ON	OFF	OFF	OFF
60.00	30.00	OFF	OFF	OFF	OFF

CPU Ratio Selection: SW1/2/3

These three switches are used in combination to decide the ratio of the internal frequency of the CPU to the bus clock.
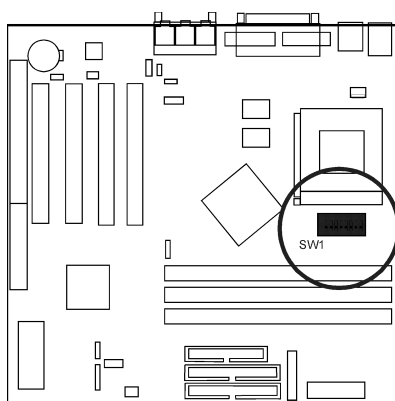
Ratio	SW1	SW2	SW3
1.5/3.5 x	OFF	OFF	OFF
2.0 x	ON	OFF	OFF
2.5 x	ON	ON	OFF
3.0 x	OFF	ON	OFF
4.0 x	ON	OFF	ON
4.5 x	ON	ON	ON
5.0 x	OFF	ON	ON
5.5 x	OFF	OFF	ON

CPU Core Voltage Selection: SW4/5/6/7/8

This section lists all possible CPU voltages that this board supports. There are five rows of CPU voltage (core voltage) switch setting in the diagram below.

CLOCK (MHz)	SW4	SW5	SW6	SW7	SW8
2.1V	ON	OFF	OFF	OFF	OFF
2.2V	OFF	ON	OFF	OFF	OFF
2.3V	ON	ON	OFF	OFF	OFF
2.4V	OFF	OFF	ON	OFF	OFF
2.5V	ON	OFF	ON	OFF	OFF
2.6V	OFF	ON	ON	OFF	OFF
2.7V	ON	ON	ON	OFF	OFF
2.8V	OFF	OFF	OFF	ON	OFF
2.9V	ON	OFF	OFF	ON	OFF
3.0V	OFF	ON	OFF	ON	OFF
3.1V	ON	ON	OFF	ON	OFF
3.2V	OFF	OFF	ON	ON	OFF
3.3V	ON	OFF	ON	ON	OFF
3.4V	OFF	ON	ON	ON	OFF
3.5V	ON	ON	ON	ON	OFF

4). Install Expansion Cards

This section describes how to connect an expansion card to one of your system's expansion slots. Expansion cards are printed circuit boards that, when connected to the mainboard, increase the capabilities of your system. For example, expansion cards can provide video and sound capabilities. This mainboard features one 16-bit ISA bus, and four 32-bit PCI bus expansion slots.
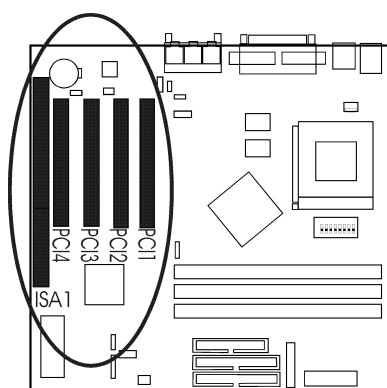
To install an expansion card, do the following:

1. Remove the computer chassis cover and select an empty expansion slot.

2. Remove the corresponding slot cover from the computer chassis. Unscrew the mounting screw that secures the slot cover and pull the slot cover out from the computer chassis. Keep the slot cover mounting screw nearby.

3. Holding the edge of the peripheral card, carefully align the edge connector with the expansion slot.

4. Push the card firmly into the slot. Push down on one end of the expansion card, then the other. Use this "rocking" motion until the add–on card is firmly seated inside the expansion slot.

5. Secure the board with the mounting screw removed in Step 2. Make sure that the card has been placed evenly and completely into the expansion slot.

6. Replace the computer system's cover.

7. Setup the BIOS if necessary.

8. Install the necessary software drivers for the expansion card.

5). Connect Devices

Connectors to Internal Devices

Floppy Diskette Drive Connector: FLOPPY

This connector provides the connection with your floppy disk drive.
The red stripe of the ribbon cable must be the same side with the Pin 1.
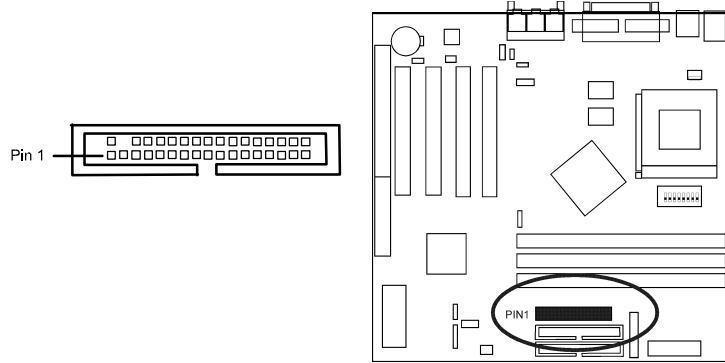
IDE HDD Device Connectors: PRIMARY, SECONDARY

These two connectors are used for your IDE hard disk drives, CD drives, LS-120 drives, or IDE ZIP drives.
The red stripe of the ribbon cable must be the same side with the Pin 1.
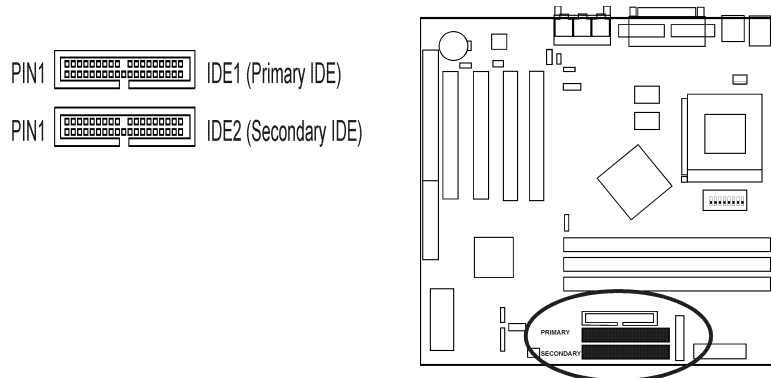
ATX Power Connector: POWER

This connector is connected to the ATX power supply.
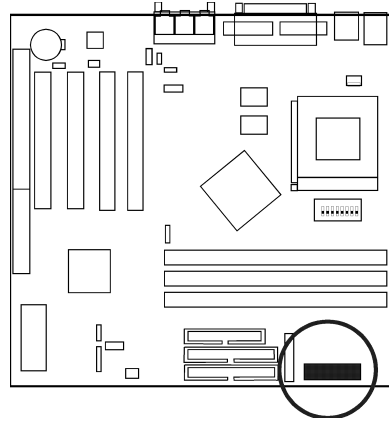
CPU Fan Connector: CPU_FAN

This connector is linked to the CPU fan for cooling the processor temperature. When the system enters the suspend mode, the CPU fan will shut off. Please read the CPU fan installation guide before connection.

WARNING: (Especially for AMD K6-2/III CPUs)
Higher performance processor and mainboards require better heatsinks to solve increasingly crucial thermal dissipation issue.
Please check the   following   website   for   AMD recommended list of thermal solution providers.
http://www1.amd.com/products/cpg/thermals/

Please make sure that you use proper cooling equipment to ensure the health and performance of your system. (Please read next page for further information.)
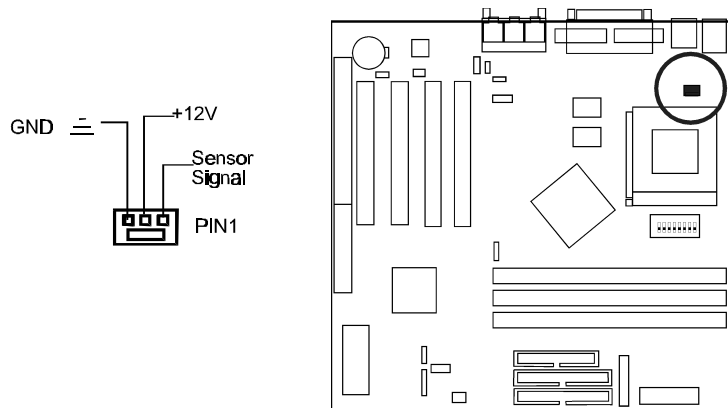
The table below was partly abstracted from the above-mentioned website for your convenience.

Manufacture	Contact Tel No.	Manufacture	Contact Tel No.
A & P Technology	408-260-9876	PC Power&Cooling	760-931-5700
Aavid	603-666-4100	Pentalpha Group	510-656-7100 886-2-8665-3248
ACT-RX	512-333-2375 886-2-2218-8000	Quality Computers	626-960-1933 626-337-5025
AVC	310-783-5480 886-2-2299-6929	RSI	512-386-7500
Cofan	510-490-7533	Siblings Investment	510-668-0368
Cooler Master	510-770-8566	Spring Spread	886-2-2847-3050
Coolsys	512-452-2100	Suria Computer	949-851-0596
Cosmotech Computer Corp.	913-888-7000 886-2-2207-0318 909-598-8188	TelTec	612-854-9177
Dynatron	510-498-8888 886-2-2881-8199	TennMax	781-944-3293 886-2-2695-4137
Elan Vital	886-3-460-2910	Thermalloy	972-243-4321
Global Win	408-747-1349 886-2-2881-7388	Titan	626-930-1822
Hoshino	408-526-1200 81-2-7778-6141	Tsuyama Kabushiki	408-526-1200
Jetart Tech	886-2-2695-2398	Wakefield	781-406-3071
Micro Labs	626-810-8100		

Wake-On-LAN Connector: WOL

This 3-pin connector allows remote LAN servers to manage the system that installed this mainboard via a network adapter that also supports WOL. When you install a adapter with WOL connector, please read the network adapter card's installation guide for details.
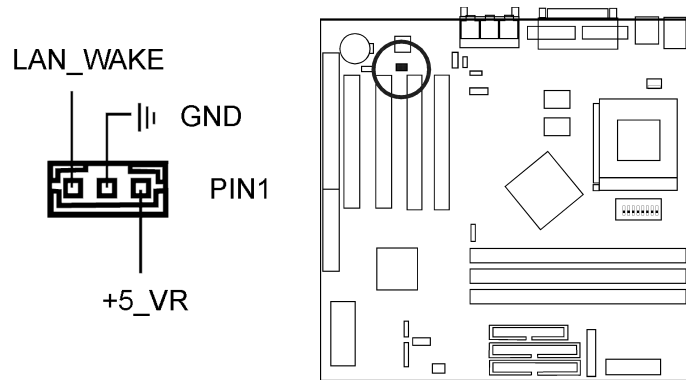
Connectors to System Case

Front Panel Block Connector

This block connector concludes the connectors for linking with IDE LED, power LED, remote power button, message LED, suspend button, reset button and speaker on the front panel of the system case. Please identify polarities of plug wires for the case speaker and LEDs. Please ask vendor about this information when you buy them and install the system by yourself. The plug wires' polarities of this buttons will not affect the function.
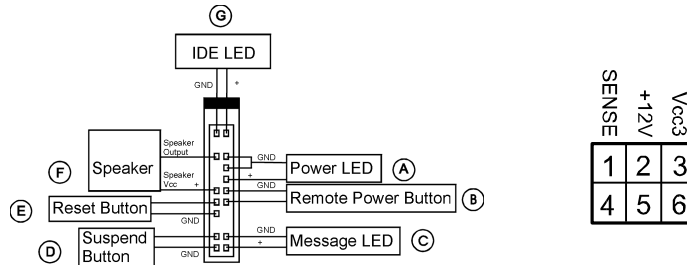
Power LED (A) is connected with the system power indicator to indicate whether the system is on/off. When the system enter the suspend mode, it blinks.

Remote Power Button (B) is connected with remote power (soft power) switch. Push this switch will turn off and on the system instead of turning the power switch on the power supply.

Message LED (C) is connected with the message LED. When the system is running normally, the indicator is off. It is controlled by the operating system or application software.

Suspend Button (D) is connected with suspend mode switch.

Reset Button (E) is connected to the reset switch. Push this switch to reboot the system instead of turning power switch off and on.

Speaker (F) is connected with the case speaker.

IDE LED (G) is connected IDE device indicator. This LED will blink when the hard disk drives are activated.

System Case Fan Connector: CASE_FAN

This 3-pin connector links to your cooling fan on the system case to lower the system temperature.
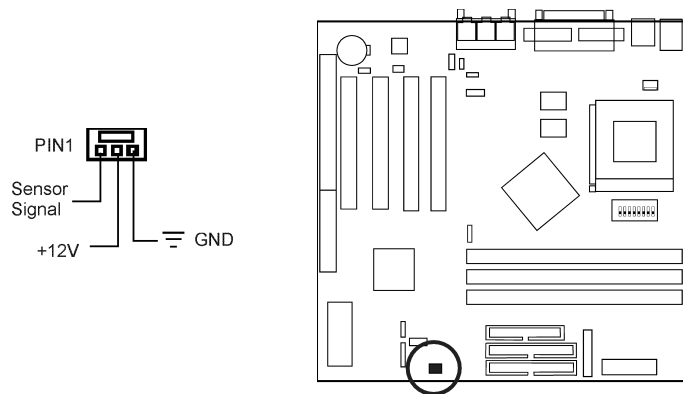
Connectors to External Devices

PS/2 Keyboard and Mouse Connector: KB, MS

These two 6-pin female connectors are used for your PS/2 keyboard and PS/2 mouse.
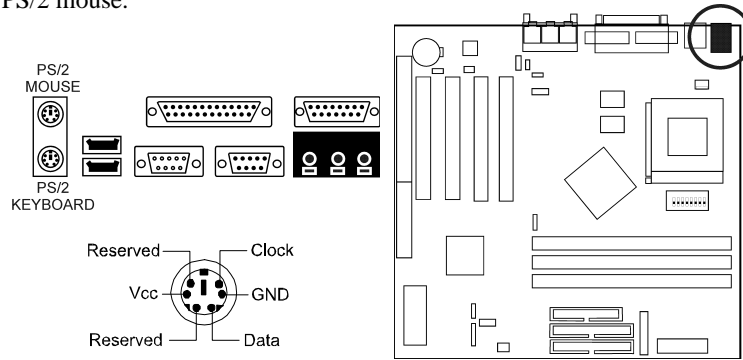
Serial Port Connectors: COM1, COM2

The COM1 9-pin D-Sub male connector allows you to connect devices that use serial ports, such as a serial mouse or a modem. The additional ribbon cable with 9-pin D-Sub male connector is used for connecting to COM2.
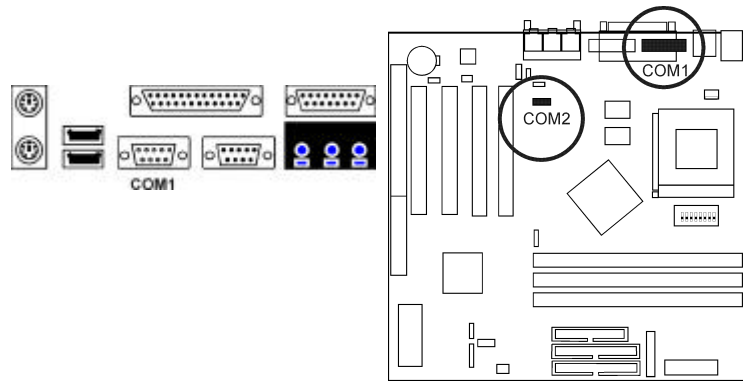
Universal Serial Bus Connectors: USB0, USB1, USB2

These two connectors that integrated on the edge of the board are used for linking with USB peripheral devices. Also, this board provides an connector USB2 for linking with the USB socket on the front panel of some system cases. If this connector is onboard and is used, the USB0 connector is disabled. Your operating system must support USB features, such as MS Windows 98, MS Windows 95 OSR2.5 with USB Supplement.
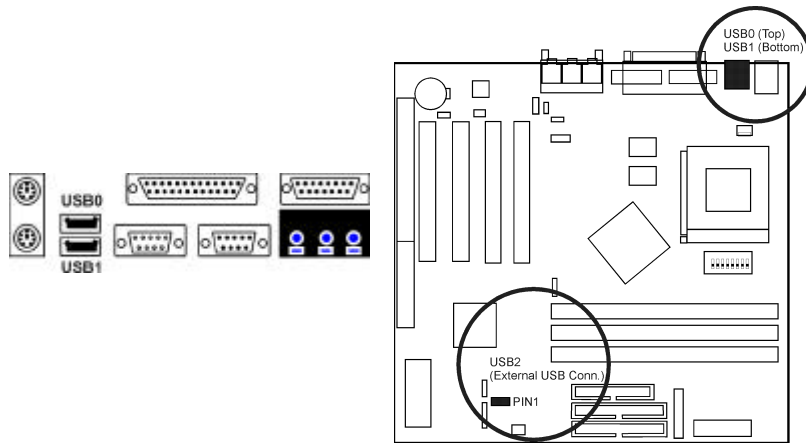
The figure below is the pin assignment of the manufacturing optional USB2 connector for front panel USB connection.
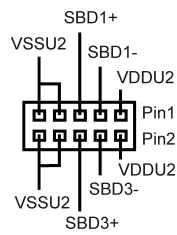
Infrared Connector: IR

This 5-pin connector is used to link with your IR device.
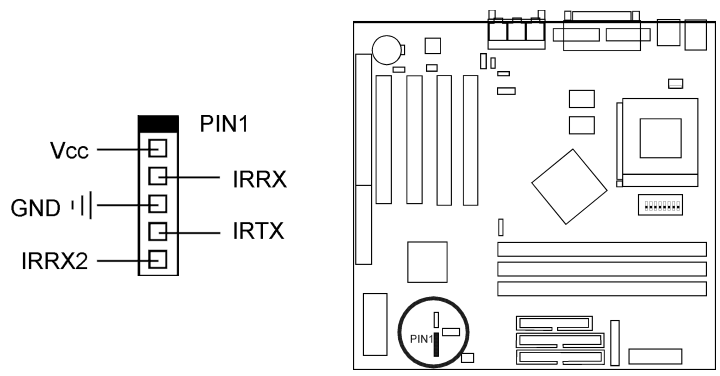
CD-ROM Drive Audio-out Connector: CD_IN

These 4-pin block connectors are linked to the AUDIO_OUT port of your CD-ROM drive by a cable which comes with it. Read the CD-ROM drive manual for detailed installation instructions.
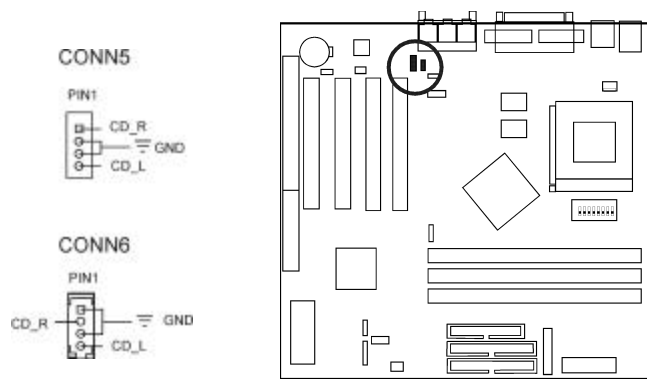
Printer Connector: LPT

This 25-pin D-Sub female connector is attached to your printer.

PRINTER
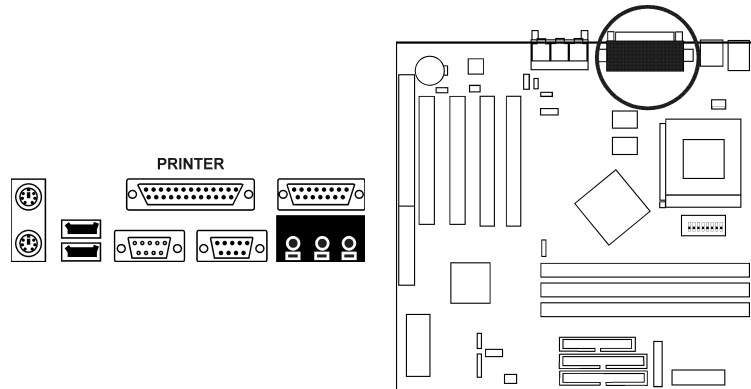
Joystick/MIDI Connector: GAME

This 15-pin female connector allows you to connect game joysticks or game pads for playing games. Connect MIDI devices for playing or editing audio.

GAME/MIDI
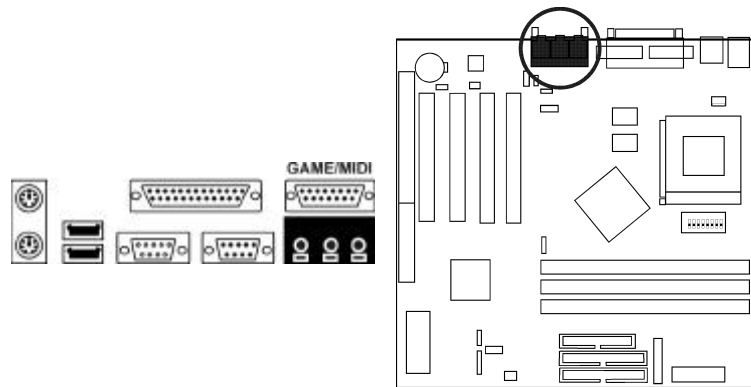
Audio I/O Jacks: MIC IN, LINE IN, LINE OUT

LINE OUT can be connected to headphones or preferably powered speakers. LINE IN allows tape players or other audio sources to be recorded by your computer or played through LINE OUT. MIC IN allows microphones to be connected for input voice.
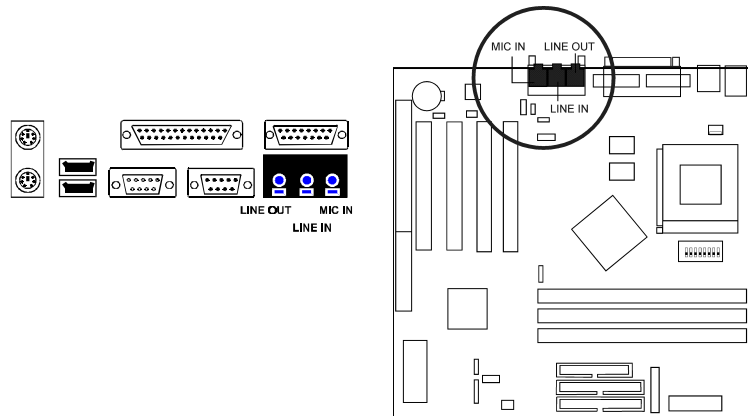
NOTE: The mainboard does not support Pre-AMP function. An external amplifier is necessary for LINE OUT.

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**Chapter 2
Installation
Procedures**

BIOS Setup

The mainboard comes with an Award BIOS chip that contains the ROM Setup information of your system. This chip serves as an interface between the processor and the rest of the mainboard's components. This section explains the information contained in the Setup program and tells you how to modify the settings according to your system configuration.

CMOS Setup Utility

```
                    ROM PCI/ISA BIOS (2A5LHF0A)
                         CMOS SETUP UTILITY
                        AWARD SOFTWARE, INC.

      STANDARD CMOS SETUP              INTEGRATED PERIPHERALS

      BIOS FEATURES SETUP              SUPERVISOR PASSWORD

      CHIPSET FEATURES SETUP          USER PASSWORD

      POWER MANAGEMENT SETUP          IDE HDD AUTO DETECTION

      PNP/PCI CONFIGURATION           SAVE & EXIT SETUP

      LOAD BIOS DEFAULTS              EXIT WITHOUT SAVING

      LOAD SETUP DEFAULTS

    Esc : Quit                    ↑ ↓ → ←  : Select Item
    F10 : Save & Exit Setup       (Shift)F2 : Change Color
```

A Setup program, built into the system BIOS, is stored in the CMOS RAM. This Setup utility program allows changes to the mainboard configuration settings. It is executed when the user changes system configuration; user changes system backup battery; or the system detects a configuration error and asks the user to run the Setup program. Use the arrow keys to select and press Enter to run the selected program. The **F5: Menu in BIOS** is a convenient feature for users to refer the board settings in this BIOS top level menu.

Standard CMOS Setup

```
                  ROM PCI/ISA BIOS (2A5LHF0A)
                      STANDARD CMOS SETUP
                     AWARD SOFTWARE, INC.

    Date (mm:dd:yy) : Mon, Apr 12 1999
    Time (hh:mm:ss) : 15 : 27 : 22

    HARD DISKS          TYPE   SIZE   CYLS HEAD PRECOMP LANDZ SECTOR  MODE

    Primary Master   :    0      0      0    0      0     0       0 NORMAL
    Primary Slave    :    0      0      0    0      0     0       0 NORMAL
    Secondary Master :    0      0      0    0      0     0       0 NORMAL
    Secondary Slave  :    0      0      0    0      0     0       0 NORMAL

    Drive A : None
    Drive B : None                           Base Memory:    640K
    Floppy 3 Mode Support : Disabled     Extended Memory: 31744K
                                            Other Memory:    384K
    Video   : EGA/VGA
    Halt On : All Errors                    Total Memory: 32768K

    ESC : Quit              ↑ ↓ → ←  : Select Item    PU/PD/+/- : Modify
    F1  : Help             (Shift)F2 : Change Color
```

The Standard CMOS Setup screen is displayed above. Each item may have one or more option settings. The system BIOS automatically detects memory size, thus no changes are necessary. 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.

Hard Disk Configurations

TYPE: Select User to fill the remaining fields. Select Auto to detect the HDD type automatically (recommended).

SIZE: The hard disk size. The unit is Mega Bytes.

CYLS: The cylinder number of the hard disk.

HEAD: The read/write head number of hard disk.

PRECOMP: The cylinder number at which the disk drive changes the write current.

LANDZ: The cylinder number that the disk drive heads (read/write) are seated when the disk drive is parked.

SECTOR: The sector number of each track defined on the hard disk.

MODE: Select Auto to detect the mode type automatically. If your hard disk supports the LBA mode, select LBA or Large. However, if your hard disk cylinder is more than 1024 and does not support the LBA function, set at Large. Select Normal if your hard disk supporting cylinders is below 1024.

Floppy 3 Mode Support
This feature allows you to install a 3.5" (1.2MB) NEC 9801 floppy drive.
The options are: Disabled (Default), Drive A.

Software Turbo Speed
The BIOS supports Software Turbo Speed feature. Instead of pressing the Turbo Speed Button on the front panel, simply press the **Alt, Ctrl, and** + keys at the same time to enable the Turbo Speed feature; and press the **Alt, Ctrl, and -** keys at the same time to disable the feature.

**Chapter 3
BIOS Setup**

BIOS Features Setup

```
                    ROM PCI/ISA BIOS (2A5LHF0A)
                         BIOS FEATURES SETUP
                         AWARD SOFTWARE, INC.
 ┌─────────────────────────────────────────────────────────────────────┐
 │ Anti-Virus Protection     : Enabled    Video  BIOS Shadow  : Enabled │
 │ CPU Internal Cache        : Enabled    Cyrix 6x86/MII CPUID: Enabled │
 │ External Cache            : Enabled                                   │
 │ Quick Power On Self Test  : Enabled                                   │
 │ Boot From LAN First       : Enabled                                   │
 │ Boot Sequence             : A,C,SCSI                                  │
 │ Swap Floppy Drive         : Disabled                                  │
 │ Boot Up Floppy Seek       : Enabled                                  │
 │ Boot Up NumLock Status    : On                                       │
 │ Gate A20 Option           : Fast                                     │
 │ Memory Parity/ECC Check   : Disabled                                 │
 │ Typematic Rate Setting    : Disabled                                 │
 │ Typematic Rate (Chars/Sec): 6                                        │
 │ Typematic Delay (Msec)    : 250                                      │
 │ Security Option           : Setup      ┌─────────────────────────────│
 │ PCI/VGA Palette Snoop     : Disabled   │ESC : Quit       ↑↓→← : Select Item│
 │ OS Select For DRAM > 64MB : Non-OS2    │F1  : Help       PU/PD/+/- : Modify│
 │ HDD S.M.A.R.T. capability : Enabled    │F5  : Old Values  (Shift)F2 : Color│
 │ Report No FDD For WIN 95  : Yes        │F6  : Load BIOS  Defaults          │
 │                                        │F7  : Load Setup Defaults          │
 └─────────────────────────────────────────────────────────────────────┘
```

Anti-Virus Protection

This feature starts the virus scan tool to detect if boot virus in boot sector of the first hard disk drive when booting up.
The options are: Enabled (Default), Disabled.

CPU Internal Cache

When enabled, improves the system performance. Disable this item when testing or trouble-shooting. The options are: Enabled (Default), Disabled.

External Cache

When enabled, supports an optional cache SRAM. This feature allows you to disable the cache function when the system performance is unstable to run some software. The options are: Enabled (Default), Disabled.

Quick Power On Self Test

When enabled, allows the BIOS to bypass the extensive memory test. The options are: Disabled, Enabled (Default).

Boot From LAN First

This feature makes the system bootable by the remote server via LAN. The options are: Disabled, Enabled (Default).

Boot Sequence

Allows the system BIOS to first try to boot the operating system from the selected disk drive. The options are: A, C, SCSI (Default); C, A, SCSI; C, CDROM, A; CDROM, C, A; D, A, SCSI; E, A, SCSI; F, A, SCSI; SCSI, A, C; SCSI, C, A; C Only; LS/ZIP, C.

Swap Floppy Drive

Allows you to switch the order in which the operating system accesses the floppy drives during boot up. The options are: Enabled, Disabled (Default).

Boot Up Floppy Seek

When enabled, assigns the BIOS to perform floppy diskette drive tests by issuing the time-consuming seek commands. The options are: Enabled (Default), Disabled.

Boot Up Numlock Status

When set to On, allows the BIOS to automatically enable the Num Lock Function when the system boots up. The options are: On (Default), Off.

Gate A20 Option

When set at Fast, allows a faster access response under Protected mode.
The options are: Normal, Fast (Default).

Memory Parity Check

This feature enables BIOS to perform automatic memory checking upon detection of ECC or parity DRAM. The options are: Disabled (Default), Enabled.

Typematic Rate Setting

The term typematic means that when a keyboard key is held down, the character is repeatedly entered until the key is released.
The options are: Disabled (Default), Enabled.

Typematic Rate (Chars/Sec)

This feature is available only if the above item, Typematic Rate Setting, is set at Enabled. Sets the rate of a character repeat when the key is held down.
The options are: 6 (Default), 8, 10, 12, 15, 20, 24, 30.

Typematic Delay (Msec)

This feature is available only if the item, Typematic Rate Setting, is set at Enabled. Sets the delay time before a character is repeated.
The options are: 250 (Default), 500, 750, 1000 millisecond.

Security Option

Allows you to set the security level of the system.
The options are: Setup (Default), System.

PCI/VGA Palette Snoop

Set this feature to be enabled if any ISA adapter card installed in the system requires the VGA palette snoop function.
The options are: Disabled (Default), Enabled.

OS Select For DRAM > 64MB

If your operating system (OS) is OS/2, select the option OS2. Otherwise, stay with the default setting Non-OS2.
The options are: Non-OS2 (Default), OS2.

HDD S.M.A.R.T. Capability

S.M.A.R.T. stands for Self-Monitoring and Analysis Reporting Technology which allows your hard disk drive to report any read/write errors and issues a warning with LDCM installed.
The options are: Disabled; Enabled (Default).

Report No FDD For WIN 95

When the field under the Standard CMOS Setup Menu for Drive A and/or Drive B is set at None, users must set this field is set at Yes for it to function properly. Otherwise, set at No, even if field for Drive A and/or Drive B is set at None, system will still detect and recognize of a floppy drive(s).

The options are: No, Yes (Default).

Video BIOS Shadow

Allows the BIOS to copy the video ROM code of the add-on video card to the system memory for faster access.

The options are: Enabled (Default), Disabled.

Cyrix 6x86/MII CPUID

For Cyrix 6x86/MII CPU the system cannot install Netware 5.0 if CPUID is enabled. Software cannot use MMX instructions if CPUID is disabled.

The options are: Enabled (Default), Disabled.

**Chapter 3
BIOS Setup**

Chipset Features Setup

```
                    ROM PCI/ISA BIOS (2A5LHF0A)
                       CHIPSET FEATURES SETUP
                        AWARD SOFTWARE, INC.
┌────────────────────────────────────┬──────────────────────────────────┐
│ Bank 0/1 DRAM Timing  : SDRAM 10ns  │ Auto Detect DIMM/PCI Clk : Enabled│
│ Bank 2/3 DRAM Timing  : SDRAM 10ns  │ Spread Spectrum          : Enabled│
│ Bank 4/5 DRAM Timing  : SDRAM 10ns  │ CPU Host Clock (CPU/PCI) : Default│
│ SDRAM  Cycle Length   : 3           │ Current CPU Temp.        :        │
│ DRAM Read Pipeline    : Enabled     │ Current System Temp.     :        │
│ Sustained 3T Write    : Enabled     │ Current CPUFAN1 Speed    :        │
│ Cache R/CPU W Pipeline: Enabled     │ Current CPUFAN2 Speed    :        │
│ Cache Timing          : Fast        │ Vcore :          2.5V :           │
│ Video BIOS  Cacheable : Enabled     │  3.3V :           5V :            │
│ System BIOS Cacheable : Enabled     │   12V :                           │
│ Memory Hole           : Disabled    │                                  │
│ Init Display First    : PCI Slot    │                                  │
│ Frame Buffer Size     : 8M          │                                  │
│ AGP Aperture Size     : 64M         │                                  │
│ Fan On/Off On Suspend : OFF         │                                  │
│ OnChip USB            : Enabled     │ ESC : Quit        ↑↓→← : Select Item│
│ OnChip USB 2          : Enabled     │ F1  : Help      PU/PD/+/- : Modify │
│ USB Keyboard Support  : Disabled    │ F5  : Old Values  (Shift)F2 : Color│
│ OnChip Sound          : Enabled     │ F6  : Load BIOS  Defaults          │
│                                     │ F7  : Load Setup Defaults          │
└────────────────────────────────────┴──────────────────────────────────┘
```

Bank 0/1 DRAM Timing; Bank 2/3 DRAM Timing;
Bank 4/5 DRAM Timing;

This feature allows you to select the DRAM read/write speed. The options are: SDRAM 10ns (Default), SDRAM 8ns, Normal, Medium, Fast, Turbo.

SDRAM Cycle Length

This item allows you to set the CAS latency timing.
The options are: 3 (Default), 2.

DRAM Read Pipeline

When enabled, it makes the data read speed from memory modules to cache RAMs faster. The options are: Enabled (Default), Disabled.

Sustained 3T Write

When enabled, allows the CPU to compele the memory writes in 3 clocks.
The options are: Enabled (Default), Disabled.

Cache R/CPU W Pipeline

When enabled, it makes the cache RAMs read and the data write to CPU faster.
The options are: Enabled (Default), Disabled.

Cache Timing

The feature allows users to select the cache timing.
The options are: Fast (Default); Fastest.

Video BIOS Cacheable

As with caching the System BIOS above, enabling the Video BIOS cache will cause access to the video BIOS addressed at C0000H to C7FFFH to be cached, if the cache controller is also enabled.
The options are: Disabled, Enabled (Default).

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 options are: Disabled, Enabled (Default).

Memory Hole

You can reserve this area of system memory for ISA adapter ROM. When this area is reserved, it cannot be cached. The user information peripherals that need to use this area of system memory usually discusses their memory requirements. The options are: Disabled (Default); Enabled.

Init Display First

When you install an AGP VGA card and/or a PCI VGA card on the board, this feature allows you to select the first initiation of the monitor display from which card. The options are: PCI Slot (Default), AGP.

Frame Buffer Size

This option allows you to specify the frame biffer size of the AGP VGA card and/or PCI VGA card on the board.
The options are: 8M (Default), 4M, NA.

AGP Aperture Size

It allows you to select the main memory frame size fo AGP use.
The options are 128, 4, 8, 16, 32, 64M (Default).

Fan On/Off On Suspend

It allows you to turn off system fan when is suspend mode.
The options are OFF (Default), ON.

OnChip USB

When enabled, this feature allows you to use the onboard USB feature. The options are: Enabled (Default), Disabled.

OnChip USB2

When enabled, this feature allows you to use the onboard USB2 feature. The options are: Enabled (Default), Disabled.

USB Keyboard Support

This feature will appear only if the above item Onchip USB is set at Enabled. Set this feature to Enabled to use a USB keyboard with your system. The options are: Disabled (Default), Enabled.

OnChip Sound

When set at Enabled, this feature activated the onboard audio feature. The options are: Enabled (Default), Disabled.

Auto Detect DIMM/PCI Clk

Set this field at Enabled to allow auto detection of DIMM clock speed.
The options are: Enabled (Default), Disabled.

Spread Spectrum

This feature is used to set the spread Spectrum to be center spread type or down spread type.
The options are: Disabled, Enabled (Default).

CPU Host Clock

Select *Default* or select a timing combination for the CPU and the PCI bus. When set to *Default*, BIOS uses the actual CPU and PCI bus clock values.
The options are: Default (Default), 60/30 MHz, 66/33 MHz, 70/35 MHz, 75/25 MHz, 75/37 MHz, 80/26 MHz, 80/40 MHz, 83/27 MHz, 83/41 MHz, 95/31 MHz, 100/33 MHz, 105/35 MHz, 110/36 MHz, 115/38 MHz, 120/40 MHz.

Current CPU Temp. / Current System Temp. / Current CPUFAN1 Speed / Current CPUFAN2 Speed/ Vcore / 3.3V /12V / 5V

These items allow end users and technicians to monitor data provided by the BIOS on this mainboard. It is not user-configurable.

Chapter 3
BIOS Setup

Power Management Setup

Power Management

This item allows you to adjust the power management features. Select Disable for disabling global power management features. Select User Defined for configuring your own power management features.

MIN Saving initiates all predefined timers in their minimum values. MAX Saving, on the other hand, initiates maximum values. The options are: User Define (Default), MIN Saving, MAX Saving.

PM Control by APM

The option No allows the BIOS to ignore the APM (Advanced Power Management) specification. Selecting Yes will allow the BIOS wait for APM's prompt before it enters Doze mode, Standby mode, or Suspend mode. If the APM is installed, it will prompt the BIOS to set the system into power saving mode when all tasks are done. The options are: No, Yes (Default).

Video Off Method

The Option V/H SYNC+Blank allows the BIOS to blank off screen display by turning off the V-Sync and H-Sync signals sent from

add-on VGA card. DPMS Supported allows the BIOS to blank off screen display by your add-on VGA card which supports DPMS (Display Power Management Signaling function). Blank Screen allows the BIOS to blank off screen display by turning off the red-green-blue signals. The options are: V/H SYNC/Blank, DPMS Support (Default), Blank Screen.

Video Off After

This feature allows you to select under which mode to power off your monitor.
The options are: Doze, NA, Suspend (Default).

MODEM Use IRQ

This feature allows you to select the IRQ# of the system that is the same IRQ# as the modem use.
The options are: NA, 3 (Default), 4, 5, 7, 9, 10, 11.

Doze Mode

When disabled, the system will not enter Doze mode. The specified time option defines the idle time the system takes before it enters Doze mode.
The options are: Disable (Default), 10, 20, 30, 40 Sec, 1, 2, 4, 6, 8, 10, 20, 30, 40 Min, 1 Hr.

Suspend Mode

When disabled, the system will not enter Suspend mode. The specified time option defines the idle time the system takes before it enters Suspend mode. The options are Disable (Default), 10, 20, 30, 40 Sec, 1, 2, 4, 6, 8, 10, 20, 30, 40 Min, 1 Hr.

HDD Power Down

Selecting Disable will turn off the hard disk drive (HDD) motor. Selecting 1 Min..15 Min allows you define the HDD idle time before the HDD enters the Power Saving Mode. The option When Suspend lets the BIOS turn the HDD motor off when system is in Suspend mode.

The options 1 Min..15 Min and When Suspend will not work concurrently. When HDD is in the Power Saving Mode, any access to the HDD will wake the HDD up.
The options are: Disable (Default), 1 Min..15 Min.

Soft-Off By PWR-BTTN

This item is designed for the system case that uses an ATX power supply. The option Delay 4 Sec. allows the system to have a power-off delay of 4 seconds upon pressing the power button. The option Instant-Off allows the system to shutdown immediately upon pressing the power button.
The options are: Delay 4 Sec., Instant-Off (Default).

PWRON After PWR-Fail

When the system is shut down owing to the power failure, the system will not be back to power on by itself. This feature allows you to set the system back to which power status of the system when the system power is resumed.
The options are Former-Sts (Default), Off, On.

VGA

ON enables the power management timers when a no activity events is detected in the VGA. *OFF* disables the PM timer even if a no activity event is detected. The options are: OFF (Default), ON.

LPT & COM

LPT/COM enables the power management timers when a no activity event is detected in the LPT and COM ports. *LPT (COM)* enables the power management timers when a no activity event is detected in the LPT (COM) ports. *NONE* to disable the PM timer even if a no activity event is detected. The options are: LPT/COM (Default), LPT, COM, NONE.

HDD & FDD

ON will enable the power management timers when no activity event is detected in the hard drive and floppy drive. *OFF* disables

the PM timer even if no activity event is detected. The options are: OFF, ON (Default).

PCI/master

To set this feature at ON activates that Power Management feautre (PM) wake-up event for the DMA or bus master (of the LAN card or/and SCSI card). The options are: OFF (Default), ON.

RTC Alarm Resume

Enabled allows you to set the time the system will be turned on from the system power-off status. The options are: Enabled, Disabled (Default).

Wake Up On LAN/Ring

When set at Enabled, an input signal comes from the other client/server on the LAN awakes the system from a soft off state if connected over LAN.
The options are Disabled or Enabled (Default).

Primary INTR

Whe the Primary interrupt (the Primary option in the featuer of IRQ# Activity) generates will make the Power Management feautre (PM) wake-up event on. If set at OFF, all the primary interrupt will not wake-up the systetm. The options are: OFF, ON (Default).

IRQ# Activity

After the time period which you set at in Suspend Mode Feature, the system advances from Doze Mode to Suspend Mode in which the CPU clock stops and the screen display is off. At this moment, if the IRQ activity which is defined as Primary occurs, the system goes back to Full-on Mode directly.
If the IRQ activity which is defined as Secondary takes place, the system enters another low power state, Dream Mode, in which the system will act as Full-on Mode except that the screen display remains off until the corresponding IRQ handler finishes, then back to Suspend Mode.

The options for IRQ 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 14, 15 are: Primary, Secondary, Disabled. The default value for IRQ 8, 15 is: Disabled.
The default value for IRQ 3, 4, 5, 6, 7, 12, 13, 14 is: Primary.
The default value for IRQ 9, 10, 11 is: Secondary.

PNP/PCI Configuration

```
                      ROM PCI/ISA BIOS (2A5LHF0A)
                         PNP/PCI CONFIGURATION
                          AWARD SOFTWARE, INC.

 PNP OS Installed        : No      CPU to PCI Write Buffer: Enabled
 Resources Controlled By : Auto    PCI Dynamic Bursting   : Enabled
 Reset Configuration Data : Disabled PCI Master 0 WS Write  : Enabled
                                    PCI Delay Transaction  : Disabled
                                    PCI#2 Access #1 Retry  : Enabled
                                    AGP Master 1 WS Write  : Disabled
                                    AGP Master 1 WS Read   : Disabled
                                    Assign IRQ For USB  : Enabled
                                    Assign IRQ For VGA  : Enabled
                                    Assign IRQ For ACPI : IRQ10
                                    Slot 1 Use IRQ No.  : Auto
                                    Slot 2 Use IRQ No.  : Auto
                                    Slot 3 Use IRQ No.  : Auto
                                    Slot 4 Use IRQ No.  : Auto

                                    ESC : Quit       ↑↓→← : Select Item
                                    F1  : Help       PU/PD/+/- : Modify
                                    F5  : Old Values  (Shift)F2 : Color
                                    F6  : Load BIOS  Defaults
                                    F7  : Load Setup Defaults
```

PNP OS Installed

If your operating system is a Plug-and-Play one, such as Windows NT, Windows 95, select Yes. The options are: No (Default), Yes.

Resources Controlled By

If set at Auto, the BIOS arranges all system resources. If there exists conflict, select Manual. The options are: Auto (Default), Manual. The manual options for IRQ- / DMA- assigned to are: Legacy ISA, PCI/ISA PnP.

Reset Configuration Data

When enabled, allows the system to clear the last BIOS configuration data and reset with the default data. The options are: Enabled, Disabled (Default).

CPU to PCI Write Buffer

When enabled, allows data and address access to the internal buffer of the system controller; so the processor can be released from the waiting state. The options are: Enabled (Default), Disabled.

PCI Dynamic Bursting

When enabled, the PCI controller allows Bursting PCI transfer if the consecutive PCI cycles come with the address falling in same 1KB space. This improves the PCI bus throughput.
The options are: Disabled (Default), Enabled .

PCI Master 0 WS Write

When enabled, allows a zero-wait-state-cycle delay when the PCI master drive writes data to DRAM.
The options are: Enabled (Default), Disabled.

PCI Delay Transaction

The chipset has an embedded 32-bit posted write buffer to support delay transaction cycles. Select Enabled to support compliance with PCI specification version 2.1.
The options are: Disabled (Default), Enabled.

PCI#2 Access #1 Retry

When enabled, the AGP (PCI#2) access to PCI (PCI#1) will be retried until the maximum count. The options are: Disabled; Enabled (Default).

AGP Master 1 WS Write

When enabled, the AGP bus master write access to DRAMs will add one wait-state cycle.
The options are: Disabled (Default); Enabled.

AGP Master 1 WS Read

When enabled, the AGP bus master read access to the DRAMs will add one wait-state cycle.
The options are: Disabled (Default); Enabled.

Assign IRQ For USB

If your USB device does not need an IRQ, select Disabled; therefore, an IRQ can be released for the system use.
The options are: Disabled; Enabled (Default).

Assign IRQ For VGA

If your PCI VGA card does not need an IRQ, select Disabled; therefore, an IRQ can be released for the system use.
The options are: Disabled; Enabled (Default).

Assign IRQ For ACPI

If your ACPI device does not need an IRQ, select Disabled; therefore, an IRQ can be released for the system use.
The options are: IRQ9, IRQ10 (Default), IRQ11.

Slot 1/2/3/4 Use IRQ No.

Some PCI devices would need to use an IRQ on the PCI bus. Selecting Auto allows the PCI controller to automatically allocate an IRQ.
The options are: Auto (Default); 3 to 5; 7; 9 to 12; 14; 15.

Load BIOS Defaults

```
                    ROM PCI/ISA BIOS (2A5LHF0A)
                        CMOS SETUP UTILITY
                        AWARD SOFTWARE, INC.

     STANDARD CMOS SETUP              INTEGRATED PERIPHERALS

     BIOS FEATURES SETUP              SUPERVISOR PASSWORD

     CHIPSET FEATURES SETUP           USER PASSWORD

     POWER MANAGEMENT SETUP           IDE HDD AUTO DETECTION

     PNP/PCI CONFIGURA                            ETUP
                        Load BIOS  Defaults (Y/N)? N
     LOAD BIOS DEFAULT                            SAVING

     LOAD SETUP DEFAULTS

   Esc : Quit                    ↑ ↓ → ←  : Select Item
   F10 : Save & Exit Setup       (Shift)F2 : Change Color
```

BIOS defaults contain the most appropriate values of the system parameters that allow minimum system performance. The OEM manufacturer may change the defaults through MODBIN before the binary image burns into the ROM.

Load Setup Defaults

```
                    ROM PCI/ISA BIOS (2A5LHF0A)
                        CMOS SETUP UTILITY
                       AWARD SOFTWARE, INC.

    STANDARD CMOS SETUP              INTEGRATED PERIPHERALS

    BIOS FEATURES SETUP             SUPERVISOR PASSWORD

    CHIPSET FEATURES SETUP          USER PASSWORD

    POWER MANAGEMENT SETUP          IDE HDD AUTO DETECTION

    PNP/PCI CONFIGURA                              ETUP
                       Load SETUP Defaults (Y/N)? N
    LOAD BIOS DEFAULT                              SAVING

    LOAD SETUP DEFAULTS

  Esc : Quit                     ↑ ↓ → ←  : Select Item
  F10 : Save & Exit Setup        (Shift)F2 : Change Color

```

Selecting this field loads the factory defaults for BIOS and Chipset Features which the system automatically detects.

Integrated Peripherals

```
                    ROM PCI/ISA BIOS (2A5LHF0A)
                       INTEGRATED PERIPHERALS
                        AWARD SOFTWARE, INC.

 OnChip IDE Channel0 : Enabled    Onboard Parallel Mode : Normal
 OnChip IDE Channel1 : Enabled    Onboard Parallel Port : 378/IRQ7
 IDE Prefetch Mode   : Enabled
 IDE HDD Block Mode  : Enabled
 Primary Master   PIO: Auto       Onboard Legacy Audio  : Enabled
 Primary Slave    PIO: Auto       Sound Blaster         : Disabled
 Secondary Master PIO: Auto       SB I/O Base Address   : 220H
 Secondary Slave  PIO: Auto       SB IRQ Select         : IRQ 5
 Primary Master   UDMA: Auto      SB DMA Select         : DMA 1
 Primary Slave    UDMA: Auto      MPU-401               : Disabled
 Secondary MasterUDMA: Auto       MPU-401 I/O Address   : 330-333H
 Secondary Slave UDMA: Auto       FM Port (388-38BH)    : Disabled
                                  Game Port (200-207H)  : Enabled
 Onboard FDD Controller: Enabled
 Onboard Serial Port 1 : Auto
 Onboard Serial Port 2 : Auto     ESC : Quit           ↑↓→← : Select Item
 UART 2 Mode           : Standard F1  : Help      PU/PD/+/- : Modify
                                  F5  : Old Values  (Shift)F2 : Color
                                  F6  : Load BIOS  Defaults
                                  F7  : Load Setup Defaults
```

OnChip IDE Channel0

When enabled, allows you to use the onboard primary PCI IDE. If a hard disk controller card is used, set at Disabled.
The options are: Enabled (Default), Disabled.

OnChip IDE Channel1

When enabled, allows you to use the onboard secondary PCI IDE. If a hard disk controller card is used, set at Disabled.
The options are: Enabled (Default), Disabled.

IDE Prefetch Mode

When set at Enabled, it allows data to be posted to and prefetched from the primary IDE data ports. Data prefetching is initiated when a data port read occurs. The read prefetch eliments latency to the IDE data ports and allows them to be performed back to back for the highest possible PIO data transfer rates. The first data prot read of a sector is called the demand read. Subsequent data port reads from the sector are called prefetch reads. The demand read and all prefetch reads must be of the same size (16 or 32 bits).
The options are: Disabled, Enabled (Default).

IDE HDD Block Mode

> When enabled, the system executes read/write requests to hard disk in block mode. The options are: Disabled, Enabled (Default).

Primary Master PIO

> Allows an automatic or a manual configuration of the PCI primary IDE hard disk (master) mode.
>
> The options are: Auto (Default), Mode 0, Mode 1, Mode 2, Mode 3, Mode 4.

Primary Slave PIO

> Allows an automatic or a manual configuration of the PCI primary IDE hard disk (slave) mode.
>
> The options are: Auto (Default), Mode 0, Mode 1, Mode 2, Mode 3, Mode 4.

Secondary Master PIO

> Allows an automatic or a manual configuration of the PCI secondary IDE hard disk (master) mode.
>
> The options are: Auto (Default), Mode 0, Mode 1, Mode 2, Mode 3, Mode 4.

Secondary Slave PIO

> Allows an automatic or a manual configuration of the PCI secondary IDE hard disk (slave) mode.
>
> The options are: Auto (Default), Mode 0, Mode 1, Mode 2, Mode 3, Mode 4.

Primary Master UDMA

> Allows you to select the first PCI IDE channel of the first master hard disk mode or to detect it by the BIOS if the hard disk supports UDMA (Ultra DMA, faster than DMA).
>
> The options are: Disable, Auto (Default).

Primary Slave UDMA

Allows you to select the first PCI IDE channel of the first slave hard disk mode or to detect it by the BIOS if the hard disk supports UDMA (Ultra DMA, faster than DMA).
The options are: Disable, Auto (Default).

Secondary Master UDMA

Allows you to select the second PCI IDE channel of the secondary master hard disk mode or to detect it by the BIOS if the hard disk supports UDMA (Ultra DMA, faster than DMA). The options are: Disable, Auto (Default).

Secondary Slave UDMA

Allows you to select the second PCI IDE channel of the secondary slave hard disk mode or to detect it by the BIOS if the hard disk supports UDMA (Ultra DMA, faster than DMA). The options are: Disable, Auto (Default).

Onboard FDC Controller

When enabled, the floppy diskette drive (FDD) controller is activated. The options are: Enabled (Default), Disabled.

Onboard Serial Port 1

If the serial port 1 uses the onboard I/O controller, you can modify your serial port parameters. If an I/O card needs to be installed, COM3 and COM4 may be needed. The options are: Auto (Default), 3F8/IRQ4, 3E8/IRQ4, 2F8/IRQ3, 2E8/IRQ3, Disabled.

Onboard Serial Port 2

If the serial port 2 uses the onboard I/O controller, you can modify your serial port parameters. If an I/O card needs to be installed, COM3 and COM4 may be needed. The options are: Auto (Default), 2F8/IRQ3 (Default), 3E8/IRQ4, 2E8/IRQ3, 3F8/IRQ4, Disabled.

UART2 Mode

Select an operating mode for the second serial port. Set at Standard, if you use COM2 as the serial port as the serial port,

instead as an IR port.
The options are: Standard (Default), ASK-IR, HPSIR.

Parallel Port Mode

Allows you to connect with an advanced printer.
The options are: Normal (Default), EPP, ECP, ECP/ ECP.

Onboard Parallel Port

Allows you to select from a given set of parameters if the parallel
port uses the onboard I/O controller.
The options are: 378/IRQ7 (Default), 278/IRQ5, 3BC/IRQ7,
Disabled.

Onboard Legacy Audio

Select an operating mode for the second serial port. Set at
Standard, if you use COM2 as the serial port as the serial port,
instead as an IR port.
The options are: Enabled (Default), Disabled.

Sound Blaster

This feature allows you to select the Sound Blaster, if the onboard
Legacy audio chosen.
The options are: Enabled, Disabled (Default).

SB I/O Base Address

This feature allows you to select the SB I/O base address, if the
onboard Legacy audio chosen.
The options are: 220H (Default), 240H, 260H, 280H.

SB IRQ Select

This feature allows you to select the SB IRQ, if the onboard Legacy
audio chosen.
The options are: IRQ 5 (Default), IRQ 7, IRQ 9, IRQ 10.

SB DMA Select

This feature allows you to select the SB DMA channel, if the
onboard Legacy audio chosen.

The options are: DMA 1 (Default), DMA 2, DMA 3, DMA0.

MPU-401

This feature allows you to select MPU-401, if the onboard Legacy audio chosen.
The options are: Disabled (Default), Enabled.

MPU-401 I/O Address

This feature allows you to select the MPU-401 I/O address, if the onboard Legacy audio chosen.
The options are: 310-313H, 320-323H, 330-333H (Default), 300-303H.

FM Port (388-38BH)

This feature allows you to select the FM port (388-38BH), if the onboard Legacy audio chosen.
The options are: Enabled, Disabled (Default).

Game Port (200-207H)

This feature allows you to select the game port (200-207H), if the onboard Legacy audio chosen.
The options are: Enabled (Default), Disabled.

Supervisor/User Password

```
                    ROM PCI/ISA BIOS (2A5LHF0A)
                       CMOS SETUP UTILITY
                       AWARD SOFTWARE, INC.
┌──────────────────────────────────────────────────────────────────┐
│   STANDARD CMOS SETUP            INTEGRATED PERIPHERALS            │
│                                                                    │
│   BIOS FEATURES SETUP           SUPERVISOR PASSWORD               │
│                                                                    │
│   CHIPSET FEATURES SETUP        USER PASSWORD                     │
│                                                                    │
│   POWER MANAGEMENT SETUP        IDE HDD AUTO DETECTION            │
│                                                                    │
│   PNP/PCI CONFIGURATION         SAVE & EXIT SETUP                 │
│                          ┌──────────────────────┐                 │
│   LOAD BIOS DEFAULTS     │ Enter Password:       │HOUT SAVING      │
│                          └──────────────────────┘                 │
│   LOAD SETUP DEFAULTS                                             │
├──────────────────────────────────────────────────────────────────┤
│ Esc : Quit                      ↑ ↓ → ←  : Select Item            │
│ F10 : Save & Exit Setup         (Shift)F2 : Change Color          │
│                                                                    │
│                                                                    │
└──────────────────────────────────────────────────────────────────┘
```

To enable the Supervisor/User passwords, select the item from the Standard CMOS Setup. You will be prompted to create your own password. Type your password up to eight characters and press Enter. You will be asked to confirm the password. Type the password again and press Enter. To disable password, press Enter twice when you are prompted to enter a password. A message appears, confirming the password is disabled.

Under the BIOS Feature Setup, if *Setup* is selected under the Security Option field and the Supervisor/User Password is enabled, you will be prompted password every time you try to enter the CMOS Setup Utility. If *System* is selected and the Supervisor/User Password is enabled, you will be requested to enter the Password every time when you reboot the system or enter the CMOS Setup utility.

IDE HDD Auto Detection

```
                    ROM PCI/ISA BIOS (2A5LHF0A)
                       BIOS FEATURES SETUP
                       AWARD SOFTWARE, INC.



HARD DISKS        TYPE     SIZE    CYCLS  HEAD PRECOMP LANDZ SECTOR  MODE

PRIMARY MASTER  :


          Select Primary Master    Option (N=Skip) : N

       OPTIONS     SIZE    CYLS HEAD PRECOMP LANDZ SECTOR   MODE

         2(Y)      851     825   32      0   1650     63   LBA
         1         852    1651   16  65535   1650     63   NORMAL
         3         851     825   32  65535   1650     63   LARGE

   Note: Some OSes (Like SCO-UNIX) must use "Normal" for installation
                    ═══| ESC : Skip |═══
```

The IDE Hard Disk Drive Auto Detection feature automatically configures your new hard disk. Use it for a quick configuration of new hard drives. This feature allows you to set the parameters of up to four IDE HDDs. The option with **(Y)** are recommended by the system BIOS. You may also keys in your own parameters instead of setting by the system BIOS. After all settings, press Esc key to return the main menu. For confirmation, enter the Standard CMOS Setup feature.

Save and Exit Setup

```
                    ROM PCI/ISA BIOS (2A5LHF0A)
                        CMOS SETUP UTILITY
                       AWARD SOFTWARE, INC.
 ┌─────────────────────────────────────────────────────────────┐
 │   STANDARD CMOS SETUP              INTEGRATED PERIPHERALS      │
 │                                                               │
 │   BIOS FEATURES SETUP             SUPERVISOR PASSWORD          │
 │                                                               │
 │   CHIPSET FEATURES SETUP          USER PASSWORD                │
 │                                                               │
 │   POWER MANAGEMENT SETUP          IDE HDD AUTO DETECTION       │
 │                                                               │
 │   PNP/PCI CONFIGURA┌──────────────────────────┐ ETUP          │
 │                    │ SAVE to CMOS and EXIT (Y/N)? N │          │
 │   LOAD BIOS DEFAULT└──────────────────────────┘ SAVING        │
 │                                                               │
 │   LOAD SETUP DEFAULTS                                          │
 ├─────────────────────────────────────────────────────────────┤
 │ Esc : Quit                    ↑ ↓ → ←  : Select Item          │
 │ F10 : Save & Exit Setup       (Shift)F2 : Change Color        │
 │                                                               │
 │                                                               │
 └─────────────────────────────────────────────────────────────┘
```

After you have made changes under Setup, press Esc to return to the main menu. Move cursor to Save and Exit Setup or press F10 and then press Y to change the CMOS Setup. If you did not change anything, press Esc again or move cursor to Exit Without Saving and press Y to retain the Setup settings. The following message will appear at the center of the screen to allow you to save data to CMOS and exit the setup utility:

SAVE to CMOS and EXIT (Y/N)?

Exit without Saving

```
                    ROM PCI/ISA BIOS (2A5LHF0A)
                        CMOS SETUP UTILITY
                        AWARD SOFTWARE, INC.
  ┌─────────────────────────────────┬──────────────────────────────┐
  │   STANDARD CMOS SETUP           │     INTEGRATED PERIPHERALS    │
  │                                 │                              │
  │   BIOS FEATURES SETUP           │     SUPERVISOR PASSWORD       │
  │                                 │                              │
  │   CHIPSET FEATURES SETUP        │     USER PASSWORD             │
  │                                 │                              │
  │   POWER MANAGEMENT SETUP        │     IDE HDD AUTO DETECTION    │
  │                                 │                              │
  │   PNP/PCI CONFIGURA ┌──────────────────────────┐  ETUP         │
  │                     │ Quit Without Saving (Y/N)? N │            │
  │   LOAD BIOS DEFAULT └──────────────────────────┘  SAVING       │
  │                                 │                              │
  │   LOAD SETUP DEFAULTS           │                              │
  ├─────────────────────────────────┴──────────────────────────────┤
  │ Esc : Quit                         ↑ ↓ → ←  : Select Item      │
  │ F10 : Save & Exit Setup            (Shift)F2 : Change Color     │
  │                                                                 │
  └─────────────────────────────────────────────────────────────────┘
```

If you select this feature, the following message will appear at the center of the screen to allow you to exit the setup utility without saving CMOS modifications:

Quit Without Saving (Y/N)?

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**Chapter 3
BIOS Setup**

PAG-2130

MAINBOARD MANUAL