MS21

AMD Socket-A Based

MAIN BOARD

User's Manual

Shuttle MS21

AMD Socket-A based Mainboard
Manual Version 1.1

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M422

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About This Manual

1 INTRODUCTION

1.1 To Different Users

First-Time DIY System Builder

Welcome to the DIY world! Building your own computer system is not as difficult as you may think. To make your first computer DIY experience successful, right from the start, we have designed the **3 Hardware Installation** section in a step-by-step fashion for all the first-time DIY system builders. Prior to installation, we also suggest you to read the whole manual carefully to gain a complete understanding of your new MS21 mainboard.

Experienced DIY User

Congratulate on your purchase of the Shuttle MS21 mainboard. You will find that installing your new Shuttle MS21 mainboard is just easy. Bundled with an array of onboard functions, the highly-integrated MS21 mainboard provides you with a total solution to build the most stable and reliable system. Refer to sections **3.2 Jumper Settings** and **Chapter 4 Software Utility** to find out how to get the best out of your new mainboard. **Chapter 5 BIOS Setup** also contains the relevant information on how to tune up your system to achieve higher performance.

System Integrator

You have wisely chosen Shuttle MS21 to construct your system. Shuttle MS21 incorporates all the state-of-the-art technology of the SiS 730S chipset from SiS. It integrates the most advanced functions you can find to date in a compact Micro ATX board. Refer to sections **3.2 Jumper Settings** and **Chapter 4 Software Utility** for an in-depth view of system construction.

1.2 Item Checklist

Check all items with your MS21 mainboard to make sure nothing is missing. The complete package should include:

✸ One Shuttle MS21 Mainboard
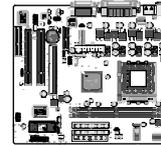
✸ One ATA 100/66 Ribbon Cable

✸ One Floppy Ribbon Cable

✸ One Lan Bracket
 (This bracket is available only for
  MS21 mainboard with lan chip on board.)
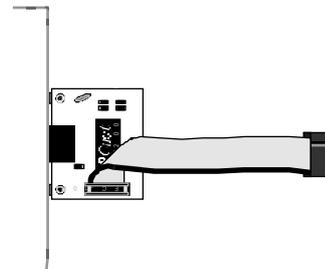
✸ MS21 User's Manual

✸ One CD-ROM containing:
 ➢ Sis Chipset VGA Driver
 ➢ AC97 Audio Driver
 ➢ Lan Driver
 ➢ Award Flashing Utility
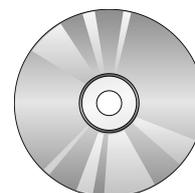
2 FEATURES

MS21 mainboard is carefully designed for the demanding PC user who wants high performance and maximum intelligent features in a compact package.

2.1 Specifications

✹ CPU Support

Supports AMD Athlon Processor with 100/133 MHz FSB.
and AMD Duron Processor with 100 MHz FSB.

✹ Chipset

SiS 730S Chipset features with super south I/O bridge and built-in 3D sound that features AC 97 Audio Codec. The SiS730S chipset offers a powerful hardware decoding DVD accelerator that significantly improves DVD playback performance. SiS730S uses Share System Memory Architecture to handle very large texture maps required by reality and 3D video games and applications.

The share memory utilizes a frame buffer size up to 64 MB.

✹ Jumperless CPU Configuration

Soft-configure CPU Speed (The CPU operating speed is software configurable through Frequency/Voltage Control of BIOS Setup program.

✹ Versatile Memory Support

Equipped with two DIMM banks of PC 100/133 compliant SDRAM to provide up to 1GB of system memory.

Note: Although the MS21 mainboard supports a memory bus of 100/133MHz, you cannot set the memory bus speed less than the CPU bus speed (CPU/memory: 100/100, 100/133, 133/133).

✳ Integrated Realtek Fast Ethernet (Optional)

The RTL8139C LAN chip is an integrated chip and transceiver capable of operating at 10/100 Mbps. This PCI Revision 2.2-compliant chip supports PCI target fast back-to-back transaction, Vital Product Data (VPD), and ACPI/PCI power management.

✳ AGP Slot

SiS 730S chipset incorporates a 128-bit 2D/3D graphics accelerator that provides 1920x1200 16-bit color. The chipset also supports an extra AGP 4x slot.

Note: The AGP slot only supports NVIDIA 4xAGP cards.

✳ PCI Expansion Slots

Provides two 32-bit PCI slots.

✳ AMR Expansion Slot

Provides one Audio Modem Riser (AMR) slot.

✳ CNR Expansion Slot

Provides one Communications and Networking Riser (CNR) slot.

✳ Super South Bridge

The SiS730S Super-South Bridge includes a 10/100Mb Fast Ethernet feature for office and home networking requirements. The SiS730S offers an AC 97 compliant interface that consists of a digital audio engine with 3D-hardware accelerator, on-chip sample rate converter, and a professional wavetable along with a separate modem DMA controller.

✳ Super I/O Interface:

Provides a variety of I/O interfaces:

➢ 1 × Floppy interface for 3.5-inch FDD with 720KB, 1.44MB, 2.88MB format or for 5.25-inch FDD with 360KB or 1.2MB format.

➢ 1 × PS/2 mouse connector

➢ 1 × PS/2 Keyboard connector

- ➢ 2 ports of USB connectors on back panel
- ➢ Two sets of 2-port USB headers on mid-board
- ➢ 1 × DB9 Serial connector 6550 UART compatible
- ➢ 1 × DB15 VGA connector
- ➢ 1 × Infrared communication port ASKIR and IrDA compatible.
- ➢ 1 × DB25 Parallel port supporting Standard Parallel Port (SPP), Enhanced Parallel Port (EPP) and Extended Capabilities Port (ECP) data transmission schemes.
- ➢ 1 x DB15 MIDI/GAME port , and another 3 ports which are Line_out, Line-In and Microphone.

✳ PCI Bus Master IDE Controller Onboard

Two Ultra DMA 33/66/100 Bus Master Dual-channel IDE ports provide support to a maximum of four IDE devices (one Master and one Slave per channel). The IDE Bus implements the data transfer speed up to 33/66/100 MB/sec and also supports Enhanced PIO Modes 0 ~ 4.

✳ ATX Power Supply Connector

ATX power supply unit can be connected to the onboard 20-pin ATX power connector, supporting Suspend and Soft-On/Off by dual-function power button.

✳ Advanced Configuration and Power Interface

Features four power saving mode: Snoop, Suspend to RAM, Suspend to Disk, and Soft-Off. ACPI provides more efficient Energy Saving Features controlled by your operating system that supports OS Direct Power Management (OSPM) functionality.

✳ System BIOS

Provides licensed Award BIOS on 2Mb Flash EEPROM.
Supports Green PC and Desktop Management Interface (DMI).

✳ ATX Form Factor

System board conforms to the Micro ATX specification.
Board dimension: 244 mm x 220 mm.

✻ Advanced Features

➢ **Dual Function Power Button -** The system can be in one of two states; one is Suspend mode and the other is Soft-Off mode. Pushing the power button for less than 4 seconds places the system into Suspend mode. When the power button is pressed for longer than 4 seconds, the system enters the Soft-Off mode.

➢ **Wake-on-LAN -** The onboard WOL connector can be attached to a network card that supports this function to wake up system via LAN.

➢ **Modem Ring Power-On** - The system can be powered on automatically by activation of modem ring.

✻ Other Features

➢ **Voltage Monitoring -** Monitors various voltages of key elements, such as the CPU, and other critical system voltage levels to ensure stable current reach to mainboard components. System voltages include Vcore on CPU, and +2.5V, +3.3V, +5V, +12V etc. on system.

➢ **Fan Status Monitoring -** To prevent overheating of CPU, the CPU fan is monitored for RPM and failure. (CPU cooling fan with RPM sensor is required.)

➢ **Temperature Monitoring -** This item allows users to make sure whether the CPU or system operates in a suitable temperature.

3 HARDWARE INSTALLATION

Before removing or installing any of these devices including CPU, DIMMs, Add-On Cards, Cables, please make sure to unplug the onboard power connector.

This section outlines how to install and configure your MS21 mainboard. Please refer to following mainboard layout to help you identifying various jumpers, connectors, slots, and ports. Then follow these steps designed to guide you through a quick and correct installation of your system.

3.1 Step-by-Step Installation

Accessories Of MS21

Red 3VSB LED for SDRAM- LED1

Two DIMM Sockets

CPU Fan- CPUFAN1

PS2 Keyboard /
PS/2 Mouse Connectors

USB1/USB2 Connectors

Socket 462

Serial Port
Connector (COM1)

Parallel Connector

SiS 730s Chip

Dual USB Ports Header- USB2

VGA Connector

ATX Power Connector

Line_out/Line_In/Microphone
MIDI/GAME Port Connectors

AMR 1 Slot

Audio_in Connector- CD_1

Audio_in Connector- CD_2

Clear CMOS Setting- JP1

Extra MIC/Line-Out Header- J1

AGP 2x/4x Slot

AC97 Audio CODEC

Lan Header - J2

Two PCI Slots

On Board Lan
RTL8139C (Optional)

CNR1 Slot

IR Header -SIR1

SiS 950 Super I/O
2Mb Flash ROM
Dual USB Ports Header- USB3

Two IDE Connectors

Floppy Connector

Wake On Modem Connector- WOM1

Wake On Lan Connector- WOL1

Front Panel Connector -PANEL1

Housing Fan- CASFAN1

BIOS Write Protect- JP3

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Step 1

Install the CPU:

1. Locate the CPU socket on the upper-right sector of your mainboard (between the back panel connectors and the DIMM memory banks).

2. Pull the CPU socket lever slightly sideways away from the socket to unlock the lever, and then bring it to an upwardly vertical position.

3. Place your AMD 462 processor in the socket A. Note that the CPU's edges have been purposely designed non-symmetrically to prevent from inserting the processor in the wrong direction. And the CPU will only fit in the orientation as shown. The following diagram demonstrates the correct placement of the CPU in socket A. You can see that the two blunt-edged corners should be oriented toward the blank space on the socket.

Blank   AMD CPU

Lever   Blank   Notch
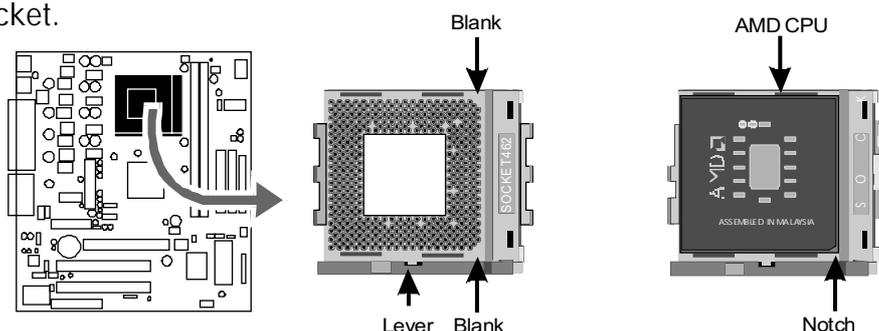
4. Slightly push the AMD 462 processor into the socket without applying excessive force while making sure there is no gap between CPU and socket. Then lower the socket-lever all the way down to the horizontal position and lock it to secure the CPU in place.

5. The AMD 462 processor requires a set of heatsink/fan to ensure proper cooling of the processor. If the heatsink/fan have not been mounted on your CPU, you must purchase the heatsink/fan separately and have it installed. Plug the cable through the heatsink/fan in the CPU fan power connector located nearby. Note that there are several types of CPU fan connectors. Normally, if your mainboard supports the hard ware monitoring function,a 3-pin fan power connector should allow your system to detect the CPU fan's speed . The CPU fan can also run with a 2-pin fan power connector, however, detection of CPU fan's speed is not supported. Another type of CPU fan may feature a large 4-pin fan power connector, which does not support CPU fan's speed detection and must be directly connected to the system's power supply unit.

Step 2.

Set Jumpers

The default jumper settings have been set for the common usage standard of this mainboard. Therefore, you do not need to reset jumpers unless you require special adjustments as any of following cases:

1. Clear CMOS
2. Make BIOS write protected

For first-time DIY system builders, we recommend that you should not change the default jumper settings if you are not totally familiar with mainboard configuration procedures. The factory-set default settings are tuned for optimum system performance. For the advanced users who wish to customize their system, section **3.2 Jumper Settings** will provide the detailed information on how to configure your mainboard manually.

Step 3

Install SDRAM System Memory

To install memory, insert SDRAM memory module(s) in any one, two DIMM banks. Note that SDRAM modules are directional and will not go in the DIMM slots unless they are properly oriented. After the module is fully inserted into the DIMM socket, lift the clips of both sides of the DIMM bank to lock the module in place.
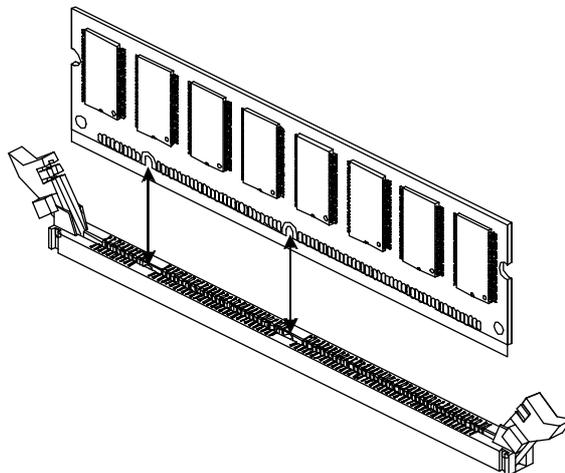
Step 4

Install Internal Peripherals in System Case

Before you install and connect the mainboard into your system case, we recommend that you first assemble all the internal peripheral devices into the computer housing, including but not limited to the hard disk drive (IDE/HDD), floppy disk drive (FDD), CD-ROM drive, and ATX power supply unit. This will greatly facilitate in making the connection to the mainboard described below.

To install IDE & FDD drives, follow this procedure:

1. Set the required jumpers on each device according to the instructions provided by the manufacturer. (IDE devices, HDD and CD-ROM, must have jumpers on Master or Slave mode depending on your willing to install more than one device for each kind.

2. Connect IDE cable and FDD cable to the back panel of the internal peripheral devices. Note that the cable should be oriented with its colored stripe (usually in red or magenta) connected to pin#1 both on the mainboard IDE or FDD connector and on the device as well.

3. Connect an available power cable through your system power supply unit to the back panel of each peripheral device. Note that the power cable is directional and cannot fit in if not properly positioned.

Step 5

Mount the Mainboard on the Computer Chassis

1. You may find that there are a lot of different mounting hole positions both on your computer chassis and on the mainboard. To choose a correct mounting hole, the key point is to keep the back panel of the mainboard in a close fit with your system case, as shown below.
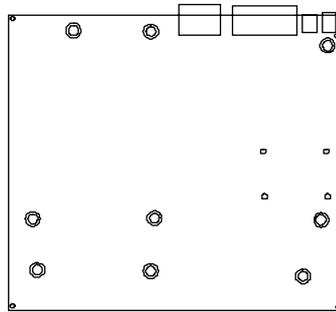
2. After deciding the proper mounting holes, position the studs between the frame of chassis and the mainboard. The studs are used to fix the mainboard and to keep a certain distance between the system chassis and the mainboard, in order to avoid any electrical short between the board and the metal frame of chassis. (If your computer case is already equipped with mounting studs, you will need to tighten screws to attach the mainboard.)

> **Note:**   In most computer housings, you will be able to find 4 or more attachment points to install mounting studs and fix the mainboard. If there aren't enough matching holes, then make sure to install at least 4 mounting studs to ensure proper attachment of the mainboard.

Step 6

Connect Front Panel Switches/LEDs/Speaker

You can find there are several different cables already existing in the system case and originating from the computer's front panel devices (HDD LED, Power LED, Reset Switch, PC Speaker, etc.) These cables serve to connect the front panel switches and LEDs to the mainboard's front panel connectors group, as shown below :
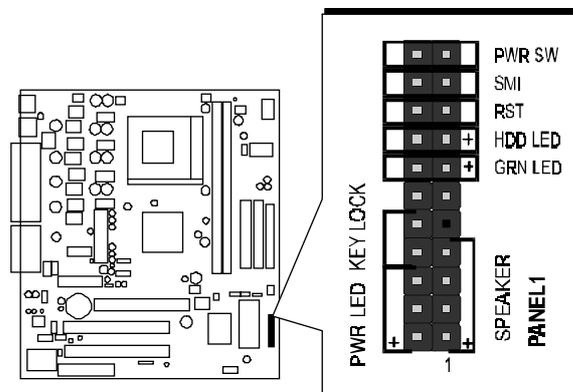
1. Power LED (PWR LED)
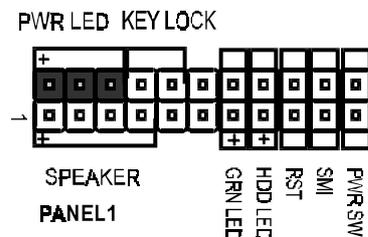
2. Keylock Header (KEY LOCK)
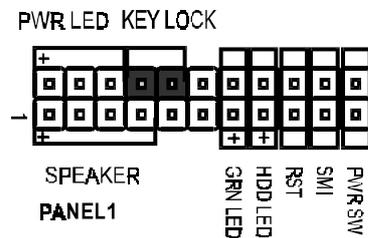
3. PC SPEAKER (SPEAKER)

4. Green-LED (GRN LED)

PWR LED KEY LOCK

SPEAKER
PANEL1
GRN LED
HDD LED
RST
SMI
PWR SW

5. HDD-LED (HDD LED)

PWR LED KEY LOCK

SPEAKER
PANEL1
GRN LED
HDD LED
RST
SMI
PWR SW

6. Hardware Reset Switch (RST)

PWR LED KEY LOCK

SPEAKER
PANEL1
GRN LED
HDD LED
RST
SMI
PWR SW
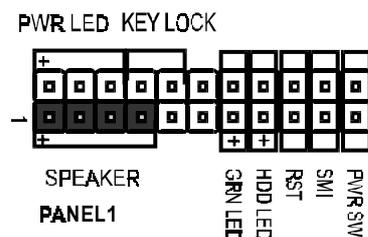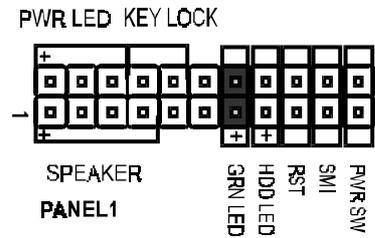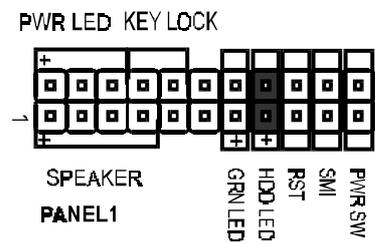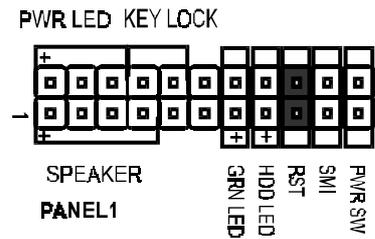
7. System Management
   Interface Header (SMI)

PWR LED KEY LOCK

SPEAKER
PANEL1
GRN LED
HDD LED
RST
SMI
PWR SW
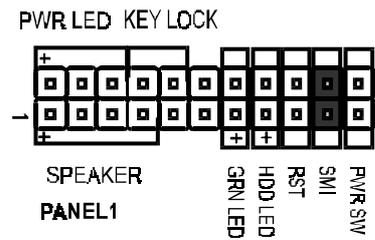
8. ATX Soft Power On/Off (PWR SW)

PWR LED KEY LOCK

SPEAKER
PANEL1
GRN LED
HDD LED
RST
SMI
PWR SW
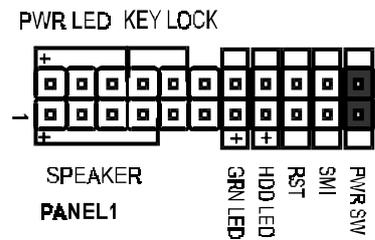
Step 7

Connect IDE & Floppy Disk Drives

1. IDE cable connector
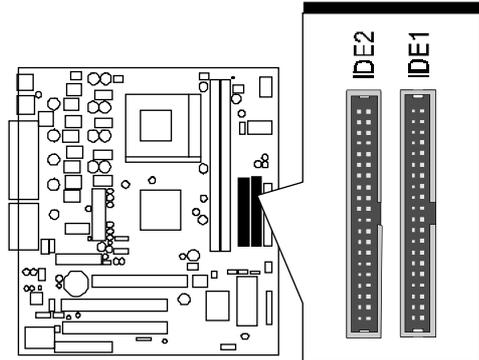
2. Floppy cable connector
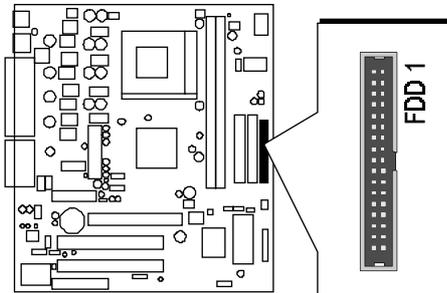
Step 8

Connect Other Internal Peripherals

1. IR Header

SIR1

1
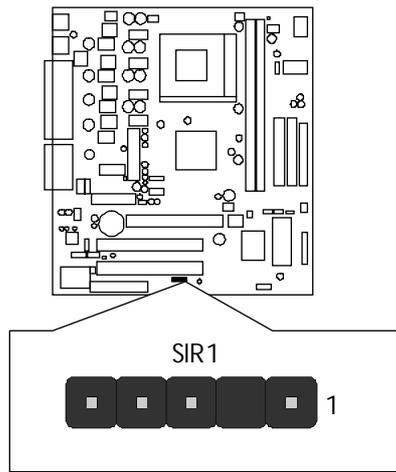
Step 9

Connect the Power Supply

1. System power connector

Warning: Once power cord is plugged in mainboard, LED1 lights up. Please take reference to page 40 for location of LED 1. You are not allowed to install or uninstall memory modules while LED 1 lights up.

ATX 1
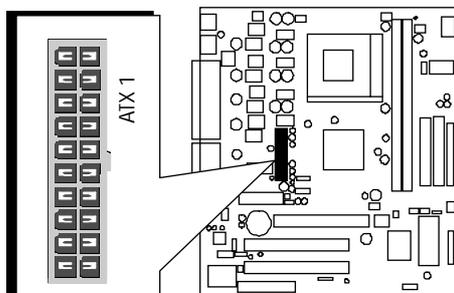
Step 10

Install Add-on Cards in Expansion Slots

1. AMR Card
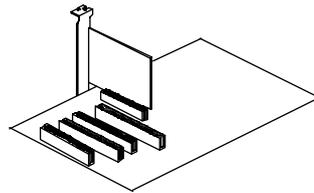
2. Accelerated Graphics Port (AGP) Card
   Note: The AGP slot only supports NVIDIA 4xAGP cards.
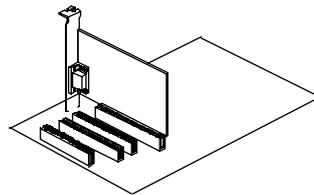
3. PCI Card
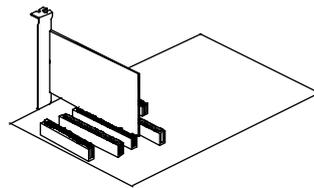
4. Communications and Networking Riser (CNR) Card
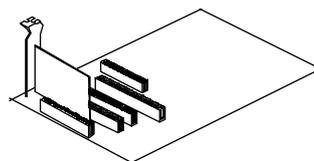
Step 11

Connect External Peripherals to Back Panel

You are now ready to put the computer case back together and get on to the external peripherals connections to your system's back panel.
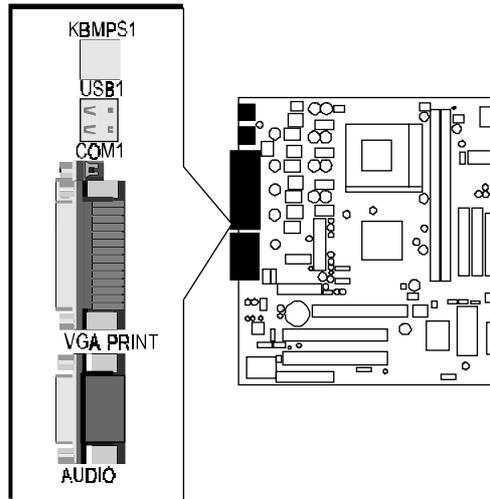
1. PS/2 Mouse and PS/2 Keyboard
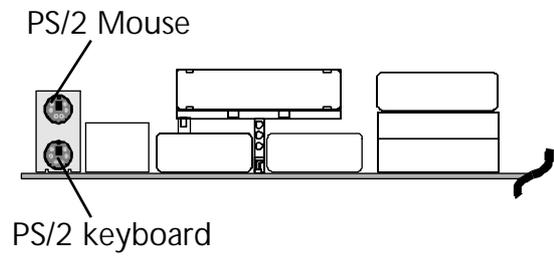
2. USB Devices
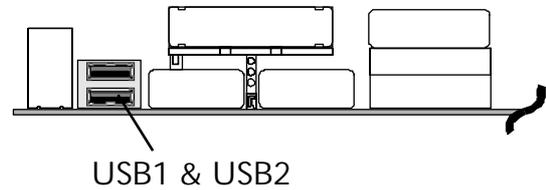
3. COM1 Port
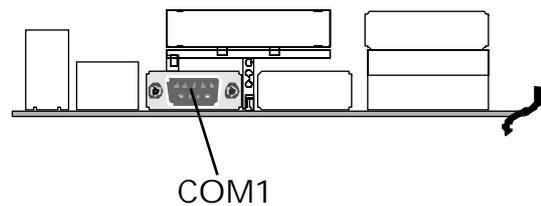
4. VGA Port

VGA Port
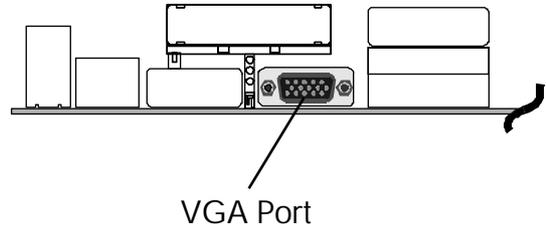
5. Parallel Port

Parallel Port

6. Line_out / Line_In / Microphone
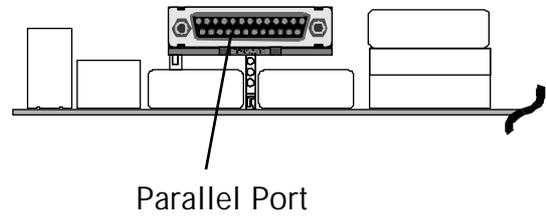
Line_out   Line_In   Microphone
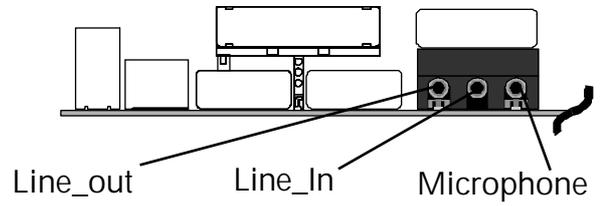
7. MIDI/Game Port

MIDI/GAME Port
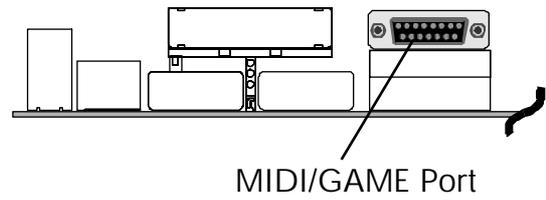
Step 12

First Time System Boot-Up

To assure the completeness and correctness of your system installation, you may check the above installation steps once again before you boot up your system for the first time.

1. Insert a bootable system floppy disk (DOS 6.2x, Windows 95/98/NT, or others) which contains FDISK and FORMAT utilities into the FDD.
2. Turn on the system power.
3. First, you must use the FDISK utility to create a primary partition of the hard disk. You can also add an extended partition if your primary partition does not use all of the available hard disk space. If you choose to add an extended partition, you will have to create one or more logical partitions to occupy all the space available in the extended partition. The   FDISK utility will assign a drive letter (i.e., C:, D:, E:,...) to each partition which will be shown in the FDISK program. After FDISK procedure, reboot your system by using the same system floppy disk.

> **Note:**   DOS 6.2x and Windows 95A can only support up to 2.1GB of HDD partition. If you use the FDISK utility with one of the operating systems mentioned above, you can only install your HDD into partitions no larger than 2.1GB each.

4. Now, use the FORMAT utility to format all the partitions you've created. When formatting the primary partition (C:), make sure to use the FORMAT C: /S command.

> **Note:**   FORMAT C: /S can transfer all the necessary system files into the primary partition of your hard disk. Then, your HDD will become a bootable drive.

5. Install all the necessary drivers for CD-ROM, Mouse, etc.
6. Set up the complete operating system according to your OS installation guide.

> **Note:**   This mainboard supports ACPI. Consequently, NumLock on keyboard is still on whenever you turn off system.

Step 13

Install Drivers & Software Components

Please note that all the system utilities and drivers are designed for Win 9x/ 2000/ME/NT operating systems only. Make sure your operating system is already installed before running the driver installation CD-ROM programs.

1. Insert the MS21 bundled CD-ROM into your CD-ROM drive. The auto-run program will display the driver main installation window on screen .

2. Choose " Install VGA Device Software" and complete the installation.

3. Return to the SHUTTLE MAINBOARD DRIVERS & UTILITIES screen.

4. Choose "Install Audio Device Driver" and complete the installation.

5. Return to the main installation window and exit from the auto-run drivers installation program.

3.2 Jumper Settings

Several hardware settings are made through the use of jumper caps to connect jumper pins to the mainboard. Pin #1 is located at any corner of each jumper; you just find a location with pin#1 marked. There are several types of pin1# shown as below:

3-pin and multi-pin (> 3) jumpers are shown as follows:
Pin #1 to the left:

Pin #1 on the top:

Pin #1 to the right:

Pin #1 on the bottom:

Jumpers with two pins are shown as ▬▬ for Close [On] or ▪|● for Open [Off]. To Short jumper pins, simply place a plastic jumper cap over the desired pair of pins.

> **Caution!**
> 1. Do not remove the mainboard from its antistatic protective packaging until you are ready to install it.
> 2. Carefully hold the mainboard by its edges and avoid touching its components. When putting the mainboard down, place it on the top of its original packaging film, and on an even surface, and components side up.
> 3. Wear an antistatic wrist strap or take other suitable measures to prevent electrostatic discharge (ESD) whenever handling this equipment.

Jumpers & Connectors Guide

Use the mainboard layout on page 11 to locate CPU socket, memory banks, expansion slots, jumpers and connectors on the mainboard during the installation. The following list will help you to identify jumpers, slots, and connectors along with their assigned functions:
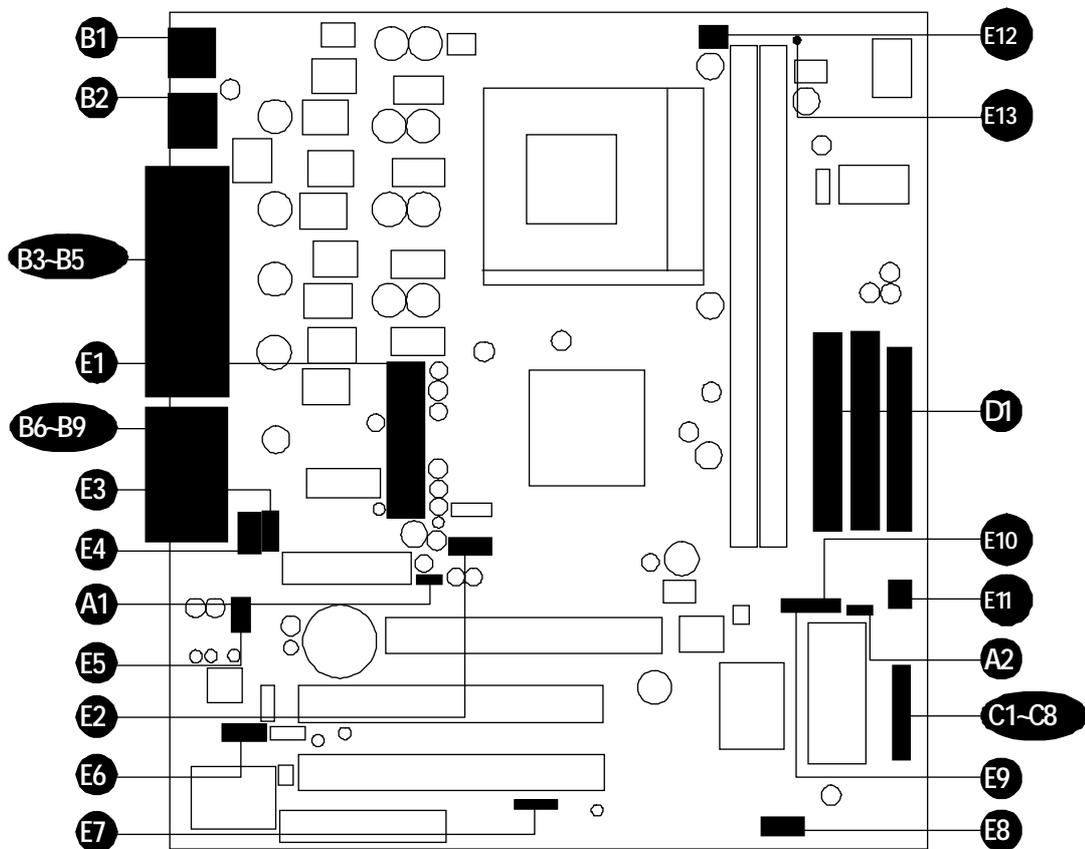
CPU/Memory/Expansion Slots

Socket 462 : CPU Socket for socket A AMD processors.

DIMM 1/2   : Two DIMM Sockets for 32, 64, 128, 256 and 512MB 3.3V SDRAM.

AMR   : One AMR expansion slot for audio/modem riser card

AGP   : One AGP (Accelerated Graphics Port) slot

PCI   : Two 32-bit PCI expansion slots

CNR   : One CNR (Communications and Networking Riser) slot

Jumpers

A1　JP1　　　　　: Clear CMOS setting.

A2　JP3　　　　　: Make BIOS write protected setting.

Back Panel Connectors

B1　KB　　　　　: PS/2 Keyboard.

B1　MPS1　　　 : PS/2 Mouse.

B2　USB 1　　　 : 2 × USB ports (Universal Serial Bus).

B3　COM1　　　 : Serial port 1 (DB9 male).

B4　PRINTER　 : Parallel port (DB25 female).

B5　VGA　　　　: VGA port (DB15 female).

B6　Line_out　 : Line_out port.

B7　Line_in　　 : Line_in port.

B8　Microphone : Microphone port.

B9　GAME/MIDI : GAME/MIDI port.

Front Panel Connectors

C1　PWR LED　 : System Power LED.

C2　KEY LOCK　: KEYLOCK.

C3　SPEAKER　 : Speaker in housing.

C4　GRN LED　 : Green LED.

C5　HDD LED　 : IDE drive active LED.

C6　RST　　　　 : Hardware reset switch.

C7　SMI　　　　 : Hardware system management interface momentary type switch.

C8　PWR SW　 : ATX Power On/Off Momentary Type Switch.

Internal Peripherals Connectors

D1　FDD1　　　 : Floppy Disk Drive Interface

D1　IDE1　　　 : IDE Primary Interface (Dual-channel)

D1　IDE2　　　 : IDE Secondary Interface (Dual-channel)

Other Connectors:

E1 ATX 1　　　　 : ATX power connector (20-pin header).
E2 USB 2　　　　 : Dual USB ports header
E3 CD2　　　　　 : Audio_in connector.
E4 CD1　　　　　 : Audio_in connector.
E5 J 1　　　　　 : Extra MIC / Line_out header.
E6 J 2　　　　　 : Lan bracket header.
E7 SIR 1　　　　 : IR header.
E8 USB 3　　　　 : Dual USB ports header.
E9 WOM1　　　　 : Wake on modem header.
E10 WOL 1　　　　 : Wake on lan header.
E11 CASFAN 1　 : System cooling fan power connector.
E12 CPUFAN 1　 : CPU cooling fan power connector.
E13 LED1　　　　 : Red 3VSB LED for SDRAM.

Ⓐ1 Clear CMOS setting (JP1)

You can clear CMOS to restore system default setting. Please follow below procedure to clear CMOS.

Pin 2-3 (Default, Normal)

Pin 1-2 (Clear CMOS)
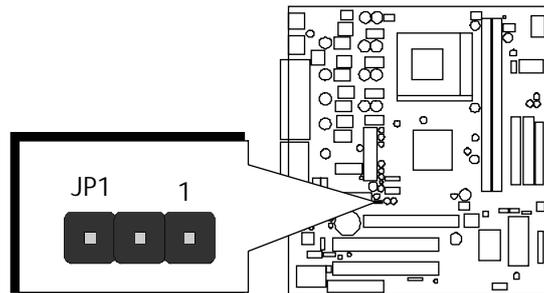
Step 1. Turn off the system and unplug the AC power.

Step 2. Remove ATX power cable from onboard power connector.

Step 3. Locate JP1 and short pins 1-2 for a few seconds.

Step 4. Return JP1 to its normal setting by shorting pins 2-3.

Step 5. Connect ATX power cable back to onboard power connector.

Ⓐ2 BIOS write protect setting (JP3)

This motherboard offers JP3 jumper to make BIOS read-only.

Pin 1-2 (Default- disable the function)

Pin 2-3 (Enable the function)
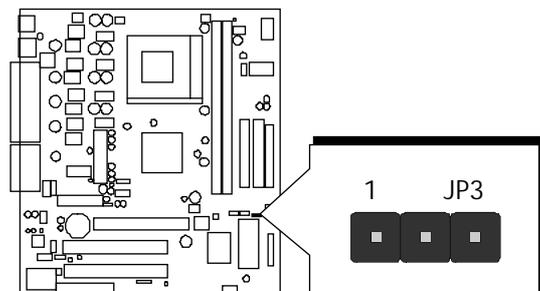
B1 PS/2 Keyboard & PS/2 Mouse Connectors

Two 6-pin female PS/2 keyboard & Mouse connectors are located at the rear panel of the mainboard. Depending on the computer housing you use (desktop or minitower), the PS/2 Mouse connector is situated at the top of the PS/2 Keyboard connector when the mainboard is laid into a desktop, as opposite to a minitower where the PS/2 Mouse connector is located at the right of the PS/2 Keyboard's. Plug the PS/2 keyboard and mouse jacks into their corresponding connectors.

PS/2 Mouse

PS/2 keyboard
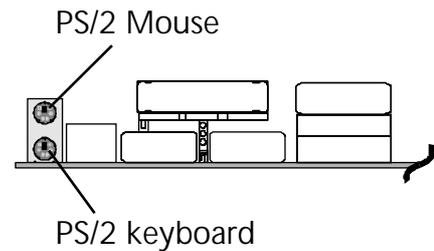
B2 USB1/USB2 Port Connectors

Two female connectors USB1/USB2 share the same USB (Universal Serial Bus) bracket at the rear panel of your mainboard. Plug each USB device jack into an available USB1/USB2 connector.

USB1 & USB2
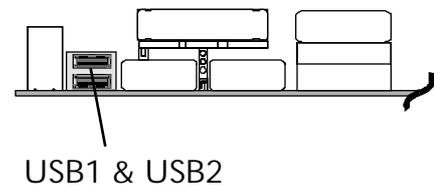
B3 COM1 Connector

This mainboard can accommodate one serial device on COM1. Attach a serial device cable to the DB9 serial port COM1 at the back panel of your computer.
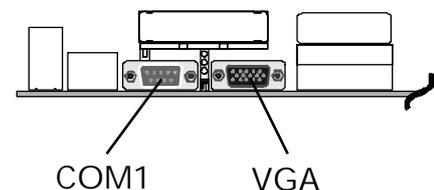
B4 VGA Connector

One 15-pin VGA connector is located at the rear panel of mainboard.

COM1   VGA

B5 Parallel Port Connector

One DB25 female parallel connector is located at the rear panel of mainboard. Plug the connection cable from your parallel device (printer, scanner, etc.) into this connector.

Parallel Port
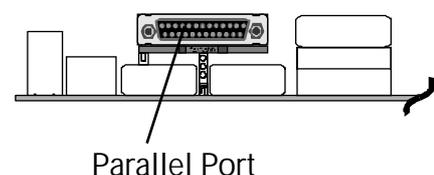
B6 Line_out

Line_Out is a stereo output port through which the combined signal of all internal and external audio sources on the board is output. It can be connected to 1/8-inch TRS stereo headphones or to amplified speakers.

Line_out
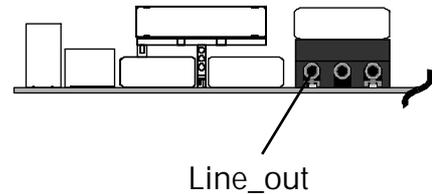
B7 Line_in

Line_in is a stereo line-level input port that accepts a 1/8-inch TRS stereo plug. It can be used as a source for digital sound recording, a source to be mixed with the output, or both.

Line_in
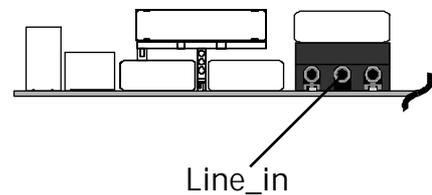
B8 Microphone

Microphone is a 1/8-inch jack that provides a mono input. It can use a dynamic mono or stereo microphone with a resistance of not more than 600 Ohms.

Microphone
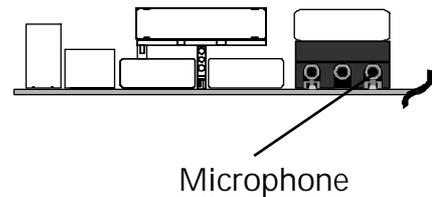
B9 MIDI/GAME Port

The MIDI/GAME port is a 15-pin female connector. This port can be connected to any IBM PC compatible game with a 15-pin D-sub connector.

MIDI/GAME Port

MIDI Instrument Connection

You will need a MIDI adapter to connect a MIDI compatible instrument to the sound card. The MIDI adapter can be connected to the Joystick/MIDI port. You will also need the MIDI sequencing software to run MIDI instruments with your computer.
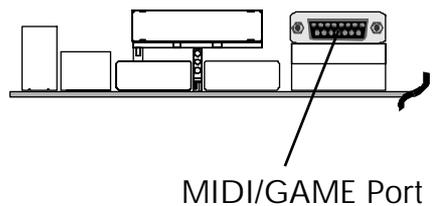
ⓒ₁ POWER LED (PWR LED)

If you get a 3-pin LED in dual color connector, attach the cable from housing's front panel to the PWR LED header on board. The LED stays light while the system is running ; and it turns to another color while the system is operating from normal mode to ACPI mode.
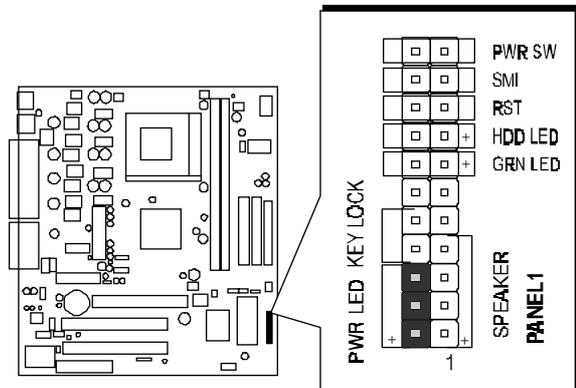
Note : Please notice all the LED connectors are directional. If any LED of PANEL 1 does not light up during running, please simply change to the opposite direction.

ⓒ₂ KEYLOCK (KEY LOCK)

Keylock connector is a 2-pin connector for a lock that may be installed on the system case for enabling or disabling keyboard.
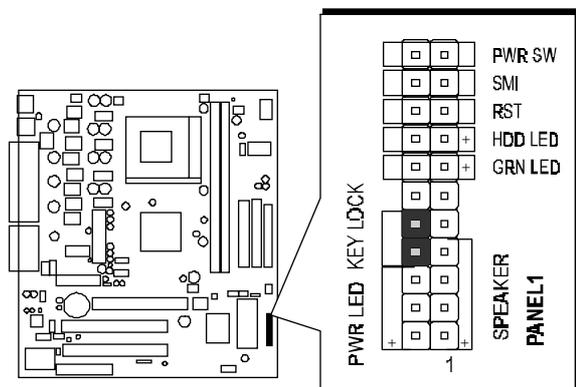
ⓒ₃ Speaker Connector (SPEAKER)

Attach PC speaker cable from case to the 4-pin speaker connector (SPEAKER).
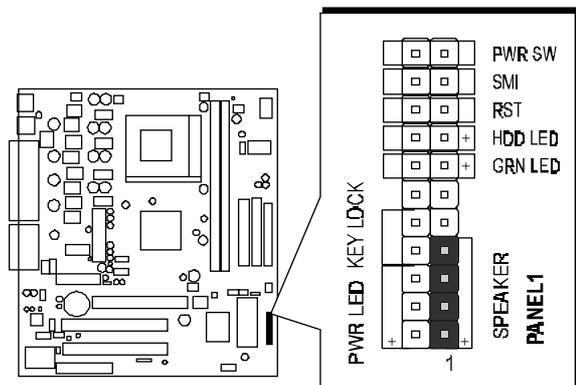
➍Green LED (GRN LED)

The green LED (GRN LED) indicates that system is currently in one of the power saving mode (Doze/Standby/Suspend). When system resumes to normal operation mode, the green LED will go off. Attach a 2-pin green LED cable to GRN LED header.
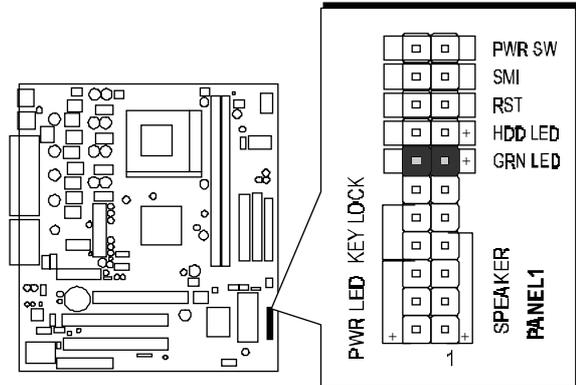
➎HDD LED Connector (HDD LED)

Attach connector cable from IDE device LED to the 2-pin HDD LED header. The HDD LED lights up whenever an IDE device is active.
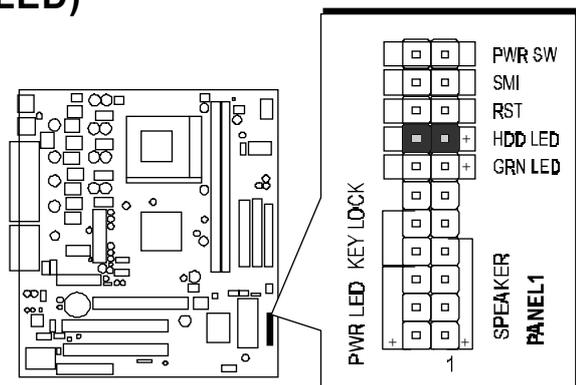
➏Hardware reset connector (RST)

Attach 2-pin hardware reset switch cable to the RST header. Pressing reset switch causes system to restart.
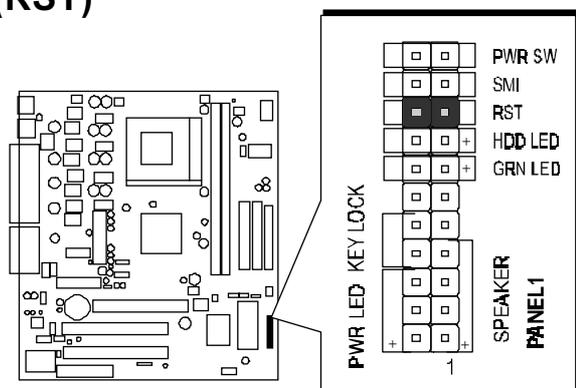
☞ System Management Interface Connector (SMI)

Hardware System Management Interface (SMI) header may attach to a 2-pin momentary switch. Press SMI switch to force system into power saving mode; press it again to resume back to normal operation.
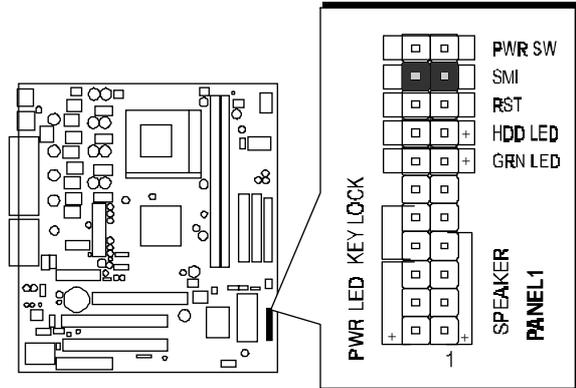
☞ ATX Power On/Off Switch Connector

(PWR SW)

The Power On/Off Switch is a momentary type switch used for turning on or off system's ATX power supply. Attach connector cable from Power Switch to the 2-pin PWR SW header on the mainboard.
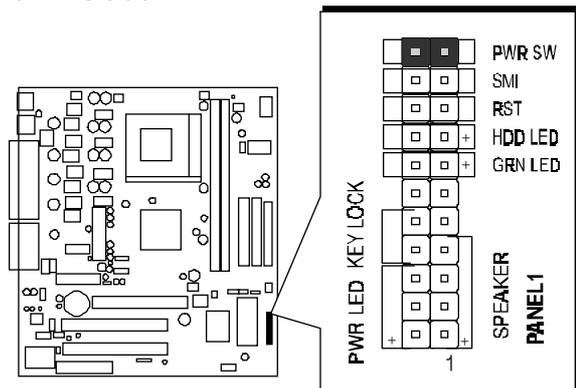
🔟 Enhanced IDE and Floppy Connectors

The MS21 mainboard features two 40-pin dual-channel IDE device connectors (IDE1/IDE2) providing the support to up to four IDE devices, such as CD-ROM and Hard Disk Drives (H.D.D.). This mainboard also includes one 34-pin floppy disk controller (FDD) to accommodate the Floppy Disk Drive (F.D.D.). Moreover, this mainboard comes with one 40pin ribbon cable to connect to IDE H.D.D. and one 34-pin ribbon cable for F.D.D. connection.

Note : Please connect your system H.D.D. to IDE 1.

Important: Ribbon cables are directional. The red stripe means pin #1. Please make sure to always have correct connection with cable and pin #1 of IDE1/IDE2 or FDD1 on the mainboard.
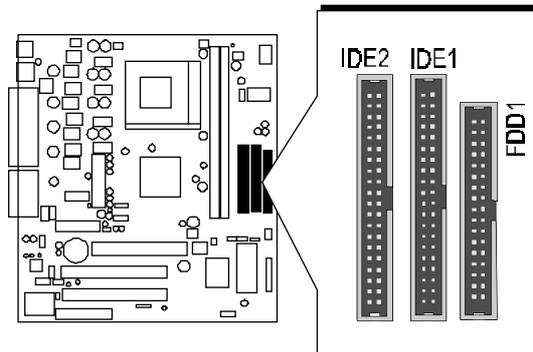
Ⓔ❶ ATX Power Connector (ATX 1)

Locate the 20-pin male header ATX power connector (ATX 1) on your mainboard. Plug the power cable from the ATX power supply unit directly into ATX 1 power supply connector.
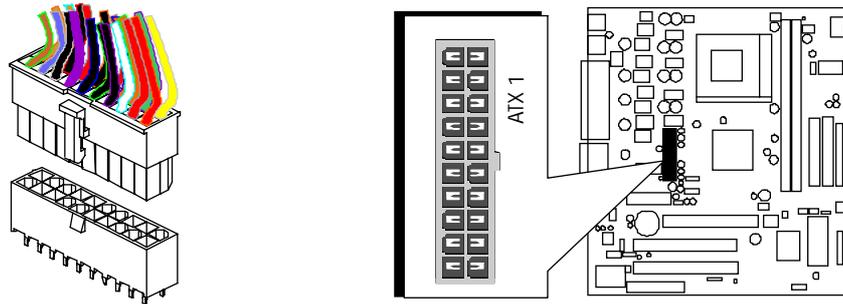
Note 1 : The ATX power connector is directional and will not go in unless the guides match perfectly. Make sure that pin#1 is properly positioned.

Note 2: Make sure the latch of the ATX power connector clicks into place to ensure a solid attachment.

Note 3: Your ATX power supply must be supplied to ACPI +5V standby power and at least 720mA compatible.

Note 4: Make sure your power supply have adequate power for higher speed processor installed.

Ⓔ❷ Dual USB ports Header (USB2)

This header is used to connect the cable attached to USB connectors mounted on front panel.

Pin assignment:
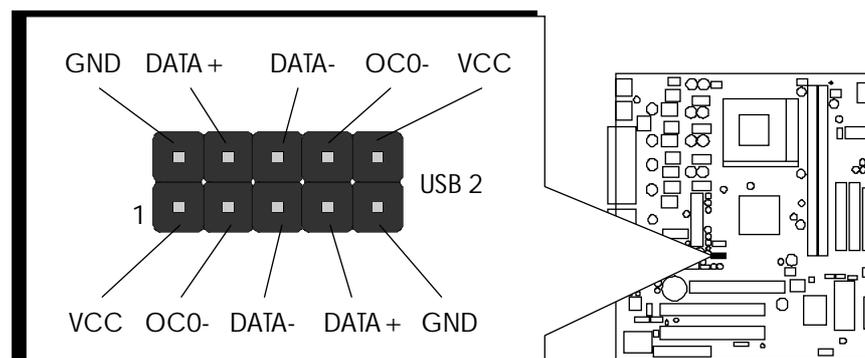
E3~E4 **Audio_in header (CD2 and CD 1)**

Use the audio cable provided with CD-ROM/DVD drive to join audio con-
nector on rear edge of CD-ROM/DVD drive with one of the two audio-in
connectors CD1 and CD2 on the mainboard.
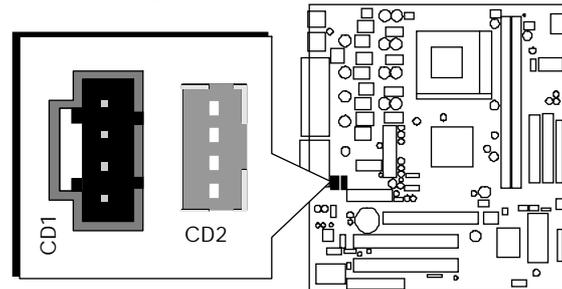
E5 **Extra MIC / Line_out Header (J1)**

This header allows users to install auxiliary front-oriented microphone and
line-out ports for easier access. Either the Mic and Line_out connector on
back panel or J1 header are available at the same time. If you would like to
use this J1 header on front panel, please remove all jumpers from J1 and
install your special Extra Mic / Line_out cable instead.
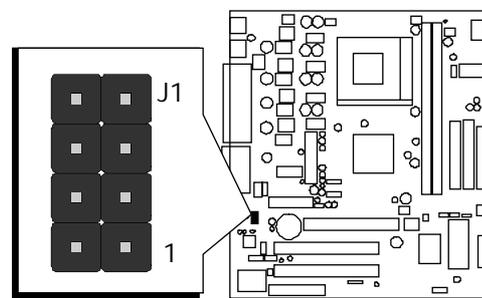
E6 **Lan Header (J2)**

This header allows users to attach an RJ-45 cable to access a local area
network (LAN).

Note: the LAN chip on board is optional at the time of purchase and it sup-
ports 10 Mbps or 100 Mbps LAN connections.
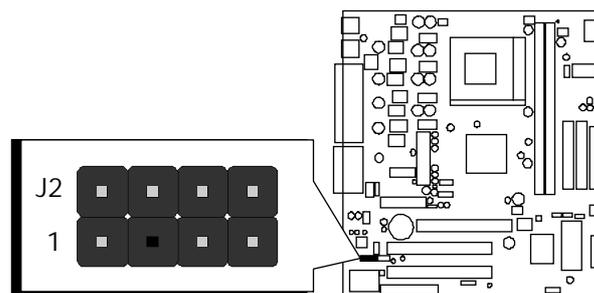
ⓔ⁊ IR connector (SIR 1)

If you have an Infrared device, this mainboard can implement IR transfer function. Please follow below procedure to enable IR transfer function.

SIR1

VCC

NC

IRRX

GND

IRTX
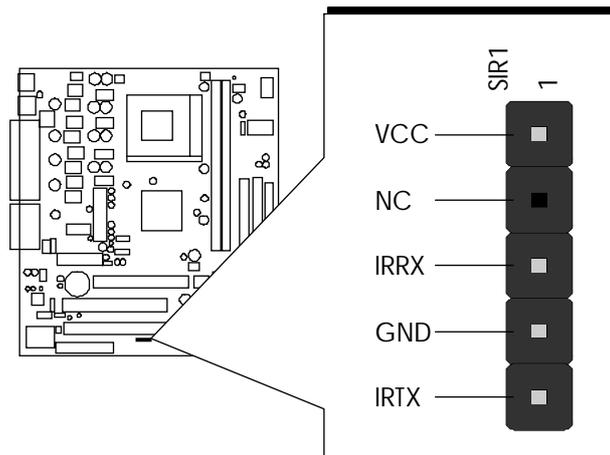
Step 1. Attach the 5-pin infrared device cable to SIR1 connector.
(Refer to above diagram for IR pin assignment.)

Step 2. Configure the Infrared transfer mode through the option "UART Mode Select" in field "Integrated peripheral / SiS 950 Super IO Device" of BIOS setup program. This mainboard supports Normal, IrDA and ASKIR transfer modes.

ⓔ⁸ Dual USB ports Header (USB3)

This header is used to connect the cable attached to USB connectors mounted on front panel.

Pin assignment:

GND DATA+ DATA- OC0- VCC

USB 3

1

VCC OC0- DATA- DATA+ GND
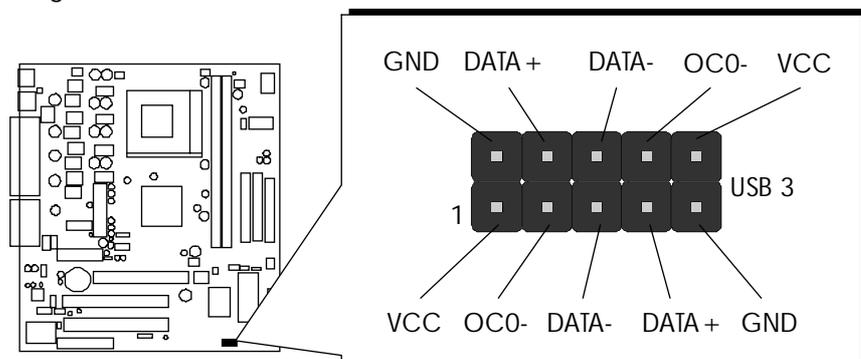
ⓔ9 Wake-on modem connector (WOM 1)

If you have a PCI modem card installed that supports wake-on-modem function, please connect the cable into the WOM1 header on the mainboard. When your system is in power-saving mode, any modem signal resumes system automatically. And you also need to enable the item through "Power Management / PM Wake Up Events" of BIOS setup program.
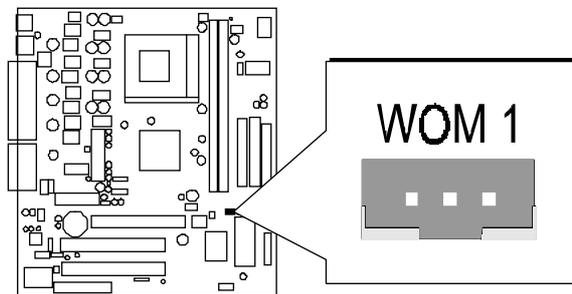
ⓔ10 Wake-on lan connector (WOL 1)

If you have a lan card installed and the lan card supports Wake-on-Lan function. Please connect the cable into WOL1 header on mainboard. While your system is in power-saving mode, any lan signal resumes system automatically. And you also need to enable the item through "Power Management" of BIOS setup program.
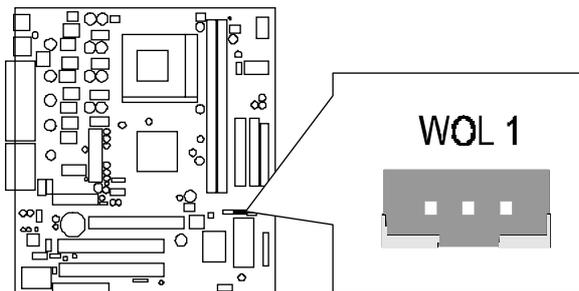
E11~E12 CPU Fan and Housing Fan Headers (CPUFAN1, CASFAN1)

This mainboard provides two onboard 12V cooling fan power headers to support CPU (CPUFAN1), Housing (CASFAN1) cooling fans.

> **Note:** Both cable wiring and type of plug may vary and they depend on fan maker. Keep in mind that the red wire should always be connected to the 12V header and the black wire to the ground (GND) header.

SENSE +12 GND

CPUFAN1

CASFAN1
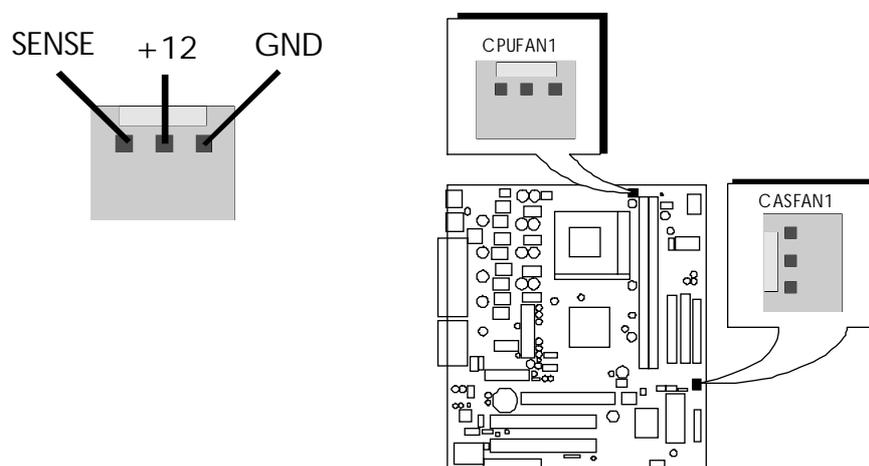
E13 Red 3VSB LED for SDRAM (LED 1)

The red LED turns on if your power cord is still plugged in, which means 3V standby voltage is supplied to mainboard. You can not install or uninstall memory modules while LED 1 lights up.
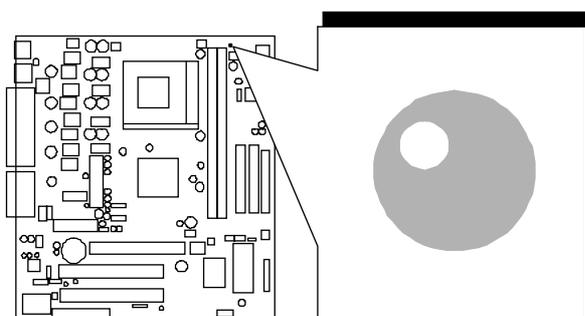
3.3 System Memory Configuration

The MS21 mainboard has two 168-pin DIMM sockets that allow you to install from 32MB up to 1.0GB of system memory with PC 100/133 SDRAM (Synchronous DRAM). Each DIMM (Dual In-line Memory Module) socket can accommodate 32MB, 64MB, 128MB, 256MB and 512MB 3.3V single or double side 64-bit or 72-bit wide data path SDRAM modules.

Install Memory:

Install memory in any or all of the banks and in any combination, shown as follows :

DIMM Socket	Memory Modules	Module Quantity
DIMM 1	32MB, 64MB, 128MB, 256MB and 512MB 168-pin 3.3V SDRAM	x 1
DIMM 2	32MB, 64MB, 128MB, 256MB and 512MB 168-pin 3.3V SDRAM	x 1

Note: You do not need to set any jumper to configure memory since the BIOS utility can detect the system memory automatically. You can check the total system memory value in the BIOS Standard CMOS Setup menu.

Upgrade Memory:

You can easily upgrade the system memory by inserting additional SDRAM modules in available DIMM banks. The total system memory is calculated by simply adding up the memory in all DIMM banks. After upgrade, the new system memory value will automatically be computed and displayed by the BIOS Standard CMOS Setup menu.

4 SOFTWARE UTILITY

4.1 MS21 Mainboard CD Overview

Note: The cd contents attached in the MS21 mainboard are subject to change without notice.

To start your mainboard CD, just insert it into your CD-ROM drive, and the CD AutoRun screen should appear. If the AutoRun screen does not appear, double click or run D:\Autorun.exe (assuming that your CD-ROM drive is drive D:)

Navigation Bar Description:

- ☞ **Install VGA Device Software** - Install VGA driver.

- ☞ **Install Audio Device Driver** - Install audio driver.

- ☞ **Link to Shuttle Homepage** - Link to shuttle website homepage.

- ☞ **Browse this CD** - Allows you to see contents of this CD.

- ☞ **Quit** - Close this CD.
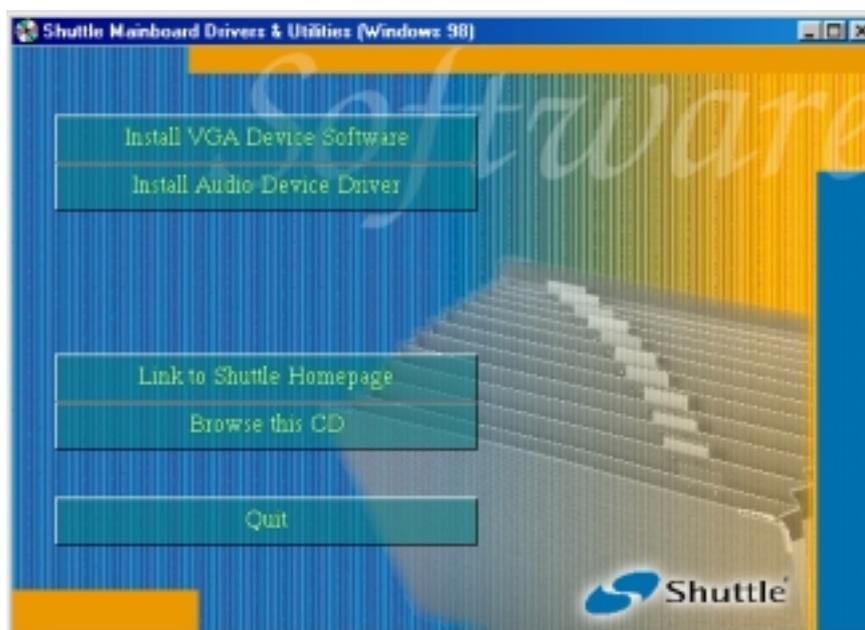
4.2 Install VGA Software

Insert the attached CD into your CD-ROM drive, and the CD AutoRun screen should appear. If the AutoRun screen does not appear, double click on Autorun icon in **My Computer** to bring up **Shuttle Mainboard Drivers & Utilities** screen. Use your pointing device (e.g. mouse) to select the "**Install VGA Device Software**" bar.

Once you made your selection, a Setup window runs the installation automatically. When the copying files is done, make sure you **reboot** the system to take the installation effect.

Note: You may install VGA driver under all O.S. except Windows NT 4.0. Take reference to next page for installing guide.
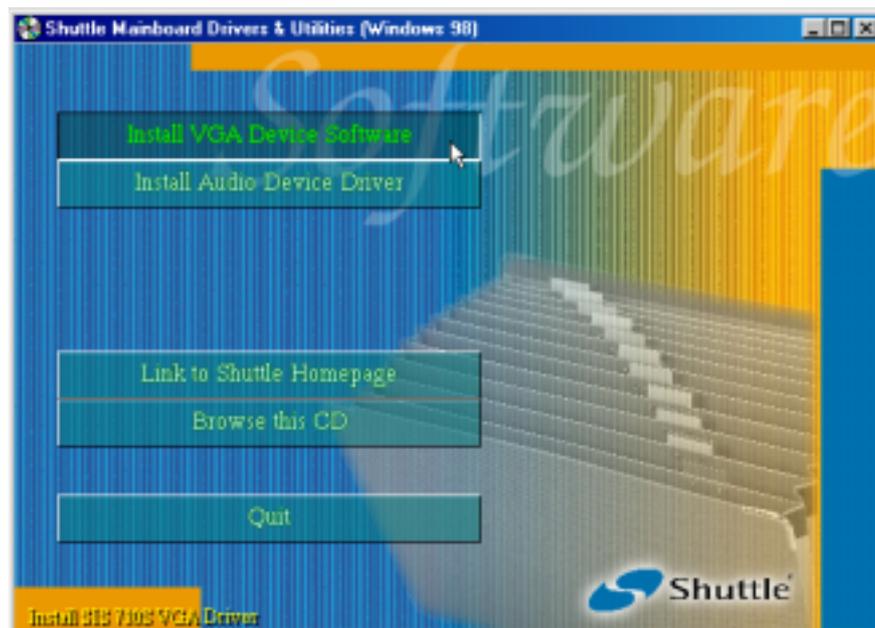
● Install VGA driver under NT 4.0:

1. Please move mouse to desktop and push right button of mouse, then window "**Display Properties**" comes out. Choose "**Display Type**" to get following screen.
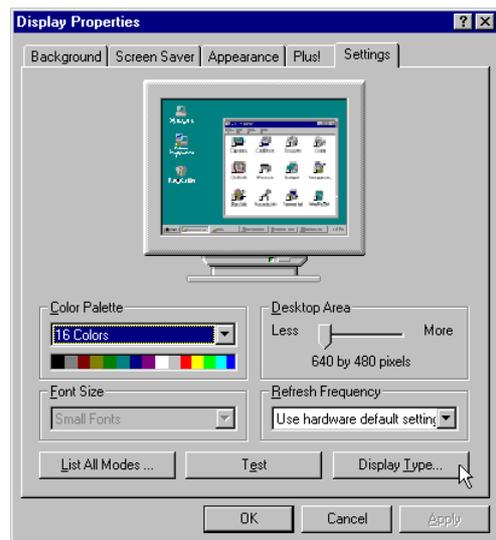
2. Use "**Change**" option to run to next screen.
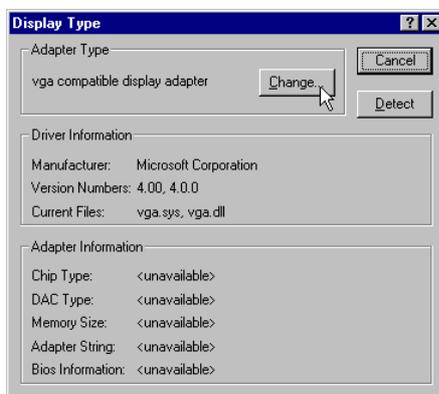
3. Please select "**Have Disk**".
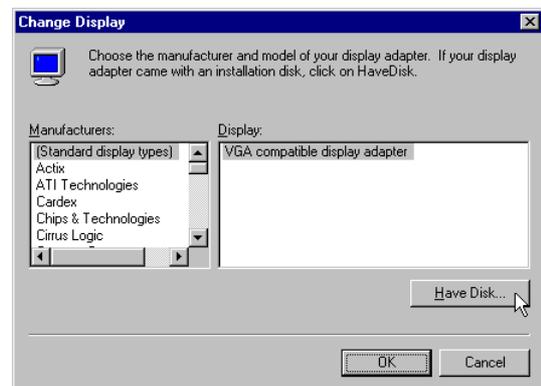
4. Please choose path "**D:\vga\WINNT40\Sis630**". Then you just obey installation guide to complete setup successfully. (In this location CD disk is supposed to be "**D**" letter.)
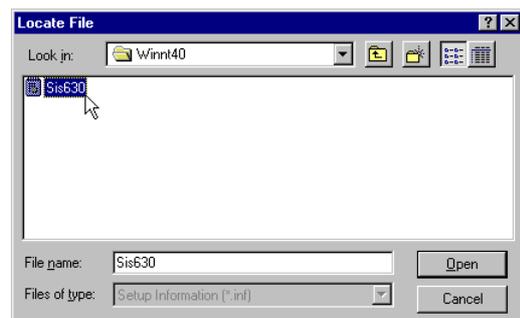
4.3 Install Audio Device Driver

Insert the attached CD into your CD-ROM drive, and the CD AutoRun screen should appear. If the AutoRun screen does not appear, double click on Autorun icon in **My Computer** to bring up **Shuttle Mainboard Drivers & Utilities** screen.

Use your pointing device (e.g. mouse) to select the "**Install Audio Device Driver**" bar.
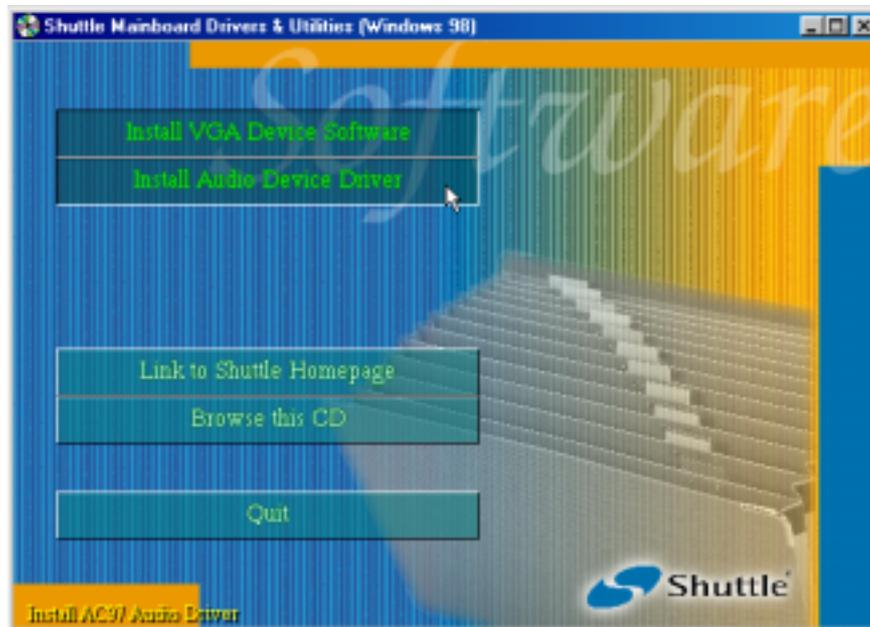
Once you made your selection, a Setup window runs the installation automatically.

When the copying files is done, make sure you **reboot** the system to take the installation effect.

4.4 Install LAN Driver

● **Install LAN driver under WIN 98SE:**

1. Please use mouse to go to "**My Computer**" then push right button of mouse and select "**Properties**" so that window "**System Properties**" may come out. You will see yellow marks. Choose "**properties**" by pressing right button of mouse to come into window "**PCI Ethernet Controller Properties**".

2. Choose "**Reinstall Driver**".

4. Please choose path "**D:\lan\Realtek\Win98**". Then you just obey installation guide of Wizard to complete setup successfully. (In this location CD disk is supposed to be "**D**" letter.)

Note: If you need to install lan driver under Windows ME, the setup procedure is similar like what you do under Windows 98SE.
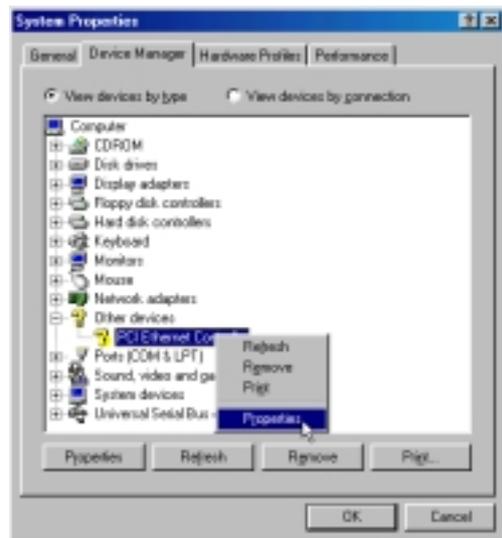
3. Please select "**Search for a better driver than the one your device is using now. [Recommended]**".

● **Install LAN driver under Windows NT:**

1. Please use mouse to go to "**Network Neighborhood**" then push right button of mouse and select "**Properties**"so that window "**Network Setup Wizard**" may come out. Please base the network setting of your system to decide following options And press "**next**" to continue setup.

2. Choose "**Have Disk**" and key in path "**D:\Lan\Realtek**" for installation. Then "**RTL8139 [A/B/C] PCI Fast Ethernet Adapter**" driver will be found. Press "**next**" to continue setup.
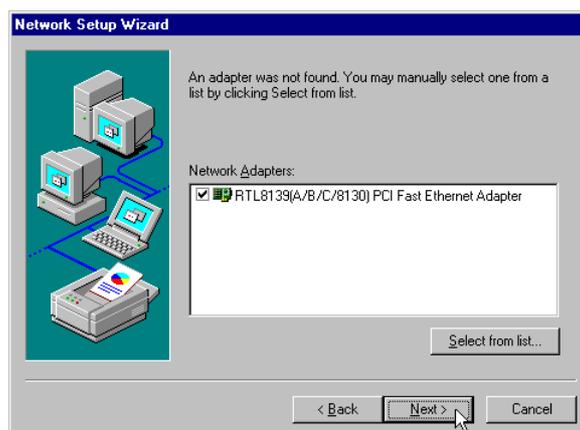
3. Then you just follow Wizard's default setting to complete installation.

● **Install LAN driver under Windows 2000:**

1. Please use pointing device to come to window "**System Properties**"
through the path " **My Computer - Control Panel - System - Hardware** ".
Then choose "Device Manager" to next screen.
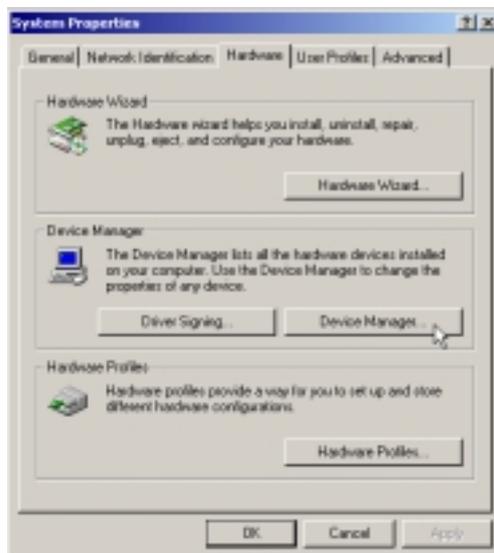
2. Choose "**Network Adapter**" and push right button of mouse to come into
next screen.
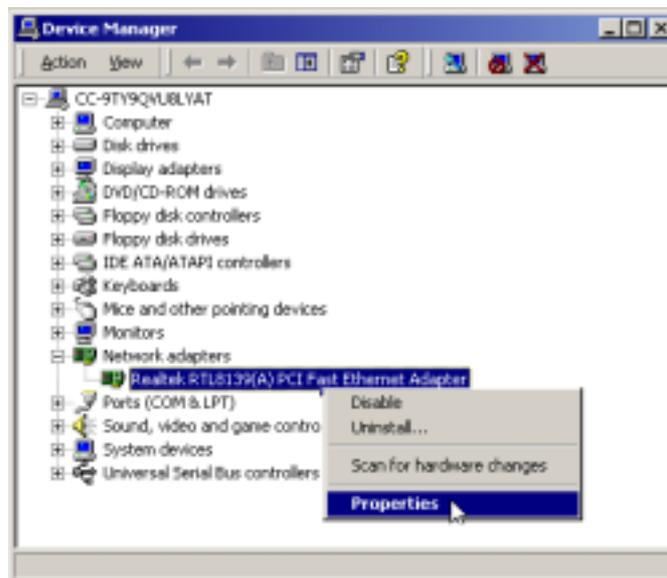
3. Then choose "**Update Driver**" so that Wizard may come out. Then press "next" to go on.
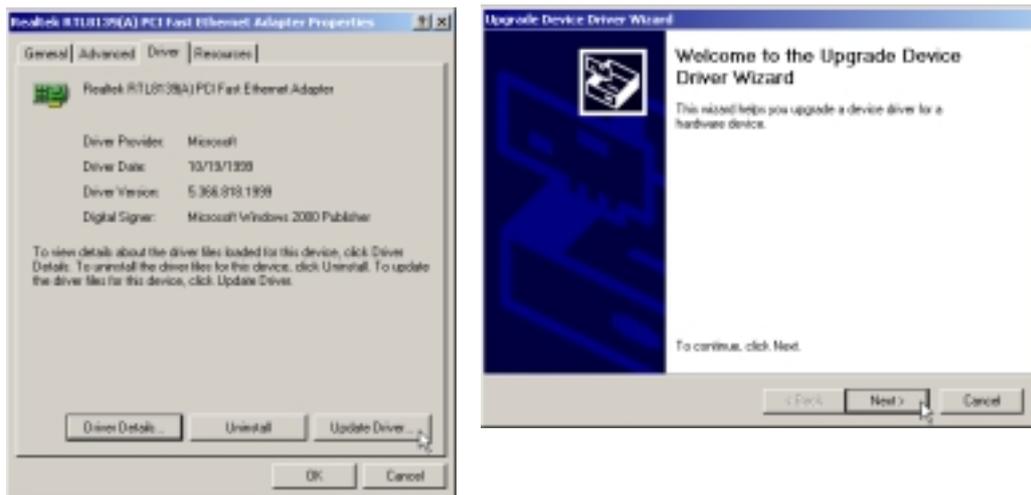
4. While you are asked of driver, select " **Display a list of the known drivers for this device so that I can choose a specific driver.**".

5. Please select the path "**D:\lan\Realtk\WIN2000\NETRTS5**" to install driver. (In this location CD disk is supposed to be "**D**" letter.)
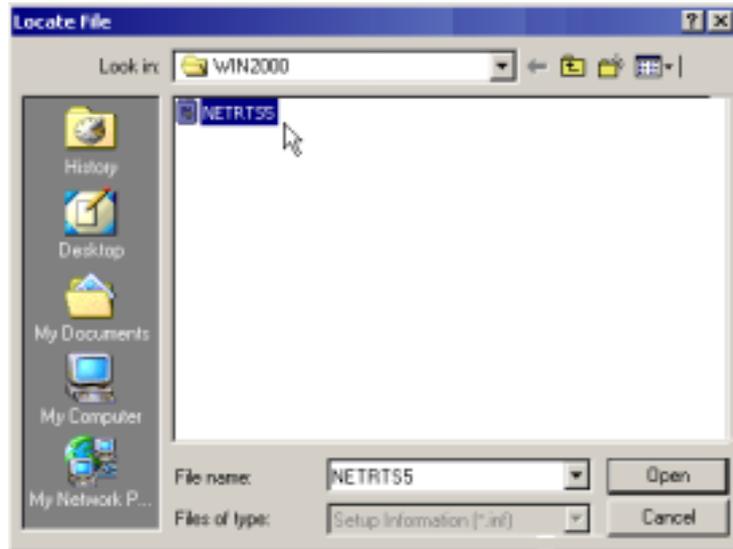
6. Choose "**Realtek RTL8139 [A/B/C/8130] PCI Fast EthernetNIC**". And then you just follow on-screen guide to finish setup.
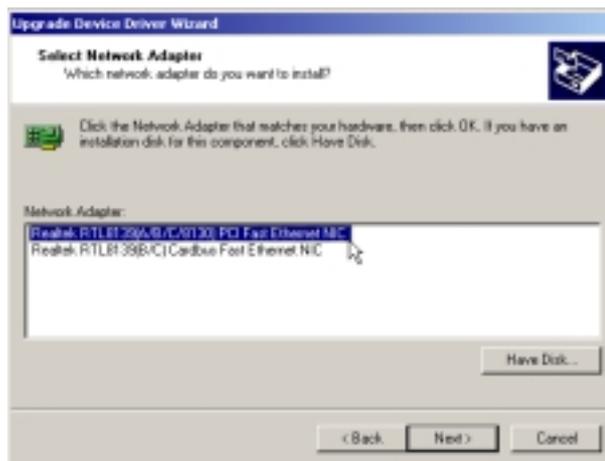
5 BIOS SETUP

MS21 BIOS ROM has a built-in Setup program that allows users to modify the basic system configuration. This information is stored in battery-backed RAM so that it retains the Setup information even if the system power is turned off.

The system BIOS is managing and executing a variety of hardware related functions in the system, including:
System date and time
Hardware execution sequence
Power management functions
Allocation of system resources

5.1 Enter the BIOS

To enter the BIOS (Basic Input / Output System) utility, follow these steps:

> **Step 1.** Power on the computer, and the system will perform its POST (Power-On Self Test) routine checks.

> **Step 2.** Press < Del > key immediately, or at the following message: "Press DEL to enter SETUP" ,or simultaneously press < Ctrl > , < Alt > , < Esc > keys

> **Note 1.** If you miss trains of words mentioned in step 2 (the message disappears before you can respond) and you still wish to enter BIOS Setup, restart the system and try again by turning the computer OFF and ON again or by pressing the < RESET > switch located at the computer's front panel. You may also reboot by simultaneously pressing the < Ctrl > , < Alt > , < Del > keys.
>
> **Note 2.** If you do not press the keys in time and system does not boot, the screen will prompt an error message, and you will be given the following options:
> **"Press F1 to Continue, DEL to Enter Setup"**

> **Step 3.** As you enter the BIOS program, the CMOS Setup Utility will prompt you the Main Menu, as shown in the next section.

5.2 The Main Menu

Once you enter the Award BIOS(tm) CMOS Setup Utility, the Main Menu will appear on the screen. The Main Menu allows you to select from several setup functions and two exit choices. Use the arrow keys to select among the items and press <Enter> to accept and enter the sub-menu.

```
           CMOS Setup Utility - Copyright (C) 1984-2000 Award Software

     ► Standard CMOS Features              ► Frequency/Voltage Control

     ► Advanced BIOS Features                Load Fail-Safe Defaults

     ► Advanced Chipset Features             Load Optimized Defaults

     ► Integrated Peripherals                Set Password

     ► Power Management Setup                Save & Exit Setup

     ► PnP/PCI Configurations                Exit Without Saving

     ► PC Health Status

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

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

Note that a brief description of each highlighted selection appears at the bottom of the screen.

Standard CMOS Features

This setup page includes all items in a standard BIOS compatible.

Advanced BIOS Features

This setup page includes all items of Award special enhanced features.

Advanced Chipset Features

This setup page includes all items of chipset features.

Integrated Peripherals

This setup page includes all items of peripherals features.

Power Management Setup

This setup page includes all items of Power Management features.

PnP/PCI Configurations

This item specifies the value (in units of PCI bus blocks) of the latency timer for the PCI bus master and the IRQ level for PCI device.

PC Health Status

This entry shows the current system temperature, voltage and Fan speed.

Frequency/Voltage Control

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

Load Fail-Safe Defaults

Setup defaults load the optimized settings for optimum system performance. However, you can change the parameter through each Setup Menu.

Load Optimized Defaults

To load the Turbo defaults is required by the power users who want to push the limitation of system performance by overclocking. **Before you use this function, make sure you fully understand the items in Chipset Setup menu and the components (CPU, DRAM, HDD, etc.) of your system are good enough for optimized setting.**

Set Password

The item can be used to install a password.

Save & Exit Setup

Save CMOS value changed to CMOS and exit from setup.

Exit Without Saving

Abandon all CMOS value changed and exit from setup.

✎ *Standard CMOS Features*

The items in Standard CMOS Setup Menu are divided into around 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) 1984-2000 Award Software
                            Standard CMOS Features
    ┌──────────────────────────────────────────────┬─────────────────────┐
    │  Date (mm:dd:yy)            Sat, Feb 24 2001  │     Item Help       │
    │  Time (hh:mm:ss)              1 : 42 : 11     ├─────────────────────┤
    │                                               │  Menu Level    ▶    │
    │ ▶ IDE Primary Master                          │                     │
    │ ▶ IDE Primary Slave                           │  Change the day, month, │
    │ ▶ IDE Secondary Master                        │  year and century   │
    │ ▶ IDE Secondary Slave                         │                     │
    │                                               │                     │
    │   Drive A                  [1.44M, 3.5 in.]   │                     │
    │   Drive B                  [None]             │                     │
    │   Floppy 3 Mode Support    [Disabled]         │                     │
    │                                               │                     │
    │   Video                    [EGA/VGA]          │                     │
    │   Halt On                  [All Errors]       │                     │
    │                                               │                     │
    │   Base 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 < month> < date> < year> .
Press < F3> to show the calendar.

Time

The time format is < hour> < minute> < second> . The time is converted based on the 24-hour military-time clock. For example. 5 p.m. is 17:00:00.

Hard Disks Type

This item identify the types of hard disk drives that has been in-stalled in the computer. There are 46 predefined types ,a user defin-able type and AUTO type.

Press PgUp or PgDn to select a numbered hard disk type, or type the number and press < Enter> . 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 item. If your hard disk drive type is not matched or listed, you can use Type User to define your own drive type manually.

If select Type User, you may find related information in the following items. Enter the information directly from the keyboard and press <Enter>. Those information should be provided in the documentation from your hard disk vendor or the system manufacturer.

The user may also set those items in AUTO to automatically configure the hard disk drives parameter when the system power on.

If a hard disk drive has not been installed, select NONE and press <Enter>.

Drive A type/Drive B type

This item specifies the types of floppy disk drive A or drive B that has been installed in the system.

Floppy 3 Mode Support

Floppy 3 mode refers to a 3.5-inch diskette with a capacity of 1.2 MB. Floppy 3 mode is sometimes used in Japan.

Video

This item selects the type of adapter used for the primary system monitor that must matches your video display card and monitor. Although secondary monitors are supported, you do not have to select the type in Setup.

Halt On

This item determines if the system will stop when an error is detected during power-up.

Memory

This item is only for display. It is automatically detected by POST (Power On Self Test) of the BIOS.

Base Memory

The POST of the BIOS will determine the amount of base (or conventional) memory installed in the system. The value of the base memory is typically 640K for systems with 640K memory installed on the mainboard.

Extended Memory

The BIOS determines how much extended memory is present during the POST. This is the amount of memory located above 1MB in the CPU's memory address map.

Advanced BIOS Features

```
CMOS Setup Utility - Copyright (C) 1984-2000 Award Software
                    Advanced BIOS Features

   Anti-Virus Protection      [Disabled]          Item Help
   CPU Internal Cache         [Enabled]
   External Cache             [Enabled]       Menu Level    ▶
   Processor Number Feature   [Enabled]
   Quick Power On Self Test   [Enabled]       Allows you to choose
   First Boot Device          [Floppy]        the VIRUS warning
   Second Boot Device         [HDD-0]         feature for IDE Hard
   Third Boot Device          [LS120]         Disk boot sector
   Boot Other Device          [Enabled]       protection. If this
   Swap Floppy Drive          [Disabled]      function is enabled
   Boot Up Floppy Seek        [Enabled]       and someone attempt to
   Boot Up NumLock Status     [On]            write data into this
   Gate A20 Option            [Fast]          area ,  BIOS will show
   Typematic Rate Setting     [Disabled]      a warning message on
 x Typematic Rate (Chars/Sec) 6               screen and alarm beep
 x 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   [Yes]

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

Anti-Virus Protection

When this item is enabled, it provides some protection against viruses that try to write to the boot sector and partition table of your hard disk drive. This item is *Disabled* by default. You need to disable it so that you can install an operating system. We recommend that you enable Anti-Virus Protection as soon as you have installed your disk with an OS.

➢ The choice: Enabled, Disabled.

CPU Internal Cache

All the processors that can be installed in this mainboard use internal (level 1) cache memory to improve performance. Leave this item at the default value *Enabled* for better performance.

➢ The choice: Enabled, Disabled.

External Cache

Most processors that can be installed in this system use external (L2) cache memory to improve performance. The exceptions are older SEPP Celeron CPUs running at 266 or 300 MHz. Enable this item for all but these two processors.

➢ The choice: Enabled, Disabled.

Processor Number Feature

Some of the new generation of socket-A processors are installed with a unique processor number. This number may be used for verification in Internet transactions and e-commerce. If you prefer not to use or distribute the unique processor number, use this item to suppress the processor number.

➢ The choice: Enabled, Disabled.

Quick Power On Self Test

You can enable this item to shorten the power on testing (POST) and have your system start up a little faster. You might like to enable this item after you are confident that your system hardware is operating smoothly.

➢ The choice: Enabled, Disabled.

First/Second/Third Boot Device

Use these three items to select the priority and order of the devices that your system searches for an operating system at start-up time.

➢ The choice: Floppy, HDD-0, HDD-1, HDD-2, HDD-3, SCSI, CDROM, ZIP-100, USB-FDD, USB-ZIP, LAN, LS120, USB CD-ROM, USB-HDD, Disabled.

Boot Other Device

If you enable this item, the system will search all other possible locations for an operating system if it fails to find one in the devices specified under the first, second, and third boot devices.

➢ The choice: Enabled, Disabled.

Swap Floppy Drive

If you have two floppy diskette drives in your system, this item allows you to swap the assigned drive letters so that drive A becomes drive B, and drive B becomes drive A.

➢ The choice: Enabled, Disabled.

Boot Up Floppy Seek

If this item is enabled, it checks the geometry of the floppy disk drives at start-up time. You don't need to enable this item unless you have an old diskette drive with 360K capacity.

➢ The choice: Enabled, Disabled.

Boot Up NumLock Status

This item defines if the keyboard Num Lock key is active when your system is started.

➢ The choice: On, Off.

Gate A20 Option

This item defines how the system handles legacy software that was written for an earlier generation of processors. Leave this item at the default value.

➢ The choice: Fast, Normal.

Typematic Rate Setting

If this item is enabled, you can use the following two items to set the typematic rate and the typematic delay settings for your keyboard.

➢ The choice: Enabled, Disabled.

Typematic Rate (Chars/Sec)

If the item Typematic Rate Setting is enabled, you can use this item to define how many characters per second are generated by a held-down key.

➢ The choice: 6, 8, 10, 12, 15,20, 24, 30.

Typematic Delay (Msec)

If the item Typematic Rate Setting is enabled, you can use this item to define how many milliseconds must elapse before a held-down key begins generating repeat characters.

➢ The choice: 250, 500, 750, 1000.

Security Option

If you have installed password protection, this item defines if the password is required at system start up, or if it is only required when a user tries to enter the Setup Utility.

➢ The choice: Setup, System.

OS Select For DRAM > 64MB

This item is only required if you have installed more than 64 MB of memory and you are running the OS/2 operating system. Otherwise, leave this item at the default Non-OS2.

➢ The choice: Non-OS2, OS2.

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

SMART is an industry acronym for Self-monitoring, Analysis and Reporting Technology. If the documentation of your hard disk states that SMART is supported, you can enable this item.

➢ The choice: Enabled, Disabled.

Report No FDD For WIN 95

If you are running a system with no floppy drive and using the Windows 95 OS, select Yes for this item to ensure compatibility with the Windows 95 logo certification.

➢ The choice: Yes, No.

◢ *Advanced Chipset Features*

```
        CMOS Setup Utility - Copyright (C) 1984-2000 Award Software
                        Advanced Chipset Features
   ┌──────────────────────────────────────────────┬──────────────────────────┐
   │ ▶ Advanced DRAM Control 1    [Press Enter]    │        Item Help         │
   │ ▶ Advanced DRAM Control 2    [Press Enter]    │                          │
   │   System BIOS Cacheable      [Enabled]        │   Menu Level    ▶        │
   │   Video  RAM Cacheable       [Enabled]        │                          │
   │   Memory Hole at 15M-16M     [Disabled]       │                          │
   │   AGP Aperture Size          [64MB]           │                          │
   │   Memory Parity Check        [Enabled]        │                          │
   │                                               │                          │
   │                                               │                          │
   │                                               │                          │
   │                                               │                          │
   │                                               │                          │
   ├───────────────────────────────────────────────┴─────────────────────────┤
   │ ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help │
   │    F5:Previous Values      F6:Fail-Safe Defaults    F7:Optimized Defaults │
   └──────────────────────────────────────────────────────────────────────────┘
```

● *Advanced DRAM Control 1*

Scroll to Advanced DRAM Control 1 and press < Enter > to view the following screen:

```
        CMOS Setup Utility - Copyright (C) 1984-2000 Award Software
                        Advanced DRAM Control 1
   ┌──────────────────────────────────────────────┬──────────────────────────┐
   │   Auto Configuration         [Auto]           │        Item Help         │
   │   SDRAM RAS Active Time       6T              │                          │
   │   SDRAM RAS Active Time       3T              │   Menu Level    ▶▶       │
   │   RAS to CAS Delay            3T              │                          │
   │   Write Recovery Time         2T              │                          │
   │   Early CKE Delay 1T Cntrl    Normal          │                          │
   │   Early CKE Delay Adjust      8ns             │                          │
   │   Dram Background Command    [Delay 1T]       │                          │
   │   LD-Off Dram RD/WR Cycles   [Delay 1T]       │                          │
   │                                               │                          │
   │                                               │                          │
   │                                               │                          │
   ├───────────────────────────────────────────────┴─────────────────────────┤
   │ ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help │
   │    F5:Previous Values      F6:Fail-Safe Defaults    F7:Optimized Defaults │
   └──────────────────────────────────────────────────────────────────────────┘
```

Auto Configuration

If you leave this item at *Auto*, the system will automatically detect and configure any DRAM devices it finds. If it fails to find a memory module, change the value to *Manual* and then manually configure the memory module by entering its characteristics in the items below (SDRAM RAS,… etc.) Refer to your DRAM's documentation if you need to obtain this information.

➢ The choice: Auto, Manual, 100MHz, 133MHz.

Dram Background Command

When the delay is set at 1T, background commands are issued 1 clock cycle behind the memory address (MA) which has been issued. When set to normal, background commands and MAs are issued at the same time.

➢ The choice: Normal, Delay 1T.

LD-Off Dram RD/WR Cycles

When the delay is set at 1T, memory read and write commands are issued 1 clock cycle behind the memory address (MA) which has been issued. When set to Normal, read/write commands and MAs are issued at the same time. Press **Esc** to close the Advanced DRAM Control 1 sub-menu and return to the Advanced Chipset Features page.

➢ The choice: Normal, Delay 1T.

Press *Esc* to close the Advanced DRAM Control 1 sub-menu and return to the Advanced Chipset Features page.

⬤ *Advanced DRAM Control 2*

Scroll to Advanced DRAM Control 2 and press < Enter > to view the following screen:

SDRAM CAS Latency

Enables you to select the CAS latency time in HCLKs of 2/2 or 3/3. The value is set at the factory depending on the DRAM installed. Do not change the values in this field unless you change specifications of the installed DRAM or the installed CPU.

➢ The choice: SPD, 2T, 3T.

```
          CMOS Setup Utility - Copyright (C) 1984-2000 Award Software
                            Advanced DRAM Control 2
 ┌──────────────────────────────────────────────┬──────────────────────────┐
 │  SDRAM CAS Latency          [3T]             │        Item Help         │
 │  SDRCLK Control             [-1.0 ns]        ├──────────────────────────┤
 │  SDWCLK Control CS#/CKE     [+2.0 ns]        │ Menu Level    ▶▶         │
 │  SDWCLK Control MA/SRAS     [+0.5 ns]        │                          │
 │  SDWCLK Control Hi DQM/MD   [+1.0 ns]        │                          │
 │  SDWCLK Control Lo DQM/MD   [+1.5 ns]        │                          │
 │                                              │                          │
 │                                              │                          │
 │                                              │                          │
 │                                              │                          │
 │                                              │                          │
 ├──────────────────────────────────────────────┴──────────────────────────┤
 │ ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help │
 │      F5:Previous Values    F6:Fail-Safe Defaults   F7:Optimized Defaults  │
 └──────────────────────────────────────────────────────────────────────────┘
```

SDRCLK Control

Enables you to set the phase of the SDRCLK that leads the SDCLK.

➢ The choice: +1.0ns, +0.5ns, 0.0ns, -0.5ns, -1.0ns, -1.5ns, -2.0ns, -2.5ns, -3.0ns, -3.5ns, -4.0ns, -4.5ns, -5.0ns, -5.5ns, -6.0ns, -6.5ns.

SDRCLK Control CS#/CKE

Enables you to set the phase of the SDWCLK used for CS#/CKE signals that lead the SDCLK.

➢ The choice: +5.0ns, +4.5ns, +4.0ns, +3.5ns, +3.0ns, +2.5ns, +2.0ns, +1.5ns, +1.0ns, +0.5ns, 0.0ns, -0.5ns, -1.0ns, -1.5ns, -2.0ns, -2.5ns.

SDRCLK Control MA/SRAS

Enables you to set the phase of the SDWCLK used for MA/SRAS#/SCAS#/RAMW# signals that lead the SDCLK.

➢ The choice: +5.0ns, +4.5ns, +4.0ns, +3.5ns, +3.0ns, +2.5ns, +2.0ns, +1.5ns, +1.0ns, +0.5ns, 0.0ns, -0.5ns, -1.0ns, -1.5ns, -2.0ns, -2.5ns.

SDRCLK Control Hi DQM/MD

Enables you to set the phase of the SDWCLK used for high DQM[7:4]/MD[63:32] signals that lead the SDCLK.

➢ The choice: +5.0ns, +4.5ns, +4.0ns, +3.5ns, +3.0ns, +2.5ns, +2.0ns, +1.5ns, +1.0ns, +0.5ns, 0.0ns, -0.5ns, -1.0ns, -1.5ns, -2.0ns, -2.5ns.

SDRCLK Control Lo DQM/MD

Enables you to set the phase of the SDWCLK used for Lo DQM[3:0]/MD[31:0] signals that lead the SDCLK.

➢ The choice: +5.0ns, +4.5ns, +4.0ns, +3.5ns, +3.0ns, +2.5ns, +2.0ns, +1.5ns, +1.0ns, +0.5ns, 0.0ns, -0.5ns, -1.0ns, -1.5ns, -2.0ns, -2.5ns.

Press Esc to close the Advanced DRAM Control 2 sub-menu and return to the Advanced Chipset Features page.

System BIOS Cacheable / Video RAM Cacheable

These items allow the video and/or system to be cached in memory for faster execution. We recommend that you leave these items at the default value.

➢ The choice: Enabled, Disabled.

Memory Hole at 15M-16M

This item can be used to reserve memory space for some ISA expansion cards that require it.

➢ The choice: Enabled, Disabled.

AGP Aperture Size

This item defines the size of the aperture if you use an AGP graphics adapter. It refers to a section of the PCI memory address range used for graphics memory. We recommend that you leave this item at the default value.

➢ The choice: 4MB, 8MB, 16MB, 32MB, 64MB, 128MB, 256MB.

Memory Parity Check

Enable this item to allow BIOS to perform a parity check to the POST memory tests. Enable only if the system DRAM supports parity checking.

➢ The choice: Enabled, Disabled.

✎ *Integrated Peripherals*

```
      CMOS Setup Utility - Copyright (C) 1984-2000 Award Software
                        Integrated Peripherals
  ┌──────────────────────────────────────────────┬──────────────────────┐
  │  ▶ SIS 730 OnChip IDE Device [Press Enter]    │      Item Help       │
  │  ▶ SIS 730 OnChip PCI Device [Press Enter]    ├──────────────────────┤
  │  ▶ SIS 950 SuperIO Device    [Press Enter]    │  Menu Level    ▶     │
  │    H/W Reset Function        [Enabled]        │                      │
  │    USB Controller            [Enabled]        │                      │
  │    USB Keyboard Support      [Disabled]       │                      │
  │    IDE HDD Block Mode        [Enabled]        │                      │
  │    Onboard PCI LAN           [Enabled]        │                      │
  │    Init Display First        [PCI Slot]       │                      │
  │    AGP VGA Selection         [AGP Slot]       │                      │
  │    AGP Auto Calibration      [Enabled]        │                      │
  │    System Share Memory Size  [8 MB]           │                      │
  │                                               │                      │
  └──────────────────────────────────────────────┴──────────────────────┘
   ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
        F5:Previous Values      F6:Fail-Safe Defaults   F7:Optimized Defaults
```

● *SiS 730 Onchip IDE Device*

Use this item to enable or disable the IDE channels that are integrated on the mainboard. Selecting SIS 730 ONChip IDE Device and pressing **Enter** displays the following screen:

```
      CMOS Setup Utility - Copyright (C) 1984-2000 Award Software
                       SIS 730 OnChip IDE Device
  ┌──────────────────────────────────────────────┬──────────────────────┐
  │    Internal PCI/IDE          [Both]           │      Item Help       │
  │    IDE Primary Master PIO    [Auto]           ├──────────────────────┤
  │    IDE Primary Slave  PIO    [Auto]           │  Menu Level   ▶▶     │
  │    IDE Secondary Master PIO  [Auto]           │                      │
  │    IDE Secondary Slave  PIO  [Auto]           │                      │
  │    Primary Master   UltraDMA [Auto]           │                      │
  │    Primary Slave    UltraDMA [Auto]           │                      │
  │    Secondary MasterUltraDMA  [Auto]           │                      │
  │    Secondary Slave UltraDMA  [Auto]           │                      │
  │    IDE Burst Mode            [Enabled]        │                      │
  │                                               │                      │
  └──────────────────────────────────────────────┴──────────────────────┘
   ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
        F5:Previous Values      F6:Fail-Safe Defaults   F7:Optimized Defaults
```

Inter PCI/IDE

Use this item to enable or disable the IDE channels that are integrated on the mainboard. Leaving this item at *Both* enables you to set the IDE Primary/Secondary Master/Slave PIO, Primary/Secondary Master/Slave UltraDMA, and IDE Burst Mode fields. Setting this item to Primary enables you to set the IDE Primary Master/Slave PIO, Primary Master/ Slave UltraDMA and IDE Burst Mode fields. If you set this item to Secondary, it enables you to set the IDE Secondary Master/Slave PIO, Secondary Master/Slave UltraDMA and IDE Burst Mode fields.

➢ The choice: Both, Primary, Secondary, Disable.

IDE Primary/Secondary Master/Slave PIO

Each channel supports a master device and a slave device. These four items let you assign which kind of PIO (Programmed Input/Output) is used by IDE devices. You can choose Auto, to let the system auto detect which PIO mode is best, or you can install a PIO mode from 0-4.

➢ The choice: Mode 0,1 ~ 4, Auto.

Pimary/Secondary Master/Slave UltraDMA

Each channel supports a master device and a slave device. This motherboard supports UltraDMA. UltraDMA technology provides faster access to IDE devices.

If you install a device that supports UltraDMA, change the appropriate item on this list to Auto. You may have to install the UltraDMA driver supplied with this motherboard in order to use an UltraDMA device.

➢ The choice: Auto, Disabled.

IDE Burst Mode

Enables or disables the IDE Bus Master generating PCI burst cycle control.

➢ The choice: Enabled, Disabled.

Press *Esc* to close the SIS 730 ONChip IDE Device sub-menu and return to the Integrated Peripherals page.

⬤ SiS 730 OnChip PCI Device

Use this item to enable or disable the PCI channels that are integrated on the mainboard. Selecting SIS 730 ONChip PCI Device and pressing **Enter** displays the following screen:

```
         CMOS Setup Utility - Copyright (C) 1984-2000 Award Software
                        SIS 730 OnChip PCI Device
 ┌─────────────────────────────────────────────┬───────────────────────┐
 │  SIS-7018 AC97 AUDIO       [Enabled]         │      Item Help        │
 │  SIS-7013 S/W Modem        [Enabled]         ├───────────────────────┤
 │                                              │  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  │
 └──────────────────────────────────────────────────────────────────────┘
```

SIS-7018 A97 AUDIO

Enables and disables the onboard AC 97 audio function.

➢ The choice: Enabled, Disabled.

SIS-7013 S/W Modem

Enables and disables the onboard AC 97 modem function.

➢ The choice: Enabled, Disabled.

Press *Esc* to close the SIS 730 ONChip PCI Device sub-menu and return to the Integrated Peripherals page.

⬤ SIS 950 Super IO Device

Use this item to define the operation of some peripheral components on the system's input/output ports. Selecting SIS 950 Super IO Device and pressing **Enter** displays the following screen:

```
         CMOS Setup Utility - Copyright (C) 1984-2000 Award Software
                           SIS 950 SuperIO Device
┌─────────────────────────────────────────────────┬──────────────────────┐
│   Onboard FDC Controller      [Enabled]          │      Item Help       │
│   Onboard Serial Port 1       [3F8/IRQ4]         │                      │
│   UART 2 Mode Controller      [Disabled]         │                      │
│   UART Mode Select            [Normal]           │                      │
│   UR2 Duplex Mode             [Half]             │                      │
│   Onboard Parallel Port       [378/IRQ7]         │                      │
│   Parallel Port Mode          [ECP]              │                      │
│   ECP Mode Use DMA            [3]                │                      │
│   Game Port Address           [201]              │                      │
│   Midi Port Address           [330]              │                      │
│   Midi Port IRQ               [10]               │                      │
│                                                  │                      │
└─────────────────────────────────────────────────┴──────────────────────┘
 ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
           F5:Previous Values    F6:Fail-Safe Defaults   F7:Optimized Defaults
```

Onboard FDC Controller

This option enables the onboard floppy disk drive controller.

➢ The choice: Enabled, Disabled.

Onboard Serial Port 1

This option is used to assign the I/O address for the onboard serial port 1

➢ The choice: Disable, 3F8/IRQ4, 2F8/IRQ3, 3E8/IRQ4, 2F8/IRQ3, Auto.

UART 2 Mode Controller

If you would like to set below option "UART Mode Select", please enable this item.

➢ The choice: Enabled, Disabled.

UART Mode Select

UART Mode Select enables you to select the infrared communication protocol—Normal, IrDA, ASKIR.

The UART mode setting depends on which type of infrared module is used in the system. When set to "ASKIR" or "IrDA," the UART mode is used to support the infrared module connected on the mainboard.

➢ The choice: ASKIR, IrDA, Normal.

UR2 Duplex Mode

This field is available when UART Mode Select is set to ASKIR or IrDA. This item enables you to determine the infrared (IR) function of onboard infrared chip.

Full-duplex means that you can transmit and send information simultaneously. Half-duplex is the transmission of data in both directions, but only one direction at a time.

➢ The choice: Full, Half.

Onboard Parallel Port

This option is used to assign the I/O address for the onboard parallel port.

➢ The choice: Disabled, 378/IRQ7, 278/IRQ5, 3BC/IRQ7.

Parallel Port Mode

Enables you to set the data transfer protocol for your parallel port. There are four options: SPP (Standard Parallel Port), EPP (Enhanced Parallel Port), ECP (Extended Capabilities Port) and ECP+EPP.

SPP allows data output only. Extended Capabilities Port (ECP) and Enhanced Parallel Port (EPP) are bi-directional modes, allowing both data input and output. ECP and EPP modes are only supported with EPP and ECP aware peripherals.

➢ The choice: ECP, EPP, SPP, ECP+EPP.

ECP Mode Use DMA

When the onboard parallel port is set to ECP mode, the parallel port has the option to use DMA "3" or DMA "1

➢ The choice: 1, 3.

Game Port Address

Enables you to specify the I/O address of the game port.

➢ The choice: 201, 209.

Midi Port Address

Enables you to specify the I/O address of the MIDI port if installed.

➢ The choice: 330, 300.

Midi Port IRQ

Enables you to specify the IRQ of the MIDI port if installed.

➢ The choice: 5, 10.

Press Esc to close the SIS 950 Super IO Device sub-menu and return to the Integrated Peripherals page.

H/W Reset Function

This item enables or disables the hardware reset button. When set to Disabled, pushing hardware reset button will not reset the system.

➢ The choice: Enabled, Disabled.

USB Controller

Use this item to enable the USB ports that are integrated on this mainboard.

➢ The choice: Enabled, Disabled.

USB Keyboard Support

Enable this item if you are using a keyboard connected through the USB Port.

➢ The choice: Enabled, Disabled.

IDE HDD Block Mode

Block mode transfers can improve the access to IDE devices. Enable this item if your IDE devices support block mode transfers.

➢ The choice: Enabled, Disabled.

Init Display First

Use this item to define if your graphics adapter is installed in one of the PCI slots or select Onboard if you have a graphics system integrated on the mainboard.

➢ The choice: PCI Slot, AGP.

AGP VGA Selection

Use this item to enable an add-in VGA card installed in the AGP slot.

➢ The choice: AGP Slot, AGP.

AGP Auto Calibration

This item allows you to enable or disable AGP buffer strength auto calibration through the chipset.

➢ The choice: AGP Slot, Onboard.

System Share Memory Size

This motherboard has a built-in graphics system that uses UMA (Unified Memory Architecture) so that the graphics reserves a part of main memory for video memory. Use this item to determine how much of the main memory can be used as video memory.

➢ The choice: 8MB, 16MB, 32MB, 64MB.

☜ *Power Management Setup*

This option displays items that let you control the system power management. Modern operating systems take care of much of the power management. This mainboard supports ACPI (Advanced Configuration and Power Interface). The system has various power saving modes including powering down the hard disk, turning off the video, suspending to RAM, and a software power down that allows the system to be automatically resumed by certain events.

Wake Up Calls

If the system is suspended, or has been powered down by software, it can be resumed by a wake up call that is generated by incoming traffic to a modem, a PCI card, or a fixed alarm on the system realtime clock.

```
      CMOS Setup Utility - Copyright (C) 1984-2000 Award Software
                         Power Management Setup

   ACPI function              [Enabled]                    Item Help
   ACPI Suspend Type          [S1(POS)]
   Video Off Option           [Susp,Stby -> Off]     Menu Level    ▶
   Video Off Method           [DPMS Supported]
   Switch Function            [Break/Wake]
   MODEM Use IRQ              [3]
   Hot Key Function As        [Power Off]
   HDD Off After              [Disable]
   Power Button Override      [Instant Off]
   Power Resume Control       [Always On]
 ▶ PM Wake Up Events          [Press Enter]




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

ACPI function

This mainboard supports ACPI (Advanced Configuration and Power management Interface). Use this item to enable or disable the ACPI feature.

➢ The choice: Enabled, Disabled.

ACPI Suspend Type

Use this item to define how your system suspends. In the default, S1 (POS), the suspend mode is equivalent to a software power down. If you select S3 (STR), the suspend mode is a suspend to RAM – the system shuts down with the exception of a refresh current to the system memory.

➢ The choice: S1 (POS), S3 (STR).

Video Off Option

This option defines if the video is powered down when the system is put into suspend mode.

➤ The choice: Always On, Suspend -> Off, Sus stay -> Off,
    All Mode -> Off.

Video Off Method

This item defines how the video is powered down to save power. This item is set to DPMS (display power management software) by default.

➤ The choice: Blank Screen, V/H SYNC + Blank, DPMS Supported.

Switch Function

Enables you to set the System Management Interrupt (SMI) button function in DOS.   ➤   The choice: Disabled, Break / wake.

MODEM Use IRQ

If you want an incoming call on a modem to automatically resume the system from a power-saving mode, use this item to specify the interrupt request line (IRQ) that is used by the modem. You might have to connect the fax/modem to the mainboard Wake On Modem connector for this feature to work.

➤ The choice: NA, 3, 4, 5, 7, 9, 10, 11.

Hot Key Function As

Enables you to set the power button function in DOS.

➤ The choice: Disabled, Power off, Suspend.

HDD Off After

The IDE hard drive will spin down if it is not accessed within a specified length of time. Options are from 1 Min to 15 Min and Disable.

➤ The choice: Disabled, 1 Min ~ 15 Min.

Power Button Override

Under ACPI (Advanced Configuration and Power management Interface) you can create a software power down. In a software power down, the system can be resumed by Wake Up Alarms. This item lets you install a software power down that is controlled by the normal power button on your system. If the item is set to Instant Off, then the power button causes a software power down. If the item is set to Delay 4 Sec. then you have to hold the power button down for four seconds to cause a software power down.

➤ The choice: Instant Off, Delay 4 sec.

Power Resume Control

This item enables your computer to automatically restart or return to its last operating status after power returns from a power failure.

➢ The choice: Always Off, Always On, Keep Pre-state.

⬤ *PM Wake Up Events*

This item opens a submenu that enables you to set events that will resume the system from a power saving mode. Select Wake Up Events and press **Enter** to display the following menu:

```
         CMOS Setup Utility - Copyright (C) 1984-2000 Award Software
                           PM Wake Up Events

    IRQ [3-7,9-15],NMI          [Enabled]              Item Help
    IRQ 8 Break Suspend         [Disabled]
    RING   Power Up Control     [Enabled]          Menu Level    ▶▶
    PCIPME Power Up Control      [Disabled]
    KB Power ON Password        [Enter]
    Power Up by Alarm           [Disabled]
  x Month Alarm                  0
  x Day of Month Alarm           0
  x Time (hh:mm:ss) Alarm        0    8   44




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

IRQ [3-7, 9-15], NMI

When enabled, any event occurring at IRQs 3 through 15 (excluding IRQ 8) will awaken a system, which has been powered down.

➢ The choice: Enabled, DisaIRQ [3-7, 9-15], NMI

When enabled, any event occurring at IRQs 3 through 15 (excluding IRQ 8) will awaken a system, which has been powered down.

➢ The choice: Enabled, Disabled.

IRQ 8 Break Suspend

This field allows you to enable or disable monitoring of IRQ8 so that it does not awaken the system from a suspend mode.

➢ The choice: Enabled, Disabled.

RING Power Up Control

When set to Enabled, the system power will be turned on if there is any modem activity.

➢ The choice: Enabled, Disabled.

PCIPME Power Up Control

When set to Enabled, system power will be turned on if there is any PCI card activity from PCI cards that trigger a PME event, such as LAN or Modem cards.

➢ The choice: Enabled, Disabled.

KB Power ON Password

You can use this item to install a power on password. Press Enter to display the Password dialog box.

Power Up by Alarm

When set to Enabled, the following three fields become available and you can set the month, date (day of the month), hour, minute and second to turn on your system.

➢ The choice: Enabled, Disabled.

Month Alarm

This is for specifying the alarm month which system will awaken the system from suspend mode. Key in a DEC number: Min=1, Max=12.

Day of Month Alarm

This is for specifying the alarm day which system will awaken the system from suspend mode. Key in a DEC number: Min=1, Max=31.

Time (hh:mm:ss) Alarm

This is for specifying the alarm hour/minute/second which system will awaken the system from suspend mode. Key in a DEC number: Min=1, Max=31.

❧ PnP/PCI Configurations

```
          CMOS Setup Utility - Copyright (C) 1984-2000 Award Software
                            PnP/PCI Configurations
 ┌─────────────────────────────────────────────┬──────────────────────────┐
 │  Reset Configuration Data    [Disabled]      │        Item Help         │
 │                                              ├──────────────────────────┤
 │  Resources Controlled By     [Auto(ESCD)]    │  Menu Level    ▶         │
 │ x IRQ Resources               Press Enter    │                          │
 │                                              │  Default is Disabled.    │
 │  PCI/VGA Palette Snoop       [Disabled]      │  Select Enabled to       │
 │                                              │  reset Extended System   │
 │                                              │  Configuration Data      │
 │                                              │  ESCD) when you exit     │
 │                                              │  Setup if you have       │
 │                                              │  installed a new add-on  │
 │                                              │  and the system          │
 │                                              │  reconfiguration has     │
 │                                              │  caused such a serious   │
 │                                              │  conflict that the OS    │
 │                                              │  cannot boot             │
 │                                              │                          │
 └─────────────────────────────────────────────┴──────────────────────────┘
  ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
           F5:Previous Values     F6:Fail-Safe Defaults    F7:Optimized Defaults
```

The PnP/PCI Configurations allows you to configure the ISA and PCI devices installed in your system.

Reset Configuration Data

If you enable this item and restart the system, any PnP configuration data stored in the BIOS setup is cleared from memory. New updated data is created. ➢ The choice: Enabled, Disabled.

Resources Controlled By

You should leave this item at the default Auto (ESCD). Under this setting, the system dynamically allocates resources to plug and play devices as they are required. If you cannot get a legacy ISA (Industry Standard Architecture) add-in card to work properly, you might be able to solve the problem by changing this item to Manual, and then opening up the *IRQ Resources* sub-menu.

In the *IRQ Resources* sub-menu, if you change any of the IRQ assignations to Legacy ISA, then that Interrupt Request Line is reserved for a legacy ISA add-in card. Press **Esc** to close the IRQ Resources sub-menu.

➢ The choice: Auto (ESCD), Manual.

PCI/VGA Palette Snoop

This item is designed to overcome some problems that can be caused by some non-standard VGA cards. This board includes a built-in VGA system that does not require palette snooping so you must leave this item disabled.

➢ The choice: Enabled, Disabled.

✍ PC Health Status

```
      CMOS Setup Utility - Copyright (C) 1984-2000 Award Software
                         PC Health Status
┌──────────────────────────────────────────────┬─────────────────────┐
│  Shutdown Temperature    [XX°C/XXX°F]          │     Item Help       │
│  CPU Core Vlotage         X.XX V               │                     │
│  Vcc     2.5U             X.XX V               │  Menu Level    ▶    │
│  Vcc     3.3U             X.XX V               │                     │
│  Vcc     5.0U             X.XX V               │                     │
│          +12U            XX.XX V               │                     │
│  StandBy 3.3U             X.XX V               │                     │
│          -12U            XX.XX V               │                     │
│  StandBy 5.0U             X.XX V               │                     │
│  Voltage Battery          X.XX V               │                     │
│  CPU     Temperature     XX°C/XX°F             │                     │
│  System  Temperature     XX°C/XX°F             │                     │
│  CPU     Fan Speed       XXXX RPM              │                     │
│  Case    Fan Speed       XXXX RPM              │                     │
│                                                │                     │
│                                                │                     │
├────────────────────────────────────────────────────────────────────┤
│ ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help │
│    F5:Previous Values     F6:Fail-Safe Defaults    F7:Optimized Defaults     │
└──────────────────────────────────────────────────────────────────────┘
```

Shutdown Temperature

Select one range which includes the highest temperature of system. Once your computer's temperature is over the value, system shuts down.

System Component Characteristics

These fields provide you with information about the systems current operating status. You cannot make changes to these fields. The following information is for display.

CPU Core Voltage	
Vcc	5.0V, 3.3V, 2.5V, 12V
StandBy	5.0V, 3.3V, -12V
Voltage	Battery
CPU and system	Temperature
CPU and system	Fan Speed (in RPMs)

🔷 *Frequency/Voltage Control*

```
        CMOS Setup Utility - Copyright (C) 1984-2000 Award Software
                         Frequency/Voltage Control
 ┌─────────────────────────────────────────────┬───────────────────────┐
 │ Auto Detect DIMM/PCI Clk   [Enabled]         │       Item Help       │
 │ Spread Spectrum            [Enabled]         ├───────────────────────┤
 │ CPU HOST/SDRAM/PCI Clock   [Default]         │ 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
```

Auto Detect DIMM/PCI Clk

When this item is enabled, BIOS will disable the clock signal of free DIMM and PCI slots.

➤ The choice: Enabled, Disabled.

Spread Spectrum

If you enable spread spectrum, it can significantly reduce the EMI (Electronic-Magnetic Interference) generated by the system.

➤ The choice: Enabled, Disabled.

CPU Host / SDRAM / PCI Clock

These items appear if you have set the *CPU Internal Core Speed* to Manual. Use the *CPU/SDRAM/PCI Clock* to set the system bus frequency for installed processor (133 MHz, 100 MHz).

☜ Load Fail-Safe Defaults

While you press < Enter > on this item, you will get a confirmation dialog box with a message similar to:

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

Press 'Y' loads the BIOS default values for the most stable, minimal-performance system operations.
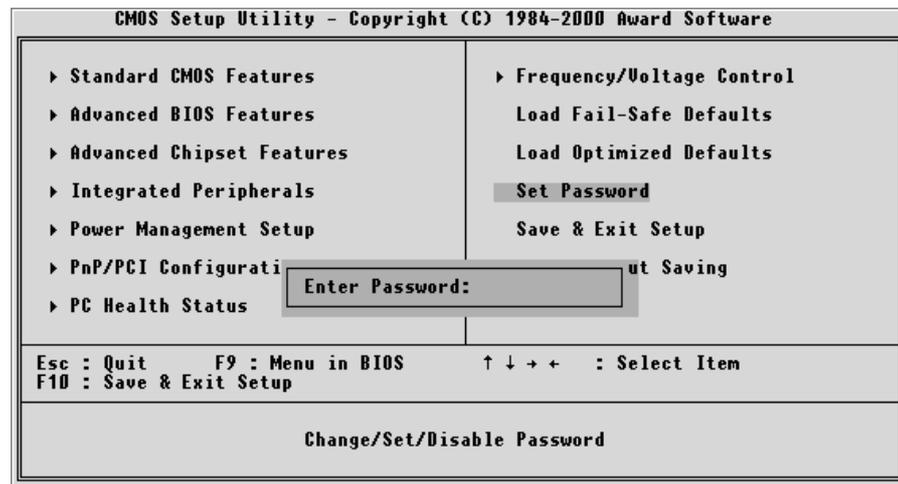
☜ Load Optimized Defaults

While you press < Enter > on this item, you will get a confirmation dialog box with a message similar to:

Load Optimized Defaults (Y/N) ? N

Press 'Y' loads the default values that are factory settings for optimal performance system operations.

🐭 Set Password

```
        CMOS Setup Utility - Copyright (C) 1984-2000 Award Software
   ┌──────────────────────────────────────────────────────────────────┐
   │  ▸ Standard CMOS Features          ▸ Frequency/Voltage Control     │
   │  ▸ Advanced BIOS Features             Load Fail-Safe Defaults      │
   │  ▸ Advanced Chipset Features          Load Optimized Defaults      │
   │  ▸ Integrated Peripherals             Set Password                 │
   │  ▸ Power Management Setup              Save & Exit Setup            │
   │  ▸ PnP/PCI Configurati┌──────────────────────────────┐ut Saving    │
   │  ▸ PC Health Status    │  Enter Password:             │             │
   │                        └──────────────────────────────┘             │
   ├──────────────────────────────────────────────────────────────────┤
   │  Esc : Quit     F9 : Menu in BIOS      ↑ ↓ → ←   : Select Item     │
   │  F10 : Save & Exit Setup                                            │
   ├──────────────────────────────────────────────────────────────────┤
   │                  Change/Set/Disable Password                       │
   └──────────────────────────────────────────────────────────────────┘
```

This item is to set supervisor password. Please follow below steps.

New Password Setting :

1. While pressing < Enter > key to start setting password function, a dialog box appears to ask you "Enter password: ".
2. Key in a new password now. However, the password can not be over eight characters or numbers.
3. Then system will request you to confirm new password by asking you to key in new password again.
4. Once the confirmation is completed, new code takes effect.

No Password Setting :

5. If you want to delete password, just press < Enter > key instead of new password while password input is requested. And the other procedures are the same as above password setting.

If You Forget Password :

6. While being asked of password, you just forget it and you must access the system. The only way is to turn off system and clear CMOS memory. Please take reference in page 29 for clear CMOS setting.

Save & Exit Setup

Press <Enter> on this item, and a similar dialog box shows up to ask you the following confirmation :

Save to CMOS and EXIT (Y/N)? Y

Pressing "Y" stores the selections made in the menus of CMOS - a special section of memory that stays on after you turn your system off. When next time you boot your computer, the BIOS configures your system according to the Setup selections stored in CMOS. After saving the values, the system restarts again.

Exit Without Saving

Press <Enter> on this item and a similar dialog box shows up to ask you the following confirmation :

Quit without saving (Y/N)? Y

This allows you to exit from Setup without storing in CMOS any change. The previous selections remain in effect. This exits from the Setup utility and restarts your computer.