MB47N

Pentium 4/Celeron, 478-Pin Processor Based MAIN BOARD

User's Manual

Shuttle® MB47N

Pentium 4/Celeron,478-pin processor based Mainboard
Manual Version 1.1

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M584

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1 INTRODUCTION

1.1 Item Checklist:

Check all items with you MB47N mainboard to make sure nothing is missing. The complete package should include:

✴ One piece of Shuttle MB47N Mainboard
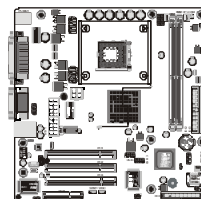
✴ One piece of ATA **100 /66/33** Ribbon Cable
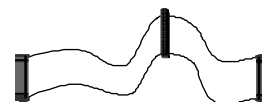
✴ One piece of Floppy Ribbon Cable

✴ One piece of twin ports USB Cable **(optional)**
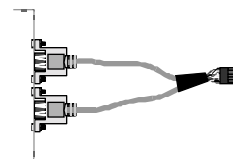
✴ MB47N User's Manual

✴ I/O Shielding

✴ One piece of Bundled CD-ROM with containing:
  ➢ MB47N user's manual saved in PDF format
  ➢ Intel Chipset System Driver
  ➢ Onboard Audio controller driver
  ➢ IDE driver
  ➢ USB2.0 Driver
  ➢ VGA driver
  ➢ Award Flashing Utility
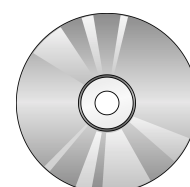
2 FEATURES

MB47N 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

Intel Pentium 4/Celeron, 478-pin processors with 400 MHz FSB.

✹ Chipset

Features Intel 845-GL (GMCH) and Intel 82801DB (ICH4).

✹ Onboard 10/100M LAN

The Realtek RTL8100B is incorporated in the chipset providing the mainboard with integrated Fast Ethernet capabilities.

✹ Jumperless CPU Configuration

Supports 400MHz (FSB) and data bandwidths up to 3.2GB/s.

✹ AC'97 Link for 4-Channel Audio and Telephony CODEC

AC'97 audio codec is compliant with the AC'97 2.3 specification, and supports 18-bit ADC (Analog Digital Converter) and DAC (Digital Analog Converter) resolution as well as 18-bit stereo full-duplex codec with independent and variable sampling rates.

✹ Versatile Memory Support

The mainboard can accommodate 2.5V unbuffered DDR SDRAM. It accommodates two 184 pin slots with a total maximum capacity of 2GB.

✹ Expansion Slots

Provides three 32-bit PCI card slots and on CNR slot.

✹ USB2.0 Interface Onboard

➢ 2 USB ports on back-panel and two USB header (4 ports) for extended USB cable and front-panel.

✺ I/O Interface

Provides a variety of I/O interfaces:

- ➢ 2PS/2 ports for mouse and keyboard
- ➢ 1Parallel port
- ➢ 1Serial port
- ➢ 1VGA port
- ➢ 1MIDI/GAME port.
- ➢ 1LAN port
- ➢ 2USB ports
- ➢ 1Mic-in port
- ➢ 1Line-in port
- ➢ 1Line-out port

✺ PCI Bus Master IDE Controller Onboard

Two Ultra DMA 100/66/33 Bus Master Dual-channel IDE ports support to a maximum of four IDE devices (one Master and one Slave per channel).

The IDE Bus implements data transfer speeds of up to 100 MB/sec and also supports Enhanced PIO Modes.

80-pin Cable Backward Compatible Legacy ATAPI Devices, ATAPI IDE CD-ROM, CD-R, CD-RW, and LS-120 Supports.

✺ ATX Power Supply Connector

ATX power supply unit can connected to the onboard 20-pin Pentium 4 standard ATX power connectors, supporting Suspend and Soft-On/Off by dual-function power button.

The Pentium 4 ATX power include two connectors.

✺ Advanced Configuration and Power Interface

Features four power saving modes: S1 (Snoop), S3 (Suspend to RAM), S4 (Suspend to DISK), and S5 (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 V6.0 PG on Intel Firmware Hub 2Mb Flash core and supports Green PC, Desktop Management Interface (DMI).

✹ Form Factor

System board conforms to Micro ATX specification.

Board dimension: 244mm x 244mm.

✹ Advanced Features

➢ **Low EMI** - Built in spread spectrum and automatic clock shut-off of unused PCI/SDRAM slots to reduce EMI.

➢ **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 Soft-Off mode.

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

➢ **CPU Clock Setting** - This item allows users to adjust CPU Host Clock in BIOS.

➢ **CPU Multiplier Setting** - This item allows users to adjust CPU Multiplier in BIOS.

➢ **CPU Vcore Setting** - This item allows users to select the CPU Vcore by jumper.

✹ Intelligent Features

➢ **Voltage Monitoring** - Monitors various voltages of key elements, such as the CPU, and other critical system voltage levels to ensure stable current passing through mainboard components.

➢ **Fan Status Monitoring** - To prevent CPU from overheating, 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 runs 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 mainboard. Refer to the following mainboard layout to help you to identify 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 MB47N

Step 1

CPU Installation:

This mainboard supports Intel Pentium 4/Celeron , Socket 478 series CPU. Please follow the step as below to finish CPU installation.

Be careful of CPU orientation when you plug it into CPU socket.

1. Pull up the CPU socket level and up to 90-degree angle.

CPU socket level up to 90 degree
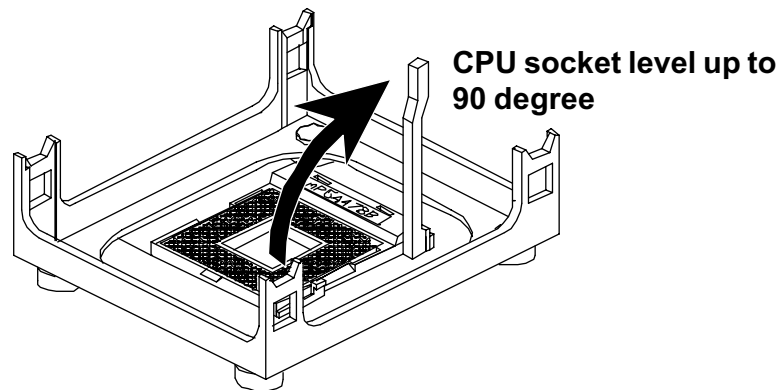
2. Locate Pin 1 in the socket and look for a black dot or cut edge on the CPU upper interface. Match Pin 1 and cut edge, then insert the CPU into the socket.

CPU pin 1 and cut edge
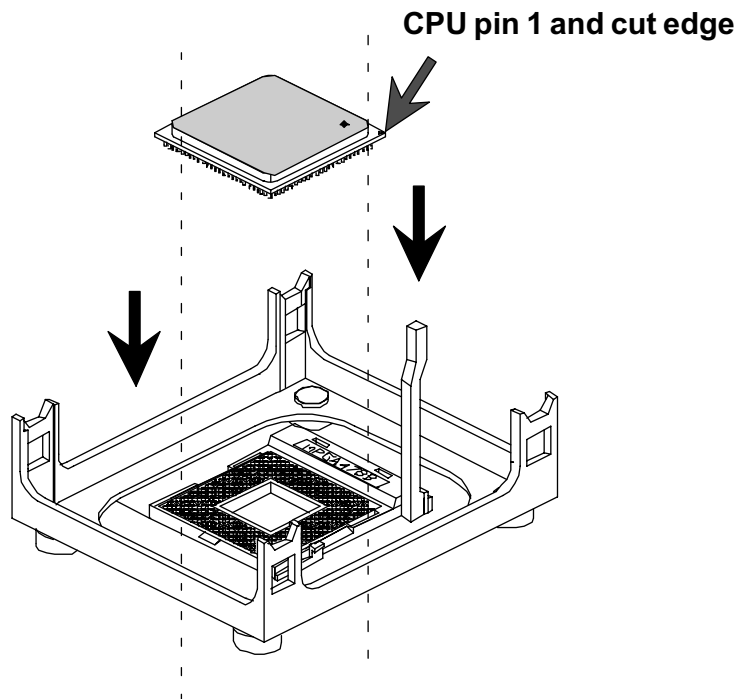
3. Press down the CPU socket level and finish CPU installation.
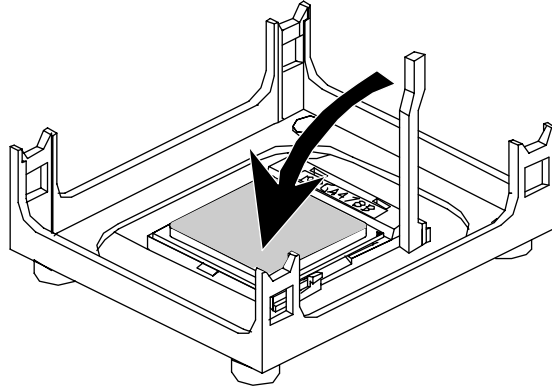
> **Note:** If you do not match the CPU socket Pin 1 and CPU cut edge well, it may damage the CPU.

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 the jumpers unless you require special adjustments as any of the following cases:

1. Clear CMOS
2. BIOS Protect
3. LAN Select
4. CPU Core Voltage Select

For first-time DIY system builders, we recommend that you do not change the default jumper settings if you are not totally familiar with the 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 detail information on how to configure your mainboard manually.

Step 3

Install DDR SDRAM System Memory

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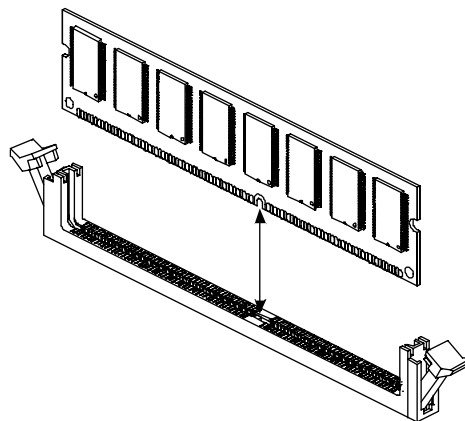
Step 4

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 connecting 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 have to set jumpers to Master or Slave mode depending on whether you install more than one device of each kind.)

2. Connect IDE cable and FDD cable on the back-panel of the internal peripheral devices to the corresponding headers on board. Note that the cable should be oriented with its colored stripe (usually 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 from 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 correct mounting holes, the key point is to keep the back-panel of the mainboard in a close fit with your system case, as shown below.
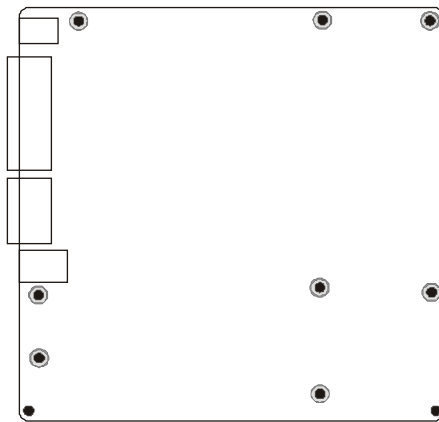
2. After deciding on the proper mounting holes, position the studs between the frame of the chassis and the mainboard. The studs are used to fix the mainboard and to keep a certain distance between the system chassis and the mainboard, in order to avoid any electrical shorts between the board and the metal frame of the 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 then 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/USB/AUDIO1

You can find there are several different cables already existing in the system case and originating from the computers front-panel devices (HDD LED, Power LED, Reset Switch, PC Speaker, or USB devices etc.) These cables serve to connect the front-panel switches, LEDs, and USB connectors to the mainboard' front-panel connectors group (PANEL1, USB2/3, SPEAKER1, AUDIO1), as shown below.

USB 2
USB 3

PANEL 1

Empty — N / C
Power ON/OFF — Reset Switch
Green LED — HDD LED

PANEL1

Empty — N/C
Power Switch ❹ — ❸ Reset Switch
Green LED ❷ — ❶ HDD LED
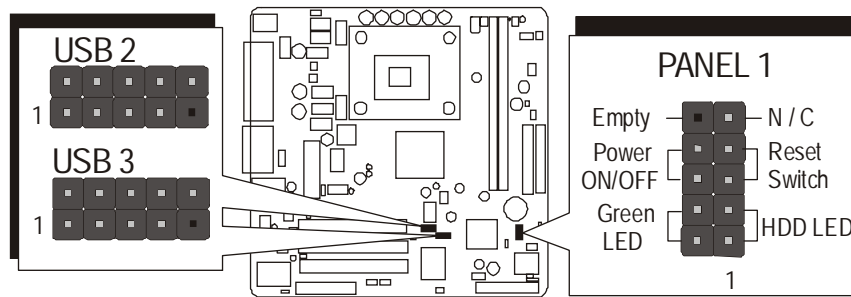
1. HDD LED
2. Green LED Indicator
3. Reset Switch
4. Power ON/OFF
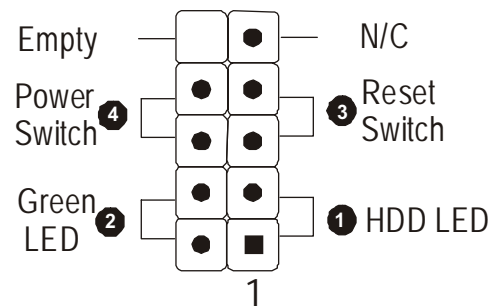
5. VCC
6. USBP4 -
7. USBP4 +
8. GROUND
9. KEY
10. USBPWR 1
11. USBP5 -
12. USBP5 +
13. GROUND
14. NC

USB 2

USBPWR1 USBP5 - USBP5 + GROUND NC
❿ ⓫ ⓬ ⓭ ⓮

1

❺ ❻ ❼ ❽ ❾
VCC USBP4 - USBD4 + GROUND KEY
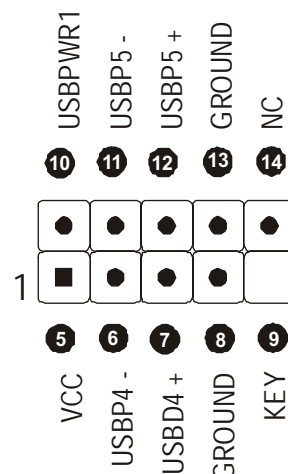
15. VCC
16. USBP2 -
17. USBP2 +
18. GROUND
19. KEY
20. USBPWR1
21. USBP3 -
22. USBP3 +
23. GROUND
24. NC

USB 3

USBPWR1	USBP3 -	USBP3 +	GROUND	NC
20	21	22	23	24
•	•	•	•	•
■	•	•	•	

1

| 15 | 16 | 17 | 18 | 19 |
| VCC | USBP2 - | USBD2 + | GROUND | KEY |
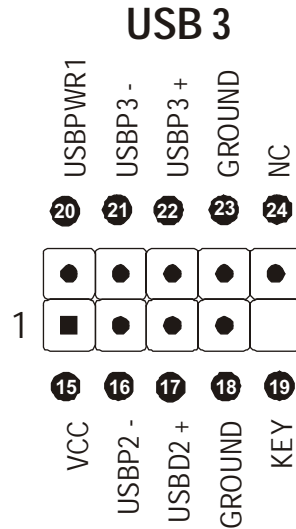
SPEAKER1

1. SIGNAL
2. KEY
3. Ground
4. VCC

| 4 | 3 | 2 | 1 |
| • | • | • | ■ |

SPEAKER 1
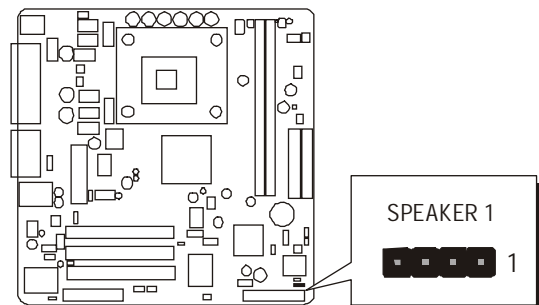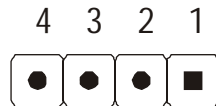
AUDIO 1

1. MICIN
2. AGND
3. MICBIAS
4. 5V
5. SPKOUTR
6. XSPKOUTR
7. KEY
8. EMPTY
9. SPKOUTL
10. XSPKOUTL

1	■	•	2
3	•	•	4
5	•	•	6
7	•		8
9	•	•	10

AUDIO1

1
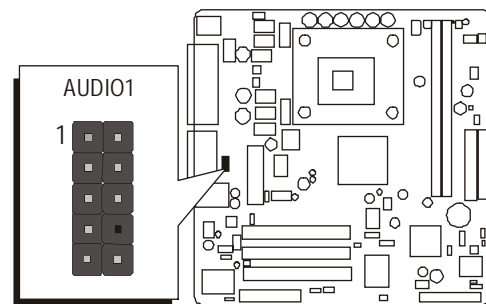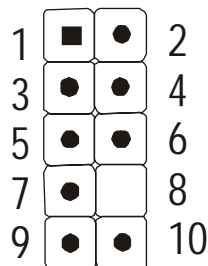
Step 7

Connect IDE and Floppy Disk Drives

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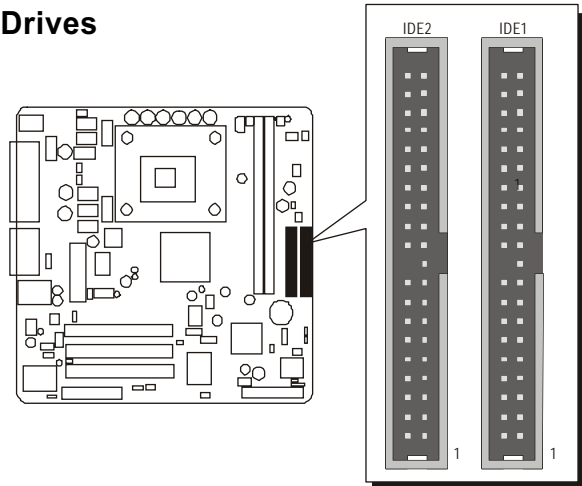
2. Floppy cable connector
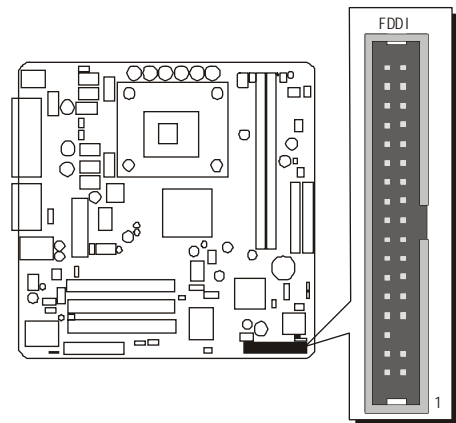
Step 8

Connect Other Internal Peripherals

1. CD-IN1/CD-IN2 connectors
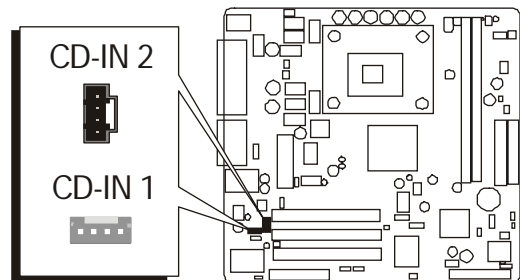
Step 9

Connect the Power Supply

1. System power connector
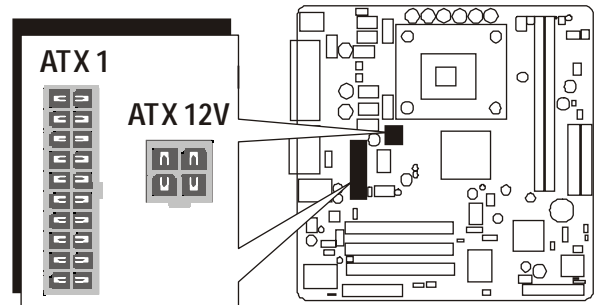
Step 10

Install Add-on Cards in Expansion Slots

1. PCI Card
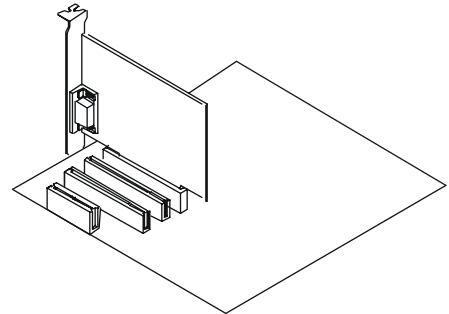
2. CNR Card
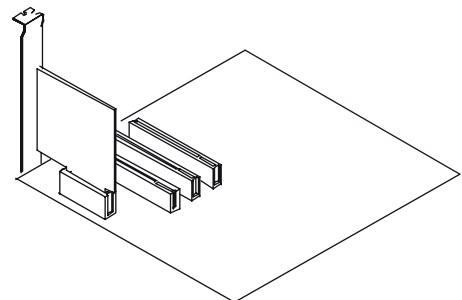
Step 11

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 back-panel.
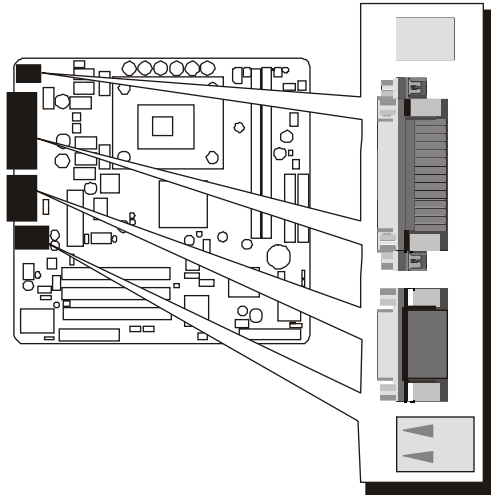
1. PS/2 Mouse and PS/2 Keyboard
2. Parallel Port
3. COM Port
4. VGA Port
5. MIDI/GAME Port
6. Audio Line-Out /Mic-In / Line-In Ports
7. LAN Port
8. USB Ports0 /1
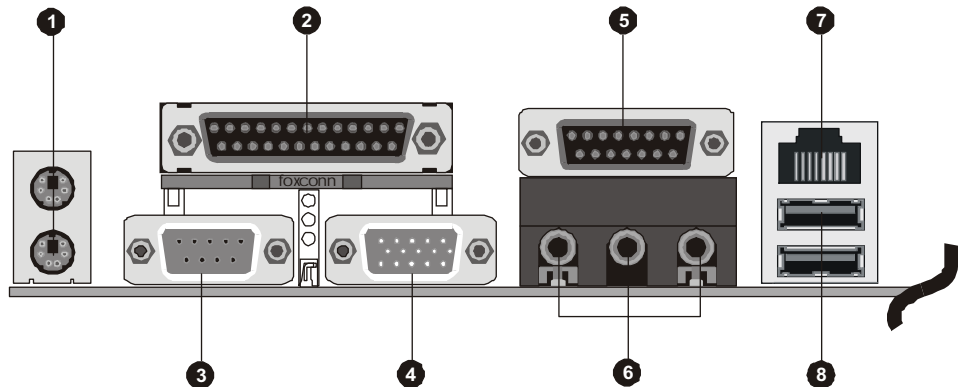
Step 12

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 drivers installation CD-ROM programs.

1. Insert the MB47N bundled CD-ROM into your CD-ROM drive. The auto-run program will display the drivers main installation window on screen.
2. Choose "Install Chipset System Driver" and complete it.
3. Choose "Install Intel Ultra ATA Driver" and complete it.
4. Choose "Install Intel USB2.0 Driver" and complete it.
5. Choose "Install Audio Driver" and complete it.
6. Choose "Install LAN Driver" and complete it.
7. Exit from the auto-run drivers installation program.

� Please refer to section **Chapter 4 Software Utility** to install LAN driver.

3.2 Jumper Settings

Several hardware settings are made through the use of mini jumpers to connect jumper pins on the mainboard. Pin #1 could be located at any corner of each jumper, you just find the location with a white right angle which stands for pin 1#. There are several types of pin 1# shown as below:

3-pin and multi (> 3) pin jumpers shown as following:

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 mini jumpers 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 top of its original packaging film, 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:
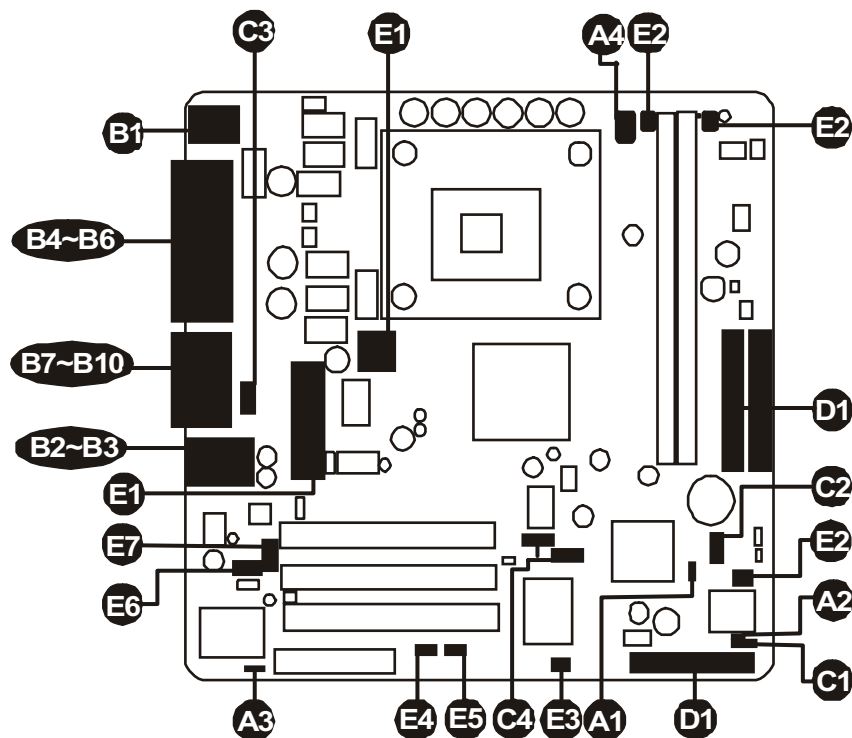
CPU/Memory/Expansion Slots

Socket478 : CPU Socket for Pentium4 /Celeron, 478-pin processors

DIMM1/2 : Two DIMM Slots for 128, 256, 512 MB, and 1GB of 2.5V DDR SDRAM

(The total installed memory does not exceed 2GB)

PCI : Three 32-bit PCI Expansion Slots

CNR : One Communication and Networking Riser Slot

Jumpers

(A1) JP1   : Clear CMOS setting

(A2) JP3   : BIOS flash protect jumper

(A3) JP4   : Select onboard LAN

(A4) VID4 ~ VID0   : CPU Core voltage selector jumper

Back Panel Connectors

(B1) KB   : PS/2 keyboard port

(B1) MS   : PS/2 mouse port

(B2) LAN   : RJ45 LAN Port

(B3) USB   : 2 USB (Universal Serial Bus) ports

(B4) COM1   : Serial ports 1

(B5) VGA Port   : VGA port

(B6) PRINTER   : Parallel port

(B7) LINE_OUT   : Line-Out port

(B8) LINE_IN   : Line-In port

(B9) MIC_IN   : Mic-In port

(B10) GAME/MIDI   : GAME/MIDI Port

Front Panel Connectors

(C1) SPEAKER   : Internal speaker in housing

(C2) PANEL1   : PANEL connector

(C3) AUDIO1   : Front-Panel MIC/Speaker Out header

(C4) USB2/3   : Front panel USB ports connector

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) ATX1/ATX12V   : ATX power connector

(E2) CPUFAN   : CPU fan connector

(E2) PWRFAN   : Power fan connector

E2	CASFAN	: Chassis fan connector
E3	IR1	: Infrared cable header
E4	WOM1	: Wake On Modem wake up connector
E5	WOL1	: Wake On LAN wake up connector
E6	CDIN1	: CD_IN connector(WHITE), Panasonic Type
E7	CDIN2	: CD_IN connector(BLACK), Sony Type

☞ *Jumpers*

Ⓐ **Clear CMOS Setting (JP1)**

JP1 is used to clear CMOS data. Clearing CMOS will result in the permanently erasing previous system configuration settings and the restoring original (factory-set) system settings.

Pin 1-2 (Default)

Pin 2-3 (Clear CMOS)
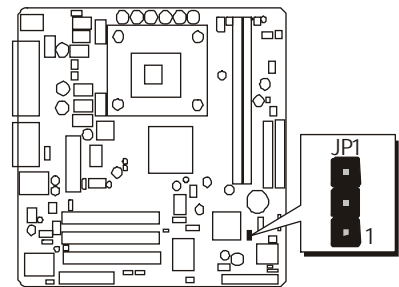
Step 1. Turn off the system power (PC-> Off).

Step 2. Remove ATX Power cable from ATX Power connector.

Step 3. Remove jumper cap from JP1 pins 1-2.

Step 4. Place the jumper cap on JP1 pin 2-3 for a few seconds.

Step 5. Return the jumper cap to pin 1-2.

Step 6. Plug ATX Power cable into ATX Power connector.

Step 7. Turn on the system power (PC-> On).

Ⓐ **BIOS Flash Protection Setting (JP3)**

JP3 is used to protect BIOS from being unintentionally flashed. Enable this jumper for protection and disable this jumper when you want to flash BIOS.

Pin open (Default)

Pin short (Flash Protected)
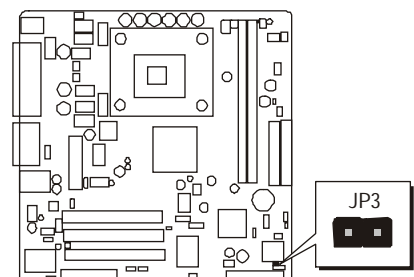
A3 LAN Select on Board Setting (JP4)

JP4 is used to enable or disable built-in LAN adapter.
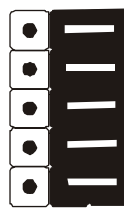
Pin 1-2 (Enable)

Pin 2-3 (Disable)
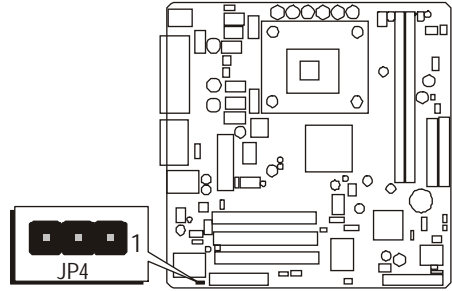
A4 Core Voltage Selector Jumper Setting (VID4~VID0)

VID4 ~ VID0 is used to set the CPU voltage manually to improve the CPU performance. However, don't change the VID4 ~ VID0 setting if you aren't familiar with the CPU. This may cause the system to become unstable or hang-up.

See table on next page for setting
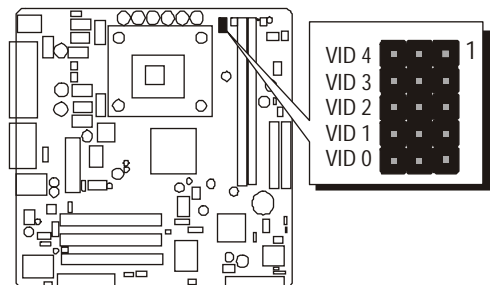
VID4	VID3	VID2	VID1	VID0	VDAC
1,2 close	1,2 close	1,2 close	1,2 close	1,2 close	Auto
open	open	open	open	open	OFF
open	open	open	open	2,3 close	1.100
open	open	open	2,3 close	open	1.125
open	open	open	2,3 close	2,3 close	1.150
open	open	2,3 close	open	open	1.175
open	open	2,3 close	open	2,3 close	1.200
open	open	2,3 close	2,3 close	open	1.225
open	open	2,3 close	2,3 close	2,3 close	1.250
open	2,3 close	open	open	open	1.275
open	2,3 close	open	open	2,3 close	1.300
open	2,3 close	open	2,3 close	open	1.325
open	2,3 close	open	2,3 close	2,3 close	1.350
open	2,3 close	2,3 close	open	open	1.375
open	2,3 close	2,3 close	open	2,3 close	1.400
open	2,3 close	2,3 close	2,3 close	open	1.425
open	2,3 close	2,3 close	2,3 close	2,3 close	1.450
2,3 close	open	open	open	open	1.475
2,3 close	open	open	open	2,3 close	1.500
2,3 close	open	open	2,3 close	open	1.525
2,3 close	open	open	2,3 close	2,3 close	1.550
2,3 close	open	2,3 close	open	open	1.575
2,3 close	open	2,3 close	open	2,3 close	1.600
2,3 close	open	2,3 close	2,3 close	open	1.625
2,3 close	open	2,3 close	2,3 close	2,3 close	1.650
2,3 close	2,3 close	open	open	open	1.675
2,3 close	2,3 close	open	open	2,3 close	1.700
2,3 close	2,3 close	open	2,3 close	open	1.725
2,3 close	2,3 close	open	2,3 close	2,3 close	1.750
2,3 close	2,3 close	2,3 close	open	open	1.775
2,3 close	2,3 close	2,3 close	open	2,3 close	1.800
2,3 close	2,3 close	2,3 close	2,3 close	open	1.825
2,3 close	2,3 close	2,3 close	2,3 close	2,3 close	1.850

☞ *Back-Panel Connectors*

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 tower), 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 opposed to a tower 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.LAN Port Connector

This mainboard can accommodate one device on LAN.

Attach RJ-45 cable to this port connect to your PC to the LAN.

PS/2 Mouse

PS/2 keyboard
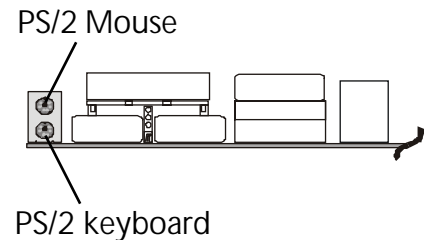
B2 LAN Port Connector

This mainboard can accommodate one device on LAN.

Attach RJ-45 cable to this port connector to your PC to the LAN.

LAN Port
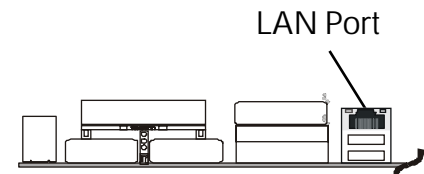
B3 USB0/USB1 Port Connectors

This mainboard offers 2 USB ports on back panel. Plug each USB device jack into an available USB0/USB1 connector.

USB Port 1

USB Port 0
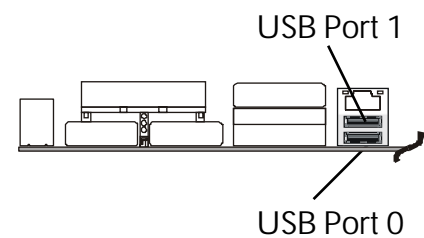
B4 COM Port Connector

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

COM Port
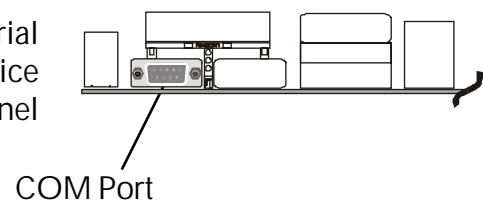
B5 VGA Port Connector

One 15-pin VGA connector is located at the rear panel of mainboard.
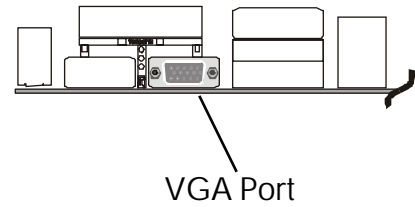
B6 Parallel (Printer) Port Connector

One DB25 female parallel connector is located at the rear panel of the mainboard.

Plug the connection cable from your parallel device (printer, scanner, etc.) into this connector.
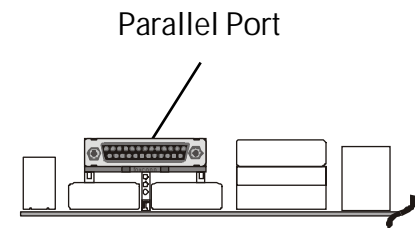
B7 Line-Out Port Connector

Line-Out is a stereo output port through which he 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
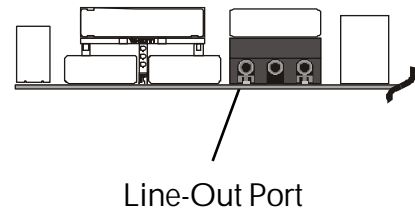
B8 Line-In Port Connector

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.
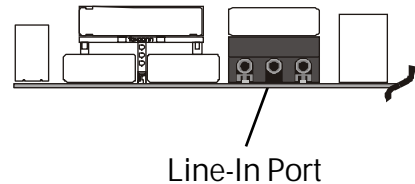
B9 Mic-In Port Connector

Mic-In 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.
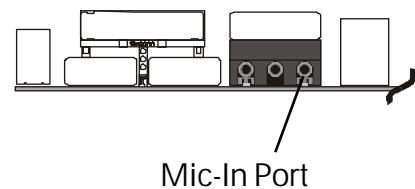
B10 Game/Midi Port Connector

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.

VGA Port

Parallel Port

Line-Out Port

Line-In Port

Mic-In Port

MIDI/GAME Port
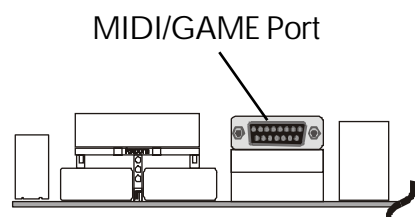
MIDI Instrument Connection

You will need a MIDI adapter to connect a MIDI compatible instrument to the sound card. The MIDI adapter can in turn be connected to the Joystick/MIDI port. You will also need the MIDI sequencing software to run MIDI instruments with your computer etc. into this connector.

☞ *Front-Panel Connectors*

❶ **Speaker Connector (SPEAKER)**

Attach the PC speaker cable from the case to the 4-pin speaker connector (SPEAKER).
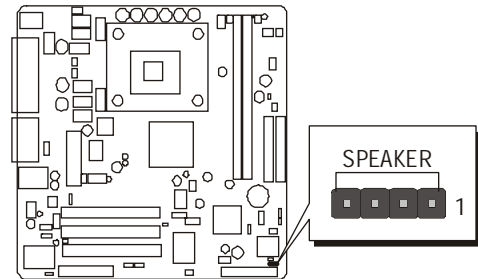
❷ **Panel1 Connector**

The panel1 connector provides a standar set of switch and LED connectors commonly found on ATX or micro-ATX cases.
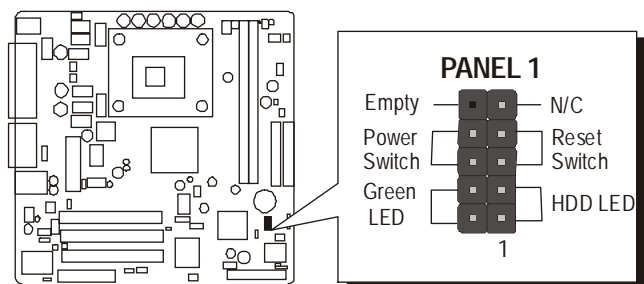
PANEL 1

1. HDD LED
2. Green LED Indicator
3. Reset Switch
4. Power ON/OFF
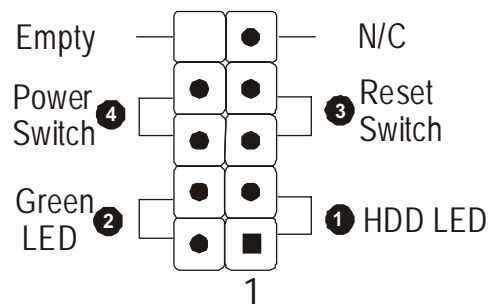
ⓒ₃ Audio1 Connector

This header allows the user to install auxiliary front-oriented microphone and line-out ports for easier access. Either the Mic and Line-out connector on back-panel or JP19 header are availbale at the same time. If you would like to use this JP19 header on front-panel, please remove all jumpers from PANEL1 and install your special Extra Mic/Line-out cable instead.
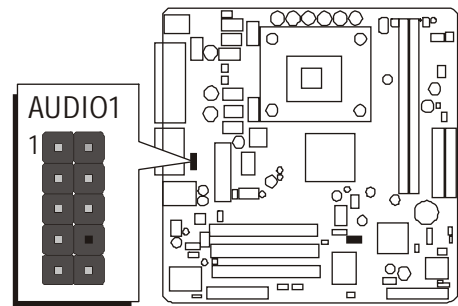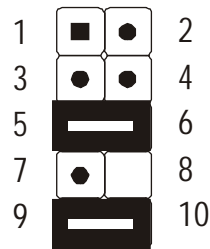
Pin Assignments:

1 = MICIN   2 = AGND
3 = MICBIAS   4 = 5V
5 = SPKOUTR   6 = XSPKOUTR
7 = KEY   8 = EMPTY
9 = SPKOUTL   10 = XSPKOUTL

ⓒ₄ Extend USB Header (USB2/USB3)

This headers are used to connect the cable attached to USB connectors which are mounted on front-panel or black-panel. But the USB cable is optional at the time of purchase.

USB2
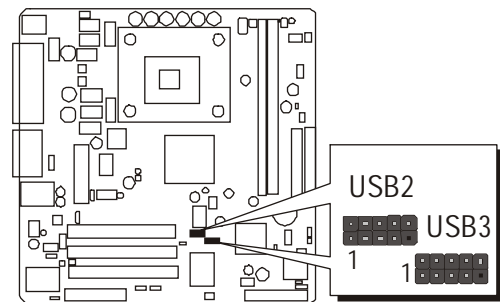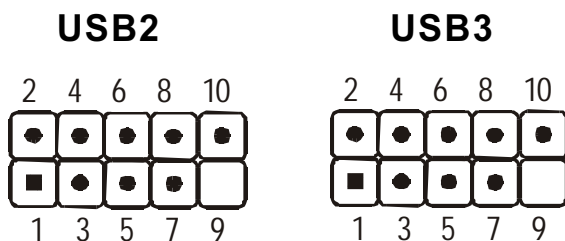
Pin Assignments:
1 = VCC   2 = USBPWR1
3 = USBP4 -   4 = USBP5 -
5 = USBP4 +   6 = USBP5 +
7 = GROUND   8 = GROUND
9 = KEY   10 = NC

USB3

Pin Assignments:
1 = VCC   2 = USBPWR1
3 = USBP2 -   4 = USBP3 -
5 = USBP2 +   6 = USBP3 +
7 = GROUND   8 = GROUND
9 = KEY   10 = NC

☞ *Internal Peripherals Connectors*

ⓓ **Enhanced IDE and Floppy Connectors**

The mainboard features two 40-pin dual-channel IDE device connectors (IDE1/IDE2) providing support for 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 (FDD1) to accommodate the Floppy Disk Drive (FDD). Moreover, this mainboard comes with one 80-pin ATA **100/66/33** ribbon cable to connect to IDE H.D.D. and one 34-pin ribbon cable for F.D.D. connection.
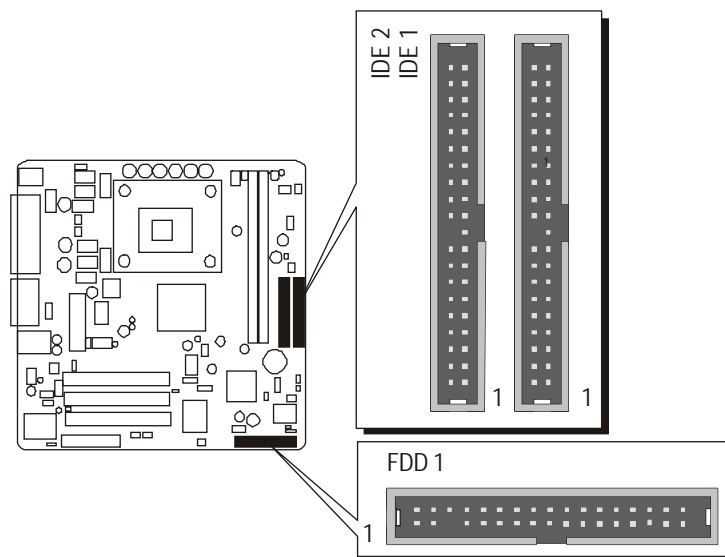
Important: Ribbon cables are directional, therefore, make sure to always connect with the red cable stripe on the same side as pin #1 of the IDE1/IDE2 or FDD connector on the mainboard.

☞ *Other Connectors*

⅀ **ATX Power Supply Connector (ATX1 and ATX12V)**

This motherboard uses 20-pin Pentium 4 standard ATX power header,
ATX1 and comes with another ATX12V headers.
Please make sure you plug in the right direction.

ATX1   ATX12V
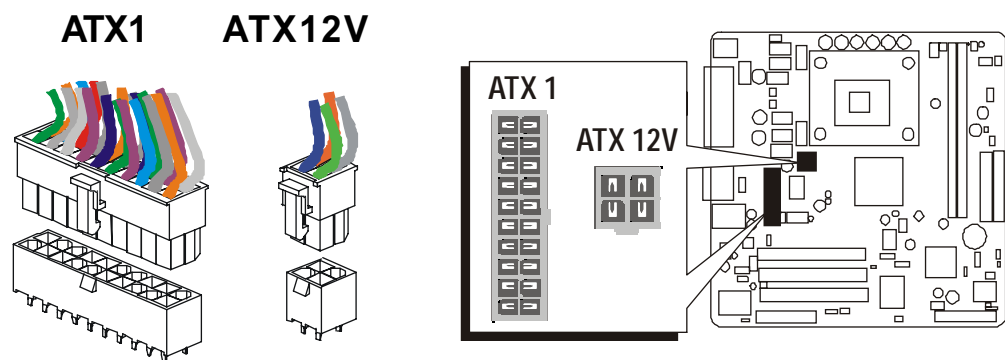
A traditional ATX system should remain at power off stage when AC power
resumes from power failure. In such case, if there is no an UPS to keep
power-on, the kind of design is inconvenient for a network server or worksta-
tion.
However, this motherboard implements an AC Power Auto Recovery
function to solve this problem. You may enable the function "PWRON After
PWR-Fail" that is under sub-menu of "Power Management Setup" through BIOS
setup program.

Note 1: The ATX power connector is directional and will not go in unless the guides
match perfectly making 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 enough power for higher speed processor
installed.

CPU, Power, CAS Fan connectors

The mainboard provides four onboard 12V cooling fan power connectors to support CPU, Power, and Chassis cooling fans.

Note:

Both cable wiring and type of plug may vary, which depends on the 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.

GND   +12V   SENSE

1

PWR FAN1
1

CPU FAN4
1

CAS FAN1
1
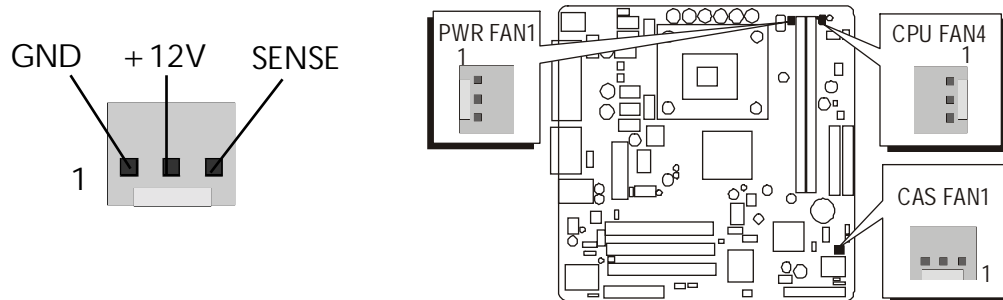
IR Header

If you have an Infrared device, this mainboard can implement IR transfer function. To enable the IR transfer function, follow these steps:

Pins Assignment:
1 = NC
2 = KEY
3 = +5V
4 = GND
5 = IRTX
6 = IRRX

2   4   6

1   3   5

IR1
1
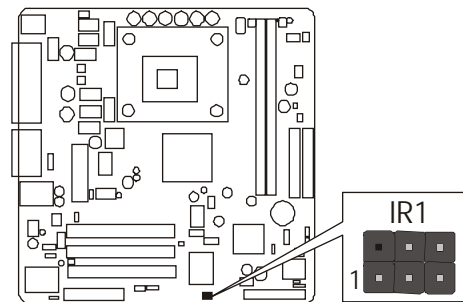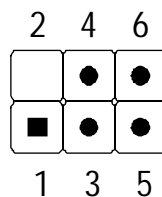
Note: Before connect your IR1 device, please be sure each IR1 on board pin allocation is matchable with the pin of the IR1 device. Other wise, incorrect IR1 connection may do damage to your IR1 device.

Step 1. Attach the 6-pin infrared device cable to IR1.
(Refer to the above diagram for IR1 pin assignment.)
Step 2. This mainboard supports Normal, IrDA transfer modes.

E4 Wake-On-Modem Connector (WOM1)

Attach a 3-pin connector through the Modem card which supports the Wake-On-Wodem (WOM1) function. This function lets users wake up the connected system through the Modem card.


```
 1   2   3
┌───┬───┬───┐
│ ■ │ ● │ ● │
└───┴───┴───┘
```
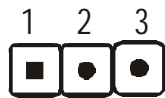
Pins Assignment:
  1 = 5VSB   2 = Ground
  3 = Wake_up
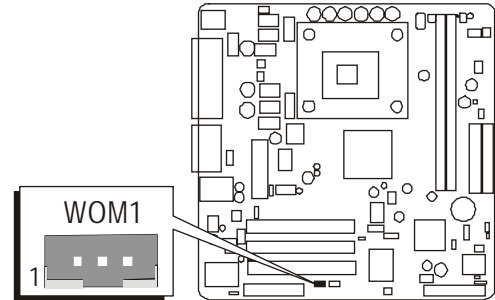
E5 Wake-On-LAN Connector (WOL1)

Attach a 3-pin connector through the LAN card which supports the Wake-On-LAN (WOL1) function. This function lets users wake up the connected system through the LAN card.


```
 1   2   3
┌───┬───┬───┐
│ ■ │ ● │ ● │
└───┴───┴───┘
```
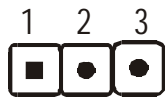
Pins Assignment:
  1 = 5VSB   2 = Ground
  3 = Wake_up
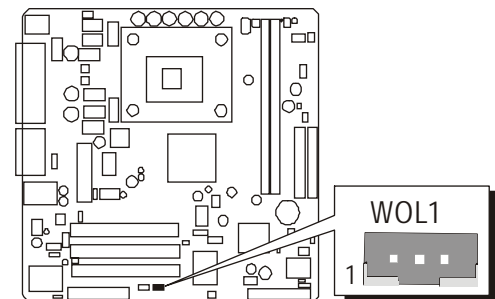
E6 Audio CDIN1/2 Connector

Port CDIN1 and CDIN2 can be used to connect a stereo audio input from CD-ROM, TV-tuner or MPEG card.
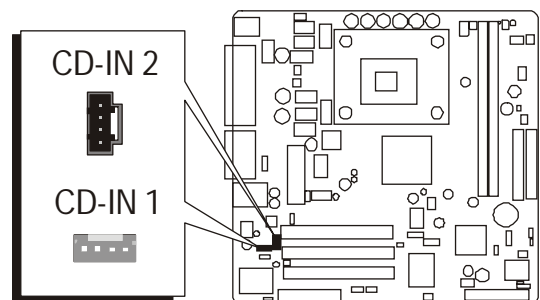
3.3 System Memory Configuration

The MB47N mainboard has two 184-pin DIMM slots that allow you to install from 128MB up to 2GB of system memory.

Each 184-pin DIMM (Dual In-line Memory Module) Slot can accommdate 128MB,256MB, 512MB and 1GB of PC1600/PC2100 compliant 2.5V single or double side 64-bit wide data path DDR SDRAM modules.

1. Install Memory:

Install memory in any or all of the banks. The combination shown as follows.

DIMM Socket	Memory Modules	Module Quantity
DIMM 1	128MB, 256MB, 512MB and 1GB 184-pin 2.5V DDR SDRAM DIMM	x 1
DIMM 2	128MB, 256MB, 512MB and 1GB184-pin 2.5V DDR SDRAM DIMM	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.

2. Upgrade Memory:

You can easily upgrade the system memory by inserting additional DDR 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 in the field "Standard CMOS Setup" of BIOS setup program.

4 SOFTWARE UTILITY

4.1   Mainboard CD Overview

Note: The CD contents attached in MB47N mainboard are subject to change without notice.

To start your mainboard CD disc, 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 Mainboard MB47N Software** - Installing INF, Ultral ATA, VGA Device, Audio Device, LAN and USB2.0drivers.

☞ **Manual** - MB47N Series mainboard user's manual in PDF format.

☞ **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 Mainboard 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 Software Setup** screen.

Select using your pointing device (e.g. mouse) on the**"Install Mainboard MB47N Software"** bar to install Mainboard Software.

The **Mainboard MB47N Software** include:

[**4.3**]   Install INTEL INF Driver
[**4.4**]   Install Intel Ultra ATA Driver
[**4.5**]   Install VGA Device Driver
[**4.6**]   Install Audio Device Driver
[**4.7**]   Install LAN Driver

4.3 Install INTEL INF Driver

Select using your pointing device (e.g. mouse) on the **"Install INTEL INF Driver"** bar to install INTEL INF driver.

Once you made your selection, a Setup window run the installation automatically.

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

4.4 Install IDE Driver

Select using your pointing device (e.g. mouse) on the "**Install Intel Ultra ATA Driver**" bar to install Ultra ATA IDE driver.

Once you made your selection, a Setup window run the installation automatically.

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

4.5 Install VGA Driver

Select using your pointing device (e.g. mouse) on the "**Install VGA Device Driver**" bar to install VGA driver.

4.6 Install Audio Device Driver

Select using your pointing device (e.g. mouse) on the "**Install Audio De-vice Driver**" bar to install Audio driver.

Once you made your selection, a Setup window run the installation automatically.

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

4.7 Install LAN Driver

Select using your pointing device (e.g. mouse) on the "**Install LAN Driver**" bar to install LAN driver.

Once you made your selection, a Setup window run the installation automatically.

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

Note: When Install LAN driver, please confirm your OS and correctly install driver. If your OS is Win 9X/NT, please take the following next page for reference. The other OS such as win2000/XP/ME can be automatical installed

Install Win98 LAN driver

The LAN Device Driver can't be set up automatically, you need double click on My Computer -> Control Pnael -> System icon to bring up System Properties screen.

Select tab "Device Manager".

You will find a yellow "?" mark at PCI Ethernet Controller, that means the driver is not recognize.

Double click on the Ethernet Controller.
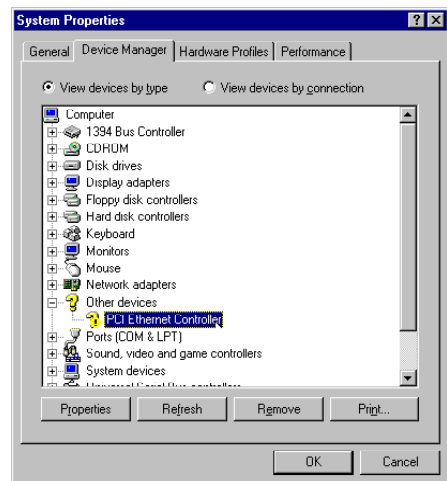
Then PCI Ethernet Controller Properties windows will appear on your screen.

Click on the "Reinstall Driver" bar to install driver.
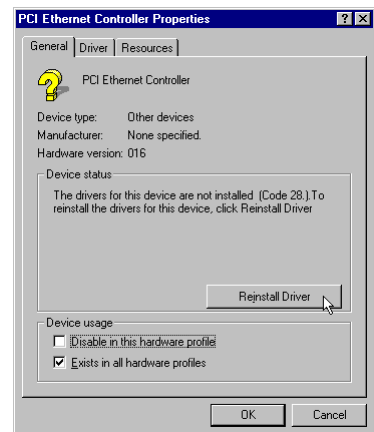
The Updade Device Driver Wizard windows will appear on your screen.

Click on "Next" bar to continue.
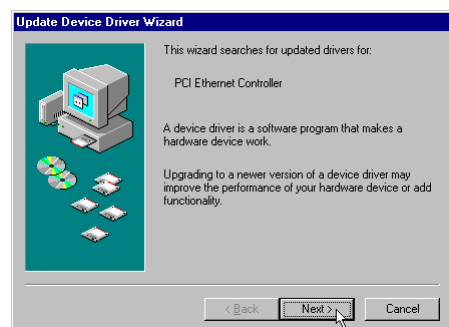
Please choose "Display a list of the drivers in a specific location, so you can select the driver you want" to the manual install driver, and click on "Next" bar to continue.

Select "Network adapters" bar for LAN device and click on "Next" bar to continue.
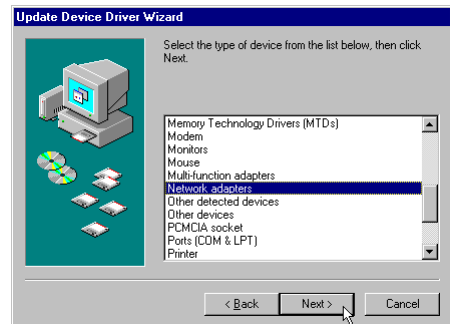
Insert the support CD by the mainboard manufacturer and choose "Have Disk" bar to continue next step.
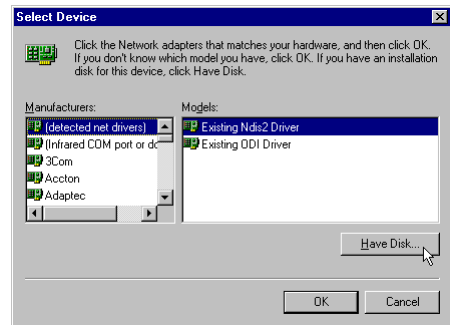
Indicate the driver's location as "D:\lan\WIN98\NETRTS5.INF" (In this location CD drive is supposed to be "D" letter.)

Select **"Realtek RTL8139 [A/B/C/ 8130] PCI Fast Ethernet NIC"** to install, and then click on **"OK"**.
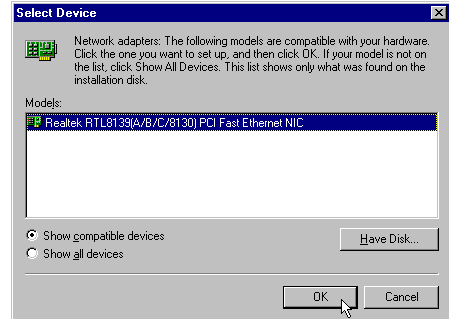
Make sure **"Realtek RTL8139 [A/B/ C/8130] PCI Fast Ethernet NIC"** driver, and click on **"Next"**.

Then the system will do the setup procddure automatically.

Completing the upgrade device driver, and click on **"Finish"** to restart the system to take all the changes effect.
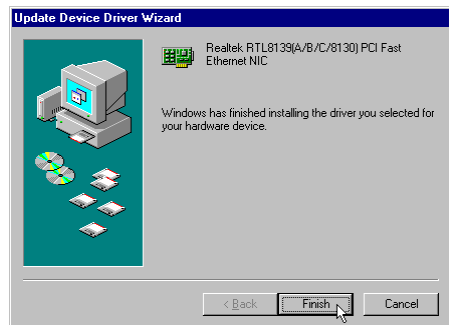
After restart, you may check Network adapters under the location mentioned at right figure.

The Network adapters shows correctly.
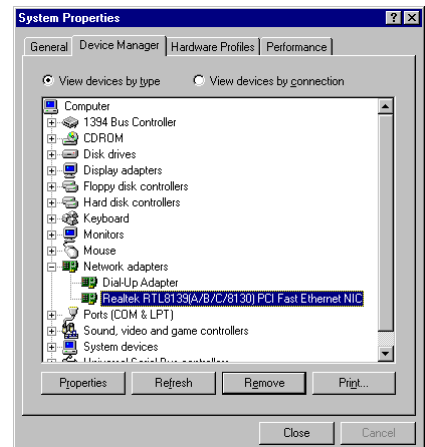
Install WinNT4.0 LAN drivers

The LAN Device Driver can't be set up automatically, you need double click on Desktop **Network** icon to bring up **Network Setup Wizard** screen.

Select tab "**Adapters**" and **"Add"** bar to install driver.

Insert the support CD by the mainboard manufacturer and choose "**Have Disk**" bar to continue next step.

Key in the driver's location as **"D:\lan\WINNT4\"** (In this location CD disk drive is supposed to be **"D"** letter.) and click on **"OK"**.
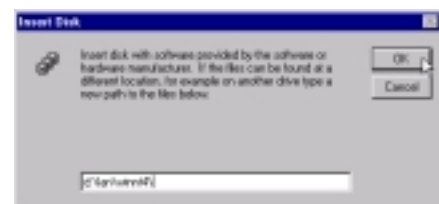
Select **"Realtek RTL8139 [A/B/C/ 8130] PCI Fast Ethernet Adapter"** to install then click on **"OK"**.
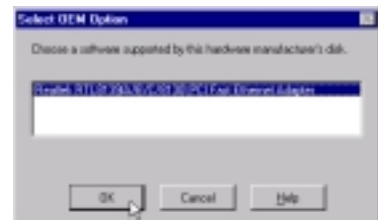
Chocse the proper Duplex Mode, and click on **"OK"**.

Make sure **"Realtek RTL8139 [A/B/C/ 8130] PCI Fast Ethernet Adapter"** driver, and click on **"Close"**.

Setting yourself network.
Then the system will do the setup procedure automatically.

Completing the upgrade device driver,

and click on **"Yes"** to restart the system to take all the changes effect.
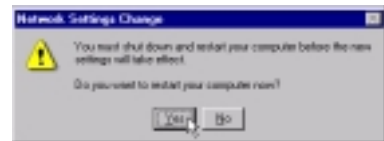
After restart, you may check Network adapters under the location mentioned at right figure. The Network adapters shows correctly.

4.8 View the User's Manual

Select using your pointing device (e.g. mouse) on the "**Manual**" bar.

Then **Online Information** windows will appear on your screen. Click on the "**Install Acrobe Reader**" bar if you need to install acrobe reader.

Then click on **"MB47N Manual"** bar to view user's manual.

5 BIOS SETUP

MB47N 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 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 meationed in step2 (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 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, 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.

```
                 Phoenix - AwardBIOS CMOS Setup Utility

   ▶ Standard CMOS Features           ▶ Frequency/Voltage Control

   ▶ Advanced BIOS Features             Load Fail-Safe Defaults

   ▶ Advanced Chipset Features          Load Optimized Defaults

   ▶ Integrated Peripherals             Set Supervisor Password

   ▶ Power Management Setup             Set User Password

   ▶ PnP/PCI Configurations            Save & Exit Setup

   ▶ PC Health Status                  Exit Without Saving

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

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

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

Setup Items

The main menu includes the following main setup categories. Recall that some systems may not include all entries.

Standard CMOS Features

This menu displays the basic information about your system.

Advanced BIOS Features

Use this menu to set the advanced features available on your system.

Advanced Chipset Features

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

Integrated Peripherals

Use this menu to specify your settings for integrated peripherals.

Power Management Setup

Use this menu to specify your settings for power management.

PnP / PCI Configurations

This option configures how PnP (Plug and Play) and PCI expansion cards operate in your system.

PC Health Status

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

Frequency / Voltage Control

Use this menu to set the clock speed and system bus for your system.

Load Fail-Safe Defaults

Use this menu to install fail-safe defaults for all appropriate items in the setup utility.

Load Optimized Defaults

Use this menu to install optimized defaults for all appropriate items in the setup utility.

Set Supervisor / User Password

Use this menu to change, set, or disable supervisor / user password. It allows you to limit access to the system and Setup, or only to Setup.

Save & Exit Setup

Save the changes that you have made in the Setup Utility and exit the Setup Utility.

Exit Without Saving

Abandon all changes that you have made in the Setup Utility and exit the Setup Utility.

⌬ *Standard CMOS Features*

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

```
                 Phoenix - AwardBIOS CMOS Setup Utility
                         Standard CMOS Features
┌─────────────────────────────────────────────────┬──────────────────────┐
│ Date (mm:dd:yy)          Wed, May 15 2002         │      Item Help       │
│ Time (hh:mm:ss)           10 : 54 :  8            ├──────────────────────┤
│                                                   │  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             65472K              │                      │
│   Total Memory                 1024K              │                      │
├─────────────────────────────────────────────────┴──────────────────────┤
│ ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help│
│    F5: Previous Values     F6: Fail-Safe Defaults  F7: Optimized Defaults│
└─────────────────────────────────────────────────────────────────────────┘
```

Date

< Month >   < DD >   < YYYY >

Set the system date. Note that if you are running a Windows OS, this items are automatically updated whenever you make changes to the Windows Date.

Time

< HH : MM : SS >

Set the system time. The time is converted based on the 24-hour military-time clock. For example, 5:00:00 p.m. is 17:00:00.

IDE Primary Master

The options are in its sub-menu.

Press < Enter > to enter the sub-menu of detailed options.

IDE Primary Slave

The options are in its sub-menu.

Press < Enter > to enter the sub-menu of detailed options.

IDE Secondary Master

The options are in its sub-menu.

Press < Enter > to enter the sub-menu of detailed options.

IDE Secondary Slave

The options are in its sub menu.

Press < Enter > to enter the sub-menu of detailed options.

Drive A/B

Select the type of floppy disk drive and installed in your system.

➢ The choice: None, 360K, 5.25 in, 1.2M, 5.25 in, 720K, 3.5 in, 1.44M, 3.5 in, or 2.88M, 3.5 in.

Floppy 3Mode Support (Disabled)

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

➢ The choice: Disabled, Drive A, Drive B, Both.

Video (EGA/VGA)

This item define the video mode of the system. This mainboard has a built-in VGA graphics system; you must leave this item at the default value.

➢ The choice: EGA / VGA, CGA 40, CGA 80, or MONO.

Halt On

This item defines the operation of the system POST (Power On Self Test) routine. You can use this item to select which situation you want the BIOS to stop the POST process and notify you.

➢ The choice: All Errors, No Errors, All, But Keyboard, All, But Diskette, or All, But Disk/Key.

Base Memory/Ectended Memory/Total Memory

These items are automatically detected by the system at start up time. These are display-only fields. You can't make change to these fields.

Advanced BIOS Features

This section allows you to configure your system for basic operation.

```
          Phoenix - AwardBIOS CMOS Setup Utility
                  Advanced BIOS Features
┌──────────────────────────────────────────┬──────────────────────┐
│ CPU L1 & L2 Cache        [Enabled]      ▲ │      Item Help       │
│ Quick Power On Self Test [Enabled]        ├──────────────────────┤
│ First Boot Device        [Floppy]         │ Menu Level    ▶      │
│ Second Boot Device       [HDD-0]          │                      │
│ Third Boot Device        [CDROM]          │ Allows you to choose │
│ Boot Other Device        [Enabled]        │ the VIRUS warning    │
│ Swap Floppy Drive        [Disabled]       │ feature for IDE Hard │
│ Boot Up Floppy Seek      [Enabled]        │ Disk boot sector     │
│ Boot Up NumLock Status   [On]             │ protection. If this  │
│ Gate A20 Option          [Fast]           │ function is enabled  │
│ ATA 66/100 Cable Msg     [Enabled]        │ and someone attempt to│
│ Typematic Rate Setting   [Disabled]       │ write data into this │
│ x Typematic Rate (Chars/Sec) 6            │ area , BIOS will show│
│ x Typematic Delay (Msec)     250          │ a warning message on │
│ Security Option          [Setup]          │ screen and alarm beep│
│ APIC Mode                [Enabled]        │                      │
│ MPS Version Control For OS[1.4]           │                      │
│ OS Select For DRAM > 64MB[Non-OS2]      ▼ │                      │
│ HDD S.M.A.R.T. Capability [Disabled]      │                      │
│ Report No FDD For WIN 95 [Yes]            │                      │
│ Small Logo(EPA) Show     [Disabled]     ▼ │                      │
├──────────────────────────────────────────┴──────────────────────┤
│ ↑↓←→:Move  Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Hel│
│         F5: Previous Values   F6: Fail-Safe Defaults  F7: Optimized Defaults│
└──────────────────────────────────────────────────────────────────┘
```

CPU L1&L2 Cache (Enabled)

All processors that can be installed in this mainboard use CPU internal L1 and L2 cache memory to improve performance. Leave this item at the default value for better performance.

➢ The choice: Enabled, or Disabled.

Quick Power On Self Test (Enabled)

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

➢ The choice: Enabled, or Disabled.

First/Second/Third Boot Device (Floopy/HDD-0/CD-ROM)

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, LS120, HDD-0, SCSI, CDROM, HDD-1, HDD-2, HDD-3, ZIP100, USB-FDD, USB-ZIP,USB-CDRAM, USB-HDD, LAN, or Disabled.

Boot Other Device (Enabled)

If you enable this item, the system searches all other possible locations for and operating system if it fails to find one in the devices specified under the First, Second, and Third boot devices.

➢ The choice: Enabled or Disabled.

Swap Floppy Drive (Disabled)

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 or Disabled.

Boot Up Floppy Seek (Enabled)

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

➢ The choice: Enabled or Disabled.

Boot Up NumLock Status (ON)

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

➢ The choice: Off or On.

Gate A20 Option (Fast)

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

➢ The choice: Normal or fast.

Typematic Rate Setting (Disabled)

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

➢ The choice: Enabled or Disabled.

* **Typematic Rate (Chars/Sec):**

  Use this item to define how many characters per second a held-down key generated.

* **Typematic Delay (Msec):**

  Use this item to define how many milli-seconds must elapse before a held-down key beings generating repeat characters.

Security Option (Setup)

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

➢ The choice: Setup or System.

APIC Mode (Enable)

This option is used to enabled or disabled APIC (Advanced Programmable Interrupt Controller) functionality. The APIC is an Intel chip that provides symmetric multiprocessing (SMP) for its Pentium system.

➢ The choice: Enabled or Disabled.

OS Select For DRAM > 64MB (Non-OS2)

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.

➢ The choice: Non-OS2 or OS2.

Report No FDD For Win 95 (Yes)

If you are running a system with no floppy drive and using the

Windows 95, select " Yes " for this item to ensure compatibility with Windows 95 logo certification.

➢ The choice: Yes or No.

Small Logo (EPA) Show (Disabled)

This item allows you to enable or disable the EPA Logo.

➢ The choice: Enabled or Disabled.

Advanced Chipset Features

These items define critical timing parameters of the mainboard. You should leave the items on this page at their default values unless you are very familiar with the technical, specifications of your system hardware. If you change the values incorrectly, you may introduce fatal errors or recurring instability into your system.

```
          Phoenix - AwardBIOS CMOS Setup Utility
                  Advanced Chipset Features
 ┌────────────────────────────────────────────┬──────────────────────┐
 │ DRAM Timing Selectable    [Manual]         │      Item Help       │
 │ CAS Latency Time          [2.5]            │                      │
 │ Active to Precharge Delay [7]              │  Menu Level    ▶     │
 │ DRAM RAS# to CAS# Delay   [3]              │                      │
 │ DRAM RAS# Precharge       [3]              │                      │
 │ Memory Frequency For      [Auto]           │                      │
 │ System BIOS Cacheable     [Disabled]       │                      │
 │ Video  BIOS Cacheable     [Disabled]       │                      │
 │ Memory Hole At 15M-16M    [Disabled]       │                      │
 │ Delayed Transaction       [Enabled]        │                      │
 │ Delay Prior to Thermal    [16 Min]         │                      │
 │ AGP Aperture Size (MB)    [128]            │                      │
 │ On-Chip Video Window Size [128MB]          │                      │
 │ On-Chip Frame Buffer Size [8MB]            │                      │
 │                                            │                      │
 ├────────────────────────────────────────────┴──────────────────────┤
 │ ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help │
 │     F5: Previous Values    F6: Fail-Safe Defaults   F7: Optimized Defaults    │
 └────────────────────────────────────────────────────────────────────┘
```

DRAM Timing Selectable (Manual)

The value in this field depends on performance parameters of the installed memory chips (DRAM). Don't change the value from the factory setting unless you install new memory that has a different performance rating than the original DRAMs.

➢ The Choice: Manual or By SPD.

CAS Latency Time (2.5)

When synchronous DRAM is installed, the number of clock cycles of CAS latency depends on the Dram timing. Don't reset this field from the default value specified by the system designer.

➢ The Choice: 1.5, 2, 2.5, or 3.

Active to Precharge Delay

The precharge time is the number of cycles it takes for DRAM to accumulate its charge before refresh.

➢ The Choice: 7, 6, or 5.

DRAM RAS# to CAS# Delay

This field lets you insert a timing delay between the CAS and RAS strobe signals, and you can use it when DRAM is written to, read from, or refreshed. Faster performance is gained in high speed, more stable performance, in low speed. This field is applied only when synchronous DRAM is installed in the system.

➢ The Choice: 3 or 2.

DRAM RAS# Precharge

If an insufficient number of cycles is allowed for the RAS to accumulate its charge before DRAM refresh, the refresh may be-incompleted, and the DRAM may fail to retain data. Fast gives faster performance; and Slow gives more stable performance. This field is applied only when synchronous DRAM is installed in the system.

➢ The Choice: 3 or 2.

Memory Frequency For

This item select SDRAM Frequency.

➢ The Choice: PC100, PC133, or Auto.

System BIOS Cacheable

Selecting Enabled allows caching of the system BIOS ROM at F0000h-FFFFFh, resulting in better system performance. However, if any program is written to this memory area, a system error may result.

➢ The choice: Enabled or Disabled.

Video BIOS Cacheable

Selecting Enabled allows caching of the video BIOS , resulting in better system performance. However, if any program is written to this memory area, a system error may result.

➢ The Choice: Enabled or Disabled.

Memory Hole At 15M - 16M (Disabled)

You can reserve this area of system memory for ISA adapter ROM. When this area is reserved, it can't be cached. The user information of peripherals that need to use this area of system memory usually discusses their memory requirements.

➢ The Choice: Disabled or Enabled.

Delayed Transaction (Enabled)

The chipset has an embedded 32-bit posted write buffer to support delayed transactions cycles. Enabled this item to support compliance with PCI specification version 2.1.

➢ The Choice: Disabled or Enabled.

Delay Prior to Thermal (16 Min)

Enable this item to set the delay time before the CPU enters auto thermal mode.

➢ The Choice: 4 Min, 8 Min, 16 Min, or 32 Min.

AGP Aperture Size (MB) (128)

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

➢ The Choice: 4, 8, 16, 32, 64, 128, or 256.

On-Chip Video Windows Size (128MB)

This item allows you to set the Graphics Aperture size.

➢ The Choice: 128MB, 64MB, or Disabled.

On-Chip Frame Buffer Size (8MB)

This item allows you to set the VGA frame buffer size.

➢ The Choice: 1MB or 8MB

✎ Integrated Peripherals

These options display items that define the operation of peripheral components on the system's input / output ports.

```
                 Phoenix - AwardBIOS CMOS Setup Utility
                          Integrated Peripherals
┌────────────────────────────────────────────────┬───────────────────────┐
│ On-Chip Primary   PCI IDE  [Enabled]        ▲   │      Item Help        │
│ IDE Primary Master PIO     [Auto]           █   │                       │
│ IDE Primary Slave  PIO     [Auto]           █   │ Menu Level    ►       │
│ IDE Primary Master UDMA    [Auto]           █   │                       │
│ IDE Primary Slave  UDMA    [Auto]           █   │                       │
│ On-Chip Secondary PCI IDE  [Enabled]        █   │                       │
│ IDE Secondary Master PIO   [Auto]           █   │                       │
│ IDE Secondary Slave  PIO   [Auto]           █   │                       │
│ IDE Secondary Master UDMA  [Auto]           █   │                       │
│ IDE Secondary Slave  UDMA  [Auto]           █   │                       │
│ USB Controller             [Enabled]        █   │                       │
│ USB Keyboard Support       [Disabled]       █   │                       │
│ AC97 Audio                 [Auto]           █   │                       │
│ AC97 Modem                 [Auto]           █   │                       │
│ Onboard LAN Device         [Enabled]        █   │                       │
│ Onboard LAN Boot ROM       [Disabled]       █   │                       │
│ Init Display First         [PCI Slot]       █   │                       │
│ IDE HDD Block Mode         [Enabled]        █   │                       │
│ POWER ON Function          [Hot KEY]        ▼   │                       │
├─────────────────────────────────────────────────┼───────────────────────┤
│ KB Power ON Password       [Enter]              │ Menu Level    ►       │
│ Hot Key Power ON           [Ctrl-F12]           │                       │
│ Onboard FDC Controller     [Enabled]            │                       │
│ Onboard Serial Port 1      [3F8/IRQ4]           │                       │
│ Onboard Serial Port 2      [2F8/IRQ3]           │                       │
│ UART Mode Select           [Normal]             │                       │
│ RxD , TxD Active           [Hi,Lo]              │                       │
│ IR Transmission Delay      [Enabled]            │                       │
│ UR2 Duplex Mode            [Half]               │                       │
│ Use IR Pins                [IR-Rx2Tx2]          │                       │
│ Onboard Parallel Port      [378/IRQ7]           │                       │
│ Parallel Port Mode         [ECP]                │                       │
│ EPP Mode Select            [EPP1.7]             │                       │
│ ECP Mode Use DMA           [3]                  │                       │
│ Game Port Address          [201]                │                       │
│ Midi Port Address          [330]                │                       │
│ Midi Port IRQ              [10]             ▼   │                       │
├─────────────────────────────────────────────────┴───────────────────────┤
│ ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help│
│       F5: Previous Values    F6: Fail-Safe Defaults  F7: Optimized Defaults  │
└──────────────────────────────────────────────────────────────────────────┘
```

On-Chip Primary /Secondary PCI IDE (Enabled)

Use these items to enable or disable the PCI IDE channels that are integrated on the mainboard.

➢ The choice: Enabled or Disabled.

IDE Primary Master/Primary Slave/Secondary Master/Secondary Slave PIO (Auto)

Each IDE 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. Choose Auto to let the system auto detect which PIO mode is best or select a PIO mode from 0-4.

➢ The choice: Auto, Mode 0, Mode 1, Mode 2, Mode 3, or Mode 4.

IDE Primary Master/Primary Slave/Secondary Master/Secondary Slave UDMA (Auto)

Each IDE channel supports a master device and a slave device. This mainboard supports UltraDMA technology, which 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 mainboard in order to use an UltraDMA device.

➢ The Choice: Auto or Disabled.

USB Controller (Enabled)

Select Enabled if your system contains a Universal Serial Bus (USB) port on this mainboard.

➢ The choice: Enabled or Disabled.

USB Keyboard Support (Disabled)

Select Enabled if you plan to use a keyboard connected through the USB port in a legacy operating system (such as DOS) that doesn't support Plug and Play.

➢ The choice: Enabled or Disabled.

AC97 Audio (Auto)

This item allows you to select AC 97 audio chip to support Audio. Disable this item If you are going to install a PCI audio add-on card.

➢ The Choice: Auto or Disabled.

AC97 Modem (Auto)

This item allows you to select AC 97 moden chip to support modem. Disable this item If you are going to install an external or PCI modem.

➢ The Choice: Auto or Disabled.

Onboard LAN Device (Enabled)

Select enabled if your system contains a built-in LAN controller.

➢ The Choice: Enabled or Disabled.

Onboard LAN Boot ROM (Disabled)

This item allows you to enable or disable the onboard LAN Boot ROM function.

➢ The Choice: Enabled or Disabled.

Init Display First (PCI Slot)

Use this item to specify whether your graphics adapter is installed in one of the PCI slots or is integrated on the mainboard.

➤ The choice: PCI Slot or Onboard /AGP .

IDE HDD Block Mode (Enabled)

If your IDE hard drive supports block mode (most new drives do), select Enabled to automatic detect the optimal number of block read and writes per sector that the drive can support and improves the speed of access to IDE devices.

➤ The choice: Enabled, or Disabled

POWER ON Function (Hot KEY)

Enable you to set power on paramenters. The default setting enables you to use a hot key to turn on the system.

➤ The choice: Password, Hot KEY, Mouse Left, Mouse Right, Any KEY, Button Only, Keyboard 98.

KB Power ON Password (Enter)

When the POWER ON Function is set to Password, use this item to set the password.

Hot Key Power ON (Ctrl - F12)

When the POWER ON Function is set to Hot KEY, use this item to set the hot key combination that turns on the system.

➤ The choice: < Ctrl-F5 > , < Ctrl-F6 > , < Ctrl-F7 > , < Ctrl-F8 > , < Ctrl-F9 > , < Ctrl-F10 > , < Ctrl-F11 > , < Ctrl-F12 >

Onboard FDC Controller (Enabled)

This item specifices onboard floppy disk drive controller. This setting allows you to connect your floppy disk drives to the onboard floppy connector.

➤ The choice: Enabled Disabled.

Onboard Serial Port1 (3F8/IRQ4)

This option is used to assign the I/O address and interrupt request (IRQ) for the onboard serial port1 (COM1).

➤ The choice: Disabled, 3F8/IRQ4, 2F8/IRQ3, 3E8/IRQ4, 2E8/IRQ3, or Auto.

Onboard Serial Port 2 (2F8/IRQ3)

This option is used to assign the I/O address and interrupt request (IRQ) for the onboard serial port 2 (COM2).

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

UART Mode Select

This field is available if the Onboard Serial Port 2 field is set to any option but disabled. UART Mode Select enables you to select the infrared communication protocol-Normal (default), IrDA, or ASKIR. IrDA is an infrared communication protocol with a maximum baud rate up to 115.2K bps. ASKIR is Sharp's infrared communication protocol with a maximum baud rate up to 57.6K bps.

➢ The choice: IrDA, ASKIR or Normal.

RxD, TxD Active (Hi,Lo)

This field enables you to set the IR reception / transmission polarity as High or Low.

➢ The choice: Hi,Hi , Hi,Lo , Lo,Hi , Lo,Lo.

IR Transmission Delay (Enabled)

This field enables you to set the whether the IR transmission rate will be delayed while converting to receiving mode.

➢ The choice: Enabled or Disabled.

UR2 Duplex Mode (Half)

This item is available when UART 2 mode is set to either ASKIR or IrDA. This item enables you to determin the infrared function of the onboard infrared chip. The options are Full and Half (default).

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 tiome.

➢ The choice: Full or Half.

Use IR Pins (IR-Rx2Tx2)

Please consule your IR peripheral documentation to select the correct setting of the TxD and RxD signals.

➢ The choice:: RxD2,TxD2 or IR-Rx2Tx2.

Onboard Parallel Port (378/IRQ7)

This item allows you to determine onboard parallel port controller I/O address and interrupt request (IRQ).

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

Parallel Port Mode (ECP)

Select an operating mode for the onboard parallel (printer) port. Select Normal, Compatible, or SPP unless you are certain your hardware and software both support one of the other available modes.

➢ The choice: SPP, EPP, ECP, or ECP+EPP, or Normal.

EPP Mode Select (EPP1.7)

The onboard parallel port is EPP spec. compliant, after you choose the onboard parallel port with EPP function. Set the EPP version to 1.7 spec. or 1.9 spec..

➢ The choice: EPP1.9 or EPP1.7.

ECP Mode Use DMA (3)

When the onboard parallel is set to ECP mode, the parallel port can use DMA3 or DMA1.

➢ The choice: 1 or 3.

Game Port Address (201)

This item selects the I / O address for the Game Port.

➢ The choice: Disabled, 201, or 209.

Midi Port Address (330)

This item selects the I / O address for Midi Port.

➢ The choice: Disabled, 330, 300, or 290.

Midi Port IRQ (10)

This item sets the interrupt request for the Midi function.

➢ The choice: 5 or 10.

◙ *Power Management Setup*

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

```
              Phoenix - AwardBIOS CMOS Setup Utility
                     Power Management Setup
   ACPI Function              [Enabled]          ▲        Item Help
   ACPI Suspend Type          [S1(POS)]
 x Run VGABIOS if S3 Resume    Auto                  Menu Level    ▶
   Power Management           [User Define]
   Video Off Method           [DPMS]
   Video Off In Suspend       [Yes]
   Suspend Type               [Stop Grant]
   MODEM Use IRQ              [3]
   Suspend Mode               [Disabled]
   HDD Power Down             [Disabled]
   HDD Off When Suspend       [Disabled]
   Soft-Off by PWR-BTTN       [Instant-Off]
   CPU THRM-Throttling        [50.0%]
   Wake-Up by PCI card        [Enabled]
   Power On by Ring           [Disabled]
   Wake Up On LAN             [Disabled]
 x USB Wake-Up From S3         Disabled
   Resume by Alarm            [Disabled]
 x  Date(of Month) Alarm        0
 x  Time(hh:mm:ss) Alarm        0 :  0 :  0

   ** Reload Global Timer Events **
   Primary IDE 0              [Disabled]
   Primary IDE 1              [Disabled]
   Secondary IDE 0            [Disabled]
   Secondary IDE 1            [Disabled]
   FDD,COM,LPT Port           [Disabled]
   PCI PIRQ[A-D]#             [Disabled]
   PWRON After PWR-Fail       [Off]          ▼
 ↑↓←→: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 (Enabled)

This item allows you to enable/disable the ACPI (Advanced Configuration and Power Management) feature.

➢ The choice: Enabled or Disabled.

> **Note :** ACPI is a power management specification that make hardware status information available to the operating system. ACPI enables a PC to turn its peripherals on and off for improved power management. It also allows the PC to be turned on and off by external devices, so that mouse or keyboard activity wakes up the computer.

ACPI Suspend Type (SI (POS))

This item allows you to select sleep state when suspend. In the default, S1(POS), the suspend modeis equivalent to a software power down. If you select S3(STR), the suspend mode is a suspend to RAM. i.e., the system shuts down with the exception of a refresh current to the system memory.

➢ The choice: S1(POS), S3(STR), or S1&S3.

Run VGABIOS if S3 Resume (Auto)

This item allows the system to initialize the VGA BIOS from S3 (Suspend to RAM) sleep state.

Power Management (User Define)

This item like a master switch for the power - saving modes and hard disk timeouts. If this item is set to Max Saving, power - saving modes occur after a short timeout. If the item is set to Min Saving, power - saving modes occur after a long timeout. If the item is set to User Define, you can insert your own timeouts for the power - saving modes.

➢ The choice: User Define, Min Saving, or Max Saving.

Video Off Method (DPMS)

This item defines if 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,or DPMS.

Video Off In Suspend (Yes)

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

➢ The choice: Yes or No.

Suspend Type (Stop Grant)

This item allows you to select the Suspend Type. If this item is set to the default Stop Grant, the CPU will to into Idle Mode druing power saving mode.

➢ The choice: PwrOn Suspend, Stop Grant.

MODEM Use IRQ (3)

This item determines the IRQ in which the MODEM can use. 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: 3, 4, 5, 7, 9, 10, 11, or NA.

Suspend Mode (Disabled)

When this item enabled and after the set up time of system inactivity, all devices except the CPU will be shut off.

➢ The choice: Disabled, 1 Min, 2 Min, 4 Min, 8 Min, 12 Min, 20 Min, 30 Min, 40Min, or 1 Hour.

HDD Power Down (Disabled)

When this item enabled and after the set up time of system inactivity, the hard disk drive will be powered down while all other devices remain active.

➢ The choice: Disabled or 1 Min ~ 15 Min.

HDD off When Suspend (Disabled)

The choice is disabled/enabled.

➢ The choice: Disabled or Enabled.

Soft-Off by PWR-BTTN (Instant-Off)

Under ACPI 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 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 Delay4 Sec. then you have to hold the power button down for 4 seconds to cause a software power down.

➢ The choice: Instant-Off or Delay 4 Sec.

CPU Thrm-Throttling (50.0%)

Use this item to specify the CPU speed (at percentage) to slow down the CPU when it reaches the predetermined overheat temperature.

➢ The choice: 87.5%, 75.0%, 62.5%,50.0%,37.5%, 25.0%, or 12.5%.

Wake-Up by PCI card (Enabled)

This item Enabled/Disabled PCI card wake up for PCI Spec 2.2.

➢ The choice: Enabled or Disabled.

Wake on by Ring (Disabled)

If this item is enable, it allows the system to resume from a software power down or power-saving mode whenever there is an incoming call to an installed fax/modem. You have to connect the fax/modem to the mainboard.

➢ The choice: Enabled or Disabled.

Wake Up On LAN (Disabled)

If this item sets to Enable, the system power will be turned on when the LAN port receives an incoming signal. You have to connect the fax/modem to the mainboard Wake On LAN connector for this feature to work.

➢ The choice: Enabled or Disabled.

USB KB Wake-up S3 (Disabled)

If you are using a USB keyboard, and the ACPI suspend type is set to S3, you can enable this item to allow a keystroke to wake up the system from power saving mode.

➢ The choice: Enabled or Disabled.

Resume by Alarm (Disabled)

When this item enabled, your can set the date (day of the month) and time to turn on your system.

➢ The choice: Disabled or Enabled.

*** Reload Global Timer Events ***

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

Primary/Secondary IDE 0/1 (Disabled)

When these items are enabled, the system will restart the power-saving thimout counters when any activity is detected on any of the drives or devices on the primary or secondary IDE channels.

➢ The choice: Disabled or Enabled.

FDD, COM, LPT Port (Disabled)

When this item is enabled, the system will restart the power-saving timeout counters when any activity is detected on the floppy disk drive, serial ports, or the parallel port.

➢ The choice: Disabled or Enabled.

PCI PIRQ [A-D] # (Disabled)

When this item is disabled, any PCI device set as the Master will not power on the system.

➢ The choice: Disabled or Enabled.

PWRON After PWR-Fail (Off)

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

➢ The choice: OFF , ON, or Former-Sts.

☜ *PNP/PCI Configurations*

This option configures how PnP (Plug and Play) and PCI expansion cards operate in your system. Both the ISA and PCI buses on the Mainboard use system IRQs (Interrupt ReQuests) and DMAs (Direct Memory Access). You must set up the IRQ and DMA assignments correctly through the PnP/PCI Configurations Setup utility for the mainboard to work properly. Selecting PnP/PCI Configurations on the main program screen displays this menu:

```
            Phoenix - AwardBIOS CMOS Setup Utility
                    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      │
 │  Assign IRQ For USB        [Enabled]      │  reset Extended System  │
 │  INT Pin 1 Assignment      [Auto]         │  Configuration Data     │
 │  INT Pin 2 Assignment      [Auto]         │  ESCD) when you exit    │
 │  INT Pin 3 Assignment      [Auto]         │  Setup if you have      │
 │  INT Pin 4 Assignment      [Auto]         │  installed a new add-on │
 │  INT Pin 5 Assignment      [Auto]         │  and the system         │
 │  INT Pin 6 Assignment      [Auto]         │  reconfiguration has    │
 │  INT Pin 7 Assignment      [Auto]         │  caused such a serious  │
 │  INT Pin 8 Assignment      [Auto]         │  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    │
 └────────────────────────────────────────────────────────────────────┘
```

Reset Configuration Data (Disabled)
If you enable this item and restart the system, any Plug and Play configuration data stored in the BIOS Setup is cleared from memory.
➢ The choice: Enabled or Disabled .

Resource controlled By (Auto(ESCD))
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) expansion 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 and Memory Resources submenus.

In the IRQ Resources submenu, if you assign an IRQ to Legacy ISA, then that Interrupt Request Line is reserved for a legacy ISA expansion card. Press < Esc > to close the IRQ Resources submenu.

In the Memory Resources submenu, use the first item Reserved Memory Base to set the start address of the memory you want to reserve for the ISA expansion card. Use the second item Reserved Memory Length to set the amount of reserved memory. Press < Esc > to close the Memory Resources submenu.

➢ The choice: Auto (ESCD) or Manual.

IRQ Resources

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

PCI/VGA Palette Snoop (Disabled)

This item is designed to overcome 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 or Disabled.

Assign IRQ For USB (Enabled)

Names the interrupt request (IRQ) line assigned to the USB on your system. Activity of the selected IRQ always awakens the system.

➢ The choice: Enabled or Disabled.

INT Pin1 ~ 8 Assignment (Auto)

Names the interrupt request (IRQ) line assigned to a device connected to the PCI interface on your system.

➢ The Choice: Auto, 3, 4, 5, 7, 9, 10, 11, 12, 14, 15.

PC Health Status

On mainboards that support hardware monitoring, this item lets you monitor the parameters for critical voltages, critical temperatures, and fan speeds.

```
            Phoenix - AwardBIOS CMOS Setup Utility
                     PC Health Status

 Shutdown Temperature      [70ºC/158ºF]              Item Help
 CPU Warning Temperature   [80ºC/176ºF]
 Chassis Open Warning      [Disabled]        Menu Level    ►
 Chassis has been           CLOSING
 System Temp.
 CPU Temp.
 CAS FAN Speed
 CPU FAN Speed
 PWR FAN Speed
 CPU Vcore
   1.5 V
   3.3 V
   5.0 V
  12.0 V
 Voltage Battery


 ↑↓→←: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
Enables you to set the maximum temperature the system can reach before powering down.
➢ The choice: Disabled, 60^{i}C /140^{i}F, 65^{i}C /149^{i}F, 70^{i}C /158^{i}F, 75^{i}C /167^{i}F.

CPU Warning Tempertuare
Use this item to set the warning temperature level for the processor.
➢ The choice: Disabled, 50^{i}C /122^{i}F, 53^{i}C /127^{i}F, 56^{i}C /133^{i}F, 60^{i}C /140^{i}F, 63^{i}C /145^{i}F, 66^{i}C /151^{i}F, 70^{i}C / 158^{i}F, 75^{i}C /167^{i}F, 80^{i}C /176^{i}F, 85^{i}C /185^{i}F, 90^{i}C /194^{i}F, 95^{i}C /205^{i}F.

Chassis Open Warning
Enables or disables the alert warning message when the chassis is opend.

System Component Characteristics

These fields provide you with information about the systems current operating status. You can't make changes to these fields.

*System Temp. (system temperature)

*CPU temp. (CPU temperature)

*CAS fan Speed (in RPMs)

*CPU fan speed (in RPMs)

*PWR fAN Speed (in RPMs)

*CPU Vcore (CPU core voltage)

1.5V

3.3V

5.0V

12.0V

* Voltage Battery (battery voltage)

◪ *Frequency/Voltage Control*

This item enables you to set the clock speed and system bus for your system. The clock speed and system bus are determined by the kind of processor you have installed in your system.

```
            Phoenix - AwardBIOS CMOS Setup Utility
                   Frequency/Voltage Control
┌────────────────────────────────────────┬─────────────────────────┐
│ CPU Clock Ratio          [ 8 X]         │        Item Help        │
│ Auto Detect DIMM/PCI CLK [Enabled]      ├─────────────────────────┤
│ Spread Spectrum          [Enabled]      │ Menu Level    ▶         │
│ CPU Host/AGP CLK/PCI CLK  [Default]     │                         │
│                                         │                         │
│                                         │                         │
│                                         │                         │
│                                         │                         │
│                                         │                         │
│                                         │                         │
│                                         │                         │
│                                         │                         │
│                                         │                         │
│                                         │                         │
├────────────────────────────────────────┴─────────────────────────┤
│ ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help │
│    F5: Previous Values   F6: Fail-Safe Defaults   F7: Optimized Defaults      │
└───────────────────────────────────────────────────────────────────┘
```
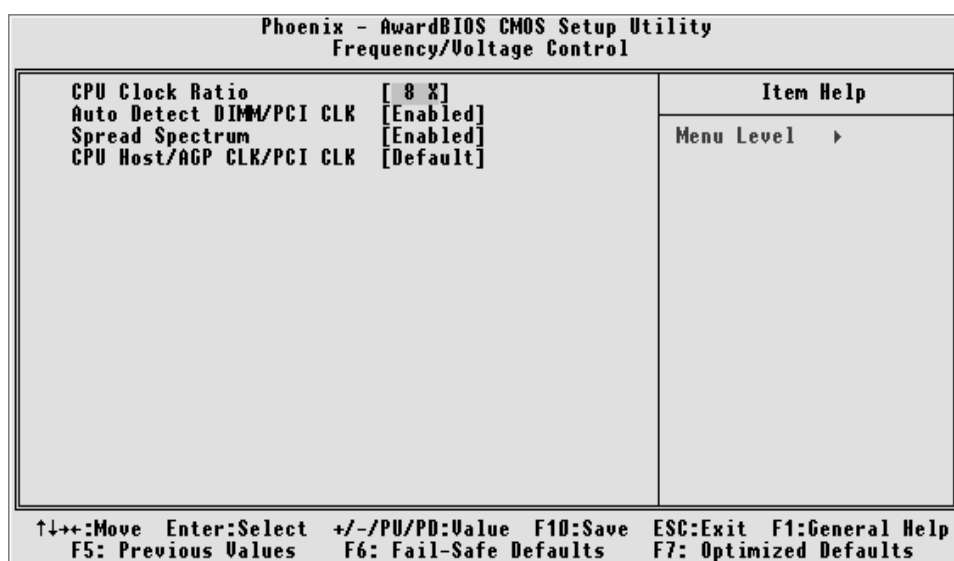
CPU Clock Ratio

This item enables you to set the CPU clock. The CPU clock ratio times the CPU Host/PCI Clock should equal the core speed of the installed processor.

➢ The choice: Min=8 or Max=50.

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 or Disabled.

Spread Spectrum

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

➢ The choice: Enabled or Disabled.

CPU Host /AGP CLK/PCI CLX (Default)

Use the CPU Host Clock to set the frontside bus frequency for the installed processor (usually 133 MHz, 100 MHz or 66 MHz).

➢ The choice: Default, 100/66/33 MHz, 103/69/34 MHz,
105/70/35 MHz, 107/71/36 MHz, 109/73/36 MHz,
111/74/37MHz, 114/76/38 MHz, 117/78/39 MHz,
120/80/40MHz, 127/85/42 MHz, 130/87/43 MHz,
133/67/33MHz, 137/68/34 MHz, 139/70/35 MHz,
141/70/35MHz, 143/71/36 MHz, 145/73/36 MHz,
150/75/38MHz, 154/77/39 MHz, 160/80/40 MHz,
170/56/28MHz, 180/60/30 MHz, 190/63/31 MHz,
199/66/33MHz.

Load Fail-Safe Defaults

This option opens a dialog box that lets you install fail-safe defaults for all appropriate items in the Setup Utility:

Press < Y > and then < Enter > to install the defaults. Press < N > and then < Enter > to not install the defaults. The fail-safe defaults place no great demands on the system and are generally stable. If your system is not functioning correctly, try installing the fail-safe defaults as a first step in getting your system working properly again. If you only want to install fail-safe defaults for a specific option, select and display that option, and then press < F6 >.

Load Optimized Defaults Option

This option opens a dialog box that lets you install optimized defaults for all appropriate items in the Setup Utility. Press < Y > and then < Enter > to install the defaults. Press < N > and then < Enter > to not install the defaults. The optimized defaults place demands on the system that may be greater than the performance level of the components, such as the CPU and the memory. You can cause fatal errors or instability if you install the optimized defaults when your hardware does not support them. If you only want to install setup defaults for a specific option, select and display that option, and then press < F7 >.

❧ *Set Supervisor/User Password*
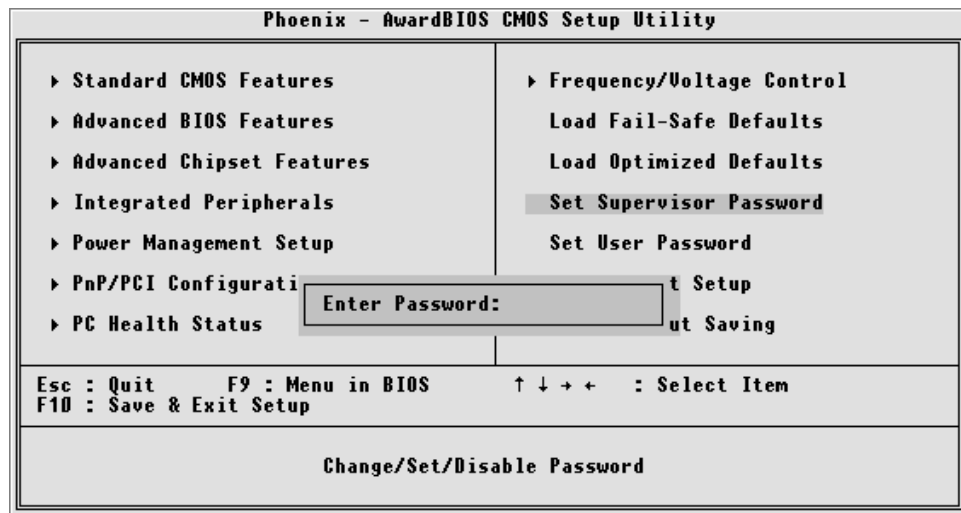
You can set either supervisor or user password, or both of them. The differences between them are:

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

Supervisor Password and User Password

The options on the Password screen menu make it possible to restrict access to the Setup program by enabling you to set passwords for two different access modes: Supervisor mode and User mode.

In general, Supervisor mode has full access to the Setup options, whereas User mode has restricted access to the options. By setting separate Supervisor and User password, a system supervisor can limit who can change critical Setup values.

Enter Password

Type the password up to eight characters, and press < Enter > . The password typed now will clear any previously entered password from CMOS memory. You will be asked to confirm the password. Type the password again and press < Enter > . You may also press < Esc > to abort the selection and not enter a password.

To disable password, just press < Enter > when you are prompted to enter password. A message will confirm the password being disabled. Once the password is disabled, the system will boot and you can enter Setup freely.

Password Disable

If you select System at Security Option of BIOS Features Setup Menu, you will be prompted in entering the password whenever the system is rebooted or you try to enter Setup. If you select Setup at Security Option of BIOS Features Setup Menu, you will be prompted only when you try to enter Setup.

Warning : Retain a record of your password in a safe place. If you forget the password, the only way to access the system is to clear CMOS, please refer to "Clear CMOS" on page 27.

❧ Save & Exit Setup

Pressing < Enter > on this item asks for 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. The 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 is restarted again.

❧ Exit Without Saving

Pressing < Enter > on this item asks for 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.