

**AB49 & AB49N**  
**Intel Pentium 4/Celeron**  
**478-pin Processor**  
**with 400/533 MHz FSB**  
**Based DDR MAINBOARD**

*User's Manual*

# Shuttle® AB49 & AB49N

**Intel Pentium 4/Celeron  
478-pin Processor  
with 400/533 MHz FSB  
Based DDR Mainboard  
Manual Version 1.0**

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## Statement of Shuttle Mainboard via the EMI Test

Shuttle mainboards have been via the EMI test in terms of series of regulations: EN55022/ CISPR22/AS/NZS3548 Class B, EN55024 (1998/AS/NZS), EN4252.1 (1994), EN61000, ANSI C63.4 (1992), CFR47 Part 15 Subpart B, and CNS13438 (1997). The items tested are illustrated as follows:

(A) Voltage: AC 110V/60HZ & AC 230V/50HZ

(B) Tested Product Information:

Product Name: PC Mainboard

Status: Sample

Model Name: AB49N/AB49

S/N: N/A

CPU:

External Frequency: 100 MHz

Intel Pentium IV 1.6/1.8/2.0/2.2/2.4 GHz

External Frequency: 133 MHz

Intel Pentium IV 2.26/2.40/2.53/2.66/2.80/3.06 GHz

Mouse Port: one port with 6 pins

Keyboard Port: one port with 6 pins

Parallel Port: one port with 25 pins

Serial Port: one port with 9 pins

USB Port: four ports with 4 pins respectively

LAN Port: one port with 8 pins (10Mbps/100Mbps)(AB49N Only)

Line-In & Line-Out & Mic-In Ports: one port for each

DDR Memory: 256 MB\*2

All CPUs have completely been tested, and values offered by the worst EMI combination of CPU external frequency are listed as follows:

| Test Mode | External Frequency | CPU         | Power Supply     | Case Open/Closed |
|-----------|--------------------|-------------|------------------|------------------|
| 1         | 133 MHz            | P4 3.06 GHz | ENP-0730(ATX12V) | Closed           |
| 2         | 133 MHz            | P4 3.06 GHz | ENP-0730(ATX12V) | Open             |
| 3         | 100 MHz            | P4 2.4 GHz  | ENP-0730(ATX12V) | Closed           |
| 4         | 100 MHz            | P4 2.4 GHz  | ENP-0730(ATX12V) | Open             |

(C) Remedy for the Tested Product & Its EMI Interference:

Remedy: N/A

EMI Interference:

Crystal: 25.00 MHz(X1)/24.576 MHz(X2)/32.768 KHz(X3)/14.318 MHz(X4)

Clock Generator: CLK1

(D) Difference between AB49N and AB49:

To discriminate AB49N from AB49 lies in the extent that chips in AB49N support LAN, and the combination for testing is based on AB49N.

(E) Supported Host Peripherals:

| Host Peripheral | Product Name        | Model Name              | S/N        | FCC ID   |
|-----------------|---------------------|-------------------------|------------|----------|
| #1              | Case                | KF45A                   | N/A        |          |
| #2              | Power Supply (300W) | ENP-0730 (ATX12V)       | 1000002885 |          |
| #3              | IBM HDD (30.7GB)    | 91024UB                 | YKFY7981   | 38921168 |
| #4              | MITSUMI FDD         | D353M                   |            |          |
| #5              | SONY VCD Player     | CDU4811                 |            | 3892A291 |
| #6              | AGP Card            | Winfast Geforce 2 MX    |            | 3892C520 |
| #7              | Power Cable         | Detachable and Shielded |            |          |

(F) Notices for Assembling Computers:

1. Cases should be made of iron or other metal that has good electric conductivity.
2. Cylinders in a case should be made of metal, and as having a mainboard mounted in a case, make sure screws are all utilized and fastened on a mainboard.
3. An I/O shielding should be contacted with I/O metallic parts of a mainboard.
4. Cables should appropriately be arranged and fixed in a case. Follow instructions:
  - Leave IDE cables not crossed upon CPU and SDRAM;
  - Leave power cables minimum in length, and not crossed upon a mainboard;
  - Leave CPU fan cables minimum in length, and not near CPU;
  - Leave cables on panels and other spare cables tied in a computer case.
5. Make sure an EMI shielding attached to a case has properly been installed.
6. Make sure a 5.25" or 3.5" FDD and screws are fastened to an EMI shielding.
7. Make sure a case is closely in contact with EMI connected points.
8. Make sure there is no cleft in a case which is not deformed.
9. Make sure a PCI or AGP door is bound to a case.
10. Make sure cables of other devices (fans or some others) are fixed in a case.

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# WHAT'S IN THE MANUAL

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## About This Manual

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# 1 INTRODUCTION

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## 1.1 To Different Users

### First-Time DIY System Builder

Welcome to the DIY world! Building your own computer system is not as difficult as you may think. To make your first computer DIY experience successful, right from the start, we have designed the 3.1 Hardware Installation section in a step-by-step fashion for all the first-time DIY system builders. Prior to installation, we also suggest you to read the whole manual carefully to gain a complete understanding of your new Shuttle AB49/AB49N mainboard.

### Experienced DIY User

Congratulate on your purchase of the Shuttle AB49/AB49N mainboard. You will find that installing your new Shuttle AB49/AB49N mainboard is just easy. Bundled with an array of onboard functions, the highly-integrated AB49/AB49N mainboard provides you with a total solution to build the most stable and reliable system. Refer to sections 3.2 Jumper Settings and Chapter 4 Drivers/Software Utilities to find out how to get the best out of your new mainboard. Chapter 5 BIOS Setup also contains the relevant information on how to tune up your system to achieve higher performance.

### System Integrator

You have wisely chosen Shuttle AB49/AB49N to construct your system. Shuttle AB49/AB49N incorporates all the state-of-the-art technology of the 845PE (GMCH) chipset from Intel. It integrates the most advanced functions you can find to date in a compact ATX board.

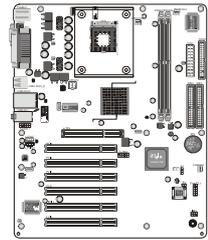
This manual is all-purpose for two kinds of mainboards: AB49 and AB49N. The main difference between them is that AB49N is equipped with an onboard LAN. In the manual, if there are some standards, characteristics, equipment, or software adopted only by AB49N, it will be highlighted in brackets.

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## 1.2 Item Checklist:

Check all items with your AB49/AB49N mainboard to make sure nothing is missing. The complete package should include:

- \* One piece of Shuttle AB49/AB49N Mainboard



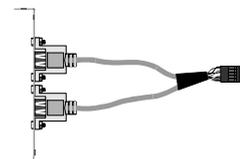
- \* One piece of ATA 100/66 Ribbon Cable



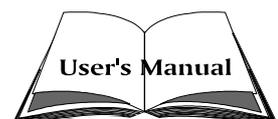
- \* One piece of Floppy Ribbon Cable



- \* One piece of twin ports USB Cable (optional)



- \* AB49/AB49N User's Manual



- \* I/O Shielding



- \* One piece of Bundled CD-ROM with containing:

- AB49/AB49N user's manual saved in PDF format
- Intel Chipset Driver
- Intel Ultra ATA Driver
- LAN Driver (AB49N Only)
- USB 2.0 Driver
- Audio Driver
- Award Flashing Utility



# 2 FEATURES

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AB49/AB49N 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 400/533 MHz FSB.

### \* Chipset

Features Intel 845PE (GMCH) N.B. and Intel 82801DB (ICH4) S.B..

### \* Hyper-Threading Technology

The latest Intel application defines a high-speed calculating ability to optimize your system by two CPUs supported (one virtual, one physical) in a multi-task environment.

### \* CPU FSB Configuration

Soft-configuration FSB (The FSB speed is software configurable from 100MHz to 133MHz.)

### \* Onboard 10/100Mb/s LAN (AB49N Only)

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

### \* On Board 6 Channel AC'97 Audio

Compliant with AC'97 2.2 involves SPDIF-Out function. 6 channel slot selectable DAC Output for multi-channel applications.

### \* Versatile Memory Support

Two 184-pin DIMM slots to support max 2GB of PC1600/PC2100/PC2700 compliant with DDR SDRAM module.

### \* PCI Expansion Slots

Provides six 32-bit PCI slots.

### \* AGP Expansion Slot

Provides one AGP 2.0 compliant slot which supports 1X/2X/4X AGP devices.

---

## ★ 6 USB 2.0 Interface Onboard

4 \* USB connectors on back-panel and 1 set of dual USB ports header on mid-board.

## ★ I/O Interface

Provides a variety of I/O interfaces:

- 1\* PS/2 mouse connector.
- 1\* PS/2 keyboard connector.
- 1\* DB25 parallel port.
- 1\* serial port.
- 1\* LAN port. (AB49N Only)
- 1\* Line-In port. (shared with Rear-Out port)
- 1\* Line-Out port. (shared with Front-Out port)
- 1\* Mic-In port. (shared with Center/Bass-Out port)

## ★ PCI Bus Master IDE Controller Onboard

Two Ultra DMA 100/66/33 Bus Master Dual-channel IDE ports provide support to a maximum of four IDE devices (one Master and one Slave per channel). The IDE Bus implements data transfer speeds of up to 100/66/33 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 be connected to the onboard 20-pin ATX power connector, and 4-pin ATX power connector. The unit supports Suspend and Soft-On/Off modes by the dual-function power button.

## ★ 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).

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### **\* ATX Form Factor**

System board conforms to ATX specification.

Board dimension: 305 mm\* 244 mm.

### **\* Advanced Features**

- Low EMI - Built in spread spectrum. Unused PCI/SDRAM slots are shut off by the automatic clock for reducing EMI.
- Dual Function Power Button - The system can be in any of the 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 will enter Soft-Off mode.
- Modem Ring Power-On - The system can be powered on automatically by the activation of modem ringing.
- CPU Host 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.

### **\* Intelligent Features**

- Voltage Monitoring - Monitors various voltages of key elements, such as the CPU, and other critical system voltage levels to ensure a stable current passing through mainboard components.
- Fan Status Monitoring - To prevent the CPU from overheating, the CPU fan is monitored by RPM, with which the cooling fan is required.
- Temperature Monitoring - This item allows users to make sure whether the CPU or system runs under a suitable temperature.

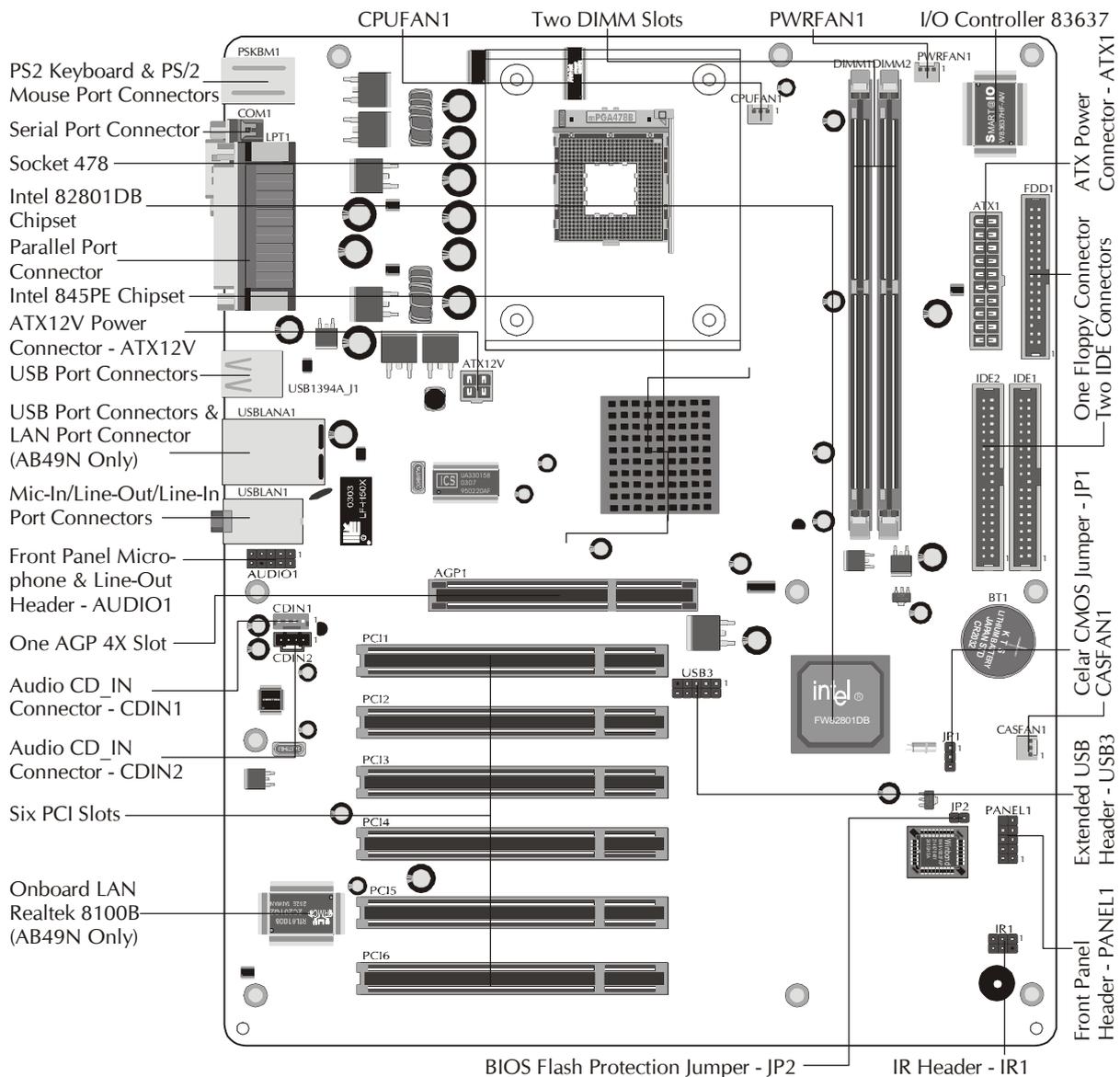
# 3 HARDWARE INSTALLATION

Before removing/installing any of these devices: CPU, DIMMs, Add-On Cards, and Cables, please unplug the onboard power connector.

This section outlines how to install and configure your mainboard. Referring to the following mainboard layout helps you identify various jumpers, connectors, slots, and ports. Steps described herein will lead you to a quick and correct installation of your system.

## 3.1 Step-by-Step Installation

### Accessories Of AB49/AB49N



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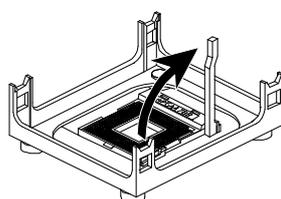
## Step 1

### CPU Installation:

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

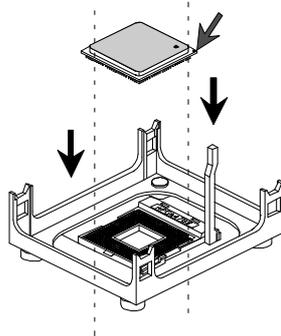
Note the CPU orientation when you plug it into CPU socket.

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



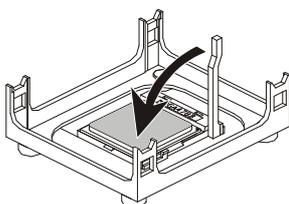
**CPU socket lever up to 90-degree angle**

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, and insert the CPU into the socket.



**CPU Pin 1 and cut edge**

3. Press down the CPU socket lever and finish CPU installation.



Note: The CPU might be damaged if you do not match the CPU socket Pin 1 and cut edge well.

4. Intel Pentium 4/Celeron processors require a set of heatsink and fan to cool down the processor. You need to purchase a heatsink and fan if they are not bundled with your CPU. Required is that install the set and plug its cable in the CPU fan power connector. Note that there are kinds of CPU fan connectors. Normally, if your mainboard supports a hardware monitoring function, a 3-pin fan power connector can have your system detect the CPU fan's speed. A CPU fan with a 2-pin or 4-pin fan power connector does not support the detection of the CPU fan's speed, and must directly be connected to the system's power supply unit.

---

## Step 2.

### Set Jumpers

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

1. Clear CMOS
2. BIOS Flash Protection

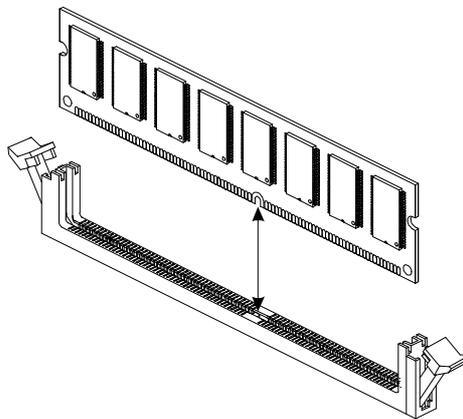
For first-time DIY system builders, we recommend that you do not change the default jumper settings if you are not totally familiar with the mainboard configuration procedures. The factory-set default settings are tuned for optimum system performance. For the advanced users who wish to customize their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

### DDR SDRAM



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## **Step 4**

### **Install Internal Peripherals in System Case**

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

To install IDE & FDD drives, follow this procedure:

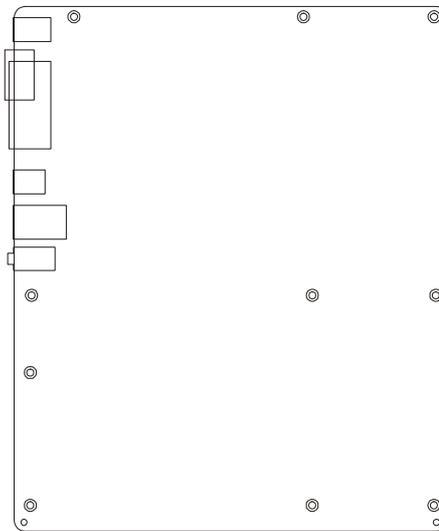
1. Set the required jumpers on each device according to the instructions provided by the manufacturer. (IDE devices, HDD, and CD-ROM, have to set jumpers to Master or Slave mode depending on whether you install more than one device of each kind.)
2. Connect IDE cable and FDD cable on the back-panel of 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 there are a lot of mounting holes on your computer chassis and mainboard. To match the holes on both properly, the key point is to make the back-panel of the mainboard in a close fit with your system case, as shown below.



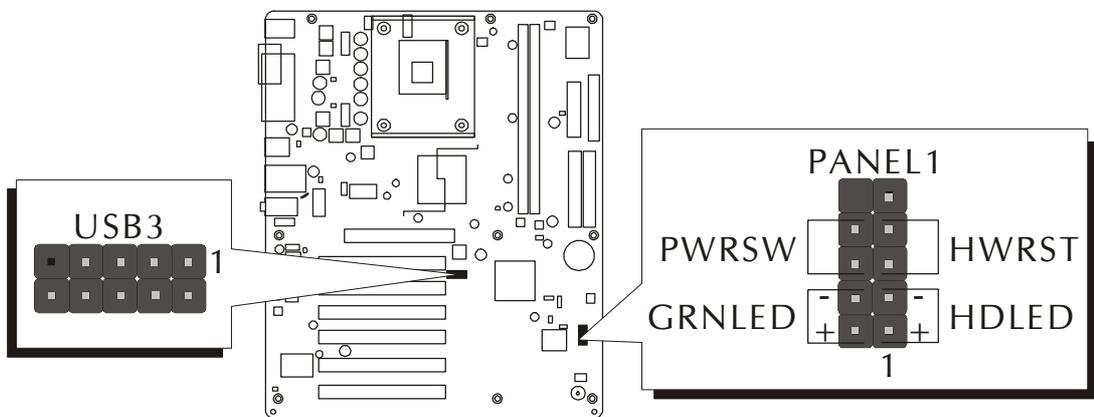
2. Position the studs between the chassis and the mainboard. The studs are used to fix the mainboard and to keep a certain distance between them, for avoiding any electrical shorts in-between.  
(If your computer case is already equipped with mounting studs, you need to tighten the screws to attach the mainboard.)

Note: In most computer housings, you can find 4 or more holes to place studs for fixing the mainboard. If there aren't enough matching holes, screw at least 4 studs to ensure the proper attachment of the mainboard.

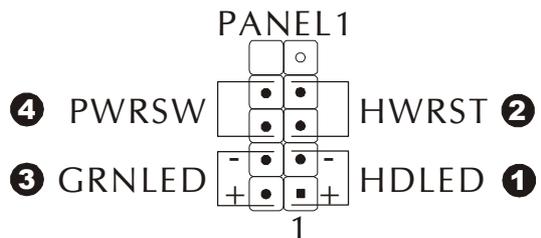
## Step 6

### Connect Front Panel LEDs/Switches/USB

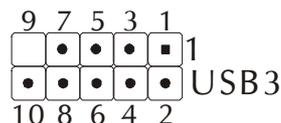
You can find there are several different cables already existing in the system case and originating from the computer's front-panel devices (HDD LED, Green LED, Reset Switch, or a USB device etc.). These cables serve to connect the front-panel LEDs, switches, and a USB connector to the mainboard's front-panel connectors, PANEL1 and USB3, as shown below.



1. HDD LED (HDLED)
2. Hardware Reset Switch Button (HWRST)
3. Green LED (GRNLED)
4. ATX Soft Power On/Off (PWR SW)
5. Extended USB Header (USB3)



5



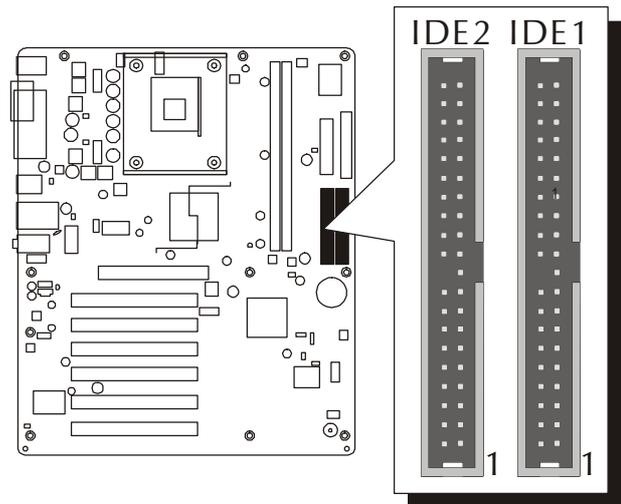
- |                     |                     |
|---------------------|---------------------|
| 1 = VREG_FP_USBPWR0 | 2 = VREG_FP_USBPWR0 |
| 3 = USB_FP_P0-      | 4 = USB_FP_P1-      |
| 5 = USB_FP_P0+      | 6 = USB_FP_P1+      |
| 7 = GND             | 8 = GND             |
| 9 = KEY             | 10 = NC             |

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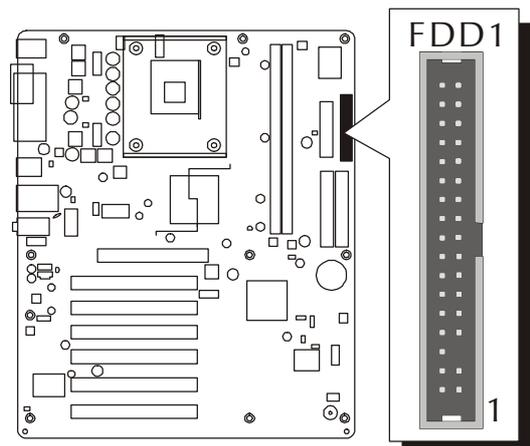
## Step 7

### Connect IDE and Floppy Disk Drives

1. IDE cable connectors



2. Floppy cable connector

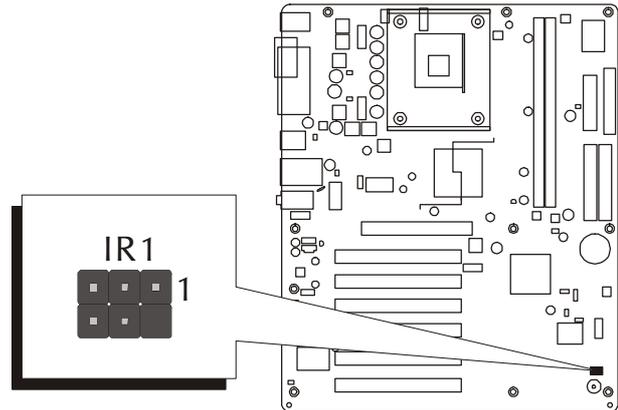


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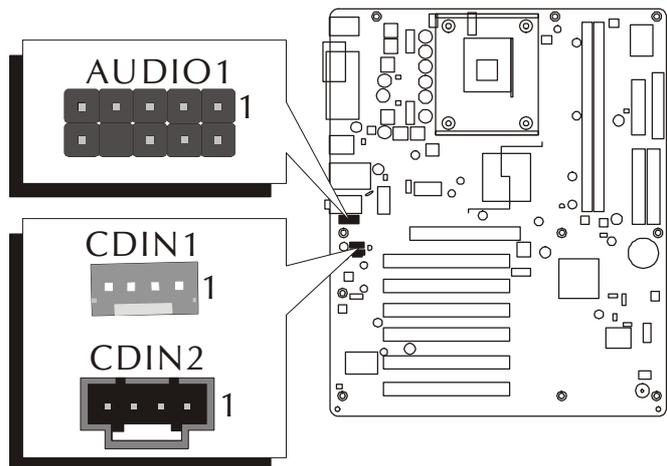
## Step 8

### Connect Other Internal Peripherals

1. IR header (IR1)



2. Front panel microphone and line-out header (AUDIO1) and CD\_IN connectors (CDIN1/CDIN2)

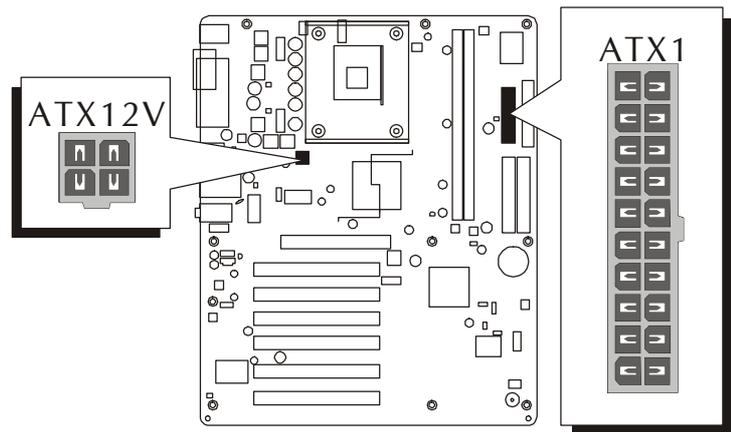


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## Step 9

### Connect the Power Supplies

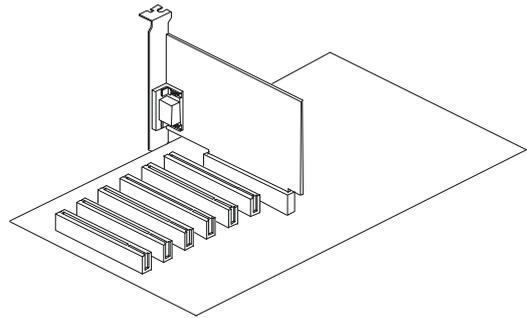
1. System power connectors (ATX1/ATX12V)



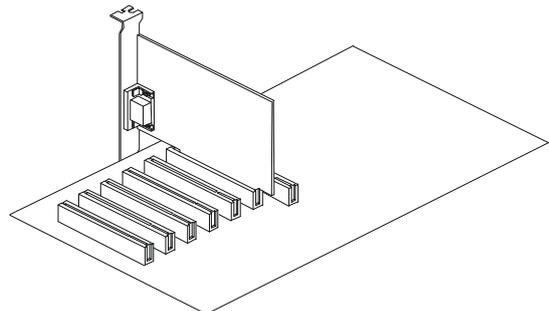
## Step 10

### Install Add-On Cards in Expansion Slots

1. Accelerated Grapics Port (AGP) Card



2. PCI Card

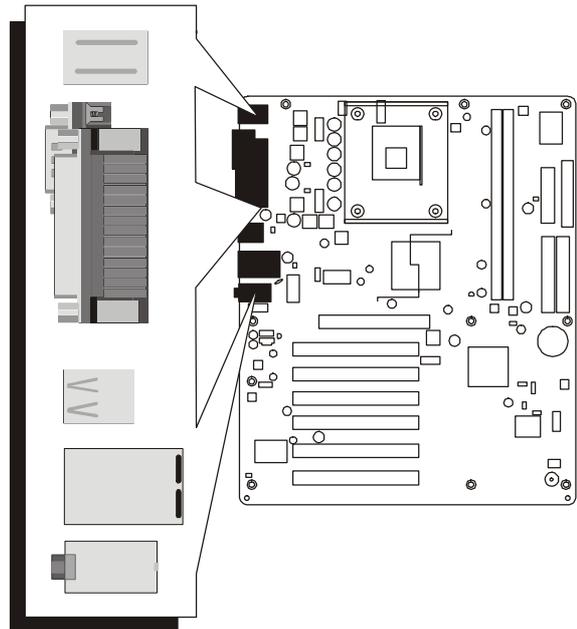


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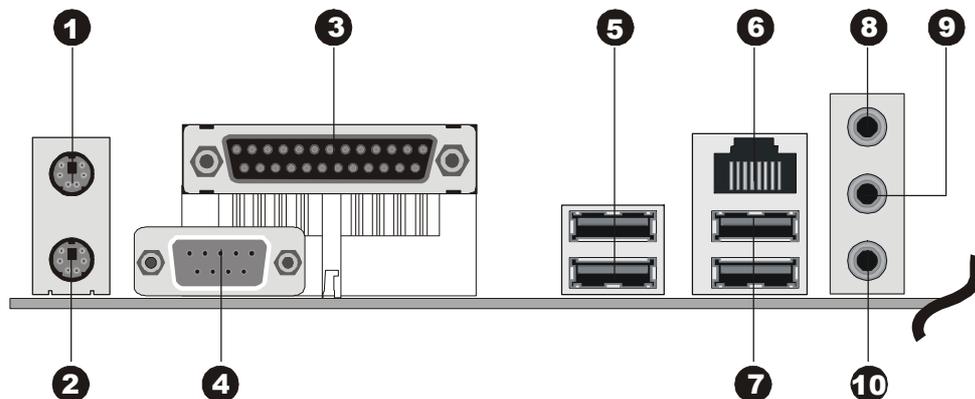
## Step 11

### Connect External Peripherals to Back-Panel

You are now ready to connect the external peripherals to your system's back-panel.



1. PS/2 Mouse Port
2. PS/2 Keyboard Port
3. Parallel Port
4. Serial Port 1
5. USB Ports 1/2
6. LAN Port (AB49N Only)
7. USB Ports 3/4
8. Audio Line-In Port (Shared with Rear-Out Port)
9. Audio Line-Out Port (Shared with Front-Out Port)
10. Audio Mic-In Port (Shared with Center/Bass-Out Port)



---

## **Step 12**

### **Install Drivers & Software Components**

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

1. Insert the AB49/AB49N bundled CD-ROM into your CD-ROM drive. The auto-run program will display the drivers main installation window on screen.
2. Choose "Install Intel Chipset Driver" and complete it.
3. Choose "Install Intel Ultra ATA Driver" and complete it.
4. Choose "Install LAN Driver" and complete it. (AB49N Only)
5. Choose "Install USB 2.0 Driver" and complete it.
6. Choose "Install Audio Driver" and complete it.
7. Return to the main installation window and exit from the auto-run driver's installation program.

---

## 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.

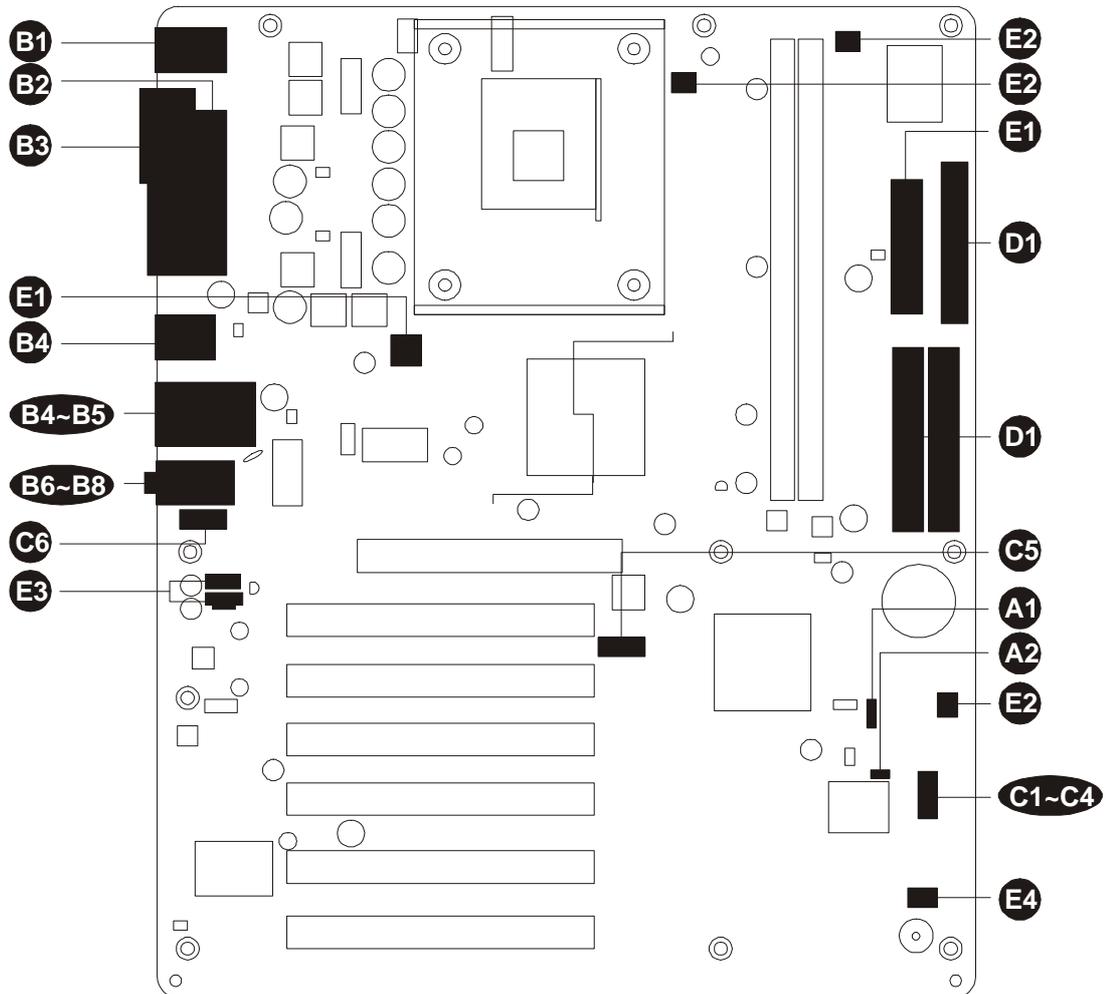
### Caution!

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**

- Socket 478 : CPU Socket for Pentium 4/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.)
- AGP : One 1X/2X/4X AGP (Accelerated Graphics Port) Slot
- PCI : Six 32-bit PCI Expansion Slots

---

### ***Jumpers***

- A1** JP1 : Clear CMOS setting
- A2** JP2 : BIOS flash protection setting

### ***Back Panel Connectors***

- B1** MS : PS/2 mouse port
- B1** KB : PS/2 keyboard port
- B2** LPT1 : Parallel port (DB25 female)
- B3** COM1 : Serial port 1 (DB9 male)
- B4** USB : 4 USB (Universal Serial Bus) ports 1/2/3/4
- B5** LAN : 1 LAN port (AB49N Only)
- B6** LINE\_IN : Line-In (6-Channel Rear-Out) port
- B7** LINE\_OUT : Line-Out (6-Channel Front-Out) port
- B8** MIC\_IN : Mic-In (6-Channel Center/Bass-Out) port

### ***Front Panel Connectors***

- C1** HDLED : IDE drive active LED
- C2** HWRST : Hardware reset switch
- C3** GRNLED : Green LED
- C4** PWRSW : ATX power on/off momentary type switch
- C5** USB3 : Extended USB header
- C6** AUDIO1 : Front panel microphone and line-out header

### ***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***

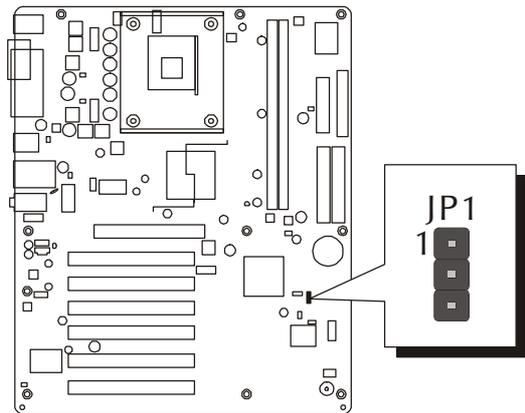
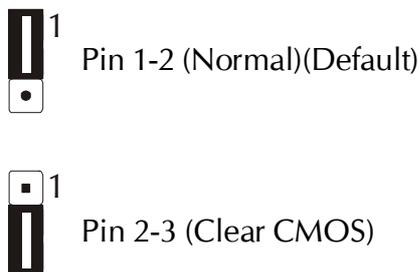
- E1** ATX1/ATX12V : ATX power connectors
- E2** CPUFAN1 : CPU fan connector
- E2** PWRFAN1 : Power fan connector
- E2** CASFAN1 : Chassis fan connector
- E3** CDIN1/CDIN2 : CD\_IN connectors
- E4** IR1 : IR header

---

## Jumpers

### A1 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.



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 pins 1-2.

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

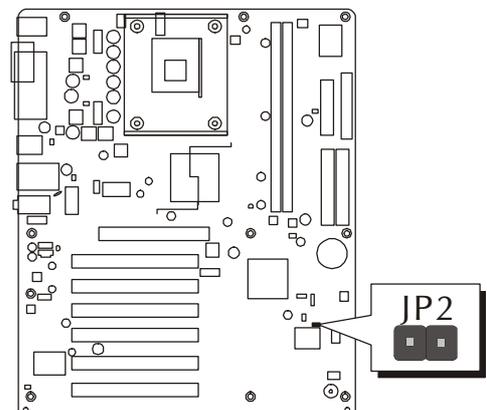
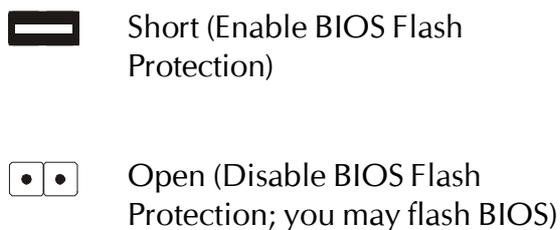
Step 5. Return the jumper cap to pins 1-2.

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

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

### A2 BIOS Flash Protection Setting (JP2)

JP2 is used to protect the BIOS from being unintentionally flashed. Enable this jumper for protection and disable this jumper when you want to flash the BIOS.

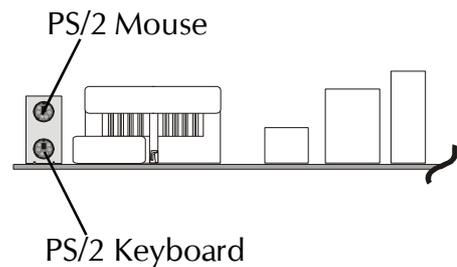


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## ☞ **Back-Panel Connectors**

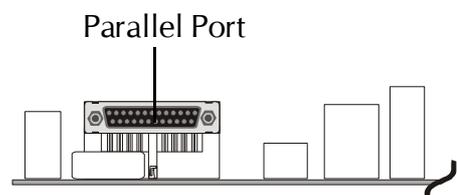
### **B1 PS/2 Mouse & PS/2 Keyboard Connectors**

Two 6-pin female PS/2 Mouse & Keyboard 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 Mouse/Keyboard jacks into their corresponding connectors.



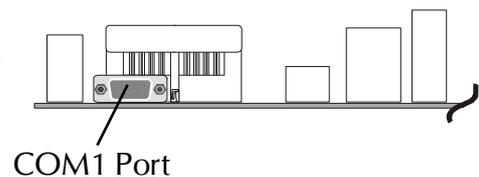
### **B2 Parallel Port Connector**

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.



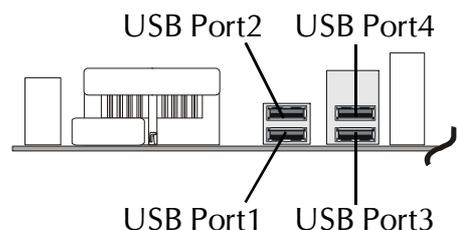
### **B3 COM1 Port Connector**

Attach a serial device cable to the DB9 serial port COM1 at the back panel of your computer.



### **B4 USB1/2/3/4 Port Connectors**

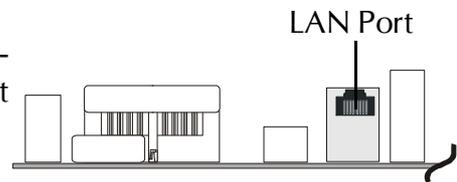
This mainboard offers 4 USB ports on back panel. Plug each USB device jack into an available USB1/2/3/4 connector.



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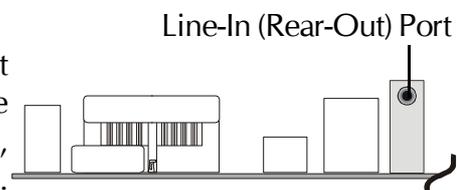
**B5 LAN Port Connector (AB49N Only)**

This mainboard can accommodate one device on LAN. Attach RJ-45 cable to this port connector to your PC to the LAN.



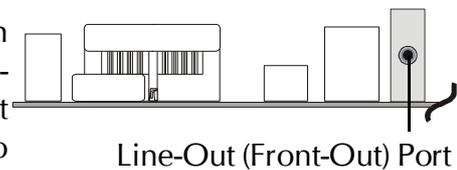
**B6 Line-In (6-Channel Rear-Out) Port Connector**

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.



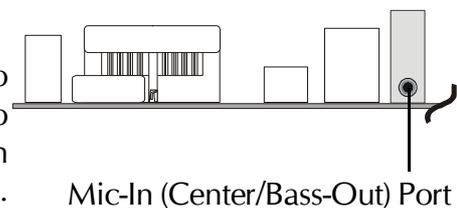
**B7 Line-Out (6-Channel Front-Out) Port Connector**

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



**B8 Mic-In (6-Channel Center/Bass-Out) 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 or mixed with Center/Bass output.

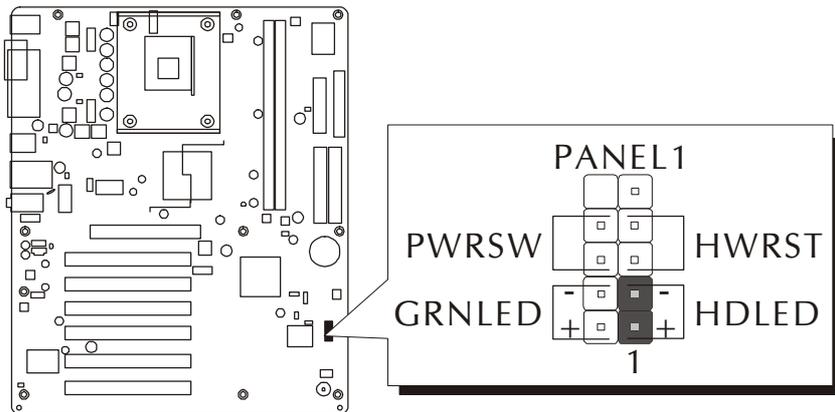


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☞ **Front-Panel Connectors**

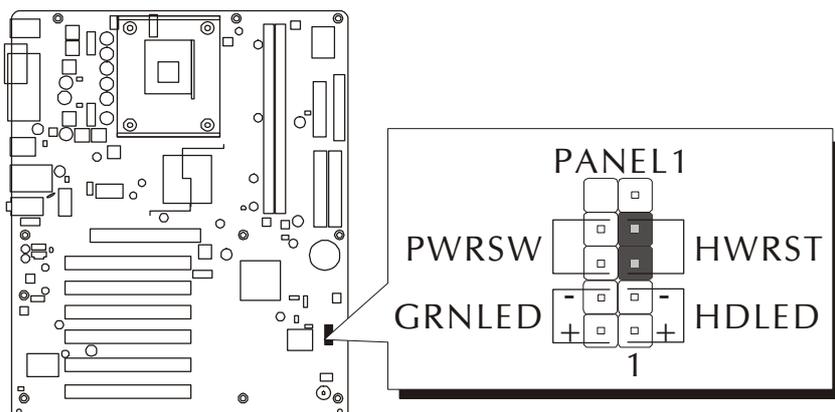
④ **HDD LED Connector (HDLED)**

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



⑤ **Hardware Reset Connector (HWRST)**

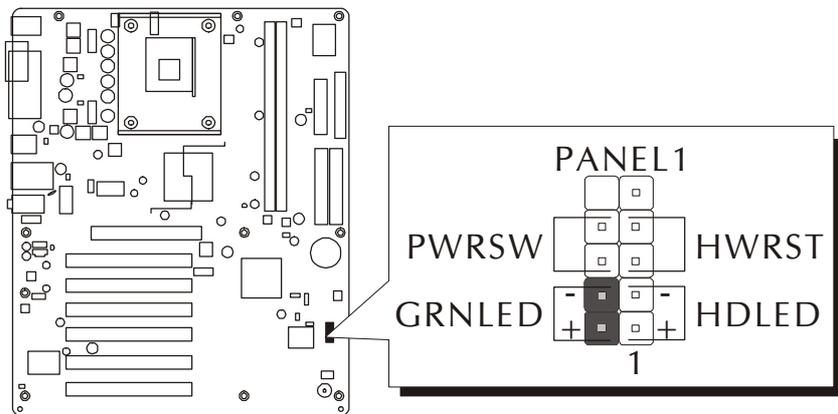
Attach a cable to the 2-pin (HWRST) header. Pressing the reset switch causes the system to restart.



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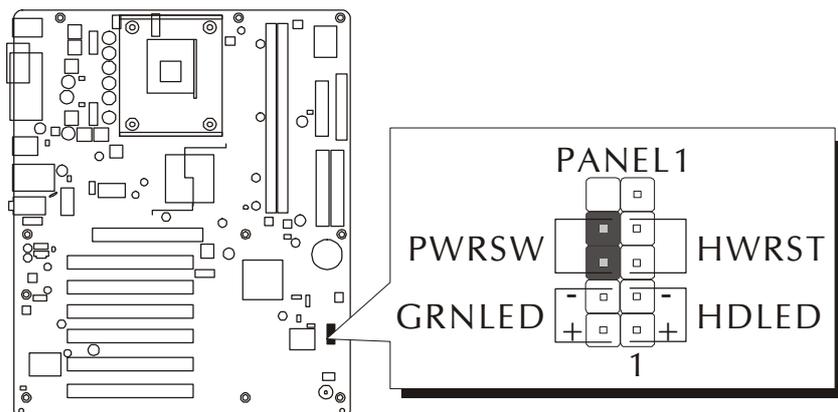
### ③ Green LED Connector (GRNLED)

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



### ④ ATX Power On/Off Switch Connector (PWR SW)

The Power On/Off Switch is a momentary type switch used for turning on or off the ATX power supply. Attach a connector cable to the 2-pin (PWR SW) header on the mainboard.

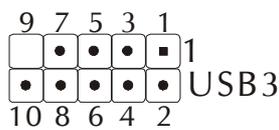


Note : Please notice all the LED connectors are directional. If your chassis's LED does not light up during running, please change it to the opposite direction.

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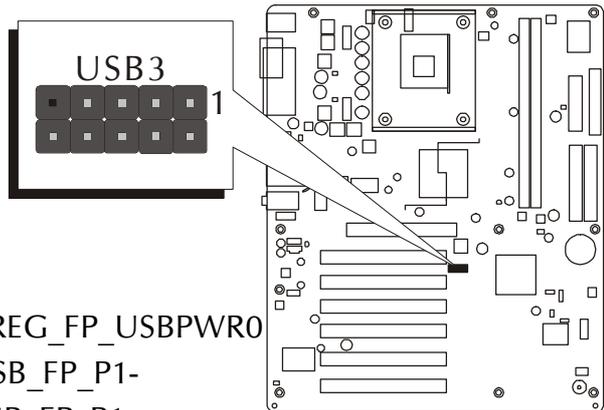
## ⑤ Extended USB Header (USB3)

The header is used to connect the cable attached to a USB connector which is mounted on front panel or back panel. But the USB cable is optional at the time of purchase.



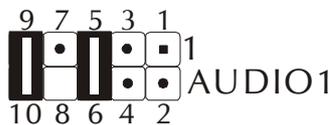
Pin Assignments:

|                     |                     |
|---------------------|---------------------|
| 1 = VREG_FP_USBPWR0 | 2 = VREG_FP_USBPWR0 |
| 3 = USB_FP_P0-      | 4 = USB_FP_P1-      |
| 5 = USB_FP_P0+      | 6 = USB_FP_P1+      |
| 7 = GND             | 8 = GND             |
| 9 = KEY             | 10 = NC             |



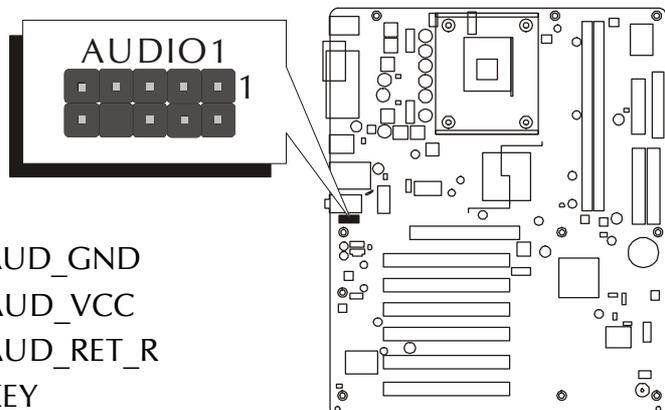
## ⑥ Front Panel Microphone and Line-Out Header (AUDIO1)

This header allows users to install an auxiliary Front-Oriented Microphone and Line-Out port for easier access. Either the Line-Out port connector on back-panel or AUDIO1 header is available at the same time. If you would like to use this header on front-panel, please remove all jumpers from this header and install your special extra microphone and line-out cable instead. Two mini jumpers must be setted on pins 5-6 and pins 9-10, when this header is not used.



Pin Assignments:

|                  |                |
|------------------|----------------|
| 1 = AUD_MIC      | 2 = AUD_GND    |
| 3 = AUD_MIC_BIAS | 4 = AUD_VCC    |
| 5 = AUD_FPOUT_R  | 6 = AUD_RET_R  |
| 7 = HP_ON/NC     | 8 = KEY        |
| 9 = AUD_FPOUT_L  | 10 = AUD_RET_L |

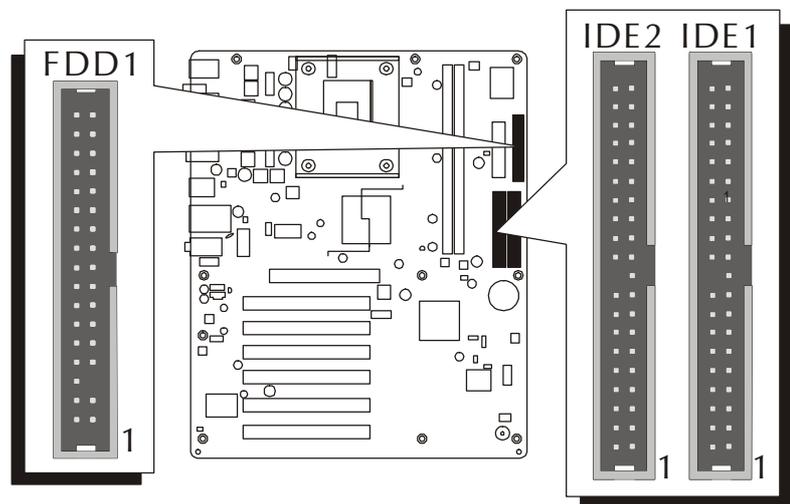


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## ☞ **Internal Peripheral Connectors**

### **01 Enhanced IDE and Floppy Connectors (IDE1/IDE2 & FDD1)**

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 Drive (HDD). This mainboard also includes one 34-pin floppy disk controller (FDC) to accommodate the Floppy Disk Drive (FDD). Moreover, this mainboard comes with one 80-pin ATA 100/66 ribbon cable to connect IDE HDD, and one 34-pin ribbon cable for FDD connection.



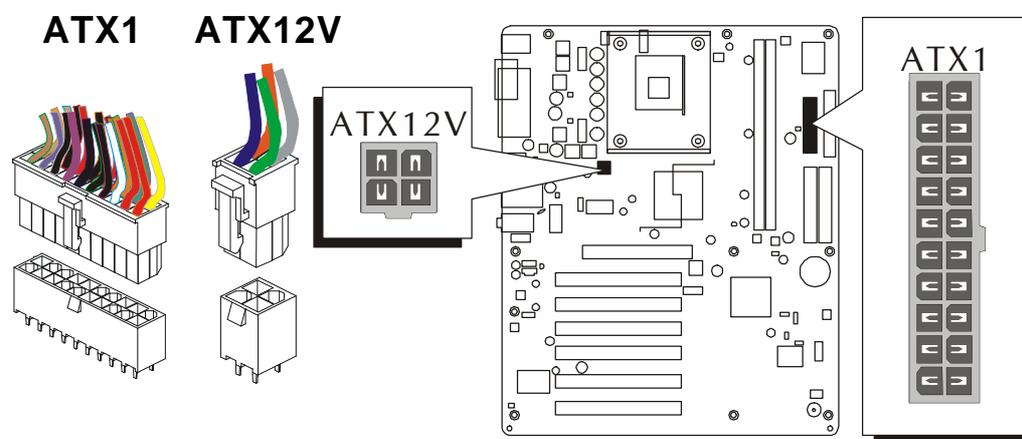
**Important:** Ribbon cables are directional; therefore, connect the red cable stripe to the same side.

---

## 👉 Other Connectors

### Ⓜ ATX Power Supply Connectors (ATX1/ATX12V)

This motherboard uses 20-pin ATX power header (ATX1), and comes with the other one header (ATX12V). Please make sure you plug each in the right direction. It is essential to have these two power supply connectors plugged or your system won't boot up.

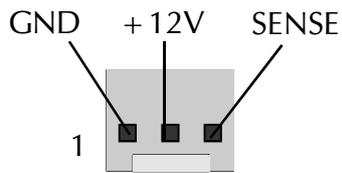


A traditional ATX system remains in the power-off stage when AC power resumes from power failure. However, it is inconvenient for a network server or workstation if there is not an UPS to execute power-on. Thus, this motherboard supports an AC Power Auto Recovery function to solve this problem. You may enable the function, "PWRON After PWR-Fail," in the sub-menu of "Power Management Setup" within the 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 stand-by power and at least 720mA compatible.   |
| Note 4: | Make sure your power supply have enough power for higher speed processor installed.   |

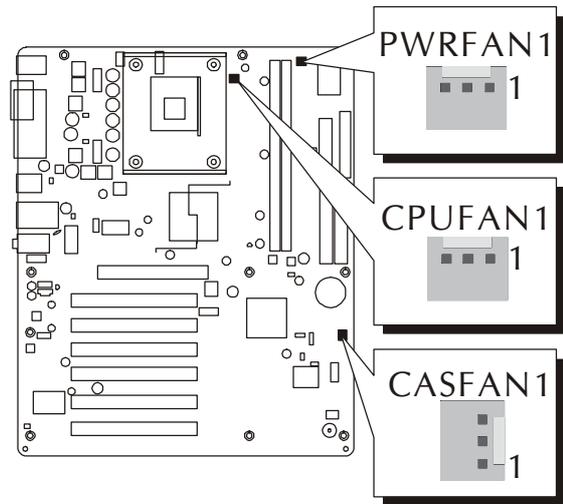
## ② CPU, Power, and Chassis Fan Connectors (CPUFAN1/PWRFAN1/CASFAN1)

The mainboard provides three onboard 12V cooling fan power connectors to support CPU (CPUFAN1), Power (PWRFAN1), and Chassis (CASFAN1) cooling fans.



### Note:

Both cable wiring and type of plug may vary, which depend 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.

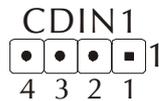


## ③ Audio CD\_IN Connectors (CDIN1/CDIN2)

Ports CDIN1 (White)/CDIN2 (Black) are used to attach audio connector cables from the CD-ROM/DVD-ROM drives.

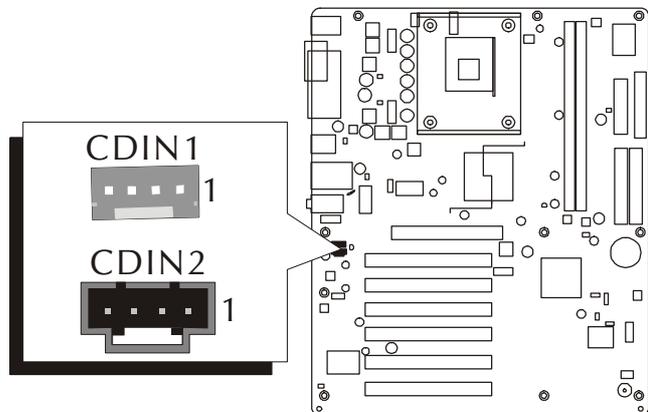
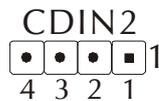
### Pin Assignments:

- 1 = CD-GND
- 2 = CD-R
- 3 = CD-GND
- 4 = CD-L



### Pin Assignments:

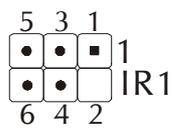
- 1 = CD-R
- 2 = CD-GND
- 3 = CD-GND
- 4 = CD-L



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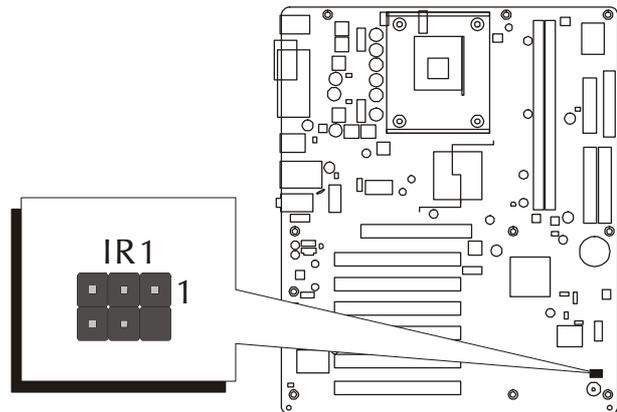
## E4 IR Header (IR1)

If you have an Infrared device, this mainboard can implement IR transfer function. This mainboard supports Normal or IrDA transfer mode. To enable this function, attach a 6-pin infrared device cable to the IR (IR1) header, and refer to the diagram below for the IR pin assignments.



Pin Assignments:

|          |          |
|----------|----------|
| 1 = NC   | 2 = KEY  |
| 3 = +5V  | 4 = GND  |
| 5 = IRTX | 6 = IRRX |



Note: Before connect your IR device to the IR (IR1) header, please note that every pin is properly allocated. If not, your IR device may be damaged.

---

### 3.3 System Memory Configuration

The AB49/AB49N mainboard has two 184-pin DIMM banks that allow you to install from 128MB up to 2GB of system memory. Each 184-pin DIMM (Dual In-line Memory Module) bank can accommodate 128MB, 256MB, 512MB, and 1GB of PC1600/PC2100/PC2700 compliant 2.5V single or double side DDR SDRAM modules. DIMM slots are arranged in two banks, each memory bank made of one bank and providing a 64-bit wide data path.

#### 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 1GB 184-pin 2.5V DDR SDRAM DIMM | x 1             |

Note: The total installed memory does not exceed 2GB.

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

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## 4.1 Mainboard CD Overview

Note: The CD contents attached in AB49/AB49N 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 AB49 Software - Installing Intel Chipset, Intel Ultra ATA, USB 2.0, and Audio drivers.
- ☞ Install Mainboard AB49N Software - Installing Intel Chipset, Intel Ultra ATA, LAN, USB 2.0, and Audio drivers.
- ☞ Manual - AB49/AB49N 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. Use your pointing device (e.g. mouse) on the "Install Mainboard AB49 Software" bar or "Install Mainboard AB49N Software" bar to run into sub-menu.

The Mainboard AB49 Software include:

- [4.2.A] Install Intel Chipset Driver
- [4.2.B] Install Intel Ultra ATA Driver
- [4.2.C] Install USB 2.0 Driver
- [4.2.D] Install Audio Driver



The Mainboard AB49N Software include:

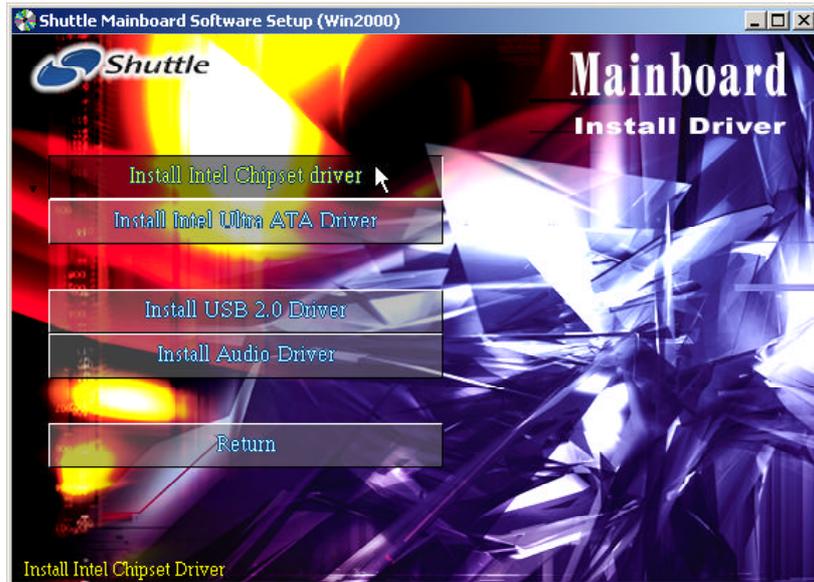
- [4.2.A] Install Intel Chipset Driver
- [4.2.B] Install Intel Ultra ATA Driver
- [4.2.C] Install USB 2.0 Driver
- [4.2.D] Install Audio Driver
- [4.2.E] Install LAN Driver



---

## 4.2.A Install Intel Chipset Driver

Select using your pointing device (e.g. mouse) on the "Install Intel Chipset driver" bar to install the chipset driver.



**AB49**

**AB49N**



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.

---

## 4.2.B Install Intel Ultra ATA Driver

This driver may do bad effect on some model or brand of IDE HDD devices. Hereby, we won't suggest users to install it cause it might crash your HDD data. However, if you are very sure that the driver matches your IDE HDD, please follow below indication to complete setup. Select using your pointing device (e.g. mouse) on the "Install Intel Ultra ATA Driver" bar to install the ultra ATA IDE driver.

P.S.: Before doing this IDE driver installation, setup chipset system driver is necessary.



**AB49**

**AB49N**



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.

---

## 4.2.C Install USB 2.0 Driver

Select using your pointing device (e.g. mouse) on the "Install USB 2.0 Driver" bar to install the USB 2.0 driver.



AB49

AB49N



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.

---

## 4.2.D Install Audio Driver

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



AB49

AB49N



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.

#### 4.2.E Install LAN Driver (AB49N Only)

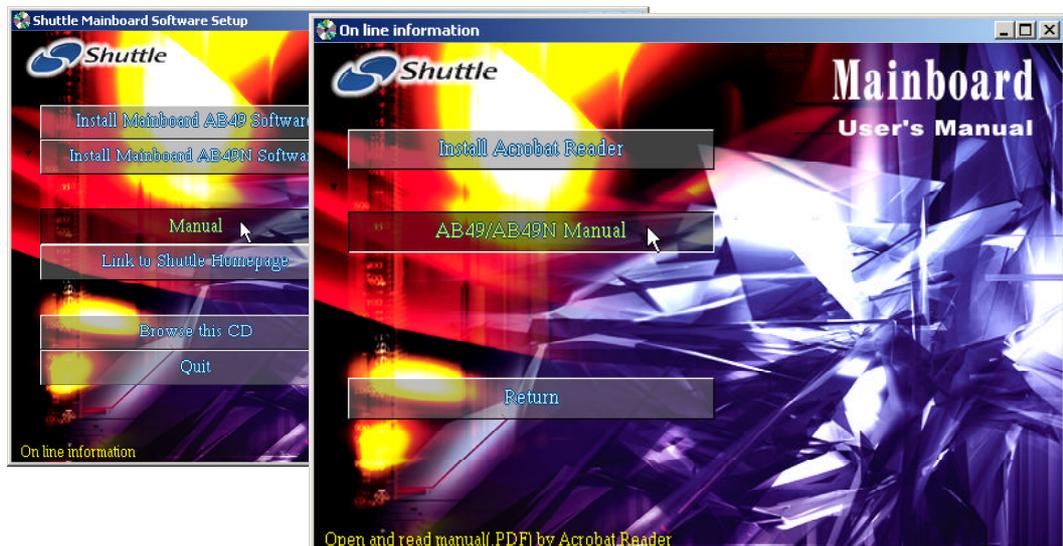
Select using your pointing device (e.g. mouse) on the "Install LAN Driver" bar to install the LAN driver.



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.

#### 4.3 View the User's Manual

Select using your pointing device (e.g. mouse) on the "Manual" bar. Click on the "Install Acrobat Reader" bar if you need to install it, or click on "AB49/AB49N Manual" bar to view user's manual.



# 5 BIOS SETUP

---

AB49/AB49N 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.

Note1. If you miss trains of words mentioned 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.

Note2. 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:

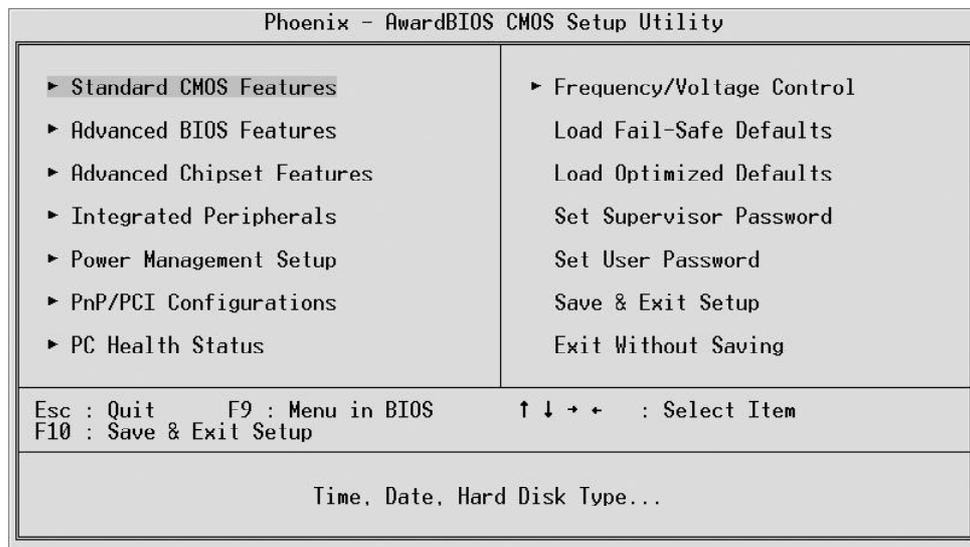
"Press F1 to Continue, DEL to Enter Setup"

- 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 AwardBIOS(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.



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**

Use this menu for basic system configuration.

#### **Advanced BIOS Features**

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

#### **Advanced Chipset Features**

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

#### **Integrated Peripherals**

Use this menu to specify your settings for integrated peripherals.

#### **Power Management Setup**

Use this menu to specify your settings for power management.

---

### ***PnP/PCI Configurations***

This entry appears if your system supports PnP/PCI.

### ***PC Health Status***

This entry shows the current system temperature, Voltage, and FAN speed.

### ***Frequency/Voltage Control***

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

### ***Load Fail-Safe Defaults***

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

### ***Load Optimized Defaults***

Use this menu to load the BIOS default values that are factory-set for optimal performance system operation. While Award has designed the custom BIOS to maximize performance, the factory has the right to change these defaults to meet users' needs.

### ***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 CMOS value changes in CMOS and exit from setup.

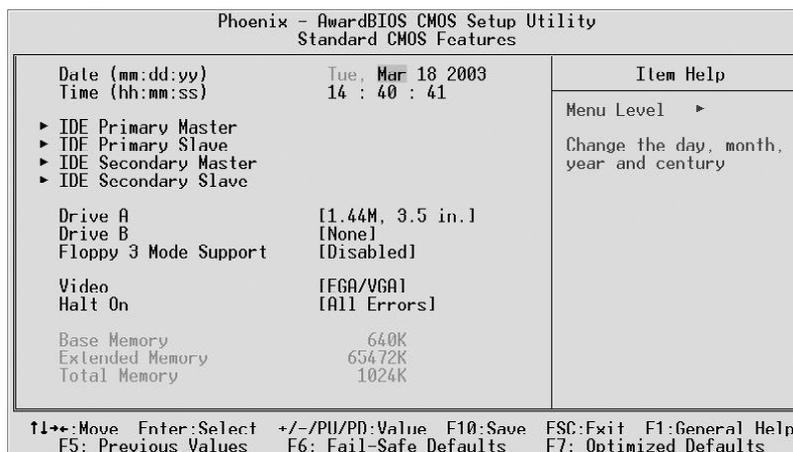
### ***Exit Without Saving***

Abandon all CMOS value changes and exit from setup.

---

## **Standard CMOS Features**

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



### Date (mm : dd : yy)

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/Secondary Master/Slave

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

### Drive A/DriveB

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 3 Mode Support

It refers to a 3.5-inch diskette with a capacity of 1.2 MB, and is sometimes used in Japan.

- The choice: Disabled, Drive A, Drive B, or Both.

### Video

This item define the video mode of the system. This mainboard has a built-in VGA graphics system; 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/Extended 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.

\*\*\*\*\*

#### **IDE Adapters**

The IDE adapters control the hard disk drive. Use a separate sub-menu to configure each hard disk drive.

##### IDE HDD Auto-Detection

Press <Enter> to auto-detect HDD on this channel. If detection is successful, it fills the remaining fields on this menu.

##### IDE Primary Master

Selecting 'Manual' lets you set the remaining fields on this screen and select the type of fixed disk.

- The choice: None, Auto, or Manual.

##### Access Mode

Choose the access mode for this hard disk.

- The choice: CHS, LBA, Large, or Auto.

##### Capacity

Disk drive capacity (Approximated). Note that this size is usually slightly greater than the size of a formatted disk given by a disk checking program.

The following options are selectable only if the 'IDE Primary Master' item is set to 'Manual', and the 'Access Mode' item is set to 'CHS'.

##### Cylinder

Set the number of cylinders for this hard disk. ➤Min = 0, Max = 65535

##### Head

Set the number of read/write heads. ➤Min = 0, Max = 255

##### Precomp

Warning: Setting a value of 65535 means no hard disk. ➤Min = 0, Max = 65535

##### Landing Zone

Set the Landing Zone size. ➤Min = 0, Max = 65535

##### Sector

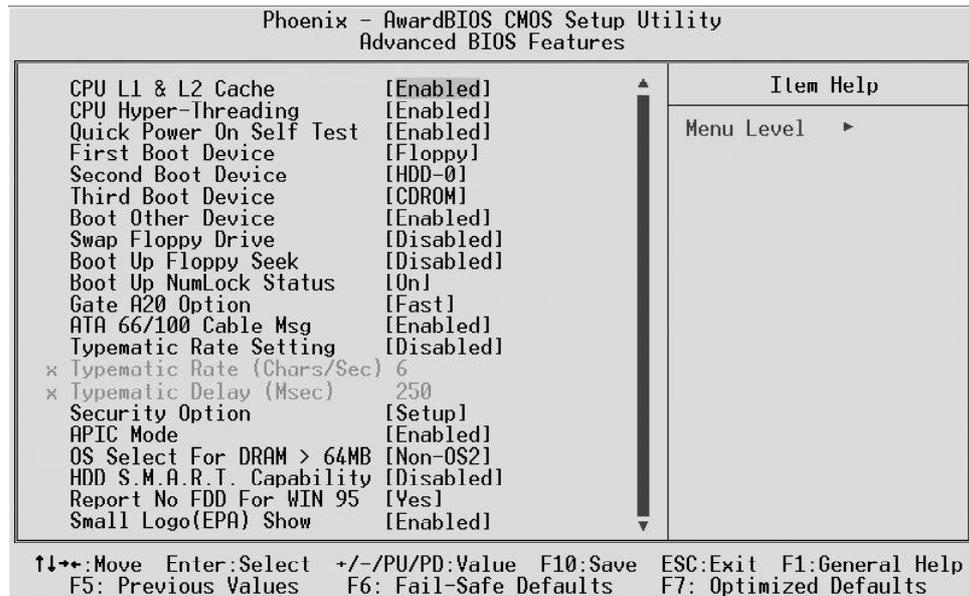
Number of sector per track. ➤Min = 0, Max = 255

\*\*\*\*\*



## Advanced BIOS Features

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



### CPU L1 & L2 Cache

This item enables CPU L1 internal and CPU L2 cache to speed up memory access.

- The choice: Enabled or Disabled.

### CPU Hyper-Threading

The latest Intel application defines a high-speed calculating ability to optimize your system by two CPUs supported (one virtual, one physical) in a multi-task environment.

- The choice: Enabled or Disabled.

### Quick Power On Self Test

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

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-CDROM, USB-HDD, LAN, or Disabled.

---

### Boot Other Device

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

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

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

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

- The choice: Off or On.

### Gate A20 Option

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

- The choice: Normal or Fast.

### ATA 66/100 Cable Msg

This item enables or disables the display of the ATA 66/100 Cable MSG.

- The choice: Enabled or Disabled.

### Typematic Rate Setting

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)

This item sets how many times the keystroke will be repeated in a second when you hold a key down.

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

### Typematic Delay (Msec)

Sets the delay time after a key is held down.

- The choice: 250, 500, 750, or 1000.

---

### Security Option

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

- The choice: Setup or System.

### APIC Mode

This option is used to enable or disable 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

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.

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

The item enables or disables the HDD system management function.

- The choice: Disabled or Enabled.

### Report No FDD For WIN 95

Whether report no FDD runs for Win 95 or not.

- The choice: Yes or No.

### Small Logo(EPA) Show

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 |            | Item Help    |
|--|------------|--------------|
| Advanced Chipset Features              |            | Menu Level ▶ |
| DRAM Timing Selectable                 | [By SPD]   |              |
| CAS Latency Time                       | [2.5]      |              |
| Active to Precharge Delay              | [7]        |              |
| DRAM RAS# to CAS# Delay                | [3]        |              |
| DRAM RAS# Precharge                    | [3]        |              |
| Command Pre Clock                      | [Auto]     |              |
| DDR Voltage                            | [Default]  |              |
| Memory Frequency For                   | [Auto]     |              |
| System BIOS Cacheable                  | [Disabled] |              |
| Video BIOS Cacheable                   | [Disabled] |              |
| Delayed Transaction                    | [Enabled]  |              |
| Delay Prior to Thermal                 | [16 Min]   |              |
| AGP Aperture Size (MB)                 | [64]       |              |

↑↓←→: 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

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

This item defines the timing delay in clock cycles before SDRAM starts a read command after receiving it.

- The Choice: 1.5, 2, 2.5, or 3.

### Active to Precharge Delay

This item defines the numbers of cycles for RAS to be allowed to precharge.

- The Choice: 7, 6, or 5.

### DRAM RAS# to CAS# Delay

This item defines the timing of the transition from RAS (row address strobe) to CAS (column address strobe) as both rows and columns are separately addressed shortly after DRAM is refreshed.

- The Choice: 3 or 2.

---

#### DRAM RAS# Precharge

This item defines the timing delay for DRAM precharge.

- The Choice: 3 or 2.

#### Command Pre Clock

Leave this item at Auto to enhance the system performance.

- The Choice: Optimal or Auto.

#### DDR Voltage

This item defines the DDR voltage.

- The Choice: Default, 2.6 V, or 2.7 V.

#### Memory Frequency For

This item is select SDRAM Frequency.

- The Choice: DDR266 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.

#### Delayed Transaction

The chipset has an embedded 32-bit posted write buffer to support delayed transactions cycles. Enable this item to support compliance with PCI specification version 2.2.

- The Choice: Enabled or Disabled.

#### Delay Prior to Thermal

This item defines the delay time before the CPU enters auto thermal mode.

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

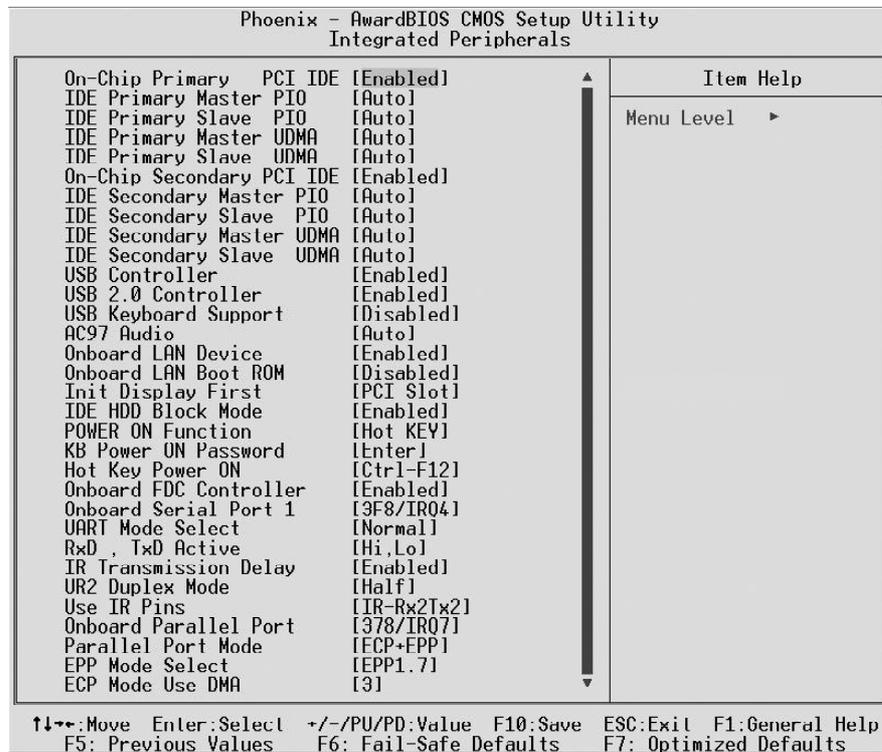
#### AGP Aperture Size (MB)

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.



## Integrated Peripherals



### On-Chip Primary/Secondary PCI IDE

The chipset contains a PCI IDE interface with support to two IDE channels. Select Enabled to activate the primary/secondary IDE interface. select Disabled to deactivate the primary/secondary interface.

- The Choice: Enabled or Disabled.

### IDE Primary/Secondary Master/Slave PIO

The four IDE PIO (Programmed Input/Output) fields let you set a PIO mode (0-4) for each of the four IDE devices that the onboard IDE interface supports. Modes 0 through 4 provide successively increased performance. In Auto mode, the system automatically determines the best mode for each device.

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

### IDE Primary/Secondary Master/Slave UDMA

Each IDE channel supports a master device and a slave device. This mainboard supports UltraDMA (UDMA) technology, which provides faster access to IDE devices. If you install a device that supports UDMA, change the appropriate item on this list to Auto. You may have to install the UDMA driver supplied with this mainboard in order to use an UDMA device.

- The choice: Auto or Disabled.

---

### USB Controller

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

- The choice: Enabled or Disabled.

### USB 2.0 Controller

Select Enabled if your system contains a USB 2.0 controller and you have USB peripherals.

- The choice: Enabled or Disabled.

### USB Keyboard Support

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

- The choice: Enabled or Disabled.

### AC97 Audio

This item allows you to control the onboard AC97 Audio.

- The Choice: Auto or Disabled.

### Onboard LAN Device (AB49N Only)

Select Enabled if your system contains a built-in LAN device.

- The choice: Enabled or Disabled.

### Onboard LAN Boot ROM (AB49N Only)

Decide whether to invoke the boot ROM of the onboard LAN chip.

- The choice: Enabled or Disabled.

### Init Display First

This item is used to determine initial device when system power on.

- The choice: PCI Slot or AGP.

### IDE HDD Block Mode

Select Enabled for automatic detection of the optimal number of block read/write per sector the drive can support.

- The Choice: Enabled or Disabled.

### POWER ON Function

Enable you to set power on parameters.

- The choice: Password, Hot KEY, Mouse Left, Mouse Right, Mouse Move, Any KEY, BUTTON ONLY, or Keyboard 98.

### KB Power ON Password

You can select this item and press "Enter" to input password if POWER ON Function select Password.

### Hot Key Power ON

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-F1 ~ Ctrl-F12.

---

### Onboard FDC Controller

This item specifies onboard floppy disk drive controller.

- The choice: Enabled or Disabled.

### Onboard Serial Port 1

This option is used to assign the I/O address and interrupt request(IRQ) for the onboard serial port 1 (COM1).

- The Choice: Disabled, 3F8-IRQ4, 2F8-IRQ3, 3E8-IRQ4, 2E8-IRQ3, or Auto.

### UART Mode Select

This item allows you to select IrDA infrared.

- The choice: Normal or IrDA.

### RxD , TxD Active

This item defines the performance of an IR device.

- The choice: Hi , Hi, Hi , Lo, Lo , Hi, or Lo , Lo.

### IR Transmission Delay

This item enables or disables the transmission delay of an IR device.

- The choice: Enabled or Disabled.

### UR2 Duplex Mode

This item allows you to select the IR half or full duplex function.

- The choice: Full or Half.

### Use IR Pins

This item defines the IR pins as an IR device is used.

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

### Onboard Parallel Port

Allows you to determine an I/O address and interrupt request(IRQ) for the onboard parallel port.

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

### Parallel Port Mode

Select an operating mode for the onboard parallel port. Select SPP unless you are certain your system supports other modes.

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

### EPP Mode Select

As the Parallel Port Mode is set to EPP, you can specify 1.7 or 1.9 spec for the EPP version.

- The choice: EPP1.7 or EPP1.9.

### ECP Mode Use DMA

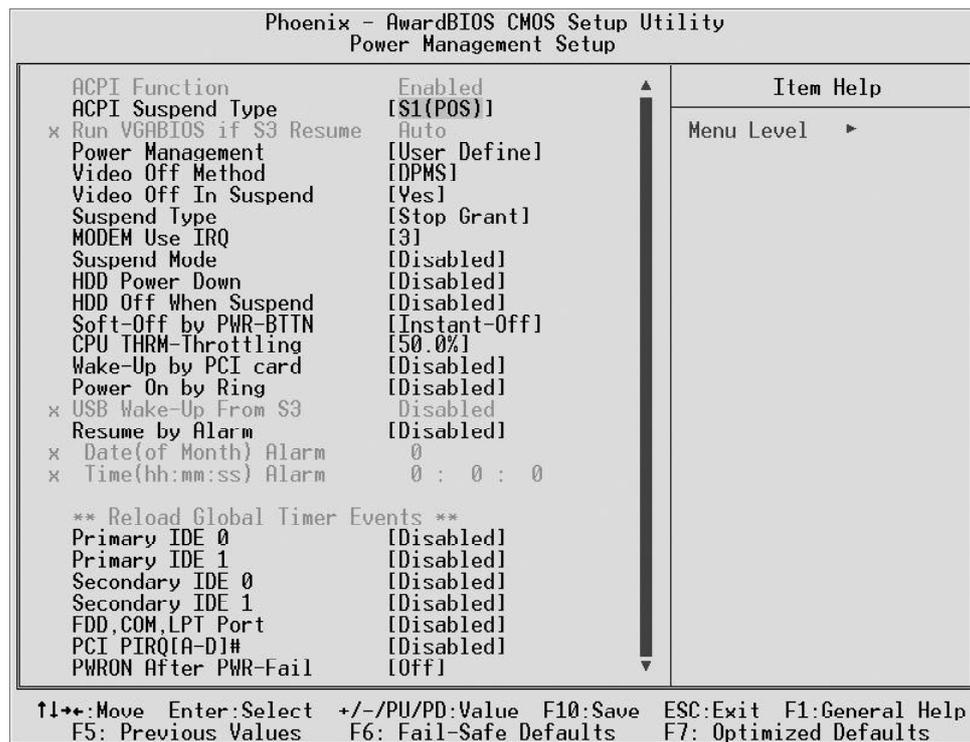
When the parallel port mode is set to ECP, this item becomes selectable.

- The choice: 1 or 3.

---

## **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.



### ACPI Function

This item defines the ACPI (Advanced Configuration and Power Management) feature that makes hardware status information available to the operating system, enables a PC to turn its peripherals on or off for improving the power management, and allows a PC turned on or off by external devices, so that a mouse or keyboard can wake up it.

### ACPI Suspend Type

This item allows you to select sleep state when suspend. In the default, S1(POS), the suspend mode is equivalent to a software power down; S3(STR), to the system that 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

Allows the system to initialize a VGA BIOS from S3 (Suspend to RAM) sleep state.

- The choice: Auto, Yes, or No.

---

### Power Management

This item acts 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 it is set to Min Saving, power-saving modes occur after a longer timeout. If it is set to User Define, you can insert your own timeouts for the power-saving modes.

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

### Video Off Method

This determines the manner in which the monitor is blanked.

V/H SYNC + Blank This selection will cause the system to turn off the vertical and horizontal synchronization ports and write blanks to the video buffer.

Blank Screen The item only writes blanks to the video buffer.

DPMS Initial display power management signaling.

- The choice: V/H SYNC + Blank, Blank Screen, or DPMS.

### Video Off In Suspend

This item determines the manner in which the monitor is blanked.

- The choice: Yes or No.

### Suspend Type

This item allows you to select the Suspend Type.

- The choice: Stop Grant or PwrOn Suspend.

### MODEM Use IRQ

This determines the IRQ which the MODEM can use.

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

### Suspend Mode

The CPU clock will be stopped and the video signal will be suspended if no Power Management events occur for a specified length of time. Full power function will return when a Power Management event is detected.

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

### HDD Power Down

When this item is enabled and after the setup 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

Enable this item to leave the hard disk drive powered down in the system suspended mode.

- The choice: Enabled or Disabled.

---

### Soft-Off by PWR-BTTN

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 Delay 4 Sec., then you have to hold the power button down for 4 seconds to cause a software power down.

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

### CPU THRM-Throttling

This item specifies the CPU speed (at percentage) to have it slowed down under the predeterminedly overheated temperature.

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

### Wake-Up by PCI card

This item leaves PCI cards wake up the system from the suspend mode.

- The choice: Enabled or Disabled.

### Power On by Ring

This item defines the system will resume by activating of modem ring.

- The choice: Enabled or Disabled.

### USB Wake-Up From S3

If you are using USB devices, and the ACPI Suspend Type is set to S3 or S1&S3, enable this item to have USB devices wake up the system from power saving mode.

- The choice: Enabled or Disabled.

### Resume by Alarm

When set to Enabled, the following two items become available and you can set the date, hour, minute and second to turn on your system.

- The choice: Enabled or Disabled.

#### Date(of Month) Alarm

This item selects the alarm Date (day of the month).

- Key in a DEC number: Min = 0, Max = 31.

#### Time(hh : mm : ss) Alarm

This item selects the alarm Time.

- [hh] ➤ Key in a DEC number: Min = 0, Max = 23.

- [mm/ss] ➤ Key in a DEC number: Min = 0, Max = 59.

---

**\*\* 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/IDE 1

When these items are enabled, the system will restart the power-saving timeout 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

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

- The choice: Disabled or Enabled.

PCI PIRQ[A-D]#

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

This item enables your computer to automatically restart or return to its last operating status after power fails.

- The choice: Off, On, or Former-Sts.

---

## **PnP/PCI Configurations**

This category configures how PnP and PCI operate in your system. Correctly setting up the IRQ and DMA (both PnP and PCI use) assignments will make your system work stably. It is strongly recommended that only technical users make changes to the default settings.

| 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  |                        |
| PCI/VGA Palette Snoop                  | [Disabled]   | Default is Disabled.   |
| Assign IRQ For USB                     | [Enabled]    | Select Enabled to      |
| INT Pin 1 Assignment                   | [Auto]       | reset Extended System  |
| INT Pin 2 Assignment                   | [Auto]       | Configuration Data     |
| INT Pin 3 Assignment                   | [Auto]       | ESCD) when you exit    |
| INT Pin 4 Assignment                   | [Auto]       | Setup if you have      |
| INT Pin 5 Assignment                   | [Auto]       | installed a new add-on |
| INT Pin 6 Assignment                   | [Auto]       | and the system         |
| INT Pin 7 Assignment                   | [Auto]       | reconfiguration has    |
| INT Pin 8 Assignment                   | [Auto]       | caused such a serious  |
|  |              | conflict that the OS   |
|  |              | cannot boot            |

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

### Reset Configuration Data

When Enabled, any PnP configuration data stored in the BIOS will be cleared from memory, with new data created.

- The choice: Enabled or Disabled.

### Resources Controlled By

Set to Auto(ESCD) makes the system dynamically allocate resources to PnP devices as required; to Manual, the following item available.

- The choice: Auto(ESCD) or Manual.

### IRQ Resources

This item allows you respectively assign an interruptive type for IRQs.

- The choice: PCI Device or Reserved.

### PCI/VGA Palette Snoop

Select Disabled if your system has a built-in VGA.

- The choice: Enabled or Disabled.

### Assign IRQ For USB

Enable this item to have activity of the selected interrupt request (IRQ) line assigned to USB devices always awaken the system.

- The choice: Enabled or Disabled.

### INT Pin 1 ~ 8 Assignment

Names the 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, or 15.

---

## PC Health Status

| Phoenix - AwardBIOS CMOS Setup Utility |              |
|--|--------------|
| PC Health Status                       |              |
| Shutdown Temperature                   | [Disabled]   |
| Warning Temperature                    | [Disabled]   |
| System Temp.                           |              |
| CPU Temp.                              |              |
| SYS FAN Speed                          |              |
| CPU FAN Speed                          |              |
| PWR FAN Speed                          |              |
| CPU Vcore                              |              |
| 12.0 V                                 |              |
| 3.3 V                                  |              |
| 5.0 V                                  |              |
| Battery Voltage                        |              |
|  | Item Help    |
|  | Menu Level ▶ |

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

### Shutdown Temperature

Enables you to set the maximum temperature that system can reach before powering down.

- The choice: Disabled, 60°C/140°F, 65°C/149°F, 70°C/158°F, or 75°C/167°F.

### Warning Temperature

Enables you to set the warning temperature level for the processor.

- The choice: Disabled, 50°C/122°F, 53°C/127°F, 56°C/133°F, 60°C/140°, 63°C/145°, 66°C/151°F, 70°C/158°F, 75°C/167°F, 80°C/176°F, 85°C/185°F, 90°C/194°F, or 95°C/205°F.

The following items provide you with information about the system's current operating status. You cannot make changes to one of them, including:

System Temp.

CPU Temp.

SYS FAN Speed

CPU FAN Speed

PWR FAN Speed

CPU Vcore

12.0 V

3.3 V

5.0 V

Battery Voltage

---

 **Frequency/Voltage Control**

| Phoenix - AwardBIOS CMOS Setup Utility |              |
|--|--------------|
| Frequency/Voltage Control              |              |
| CPU Clock Ratio                        | [ 8 X]       |
| CPU Core Voltage                       | [Vcore Auto] |
| Auto Detect DIMM/PCI CLK               | [Enabled]    |
| Spread Spectrum                        | [Enabled]    |
| CPU Clock                              | [100]        |
|  | Item Help    |
|  | Menu Level ▶ |

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

### CPU Clock Ratio

This item allows you to adjust CPU Ratio. The item becomes unavailable if your CPU clock ratio is locked.

### CPU Core Voltage

This item defines the CPU core voltage.

- The choice: Vcore Auto, Vcore 1.5%, Vcore 3.0%, or Vcore 4.5%.

### 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

This item defines the spread spectrum modulation.

- The choice: Enabled or Disabled.

### CPU Clock

This item allows the user to adjust CPU Host Clock (usually 133 MHz, 100 MHz, or 66 MHz).



### **Load Fail-Safe Defaults**

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

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

Pressing 'Y' loads the BIOS default values for the most stable, minimal performance system operations.



### **Load Optimized Defaults**

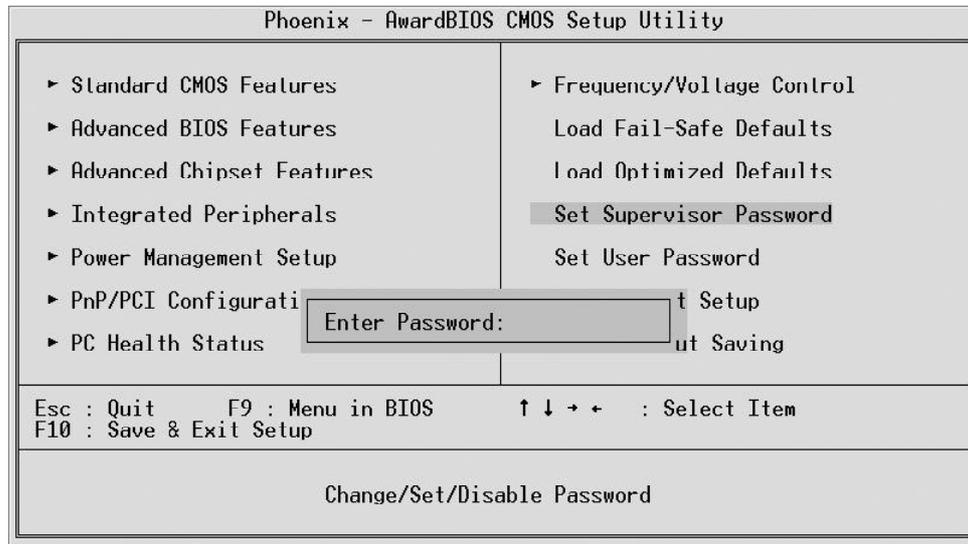
When you press <Enter> on this item, you will get a confirmation dialog box with a message similar to:

Load Optimized Defaults (Y/N) ? N

Pressing 'Y' loads the default values that are factory-set for optimal performance system operation.



## Set Supervisor/User Password



Steps to set supervisor/user password are described as follows:

### New Password Setting:

1. While pressing <Enter> to set a password, a dialog box appears to ask you enter a password.
2. Key in a new password. The password can not exceed eight characters.
3. System will request you to confirm the new password again.
4. When completed, new code takes effect.

### No Password Setting:

If you want to disable the password, just press <Enter> as a password input is requested.

### If You Forget Password:

If you forget the password, the only way to access the system is to clear the CMOS memory. Please refer to page 25 on clear CMOS setting.

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## **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)? N

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.