

AB60/R

Pentium 4/Celeron

478-pin Processor Based MAIN BOARD

User's Manual

Shuttle® AB60/R

Pentium 4/Celeron , 478-pin processor based Mainboard Manual Version 1.2

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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: AB60/R

S/N: N/A

CPU:

External Frequency: 100 MHz

Intel Pentium4: 2.0/2.4/2.5/2.6GHz

External Frequency: 133 MHz

Intel Pentium4: 2.4/ 2.53/2.8/3.06GHz

External Frequency: 200 MHz

Intel Pentium4: 2.8/ 3.0/3.2GHz

Keyboard Port: one port with 6 pins

Mouse Port: one port with 6 pins

USB 2.0 Port: four ports with 4 pins respectively

1394 Port: three port with 6 pins

VGA Port: one port with 15 pins

RJ45 Port: one port with 8 pins

S-Port Connector: one port for each

MIDI Port: two ports for each

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

DDR Memory: Apacer 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	Case Open/Closed
1	200MHz	P4 3.2 GHz	Closed
2	200MHz	P4 3.2 GHz	Open
3	133MHz	P4 3.06 GHz	Closed
4	133MHz	P4 3.06 GHz	Open
5	100MHz	P4 2.6 GHz	Closed
6	100MHz	P4 2.6 GHz	Open

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

Remedy: N/A

EMI Interference:

Crystal: 32.768KHz(X1)/14.318MHz(X2)/24.576 (X3)/25.0MHz(X4)/
25.0MHz(X5)

Clock Generator: CLK1

(D) 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	3892I168
#4	MITSUMI FDD	D353M		
#5	SONY VCD Player	CDU4811		3892A291
#6	AGP Card	Winfast Geforce 2 MX		3892C520
#7	Power Cable	Detachable and Shielded		

(E) 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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1 INTRODUCTION

1.1 To Different Users

First-Time DIY System Builder

Welcome to the DIY world! Building your own computer system is not as difficult as you may think. To make your first computer DIY experience successful, right from the start, we have designed the 3.1 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 AB60/R mainboard.

Experienced DIY User

Congratulate on your purchase of the Shuttle AB60/R mainboard. You will find that installing your new Shuttle AB60/R mainboard is just easy. Bundled with an array of onboard functions, the highly-integrated AB60/R 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.

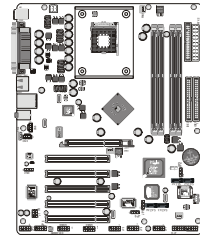
System Integrator

You have wisely chosen Shuttle AB60/R to construct your system. Shuttle AB60/R incorporates all the state-of-the-art technology of the 865PE chipset from Intel. It integrates the most advanced functions you can find to date in a compact ATX board.

1.2 Item Checklist

Check all items with your AB60/R mainboard to make sure nothing is missing. The complete package should include:

- ★ One piece of Shuttle AB60/R Mainboard



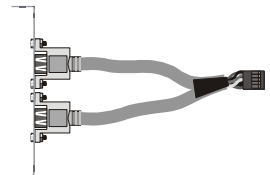
- ★ One piece of ATA 100/66/33 Ribbon Cable



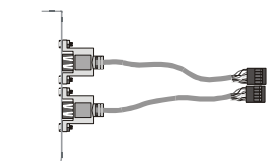
- ★ One piece of Floppy Ribbon Cable



- ★ One piece of twin ports USB Cable



- ★ One piece of twin ports 1394 Cable (AB60R Only)



- ★ Two pieces of Serial ATA Cable(AB60R Only)



- ★ Two pieces of Serial ATA Power Cord(AB60R Only)



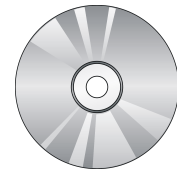
-
- * I/O Shielding



- * AB60/R User's Manual



- * One piece of Bundled CD-ROM with containing:
 - AB60/R user's manual saved in PDF format
 - Intel Chipset Driver
 - Realteck Audio driver
 - SATA RAID driver (AB60R Only)
 - SiICfg Installation Utility(AB60R Only)



2 FEATURES

AB60/R 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 400/533/800 MHz FSB. and CPU Voltage between 0.8375V ~ 1.5875V.

* Chipset

Features Intel 865PE N.B. and Intel ICH5 S.B..

* CPU FSB Configuration

Soft-configuration FSB (The FSB speed is software configurable from 400MHz to 933MHz).

* On Board 6 Channel AC'97 Audio Controller

The AC' 97 Audio codec is compliant with the AC'97 2.3 specifications. 18-20 bits DAC(Digital Analog Converter) interface for S/PDIF I/O(ICH5)..

* Versatile Memory Support

Four 184-pin Dual Channel DDR Slots to support up to 4GB of PC1600, PC2100, PC2700 or PC3200 compliant DDR SDRAM module.

* Expansion Slots

Provides one 32-bit AGP slot which supports 4X/8X AGP devices.
Provides five 32-bit PCI slots.

* 8 USB Interface Onboard

4 X USB connectors on back-panel and two sets of dual USB ports headers on board.

* I/O Interface

Provides a variety of I/O interfaces:

- 1 X Floppy interface for 3.5-inch FDD with 360K/720K/1.2M/1.44M, or 2.88M format.
- 1 X PS/2 mouse connector.
- 1 X PS/2 Keyboard connector.
- 4 X USB ports.
- 1 X LAN port.

-
- 2 X Serial Ports.
 - 1 X Parallel Port.(SPP,EPP,ECP)
 - 1 X Line-Out port.
 - 1 X Line-In port.
 - 1 X Mic-In 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 connected to the onboard 20-pin Pentium 4 standard ATX power connectors, supporting Suspend and Soft-On/Off by dual-function power button.

The 4 ATX power include other 4-pin + 12V ATX power connector.

*** System BIOS**

Provides licensed Award BIOS V6.0 PG on 4Mb Flash core and supports Green PC, Desktop Management Interface (DMI).

*** ATX Form Factor**

System board conforms to ATX specification.

Board dimension: 305mm X 245mm.

*** Advanced Features**

- Low EMI - Built in spread spectrum and automatic clock shut-off of unused PCI/DDR-SDRAMS 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 Vcore Setting - This item allows users to adjust CPU Vcore in BIOS.
 - AGP Voltage Setting - This item allows users to select AGP Voltage in BIOS.
 - DDR Voltage Setting - This item allows users to select DDR Voltage in BIOS.

*** 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. System voltages include CPU Vcore, +3.3v, +5V, +12V, Battery on system etc.
- 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.

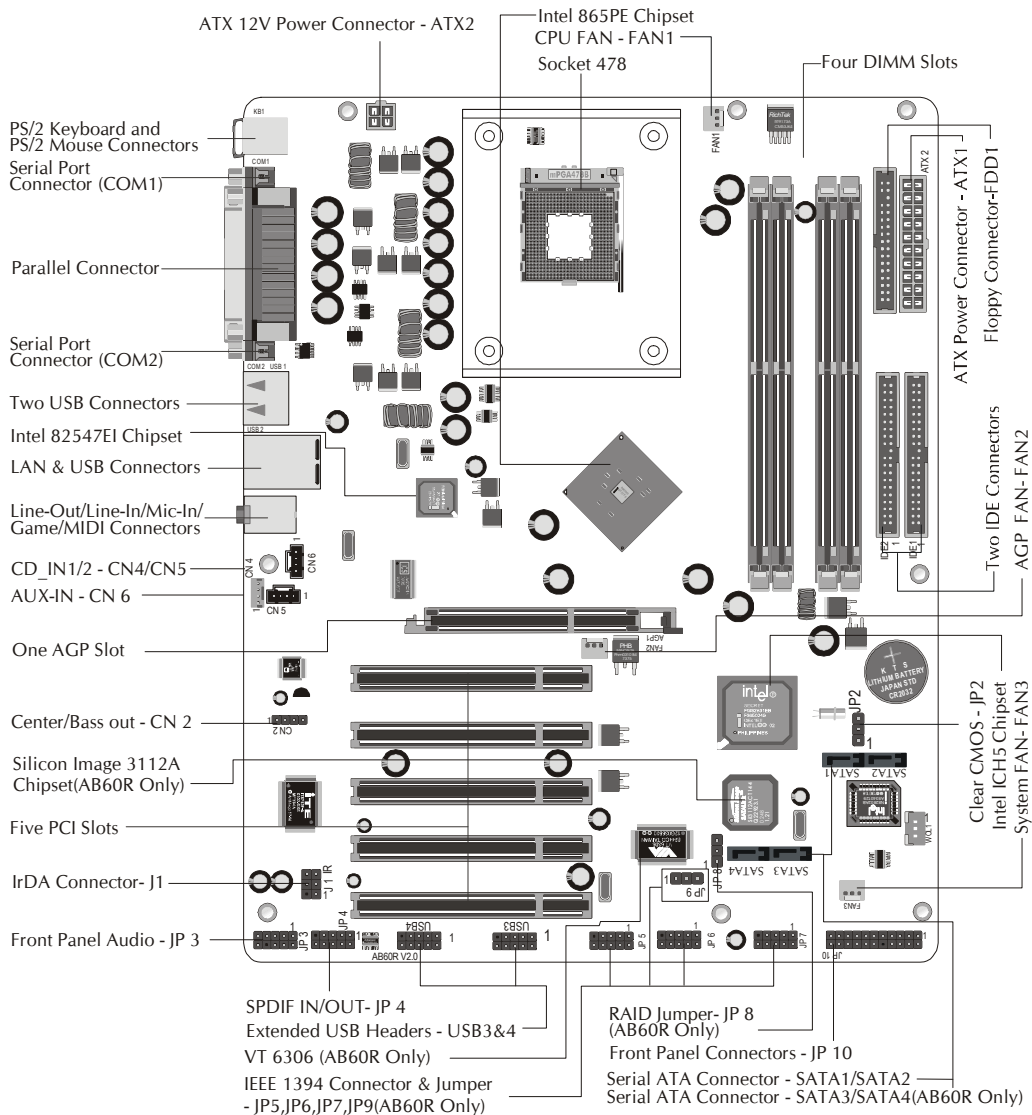
3 HARDWARE INSTALLATION

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 AB60/R



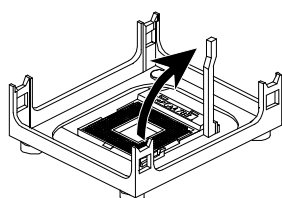
Step 1

CPU Installation:

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

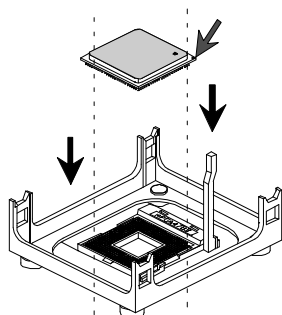
Note the CPU orientation when you plug it into CPU socket.

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



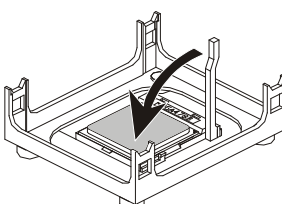
CPU socket lever up to 90-degree angle

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:

Clear CMOS

IEEE1394 Setting (AB60R Only)

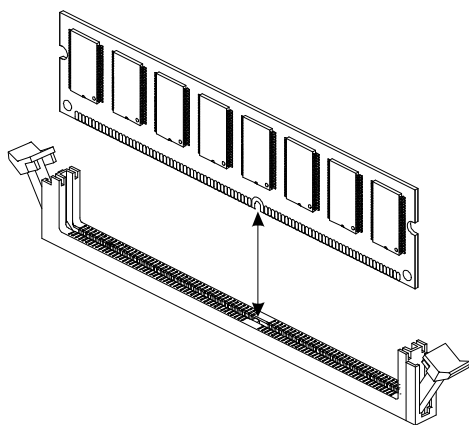
RAID Setting (AB60R Only)

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.



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.

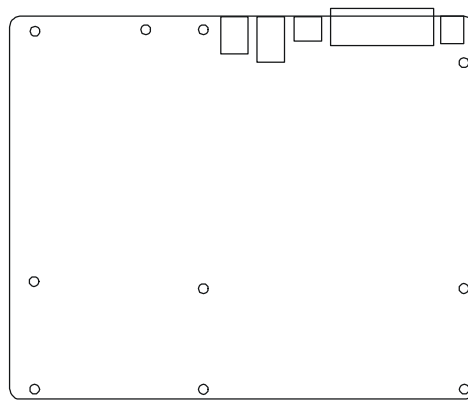
To install IDE & FDD drives, follow this procedure:

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 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.



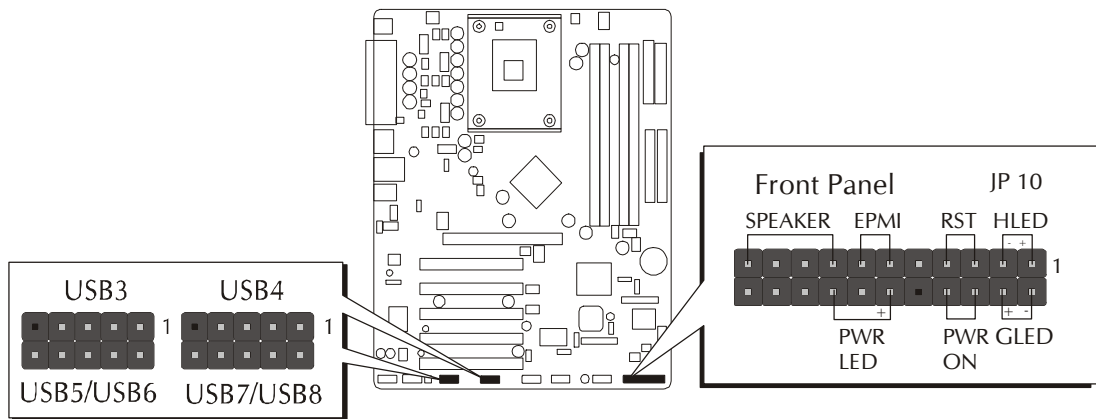
2. After deciding on the proper mounting holes, position the studs between the frame of the chassis and the mainboard. The studs are used to fix the mainboard and to keep a certain distance between the system chassis and the mainboard, in order to avoid any electrical shorts between the board and the 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

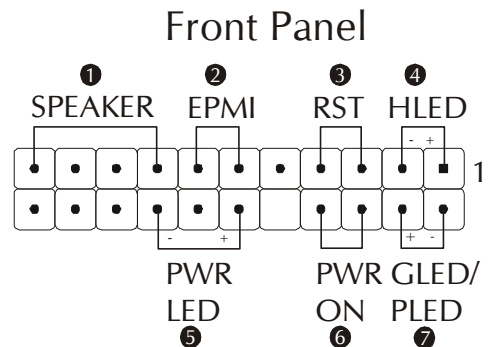
Connect Front Panel Switches/LEDs/USB connectors

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



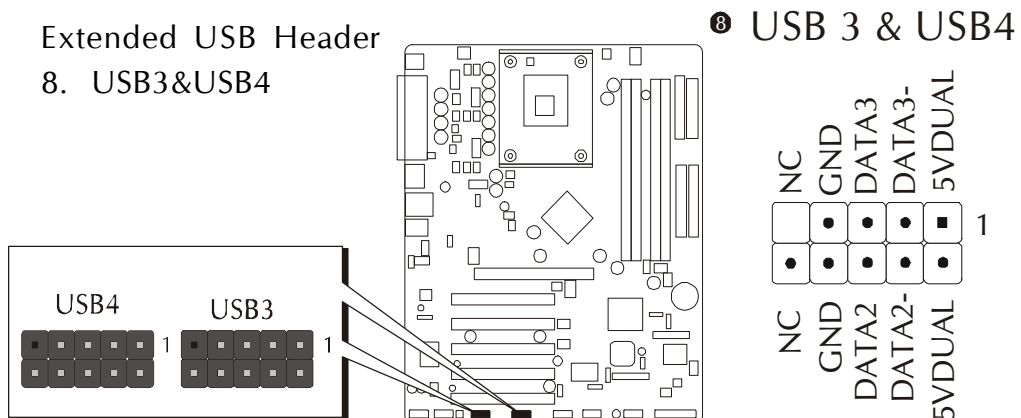
Front Panel

1. SPEAKER
2. EPMI
3. RST
4. HLED(HDD LED)
5. PWR LED
6. PWR ON
7. GLED(Green LED/POWER LED)



Extended USB Header

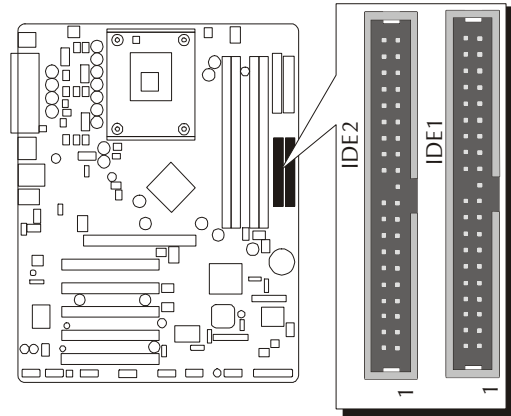
8. USB3&USB4



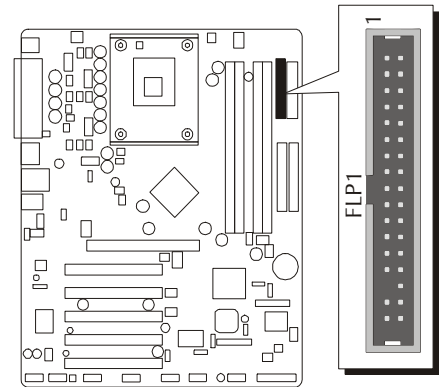
Step 7

Connect IDE and Floppy Disk Drives

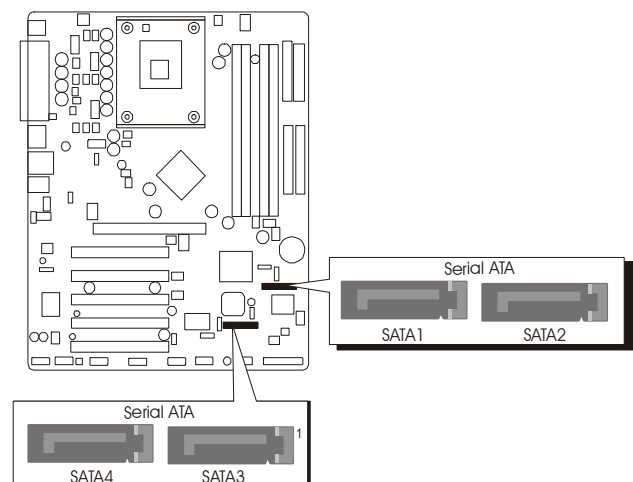
1. IDE cable connector



2. Floppy cable connector



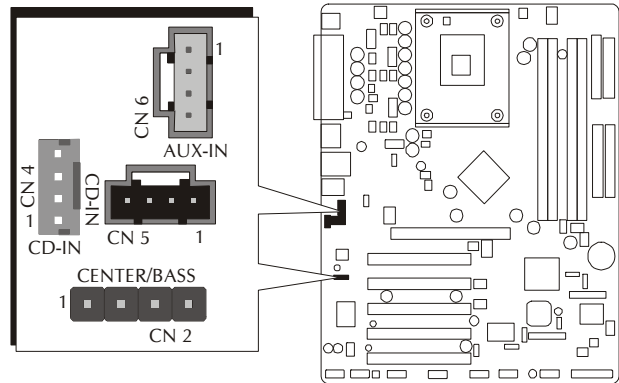
3. Serial ATA Connectors (SATA1/SATA2)/
(SATA3/SATA4)(AB60R Only)



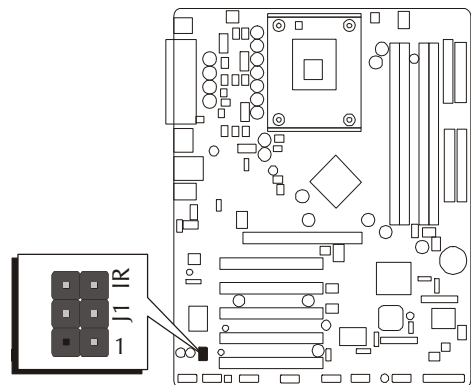
Step 8

Connect Other Internal Peripherals

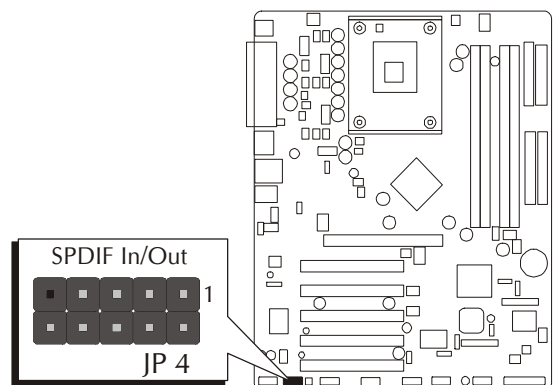
1. CD-IN, AUX-IN, Center/Bass audio headers



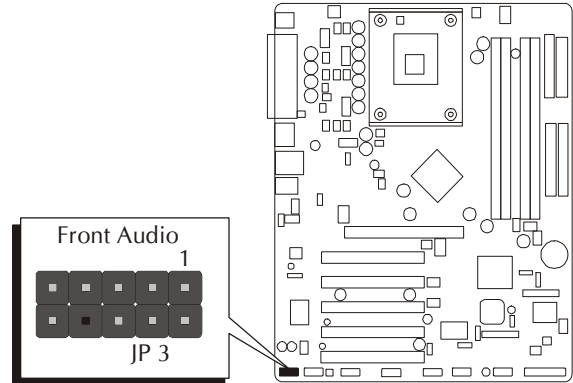
2. IR header



3. SPDIF In/Out header



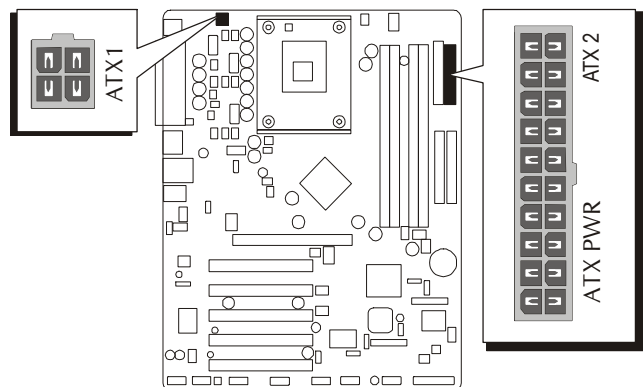
4. Front Panel Audio header



Step 9

Connect the Power Supply

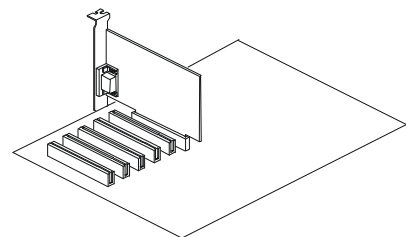
1. System power connector



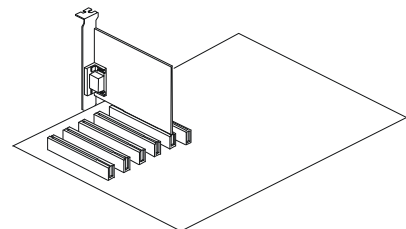
Step 10

Install Add-on Cards in Expansion Slots

1. Accelerated Graphics Port (AGP) Card



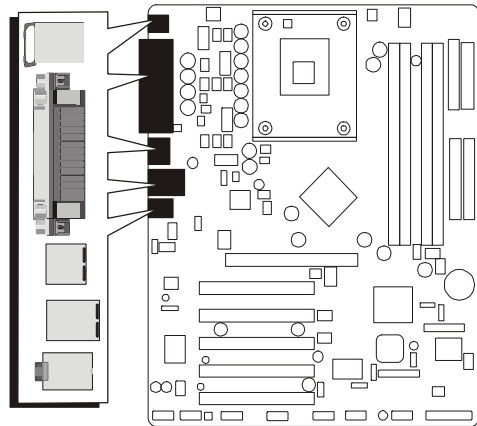
2. PCI Card



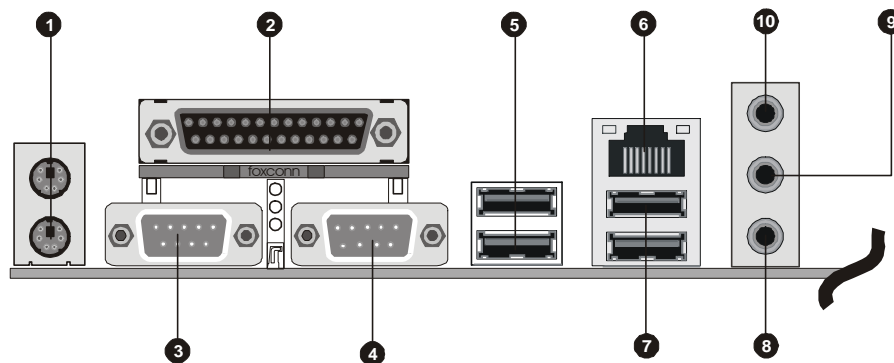
Step 11

Connect External Peripherals to Back-Panel

You are now ready to put the computer case back together and get on to the external peripherals connections to your system's back-panel.



1. PS/2 Mouse and PS/2 Keyboard
2. Parallel Port
3. COM1 Port
4. COM2 Port
5. USB0/1 Ports
6. LAN Port
7. USB2/3 Ports
8. Audio Line-Out/Front Out
9. Audio Line-In/Rear Out
10. Mic-In Port



Step 12

First Time System Boot Up

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

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

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

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

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

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

Step 13

Install Drivers & Software Components

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

1. Insert the AB60/R bundled CD-ROM into your CD-ROM drive. The auto-run program will display the drivers main installation window on screen.
2. Select the "Install Mainboard Software" bar to run into sub-menu.
3. Choose "Install Intel Chipset Driver" and complete it.
4. Choose "Install USB 2.0 Driver" and complete it.
5. Choose "Install Audio Driver" and complete it.
6. Choose "Install Intel LAN Driver" and complete it.
7. Choose "Install RAID Driver" and complete it. (AB60R Only)
8. Choose "Install SiICfg Installation Utility" and complete it. (AB60R only)
9. Return to the main installation window and exit from the auto-run drivers installation program.

3.2 Jumper Settings

Several hardware settings are made through the use of 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:



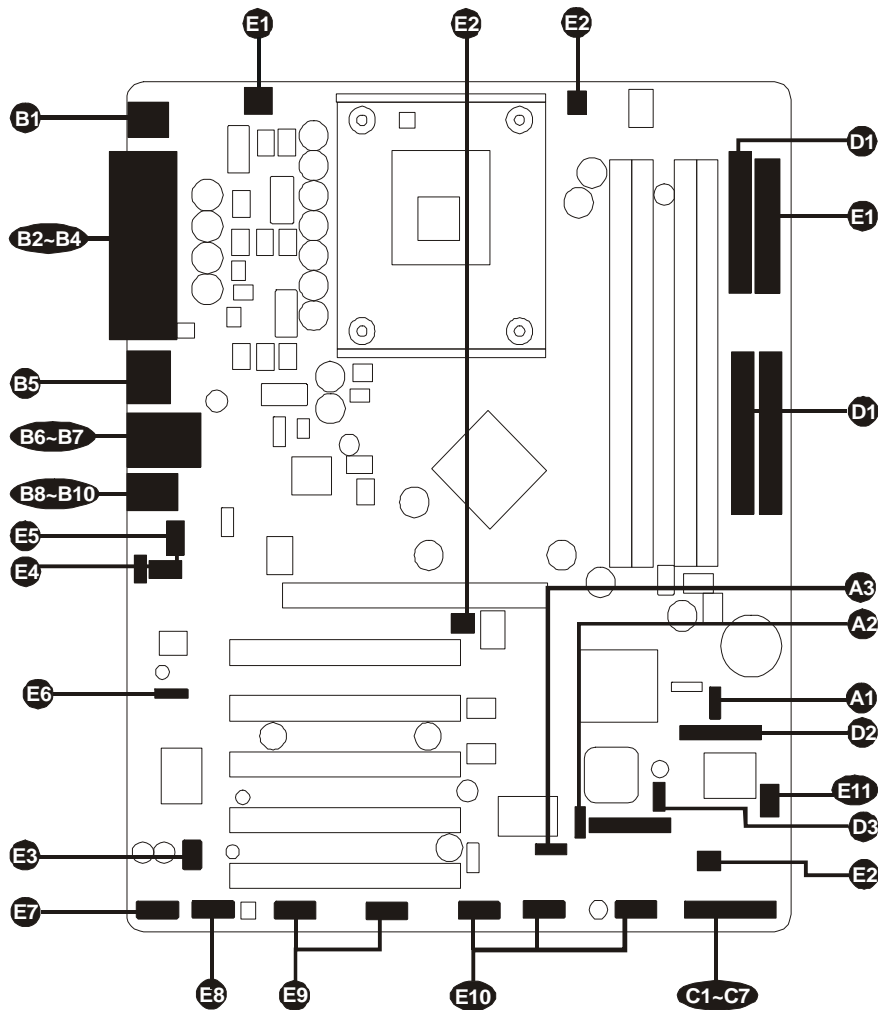
Jumpers with two pins are shown as  for Close [On] or  for Open [Off]. To Short jumper pins, simply place a plastic mini jumpers over the desired pair of pins.

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 Pentium 4 Northwood/Prescotte processors
- DIMM1/2/3/4 : Four DIMM Slots for 128, 256, 512 MB, and 1GB of 2.5V DDR SDRAM
(The total installed memory does not exceed 4GB)
- AGP : One 4 X/8X AGP (Accelerated Graphics Port) Slot
- PCI : Five 32-bit PCI Expansion Slots

Jumpers

- A1** JP2 : Clear CMOS setting
- A2** JP8 : Disable IEEE1394 setting (AB60R Only)
- A3** JP9 : Disable RAID setting(AB60R Only)

Back Panel Connectors

- B1** KB : PS/2 keyboard port
- B1** MS : PS/2 mouse port
- B2** Parallel : Printer port
- B3** COM1 : Serial port
- B4** COM2 : Serial port
- B5** USB1/2 : 2x USB ports
- B6** LAN : 1x LAN port
- B7** USB3/4 : 2x USB ports
- B8** LINE-OUT : Line-out port(Front Out)
- B9** LINE-IN : Line-in port(Rear Out)
- B10** MIC-IN : Mic-in port

Front Panel Connectors

- C1** HLED : IDE Driver Active LED
- C2** RST : Hardware Reset Switch
- C3** EPMI : Hardware System Management Interface Momentary Type Switch
- C4** SPEAKER : Housing Internal Speaker
- C5** GLED/PLED : Green LED/Power LED
- C6** PWR ON : ATX Power On/Off Momentary Type Switch
- C7** PWR LED : System Power LED

Internal Peripherals Connectors

- D1** FDD1 : Floppy disk drive interface
- D1** IDE1 : IDE primary interface (Dual-channel)
- D1** IDE2 : IDE secondary interface (Dual-channel)
- D2** Serial ATA1/2 : Serial SATA1 /2 interface
- D3** Serial ATA3/4 : Serial SATA3 /4 interface (AB60R Only)

Other Connectors

E1	ATX1/ATX2	: ATX power connectors
E2	FAN1	: CPU fan connector
E2	FAN2	: AGP fan connector
E2	FAN3	: System fan connector
E3	J1	: IR header
E4	CN4/CN5	: CD-IN 1/2 headers
E5	CN6	: AUX-IN header
E6	CN2	: Center/Bass audio header
E7	JP3	: Front Panel Audio header
E8	JP4	: SPDIF In/Out header
E9	USB3&USB4	: Extended USB Headers
E10	JP5/6/7	: Onboard IEEE1394 Connector(AB60R Only)
E11	WOL1	: Wake-On-LAN connector

Jumpers

A1 Clear CMOS Setting (JP2)

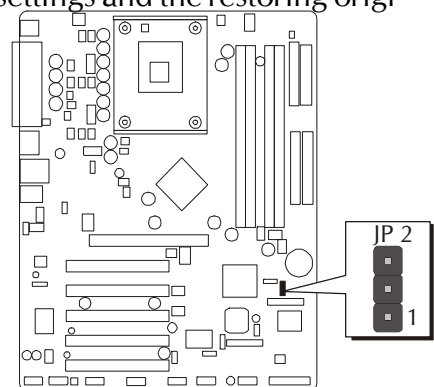
JP2 is used to clear CMOS data. Clearing CMOS will result in the permanently erasing previous system configuration settings and the restoring original (factory-set) system settings.



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 JP2 pins 1-2.
- Step 4. Place the jumper cap on JP2 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).

A2 Disable IEEE1394 Setting (JP8) (AB60R Only)

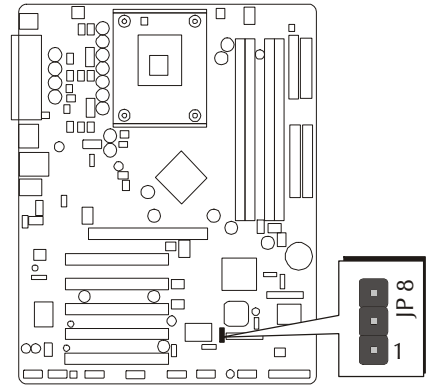
JP8 is used to enable/disable built-in IEEE1394 adapter.



Pin 1-2 (Enable)



Pin 2-3 (Disable)



A3 Disable RAID setting (JP9)(AB60R Only)

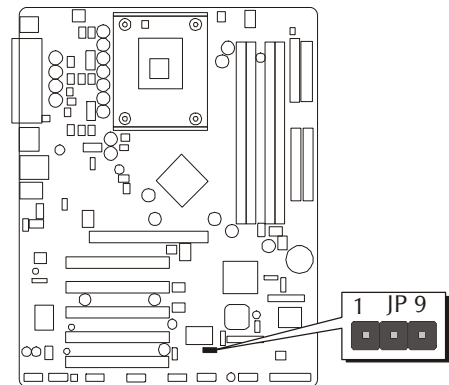
JP9 is used to enable/disable built-in RAID adapter.



Pin 1-2 (Enable)



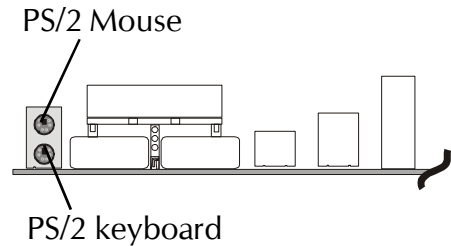
Pin 2-3 (Disable)



☞ **Back-Panel Connectors**

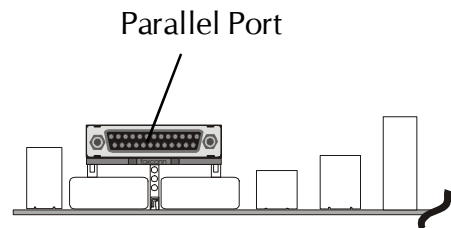
B1 PS/2 Keyboard & PS/2 Mouse Connectors

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.



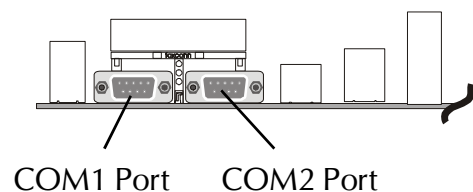
B2 Parallel Port Connector

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.



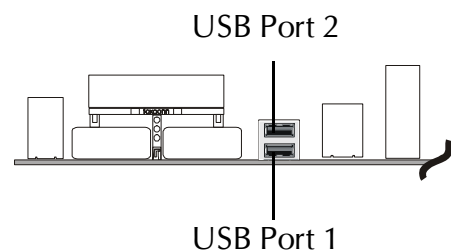
B3 COM1/2 Port Connectors

B4 This mainboard can accommodate two serial devices on COM1/2. Attach a serial device cable to the DB9 serial port COM1/2 at the back panel of your computer.



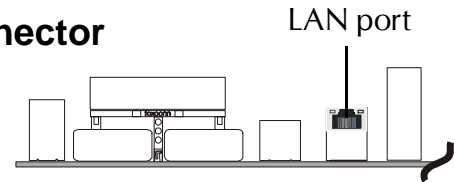
B5 USB1/USB2 Port Connectors

This mainboard offers 4 USB ports on back panel. Plug each USB device jack into an available USB1/USB2 connector.



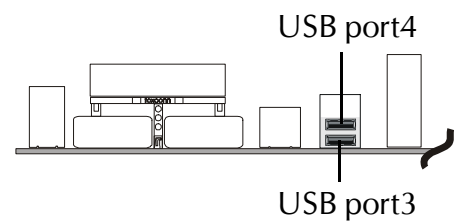
B6 10/100/1000 base-T LAN Port Connector

This mainboard can accommodate one device on LAN. Attach a Giga cable to the LAN port at the back-panel of your computer.



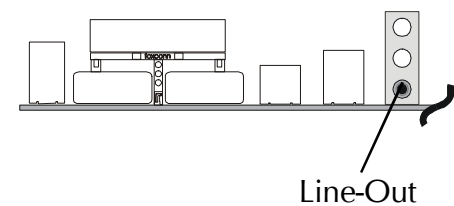
B7 USB3/USB4 Port Connectors

This mainboard offers 2 USB ports on back panel. Plug each USB device jack into an available USB3/USB4 connector.



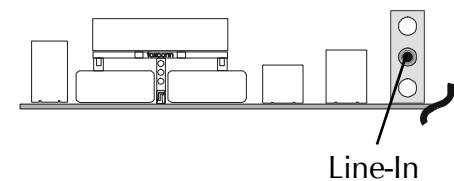
B8 Line-Out(Front Out) Port Connector

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



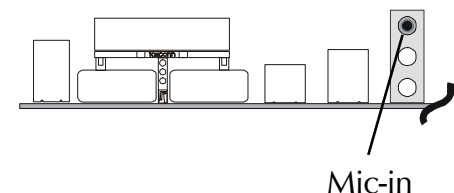
B9 Line-In(Rear Out) Port Connector

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.



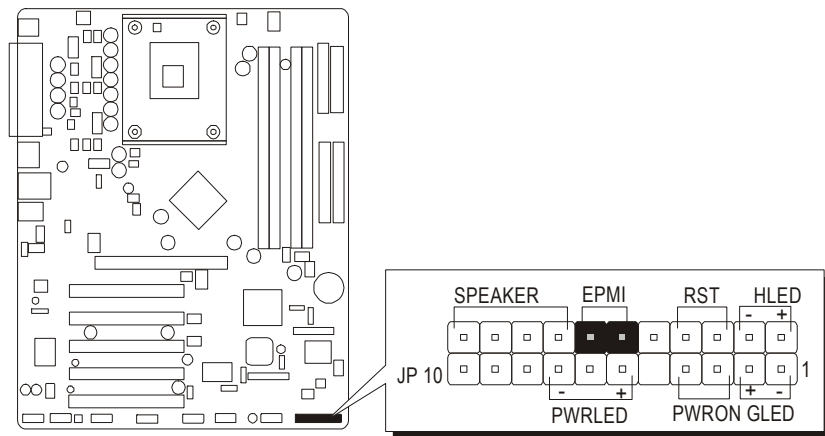
B10 Mic-In Port Connector

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.



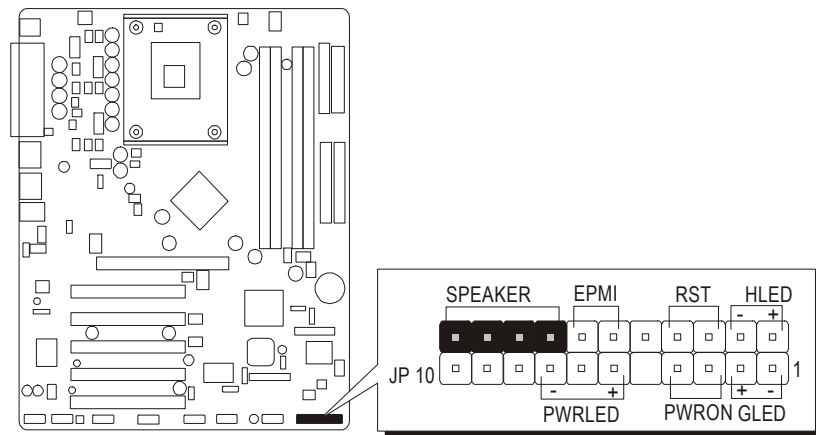
C3 EPMI Connector (EPMI)

Hardware System Management Interface (EPMI) header may attach to 2-pin momentary switch. Press the switch to force system into power saving mode; press it again to resume back the normal operation situation.



C4 Speaker Connector (SPEAKER)

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



⑥ Green LED Connector (GLED)

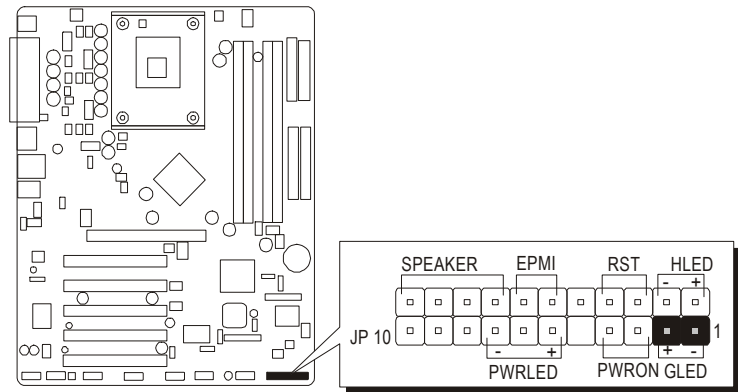
The header is dual color LED function.

Dual color LED function is defined by either Power LED or Green LED, the header can be in these states.

The Green LED Indicates that the system is currently in one of the power saving mode(Doze/Standby/Suspend). When the system resumes to normal operation mode, the Green LED will go off, Power LED on.

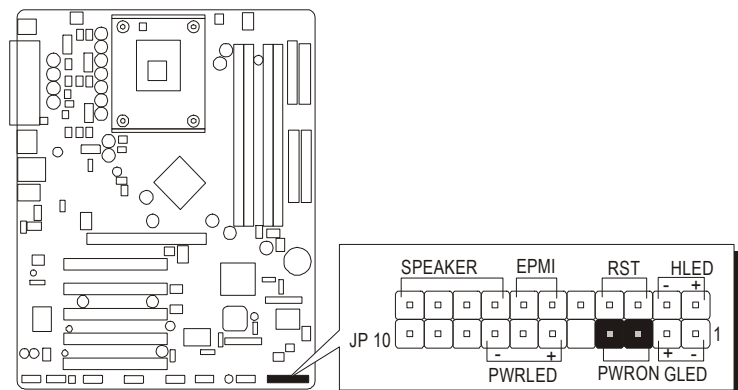
This Power LED will go off during Power saving mode.

Attach a 2-pin Green LED/Power LED cable to (Green LED/Power LED)header.



⑥ ATX Power On/Off Switch Connector (PWR ON)

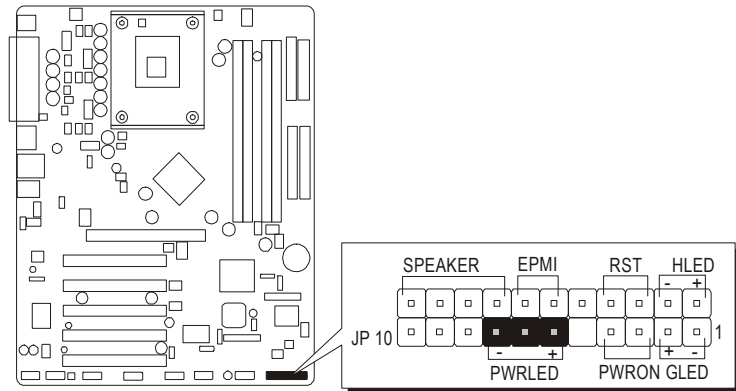
The Power On/Off Switch is a momentary type switch used for turning on or off the system ATX power supply. Attach the connector cable from the Power Switch to the 2-pin (PWR ON) header on the mainboard.



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

⑦ Power LED Connector (PWRLED)

Attach the 3-pin Power-LED connector cable from the housing front-panel to the (PWRLED) header on the mainboard. The power LED stays light while the system is running.

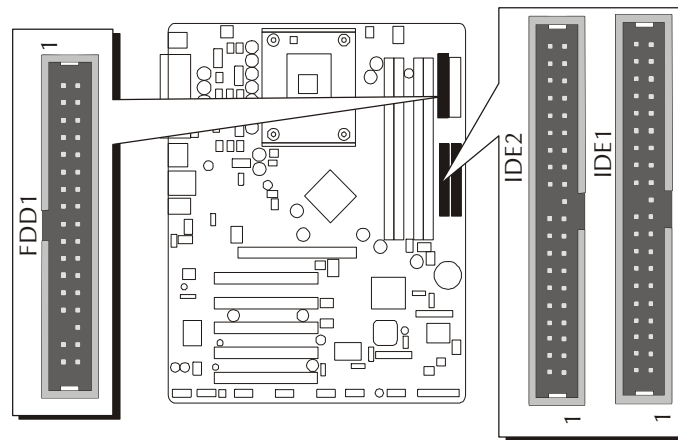


☞ Internal Peripherals Connectors

① 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.



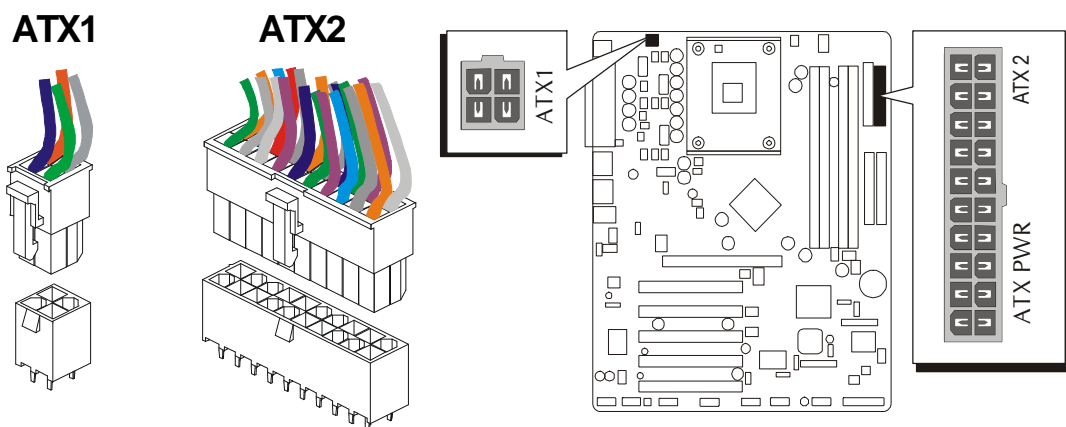
Important: Ribbon cables are directional, therefore, make sure to always connect with the red cable.

☞ Other Connectors

③ ATX Power Supply Connectors (ATX1&ATX2)

This motherboard uses 20-pin Pentium 4 standard ATX power header, and ATX2 with 2x2-pin PC ATX power supply headers.

Please make sure you plug in the right direction.



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.

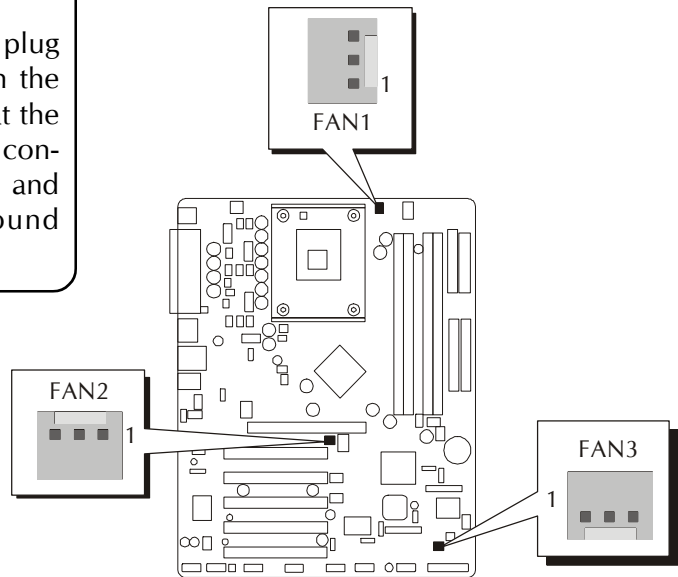
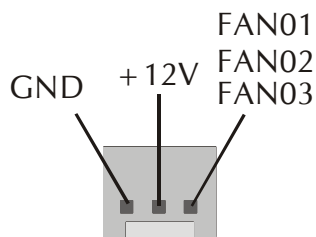
Note 4: Make sure your power supply have enough power for higher speed processor installed.

② CPU, AGP and System Fan connectors (FAN1/FAN2/FAN3)

The mainboard provides four onboard 12V cooling fan power connectors to support CPU(FAN1) , AGP(FAN2) and System(Fan3) cooling fans.

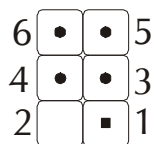
Note:

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.



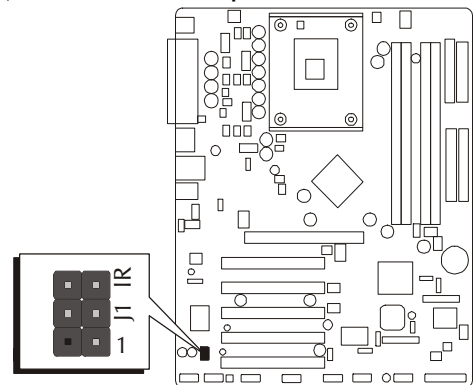
③ IR Header (J1)

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

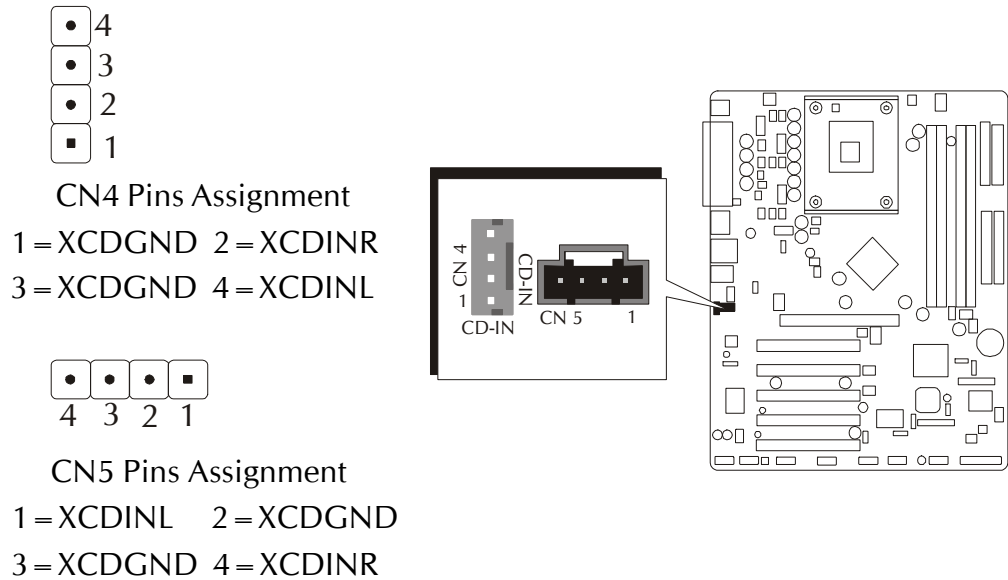


Note: Before connect your IR device, please be sure each IR on board pin allocation is matchable with the pin of the IR device. Otherwise, incorrect IR connection may do damage to your IR device.

- Step 1. Attach the 6-pin infrared device cable to J1.
(Refer to the above diagram for IR pin assignment.)
- Step 2. This mainboard support IrDA, or Normal transfer modes.

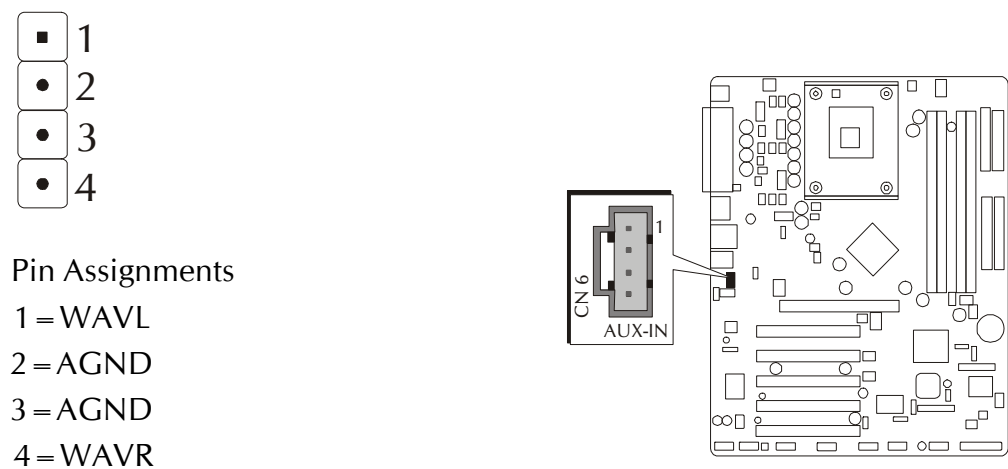
E4 CD_IN Connectors (CN4/CN5)

Port CN4/CN5 is used to attach an audio connector cable from the CD-ROM drive.



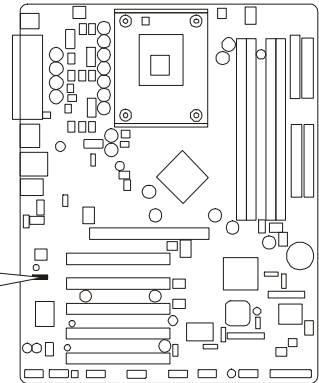
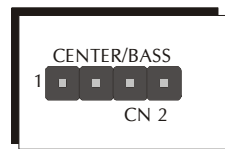
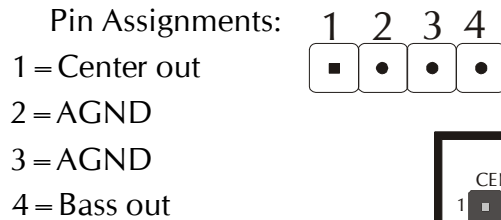
E5 Audio AUXILIARY_IN Connector (CN6)

Port CN6 can be used to connect a stereo audio input from CD-ROM, TV-tuner or MPEG card.



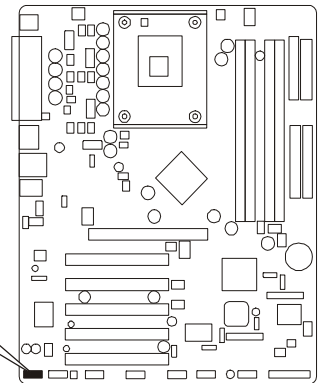
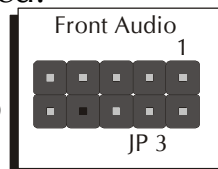
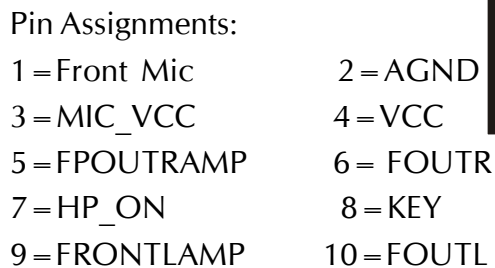
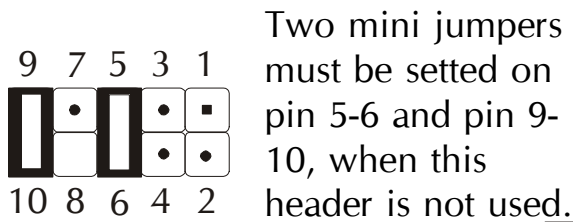
E6 Center/Bass_Out Header (CN2)

CN2 header can be used to connect the cable which attached to center/bass amplified speakers.



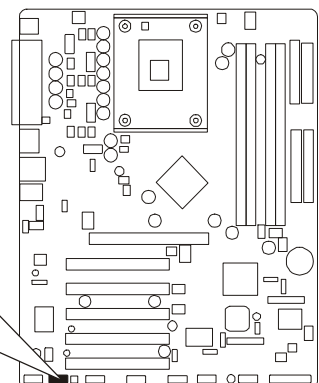
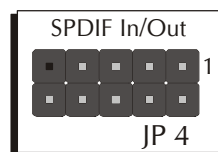
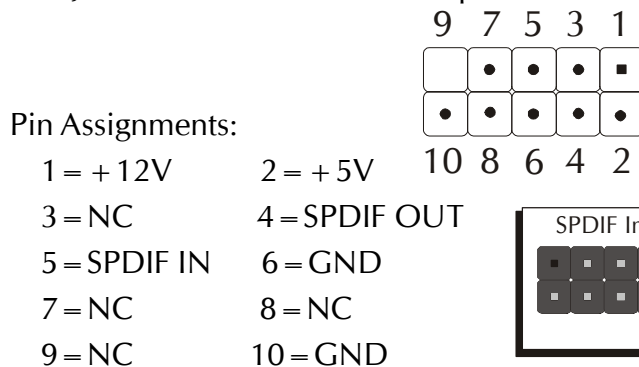
E7 Front Panel Audio Connector (JP3)

This header allows the user to install auxiliary front-oriented microphone and line-out ports for easier access.



E8 SPDIF Ext Header (JP4)

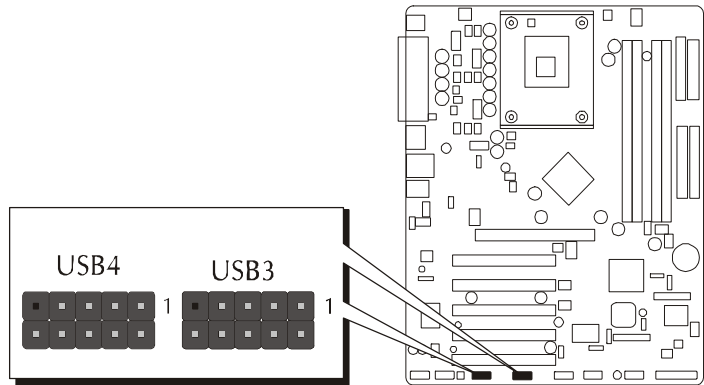
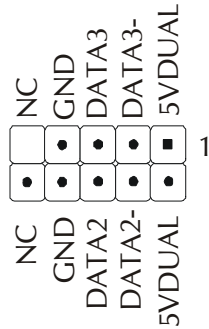
Port JP4 can be used to connect special device.



E9 Extended USB Connector (USB3/USB4)

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

USB 3 & USB4

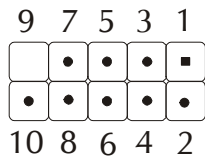


Pins Assignment:

1 = 5VDUAL	2 = 5VDUAL
3 = DATA3-	4 = DATA2-
5 = DATA3	6 = DATA2
7 = GND	8 = GND
9 = NC	10 = NC

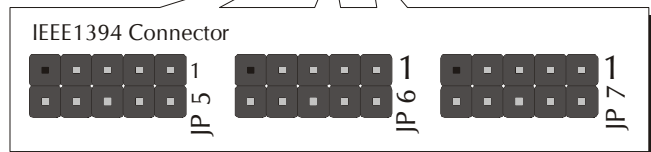
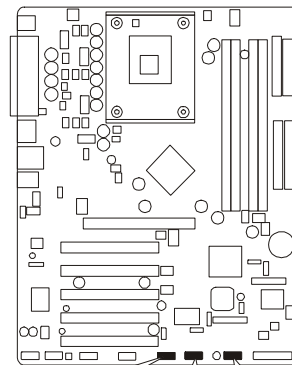
E10 IEEE1394 Connector (JP5,JP6,JP7)(AB60R Only)

The header are used to connect the cable attached to 1394 connector which are mounted on front panel or back panel. But the 1394 cable is optional at the time of purchase.



Pins Assignment:

1 = TPA +	2 = TPA -
3 = GND	4 = GND
5 = TPB +	6 = TPB -
7 = +12V	8 = +12V
9 = KEY	10 = GND

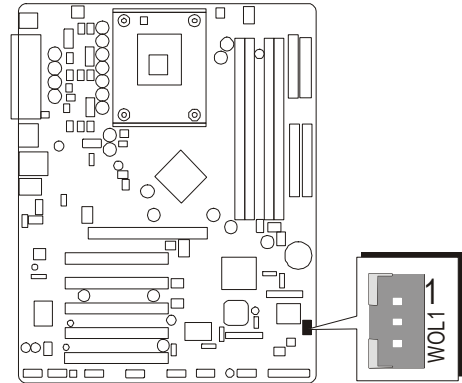


E11 Wake-On-LAN Connector (WOL1)

Attach a 3pin 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.

Pin Assignments:

1 = 5VSB	■	1
2 = GND	●	2
3 = SENSE	●	3



3.3 System Memory Configuration

The AB60/R mainboard has four 184-pin DIMM slots that allow you to install from 64MB up to 4GB of system memory.

Each 184-pin DIMM (Dual In-line Memory Module) Slot can accommodate 64MB, 128MB, 256MB, 512MB, and 1 GB of PC2100, PC2700 or PC3200 compliant 2.5V single (1 Bank) or double (2 Bank) side 64-bit wide data path DDR SDRAM modules.

Install Memory:

Install memory in any or all of the slots and in any combination shown as follows.

Density	128Mbit		256Mbit		512Mbit	
	x8	x16	x8	x16	x8	x16
Device Width						
Single/Double	SS/DS	SS/DS	SS/DS	SS/DS	SS/DS	SS/DS
184pin DDR DIMMs	128/256MB	64MB/NA	256/512MB	128MB/NA	512/1024MB	256MB/NA

Note: Maximum installed memory is 4GB.

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.

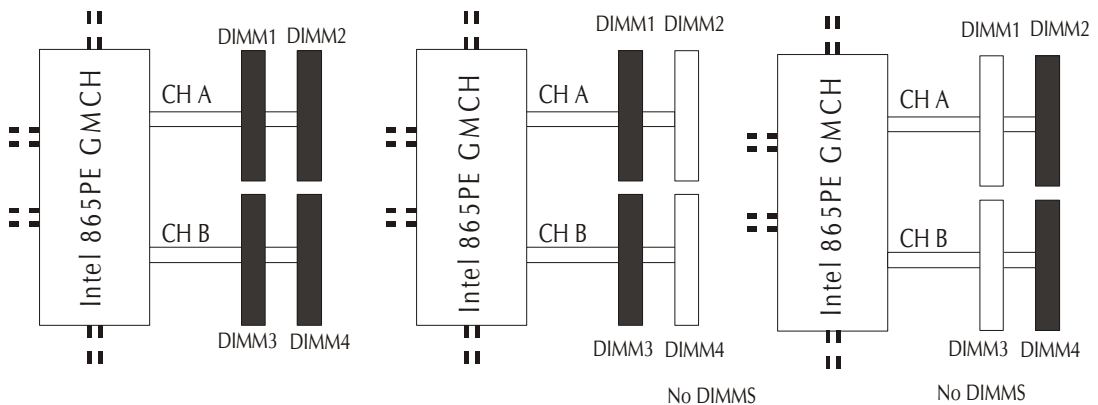
Don't support double-sided X16 DDR DIMMs.

Dual channel memory controller configuration:

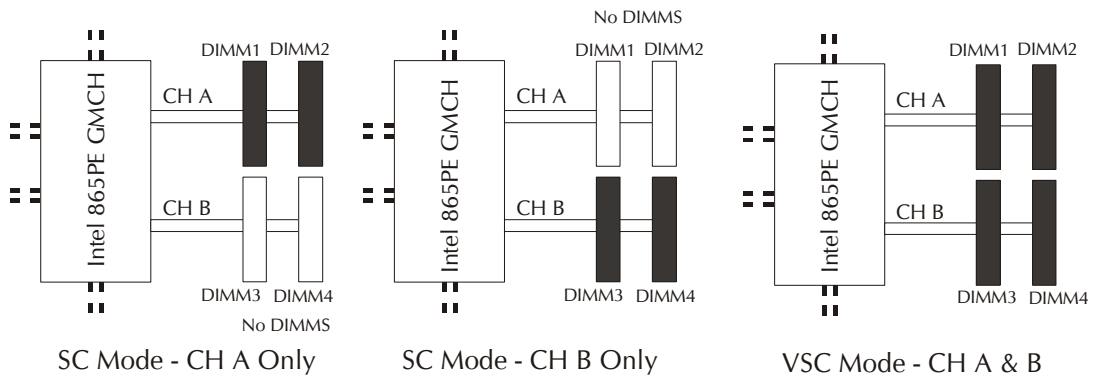
All the other case:

1. Running in Dual Channel Mode

The DIMM must be the same memory size and the same type to let this function work.



2. Running in single Channel Mode



Upgrade Memory:

You can easily upgrade the system memory by inserting additional DDR SDRAM modules in available DIMM slots. The total system memory is calculated by simply adding up the memory in all DIMM slots. 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

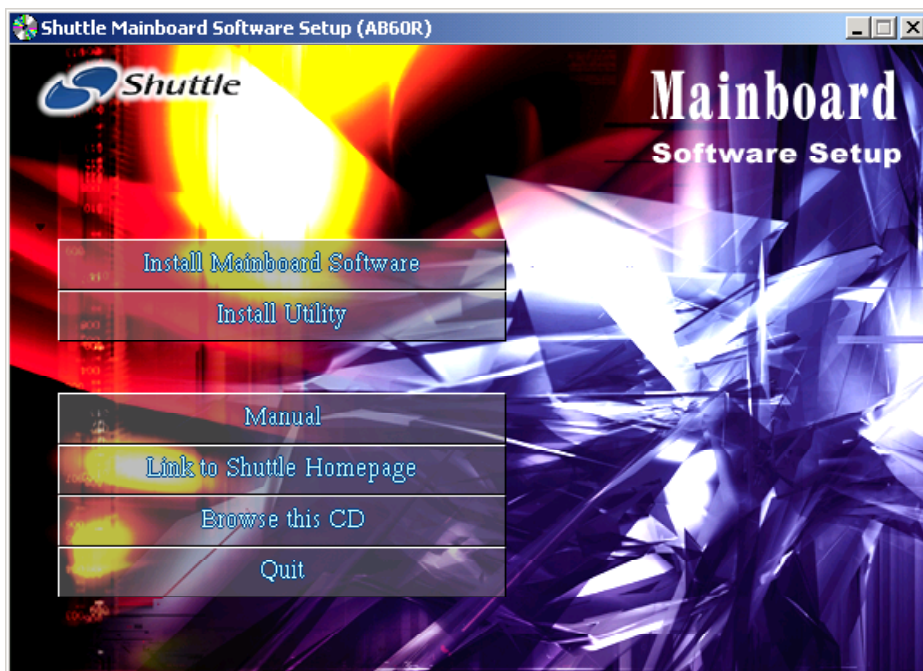
4.1 Mainboard CD Overview

Note: The CD contents attached in AB60/R 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 AB60 Software - Installing Intel chipset, audio and USB 2.0 drivers.
- ☞ Install Mainboard AB60R Software - Installing Intel chipset, audio , USB 2.0, LAN, RAID and Silicfg Installation Utility drivers.
- ☞ Manual - AB60/R 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 AB60/R Software" bar to run into sub-menu.

The Mainboard AB60/R Software include:

- [4.2.A] Install Intel Chipset Driver
- [4.2.B] Install USB 2.0 Driver
- [4.2.C] Install Realtek Audio Driver
- [4.2.D] Install Intel LAN Driver
- [4.2.E] Install Silicon RAID Driver (AB60R Only)
- [4.2.F] Install SiICfg Utility (AB60R Only)



4.2.A Install Chipset System Driver

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

4.2.B Install USB 2.0 Driver

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

4.2.C Install Audio Driver

Select using your pointing device (e.g. mouse) on the “Install Audio 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.

4.2.D Install Intel LAN Driver

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

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

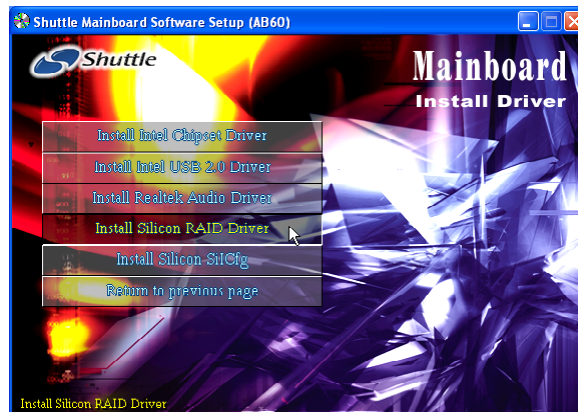


Once you made your selection, a Setup window run the installation automatically.

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

4.2.E Install RAID Driver (AB60R Only)

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

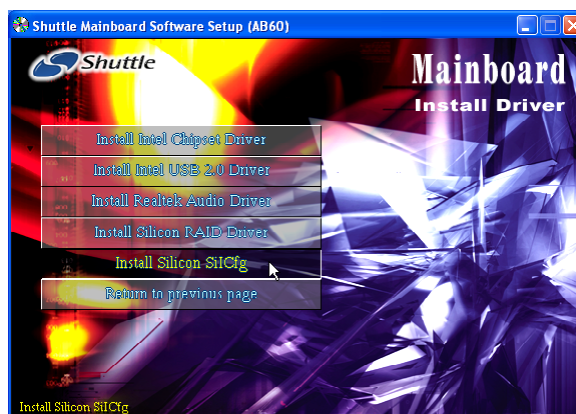


Once you made your selection, a Setup window run the installation automatically.

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

4.2.F Install SilCfG Installation Utility (AB60R Only)

Select using your pointing device (e.g. mouse) on the "Install SilCfG Installation Utility" bar to installation Silicfg Installation Utility .



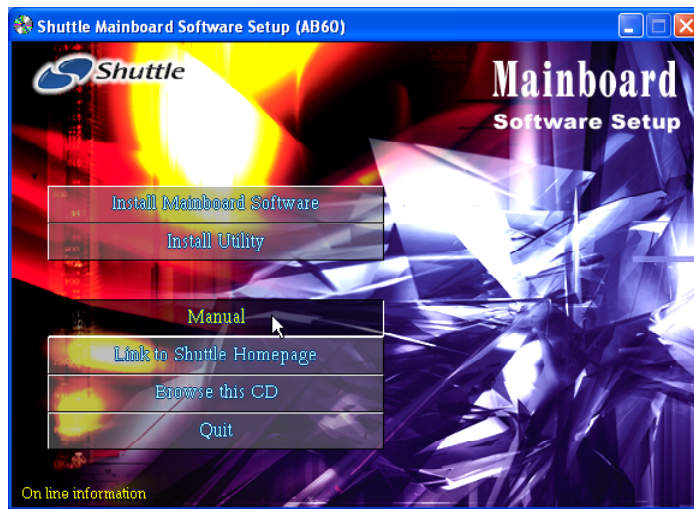
Once you made your selection, a Setup window run the installation automatically.

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

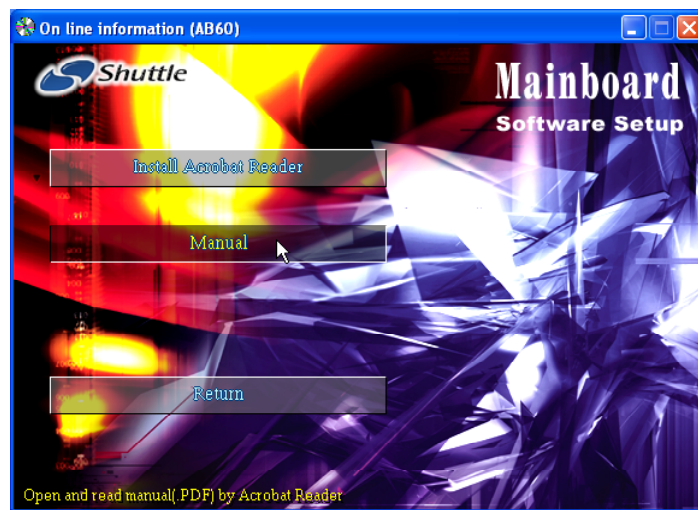
4.3 View the User's Manual

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 "Manual" bar.



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



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

5 BIOS SETUP

AB60/R BIOS ROM has a built-in Setup program that allows users to modify the basic system configuration. This information is stored in battery-backed RAM so that it retains the Setup information even if the system power is turned off.

The system BIOS is managing and executing a variety of hardware related functions in the system, including:

System date and time

Hardware execution sequence

Power management functions

Allocation of system resources

5.1 Enter the BIOS

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

- Step 1. Power on the computer, and the system will perform its POST (Power-On Self Test) routine checks.
- Step 2. Press 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's front-panel. You may also reboot by simultaneously pressing the <Ctrl>, <Alt>, keys.

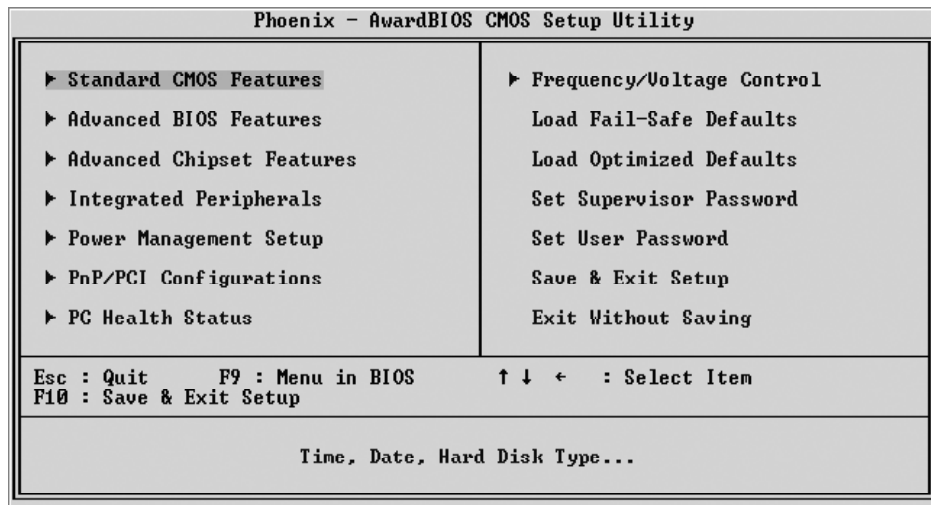
Note 2. If you do not press the keys in time and system does not boot, the screen will prompt an error message, and you will be given the following options:

“Press F1 to Continue, DEL to Enter Setup”

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

5.2 The Main Menu

Once you enter the 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.

Phoenix - AwardBIOS CMOS Setup Utility Standard CMOS Features		
Date (mm:dd:yy)	Thu, May 1 2003	Item Help Menu Level ▶ Change the day, month, year and century
Time (hh:mm:ss)	3 : 25 : 45	
▶ IDE Channel 0 Master	[None]	
▶ IDE Channel 0 Slave	[None]	
▶ IDE Channel 1 Master		
▶ IDE Channel 1 Slave		
Drive A	[1.44M, 3.5 in.]	
Drive B	[None]	
Video	[EGA/UGA]	
Halt On	[All Errors]	
Base Memory	640K	
Extended Memory	64512K	
Total Memory	65536K	
↑↓:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults		

Date

<Month> <DD> <YYYY>

Set the system date. Note that the 'Day' automatically changes when you set the date.

Time

<HH : MM : SS>

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

IDE Channel 0 Master

Options are in its sub-menu.

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

IDE Channel 0 Slave

Options are in its sub-menu.

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

IDE Channel 1 Master

Options are in its sub-menu.

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

IDE Channel 1 Slave

Options are in its sub menu.

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

Drive A/Drive B

Select the type of floppy disk drive 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

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

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

Video

Select the default video device.

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

Halt On

Select the situation in which 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

Displays the amount of conventional memory detected during boot up.

- The choice: N/A.

Extended Memory

Displays the amount of extended memory detected during boot up.

- The choice: N/A.

Total Memory

Displays the total memory available in the system.

- The choice: N/A.

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.

- Press Enter

IDE Primary Master

Selecting 'manual' lets you set the remaining fields on this screen and select the type of fixed disk. "User Type" will let you select the number of cylinders, heads, etc., Note: PRECOMP = 65535 means NONE !

- 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.

- Auto-Display your disk drive size.

The following options are selectable only if the 'IDE Primary Master' item is set to 'Manual'

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

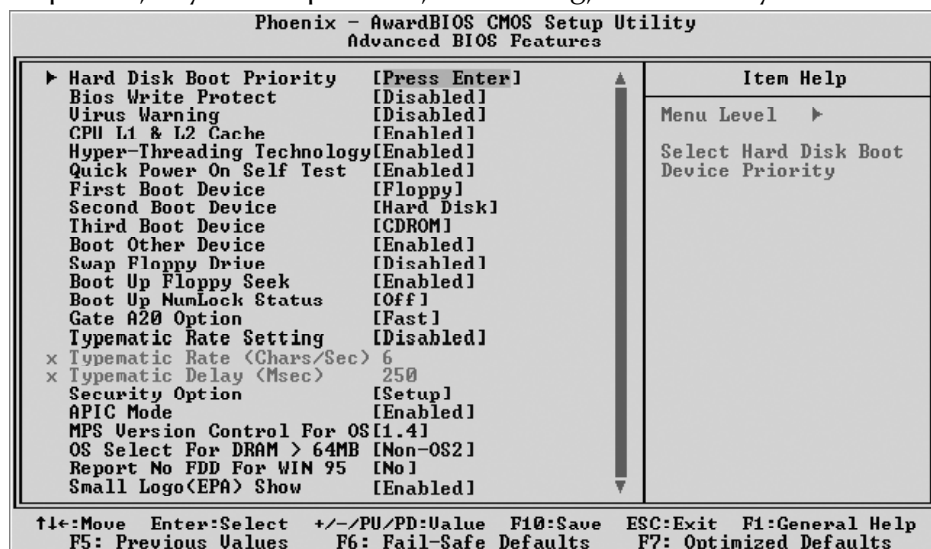
Sector

Number of sector per track.

- Min = 0, Max = 255

Advanced BIOS Features

This section allows you to configure your system for basic operation. You have the opportunity to select the system's default speed, boot-up sequence, keyboard operation, shadowing, and security.



Hard Disk Boot Priority

This item allows you to select Hard Disk Boot Device Priority.

BIOS Write Protect

This item allows you to enable or disable the BIOS Write Protect.

- The choice: Enabled or Disabled.

Virus Warning

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

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

Disabled No warning message will appear when anything attempts to access the boot sector or hard disk partition table.

- The choice: Enabled or Disabled.

CPU L1&L2 Cache

All processors that can be installed in this mainboard use internal level1(L1) and external 2(L2) cache memory to improve performance. Leave this item at the default value for better performance.

- The choice: Enabled or Disabled.

Hyper-Threading Technology

This item allows you to enable or disable CPU Hyper-Threading function. If it is set to enabled, the CPU performance will be better.

- The choice: Enabled or Disabled.

Quick Power On Self Test

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

- The choice: Enabled or Disabled.

First/Second/Third Boot Device

The BIOS attempts to load the operating system from the devices in the sequence selected in these items.

- The Choice: Floppy, LS120, Hard Disk, HDD-0, SCSI, CDROM, ZIP100, USB- FDD, USB-ZIP, USB-CDROM, USB-HDD, LAN, or Disabled.

Boot Other Device

Select Your Boot Device Priority.

- The choice: Enabled or Disabled.

Swap Floppy Drive

If the system has two floppy drives, you can swap the logical drive name assignment.

- The choice: Enabled or Disabled.

Boot Up Floppy Seek

Seeks disk drives during boot-Up. Disabling speeds boots up.

- The choice: Enabled or Disabled.

Boot Up NumLock Status

Selects power-on state for NumLock.

- The choice: Off or On.

Gate A20 Option

This entry allows you to select how the gate A20 is handled. The gate A20 is a device used for above 1MByte of address memory. Initially, the gate A20 was handled via a pin on the keyboard. Today, while a keyboard still provides this support, it is more common and much faster in setting to Fast for the system chipset to provide support for gate A20.

- The choice: Normal or Fast.

Typematic Rate Setting

Keystrokes repeat at a rate determined by the keyboard controller. When this controller enabled, the typematic rate and typematic delay can be selected.

- 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 the key down.

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

Typematic Delay (Msec)

Sets the delay time after the key is held down before it begins to repeat the keystroke.

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

Security Option

Select whether the password is required every time the system boots or only when you enter setup.

System The system will not boot and access to Setup will be denied if the correct password is not entered promptly.

Setup The system will boot, but access to Setup will be denied if the correct password is not entered promptly.

- The choice: System or Setup.

Note: To disabled security, select PASSWORD SETTING at Main Menu, and then you will be asked to enter password. Do not type anything and just press <Enter> ; it will disable security. Once the security is disabled, the system will boot, and you can enter Setup freely.

APIC Mode

Selects enable/disable IO APIC function

- The choice: Enabled or Disabled.

MPS Version Control For OS

Selects the operating system multiprocessor support version.

- The choice: 1.1 or 1.4

OS Select For DRAM > 64MB

Selects the operating system that is running with greater than 64MB of RAM in the system.

- The choice: Non-OS2 or OS2.

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/disable the EPA Logo.

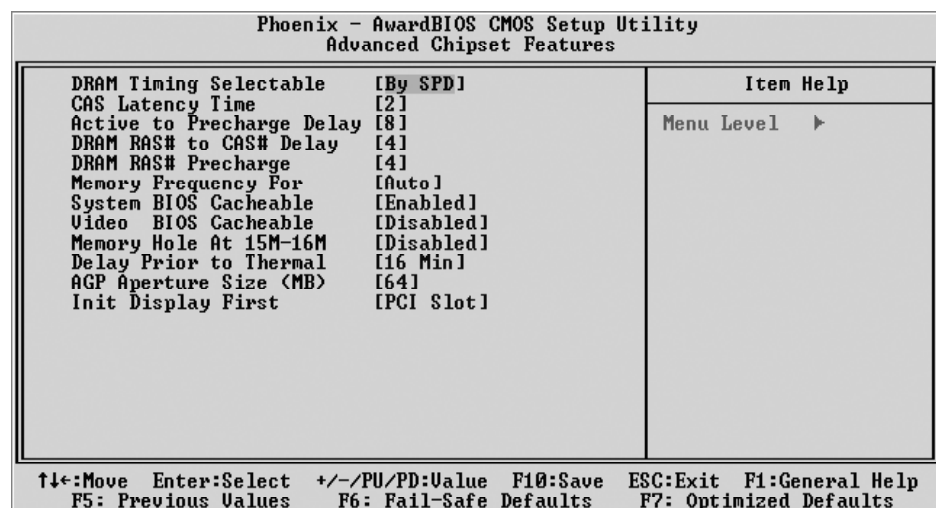
- The choice: Enabled or Disabled.



Advanced Chipset Features

This section allows you to configure the system based on the specific features of the installed chipset. This chipset manages bus speeds and access to system memory resources, such as DRAM and the external cache. It also coordinates communications between the conventional ISA bus and the PCI bus. It states that these items should never need to be altered.

The default settings have been chosen because they provide the best operating conditions for your system. If you discovered that data was being lost while using your system, you might consider making any changes.



DRAM Timing Selectable

This item select the DRAM Timing by SPD (Serial Presence Data) or by manual selection.

- The Choice: Manual or By SPD.

In some DDR SDRAM module , there is no SPD on it, select by SPD will cause system can not boot.

CAS Latency Time

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. This item select DDR SDRAM CAS latency. (2T, 2.5T, or 3T)

- The Choice: 2, 2.5 or 3.

Active to Precharge Delay

This item select the SDRAM Active to Precharge Delay. (8T, 7T, 6T, or 5T)

- The Choice: 8, 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: 4, 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: 4, 3 or 2.

Memory Frequency For

This item sets the main memory frequency. When you use an external graphics card, you can adjust this to enable the best performance for your system.

- The Choice: DDR266, DDR333, DDR320 , DDR400 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

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

- The Choice: Enabled or Disabled.

Delay Prior to Thermal

This item select the Delay time before thermal controller activate from temperature too high.

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

AGP Aperture Size (MB)

Select the size of Accelerated Graphics Port (AGP) aperture. The aperture is a portion of the PCI memory address range dedicated to graphics memory address space. Host cycles that hit the aperture range are forwarded to the AGP without any translation.

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

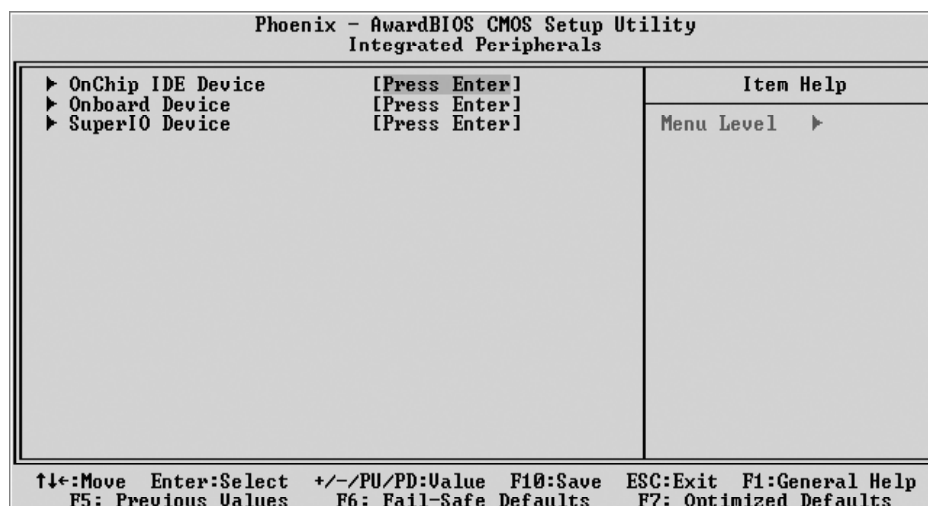
Init Display First

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 AGP.

Integrated Peripherals

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



On-Chip IDE Device

Options are in its sub-menu.

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

IDE HDD Block Mode

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

- The choice: Enabled, or Disabled

On-Chip Primary PCI IDE

The integrated peripherals controller contains an IDE interface with support to two IDE channels. Select Enabled to activate each channel separately.

- The choice: Enabled, or Disabled

IDE Primary Master/Slave PIO

The two IDE PIO (Programmed Input/Output) fields let you set a PIO mode (0-4) for each of the two 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 Master/Slave UDMA

Ultra DMA 100 implementation is possible only if your IDE hard drive supports it and the operating environment includes a DMA driver (Windows 95 OSR2 or a third-party IDE bus master driver). If both of your hard drive and your system software support Ultra UMA100, select Auto to enable BIOS support.

- The choice: Auto or Disabled.

On-Chip Secondary PCI IDE

The integrated peripherals controller contains an IDE interface with support to two IDE channels. Select Enabled to activate each channel separately.

- The choice: Enabled or Disabled.

IDE Secondary Master/Slave PIO

The two IDE PIO (Programmed Input/Output) fields let you set a PIO mode (0-4) for each of the two 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 Secondary Master/Slave UDMA

Ultra DMA 100 implementation is possible only if your IDE hard drive supports it and the operating environment includes a DMA driver (Windows 95 OSR2 or a third-party IDE bus master driver). If both of your hard drive and your system software support Ultra UMA100, select Auto to enable BIOS support.

- The choice: Auto or Disabled.

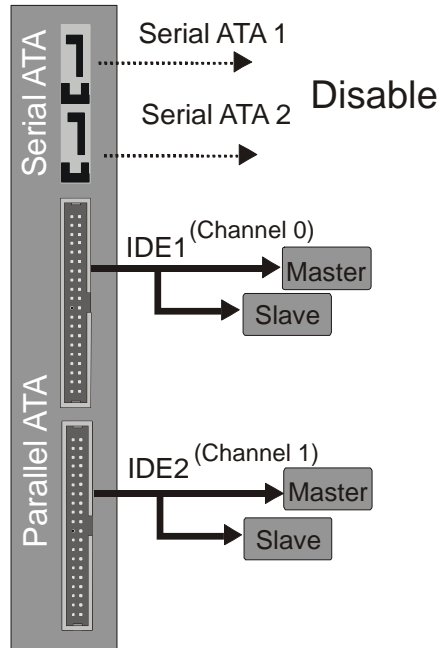
** On-Chip Serial ATA Setting **

On-Chip Serial ATA

This item lets you to enable or disable the On-Chip Serial ATA.

- The choice: Disabled, Auto, Combined Mode, Enhanced Mode or SATA Only.

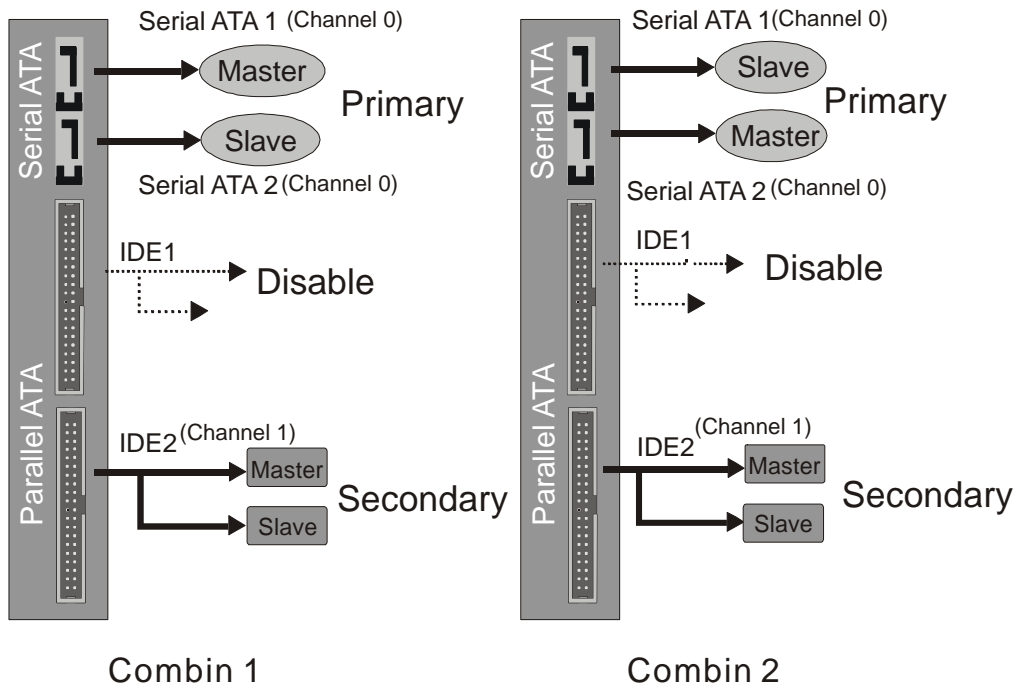
Disabled : Disabled SATA Controller.

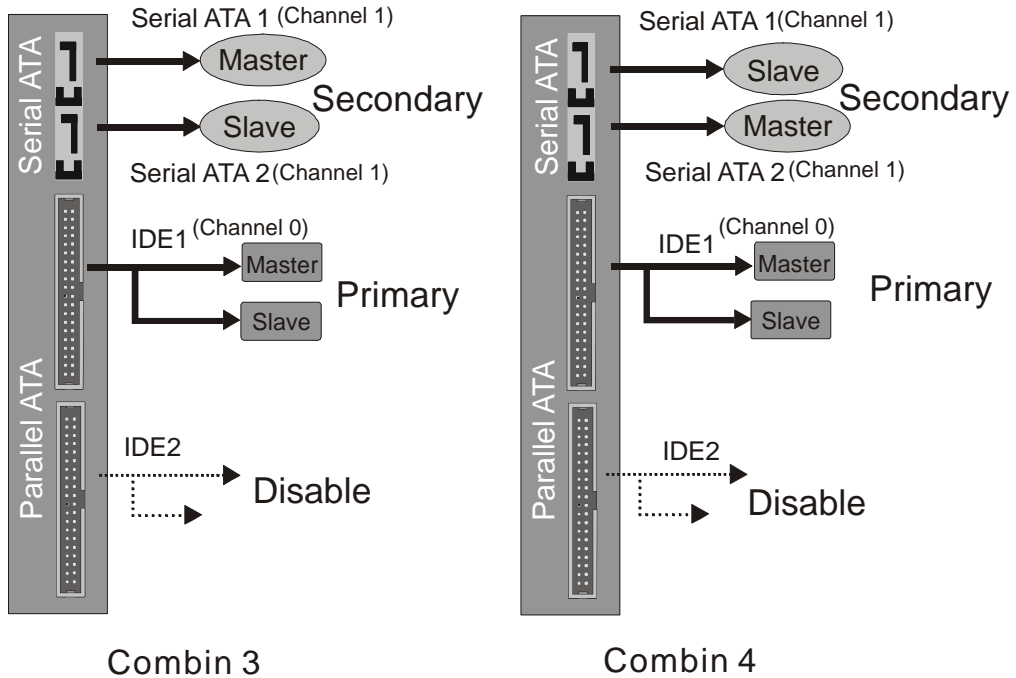


Auto: Auto arrange by BIOS.

Combined Mode: PATA and SATA are combined. Max. of 4 ATA drives are supported.

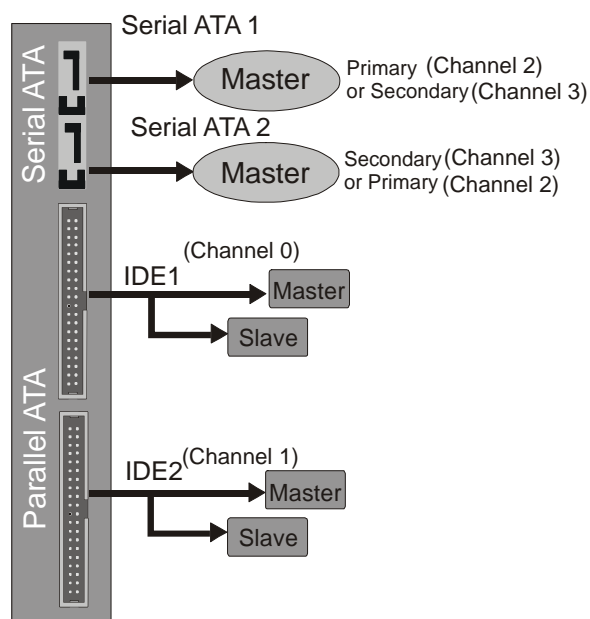
(DOS, Win2K, Win98/ME...) should set SATA and PATA to Combined Mode.



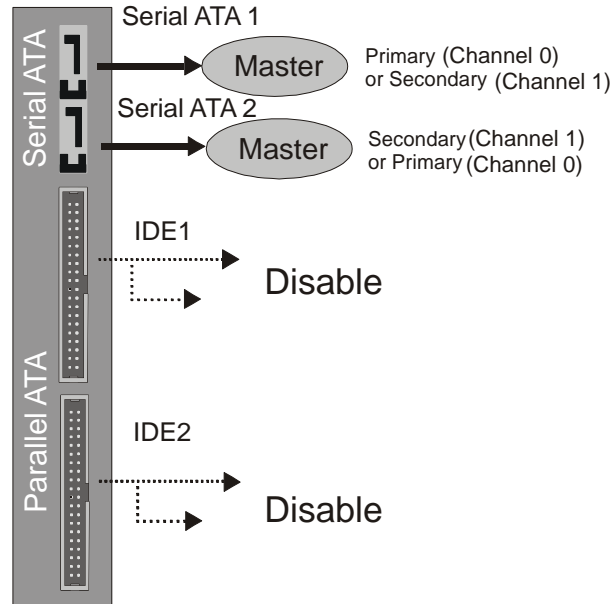


Enhanced Mode: Enable both SATA and PATA. Max. of 6 ATA drives are supported.

New OS that support switch to Enhanced mode (WinXP, Windows.NET Server) can set SATA and PATA to Enhanced Mode.



SATA-Only:SATA is operating in legacy mode.



Serial ATA Port0/1 Mode

This item allows you to set the Serial ATA Port mode.

- The choice: Primary Master, Primary Slave, Secondary Master, Secondary Slave, SATA0 Master or SATA1 Master.

Onboard Device

Options are in its sub-menu.

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

USB Controller

Select Enabled if your system contains a Universal Serial Bus (USB) controller and you have USB peripherals.

- The choice: Enabled or Disabled.

USB 2.0 Controller

Select Enabled if your system contains a Universal Serial Bus (USB) 2.0 controller and you have USB peripherals.

- The choice: Enabled or Disabled.

USB Keyboard Support

Select Enabled if your system contains a Universal Serial Bus (USB) controller and you have a USB keyboard.

- The choice: Enabled or Disabled.

AC97 Audio

Enables and disables the onboard audio chip. Disable this item if you are going to install a PCI audio add-on card.

- The choice: Auto or Disabled.

Silicon Image Raid ROM

This item is used to enable/disable Silicon Image RAID ROM.

- The choice: Enabled or Disabled.

SuperI0 Device

Options are in its sub-menu.

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

Onboard FDC Controller

This item specifies onboard floppy disk drive controller. This setting allows you to connect your floppy disk drives to the onboard floppy connector. Choose the "Disabled" settings if you have a separate control card.

- The choice: Enabled or Disabled.

Onboard Serial Port1/Port2

Select an address and corresponding interrupt for the first and second serial ports.

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

UART Mode Select

The main board support IrDA infrared through COM 2 port.

- The choice: Normal, IrDA, ASKIR, orSCR.

UR2 Duplex Mode

This item specifies onboard infrared transfer mode to full-duplex.

- The choice: Full or Half.

Onboard Parallel Port

This item allows you to determine onboard parallel port controller I/O address setting.

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

Parallel Port Mode

Select an operating mode for the onboard parallel (printer) port. Select Normal, Compatible, or SPP unless you are certain your hardware and



Power Management Setup

```
Phoenix - AwardBIOS CMOS Setup Utility
Power Management Setup

ACPI Function          Enabled
ACPI Suspend Type     [S1<POS>]
x Run VGABIOS if S3 Resume Auto
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]
Soft-Off by PWR-BTTN [Instant-Off]
Wake-Up by PCI card  [Disabled]
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]
PS2 Keyboard Power ON [Disabled]
KB Power ON Password [Enter]
Hot Key Power ON      [Any Key]
PS2 Mouse Power ON    [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
```

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 allows you to enable/disable the Advanced Configuration and Power Management (ACPI)

- The choice: Enabled or Disabled.

ACPI Suspend Type

This item allows you to select sleep state when suspend.

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

Run VGABIOS if S3 Resume (Auto)

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

- The choice: Auto, Yes, or No.

Power Management

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

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

-
- | | |
|-------------|---|
| Max Saving | Maximum power management.
Suspend Mode = 1 min.
HDD Power Down = 1 min. |
| User Define | Allows you to set each mode individually. When this item not disabled, each of the ranges are from 1 min. to 1 hr. except for HDD Power Down which ranges from 1 min. to 15 min. and disable. |
- The choice: User Define, Min Saving, or Max Saving.

Video Off Method

This determines the manner in which the monitor is blanked.

- | | |
|------------------|--|
| Blank Screen | This option only writes blanks to the video buffer. |
| 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. |
| DPMS | Initial display power management signaling. |
- The choice: Blank Screen, V/H SYNC + Blank, 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 item determines the IRQ in which the MODEM can use.

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

Suspend Mode

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, 40 Min, or 1 Hour.

HDD Power Down

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.

Soft-Off by PWR-BTTN

Pressing the power button for more than 4 seconds forces the system to enter the Soft-Off state when the system has "hung."

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

Wake-Up by PCI card

This item Enabled/Disabled PCI card wakeup for PCI Spec 2.2.

- The choice: Enabled or Disabled.

Power On by Ring

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

- The choice: Enabled or Disabled.

Wake Up On LAN

When set to Enabled, the system power will be turned on if the LAN port receives an incoming signal. You have to connect the fax/modem to the mainboard Wake Up On LAN connector for this feature to work.

- The choice: Enabled or Disabled.

USB Wake-Up From S3

Set this item Enabled, users can awaken the system by USB keyboard. When ACPI Suspend Type item select is S1(POST), then this item can not shown up.

- The choice: Enabled or Disabled.

Resume by Alarm

When this item enabled, you can set the date and time at which the RTC (real-time clock) alarm awakens the system from Suspend mode.

- The choice: Disabled or Enabled.

Date (of Month) Alarm

This item selects the alarm date.

- 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 ***

Primary/Secondary IDE0/1

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

- The choice: Enabled or Disabled.

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, serial ports or the parallel port.

- The choice: Enabled or Disabled.

PCI PIRQ[A-D]#

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

- The choice: Enabled or Disabled.

PS2 Keyboard Power ON

This item allows you to set the PS2 Keyboard Power ON function.

- The choice: Disabled, Password or Hot Key.

KB Power ON Password

This item allows you to set the KB Power ON Password.

- The choice: Enter.

Hot Key Power ON

Power-on by soft-on/off button and keyboard are available.

- The choice: Any Key, Ctrl-F1 ~ Ctrl-F12.

PS2 Mouse Power ON

This item allows you to set the PS2 Mouse Power ON function..

- The choice: Enabled or Disabled.

PWRON After PWR-Fail

This item allows you to set whether you want your system to reboot after power has been interrupted.

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



PnP/PCI Configurations

Phoenix - AwardBIOS CMOS Setup Utility PnP/PCI Configurations		Item Help
Reset Configuration Data	[Disabled]	Menu Level ▶
Resources Controlled By	[Auto(ESCD)]	Default is Disabled. Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup if you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the OS cannot boot
x IRQ Resources	Press Enter	
PCI/UGA Palette Snoop	[Disabled]	
INT Pin 1 Assignment	[Auto]	
INT Pin 2 Assignment	[Auto]	
INT Pin 3 Assignment	[Auto]	
INT Pin 4 Assignment	[Auto]	
INT Pin 5 Assignment	[Auto]	
INT Pin 6 Assignment	[Auto]	
INT Pin 7 Assignment	[Auto]	
INT Pin 8 Assignment	[Auto]	

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

This section describes the configuration of PCI bus system. PCI or Personal Computer Interconnection is a system which allows I/O devices to operate at the speed CPU itself keeps when CPU communicating with its own special components. This section covers some very technical items, and it is strongly recommended that only experienced users should make any changes to the default settings.

Reset Configuration Data

Normally, you leave this field Disabled. Select Enabled to reset Extended System Configuration Data (ESCD) when you exit from Setup if you have installed a new device or software and the system reconfiguration has caused such a serious conflict that the operating system can not boot.

- The choice: Enabled or Disabled .

Resource controlled By

The Award Plug-and-Play BIOS has the capacity to automatically configure all of the boot and Plug-and-Play compatible devices. However, this capability means absolutely nothing unless you are using a Plug-and-Play operating system such as Windows 95.

If you set this field to "manual" , choose specific resources by going into each of the sub-menu that follows this field (a sub-menu is proceeded by a ">").

- 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.

IRQ3/4/5/7/9/10/11/12/14/15 assigned

This item allows you to determine the IRQ assigned to the ISA bus and is not available to any PCI slot. Legacy ISA for devices is compliant with the original PC AT bus specification; PCI/ISA PnP for devices is compliant with the Plug-and-Play standard whether designed for PCI or ISA bus architecture.

- The choice: PCI Device or Reserved.

PCI/VGA Palette Snoop

This item is designed to overcome problems that can be caused by some nonstandard VGA card.

- The choice: Enabled or Disabled.

INT Pin 1/2/3/4/5/6/7/8 Assignment

Names the interrupt request (IRQ) line assigned to PCI 1 through PCI 8 on system. Activity of selected PCI slot awakens 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 [75°C/167°F]	Item Help
CPU VCore	Menu Level ▶
VDDQ	
+3.3V	
+5V	
+12V	
-12V	
+2.6V	
+5VSB	
Voltage Battery	
PWM Temperature	
CPU Temperature	
System Temperature	
Fan 1 Speed	
Fan 2 Speed	
Fan 3 Speed	

↑↓: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°C/140°F, 65°C/149°F, 70°C/158°F or 75°C/167°F .

System Component Characteristics

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

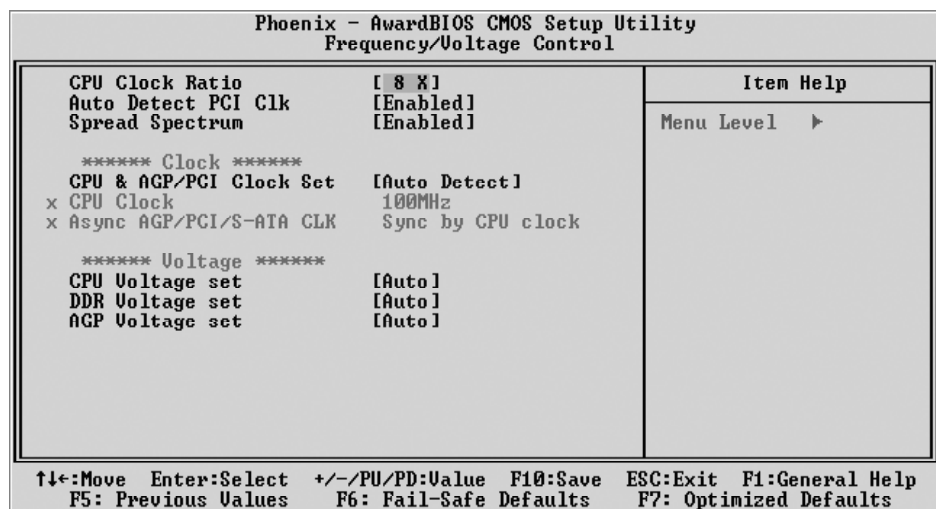
The fields include

- CPU Vcore
- VDDQ
- + 3.3V
- + 5V
- + 12V
- 12V
- +2.6V
- +5VSB
- Voltage Battery
- PWM Temperature
- CPU Temperature
- System Temperature
- Fan 1 Speed
- Fan 2 Speed
- Fan 3 Speed



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.



CPU Clock Ratio

This item allows you to adjust CPU Ratio.

- The choice: Min = 8 Max = 50
- Key in a DEC number:

Auto Detect PCI Clk

This item allows you to enable/disable auto detection PCI Clock.

- The choice: Enabled, or Disabled.

Spread Spectrum

This item allows you to enable/disable the spread spectrum modulation.

- The choice: Enabled, or Disabled.

CPU & AGP/PCI Clock Set

This item allows Auto Detect CPU & AGP/PCI Over Clock.

- The choice: Auto Detect or Manual.

CPU Clock

This item allows you to adjust CPU Clock.

- The choice: Min = 100 Max = 233
- Key in a DEC number:

Async AGP/PCI CLK

This item allows .

- The choice: Sync by CPU Clock , fixed 66/33/100MHz, fixed 73/36/100MHz or fixed 80/40/100MHz.

CPU Voltage

This item allows .you to adjust the CPU Voltage.

- The choice: Default ,0.8250 ~ 1.5875V.

DDR Voltage

This item allows .you to adjust the DDR Voltage

- The choice: Auto ,2.65V, 2.70V or 2.75V.

AGP Voltage

This item allows . you to adjust AGP Voltage.

- The choice: Auto ,1.55V, 1.60V or 1.65V.



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

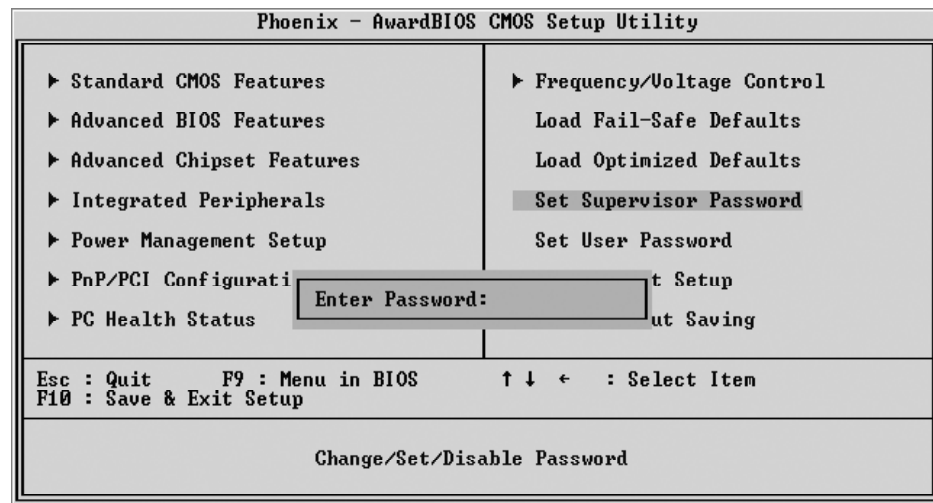
When you press <Enter> on this item, you will get a confirmation dialog box with a message similar to:

Load Optimized Defaults (Y/N) ? N

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

Supervisor/User Password Setting

You can set either supervisor or user password, or both of them. The differences between them are:



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 29.

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.