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Chapter 1 Specification

Introduction

This series of mainboards features an integration of the powerful processor Intel Pentium 4 and the single-chip North Bridge Intel 845PE. The Intel P4 processor is a rapid execution engine providing 533/400MHz system bus, while North Bridge Intel 845PE is a high performance integrated chipset providing DDR333/266 DRAM memory interface, Hub interface, and AGP interface.

Integrated with i845PE, South Bridge Intel ICH4 supports the LPC Super I/O, upstream Hub interface, PCI interface, IDE interface, USB 2.0 interface, AC'97 2.2 (6-channel) Audio interface and the interrupt control. This chapter is to introduce to users every advanced function of this high performance integration.

Topics included in this chapter are:

1-1 Mainboard Layout

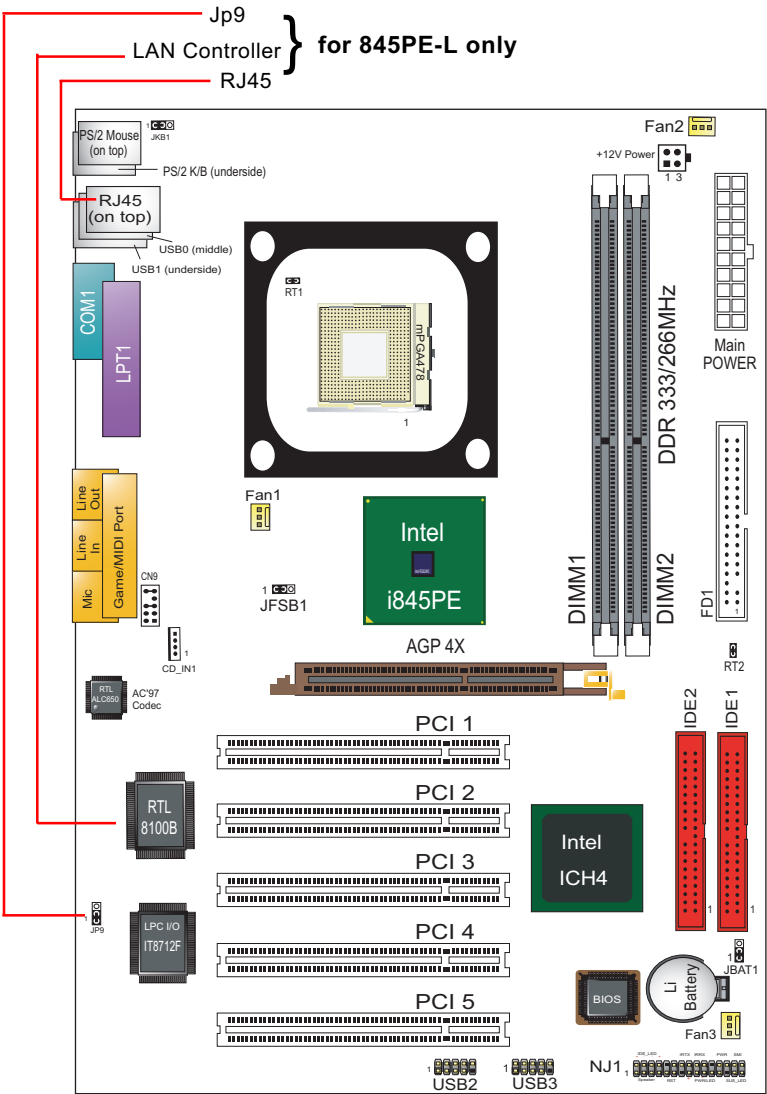
1-2 Mainboard Specifications**

1-3 Mainboard Specification Table

1-4 Chipset Diagram

**** If any difference is found between the mainboard description and the Mainboard you are using, please look up the Errata/Update Slip enclosed inside for the correction or updated information, or else contact the mainboard Dealer or visit our Web Site for the latest manual update.**

1-1 Mainboard Layout



1-2 Mainboard Specifications

1-2.1 CPU Socket

CPU Socket 478B on board, supporting Intel® Pentium 4 processors (including Intel Hyper-Threading CPUs and Prescott CPUs) in 478-pin package for :

- 533/400MHz System Bus -- 512KB L2 Advanced Transfer Cache
- Hyper-pipelined technology -- Advanced dynamic execution;
- Rapid Execution Engine -- Streaming SIMD Extensions 2
- 128 Bit Enhanced Floating Point Unit -- Execution Trace Cache

1-2.2 System Chipsets

North Bridge Intel 845PE:

- A high performance integrated chipset providing processor interface, DDR 333/266 DRAM memory interface, Hub interface, AGP interface, as well as Hyper-Threading Technology.
- Showing Hyper-Threading Logo when booting with a Hyper-threading CPU installed.

South Bridge Intel ICH4:

- Supporting the LPC Super I/O, upstream Hub interface, PCI interface, IDE interface, USB 2.0 interface, AC'97 2.2 (6-channel) Audio interface and the interrupt control.

1-2.3 Memory

2 DDR DIMM 184-pin slots on board for DDR 333/266 DRAMs :

- Supporting unregistered, non-ECC DDR 333/266 DRAM up to 2GBs
- Supporting installation of mixed volumes yet same type of DDR DRAM modules

1-2.4 Award BIOS

Flash Memory for easy upgrade and various hardware configuration in BIOS Setup(See Chapter 4 BIOS Setup):

- Standard CMOS Features(Times, Date, Hard Disk Type etc.)
- Advanced BIOS Features (Virus Protection, Boot Sequence etc.)
- Advanced Chipset Features (AT Clock, DRAM Timing etc.)
- Power Management Features (Sleep Timer, Suspend Timer etc.)
- PNP/PCI Configurations (IRQ Settings, Latency Timers etc.)
- Integrated Peripherals (Onboard IO, IRQ, DMA Assign. etc.)
- SmartDoc Anti-Burn Shield (CPU/System Temp., Fan speed etc.)
- Frequency/Voltage (CPU clock, Voltage of CPU, DIMM, AGP etc.)

1-2.5 Accelerated Graphics Port (AGP) Interface

AGP Controller embedded on board, supporting:

- 1.5V(4X) power mode only
- 4x AD and SBA signaling, AGP pipelined split-transaction longburst transfers up to 1GB/sec.
- AGP 4X only, AGP V2.0 compliant

1-2.6 Advanced System Power Management

- ACPI 1.0B compliant (Advanced Configuration and Power Interface), including ACPI suspend mode support (See Power Management of BIOS Setup)
- APM V1.2 compliant (Legacy Power Management)
- PS/2 Keyboard / Mouse Power On
- Supporting Wake-on-LAN
- Real Time Clock (RTC) with date alarm, month alarm, and century field

1-2.7 Multi-I/O Functions :

- PCI EIDE Controller, supporting:
 - 2x UATA100/66/33 IDE connectors supporting up to 4 IDE devices
- Dedicated IR Functions:
 - Third serial port dedicated to IR function either through the two complete serial ports or the third dedicated port Infrared-IrDA (HPSIR) and ASK (Amplitude Shift Keyed) IR
- Multi-mode Parallel Data Transfer:
 - Standard mode, high speed mode ECP and enhanced mode EPP
- Floppy Disk Connector:
 - One FDD connector supporting 2 floppy drives with drive swap support
- Universal Serial Bus Transfer Mode:
 - USB V2.0 compliant; 480Mb/s USB Bus, supporting Win 2000 or later operating system
 - USB drivers provided in Support CD for installation
 - 2 built-in USB connectors and 2 USB Headers (USB2, USB3) which require 2 optional USB cables to provide 4 more optional USB ports
- PS/2 Keyboard and PS/2 Mouse
- UARTs (Universal Asynchronous Receiver / Transmitter):
 - One complete serial port (COM1) on board

1-2.8 Expansion Slots

- 5 PCI Bus Master slots
- 1 AGP 4X slot
- 2 DDR DIMM slots

1-2.9 LAN on board (for 845PE-L only)

PCI local bus single-chip Fast Ethernet Controller RTL8100B on board:

- Supporting 10/100Mb data transfer
- Supporting Wake On LAN function through the on-board RJ45 LAN Connector
- LAN Driver enclosed in Support CD for user's installation.

1-2.10 Hardware Monitor on board

- Hardware Monitor supported by IT8712F, providing monitoring and alarm for flexible desktop management of hardware voltage, temperatures and fan speeds.
- Utility Software Soltek Hardware Monitor for displaying system status is enclosed in Support CD for user's installation.

1-2.11 AC'97 Audio Codec on board

AC'97 Audio Codec 2.2 compliant on board

- Supporting 6 channels of PCM audio output
- 6 channel audio consists of Front Left, Front Right, Back Left, Back Right, Center and Subwoofer for complete surround sound effect
- AC'97 Audio Codec Driver enclosed in Support CD for user's installation.

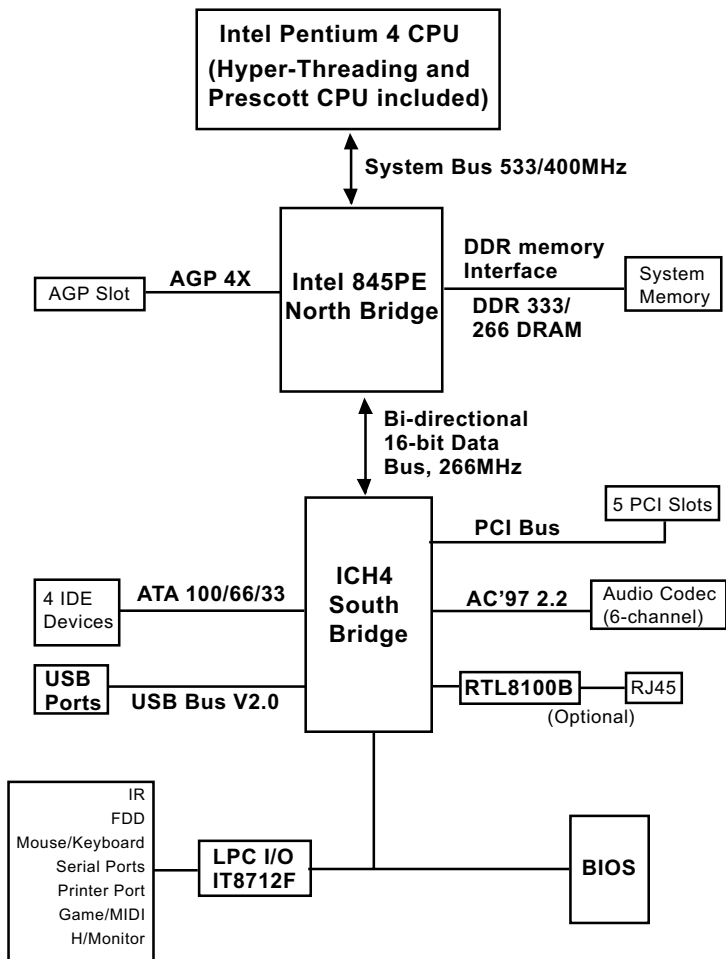
1-2.12 Form Factor

- ATX Form Factor, ATX Power Supplier, version 2.03 compliant, supported by one Main Power Connector, one +12V Power Connector.
- Mainboard size: 305mm x 190mm

1-3 Mainboard Specification Table

845PE/845PE-L Specifications and Features		
CPU	Socket 478B for P4 CPU (Hyper Threading CPU and Prescott CPU included)	
North Bridge	Intel 845PE, supporting 533/400MHz FSB	
South Bridge	Intel ICH4	
BIOS	Award BIOS	
Memory	Supporting DDR 333/266 DRAM, up to 2GB in 2 DDR DIMM slots	
I/O Chip	IT8712F, with Hardware Monitor	
AGP Interface	AGP 4X mode only	
Audio	AC'97 Audio 2.2 compliant, 6 channel audio	
IDE Interface	2 UATA 66/100 IDE ports	
PCI Slots	5 PCI Master slots on board	
I/O Connectors	6 USB V2.0, 1 FDD port, 1 COM port, 1 LPT, 1 IrDA, 1 PS/2 K/B, 1 PS/2 Mouse	
Other Feature	Keyboard/Mouse Power On	
Optional Features	Models	
	845PE	845PE-L
LAN Controller on board	No	Yes

1-4 Chipset System Block Diagram



Pentium 4 + Intel 845PE + Intel ICH4 Diagram

Chapter 2 Hardware Setup

To Get Things Ready for Hardware Setup !

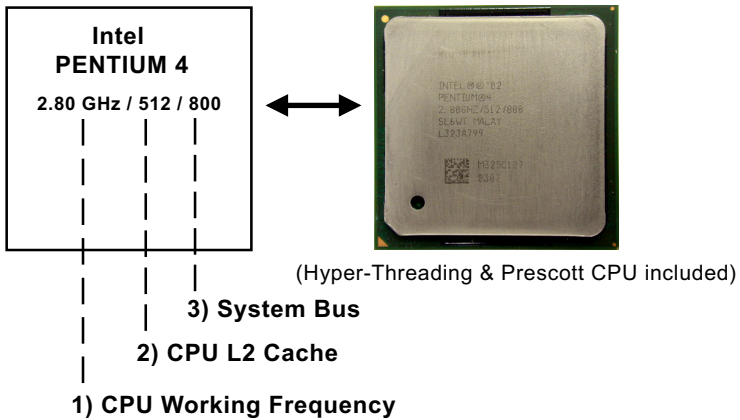
1. We recommend to install your CPU before any other components. For detailed installation instructions of a processor, you can also refer to the pamphlet enclosed in your CPU package.
2. Installing a cooling fan with a good heat sink is a must for proper heat dissipation for your CPU. Get ready an appropriate fan with heat sink for proper installation. Improper fan and installation will damage your CPU.
3. In case CPU Vcore, CPU clock or Frequency Ratio is adjustable on board, please follow the instructions described in the User's manual for proper setup. Incorrect setting will cause damage to your CPU.

The following topics are included in this chapter:

- 2-1 Pentium 4 CPU Installation**
- 2-2 Pentium 4 CPU Fan Installation**
- 2-3 Memory Installation**
- 2-4 AGP 4X Installation**
- 2-5 IDE Connector Installation**
- 2-6 Floppy Disk Connector (FDC) Installation**
- 2-7 ATX 2.03 Power Supply2 Installation**
- 2-8 Jumper Settings**
- 2-9 Other Connectors Configuration**

2-1 CPU Installation with Socket 478B

2-1.1 To Identify a Pentium 4 CPU



On the heatsink side of a Pentium 4 CPU, there printed a line of figures to identify its specifications. The line consists of 4 parts:

1. CPU Working Frequency: this part depicts the working frequency of the CPU. The Intel P4 processor with three different System Bus mode provides a variety of speeds ranging from 2A Ghz to 3.2Ghz.
400MHz System Bus: 2.60, 2.50, 2.40, 2.20, 2A GHz
533MHz System Bus: 3.06, 2.80, 2.66, 2.53, 2.40, 2.26 GHz
800MHz System Bus: 3.20, 3, 2.80C, 2.60C, 2.40C GHz
2. CPU L2 Cache: this part depicts the L2 Cache size. For example, 512 stands for 512 KB L2 Cache; 256 stands for 256 KB L2 Cache
3. System Bus: this part depicts the System Bus (Front Side Bus) is provided by CPU clock x 4. For example,
800MHz = 200MHz(CPU clock) x 4; 533MHz = 133MHz x 4
400MHz = 100MHz x 4

Note: System Bus vs CPU Clock

P4 CPU is a quad-pumped CPU. The system bus is provided by the CPU clock x 4. Therefore, users can figure out the P4 CPU clock by the System Bus divided by 4.

Pentium 4 with Hyper Threading Technology :

- (1) P4 processors at 2.40C, 2.60C, 2.80C, 3, 3.20GHz with an advanced 800MHz system bus
- (2) P4 processor at 3.06Ghz with 533MHz system bus

2-1.2 CPU Installation with Socket 478B

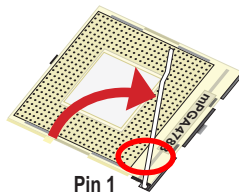
This mainboard is built with CPU Socket 478B (478-pin) supporting the Intel Pentium 4 CPU:

- Follow the steps described in this section to install the 478-pin Pentium 4 CPU into the on board Socket 478.
- After installation of Pentium 4 CPU, you must also install the specific Pentium 4 CPU fan designed in tandem with this CPU. This CPU Fan installation is described in next section.
- This mainboard supports Hyper-threading dual-in-one CPU, the function of which can be enabled by Windows XP. (See illustration on the right.)

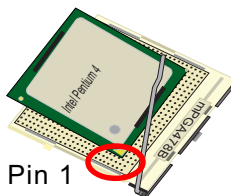


(If Hyper-threading CPU is installed successfully with O/S Win XP, the O/S will enable the dual-in-one CPU function.)

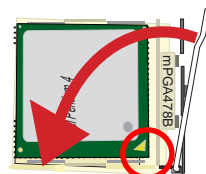
1. First pull sideways the lever of Socket 478, and then turn it up 90° so as to raise the upper layer of the socket from the lower platform.



2. Configure Pin 1 of CPU to Pin 1 of the Socket, just as the way shown in the diagram on the right. Adjust the position of CPU until you can feel all CPU pins get into the socket with ease.

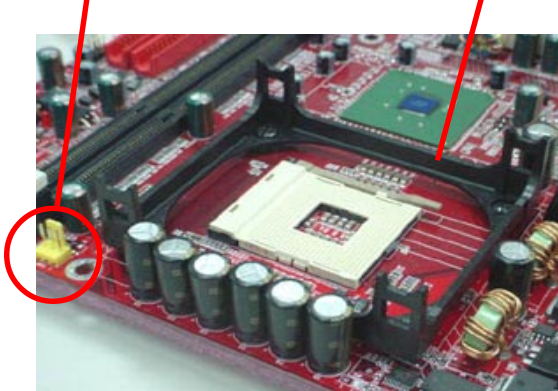


3. Make sure that all CPU pins have completely entered the socket and then lower down the lever to lock up CPU to socket.

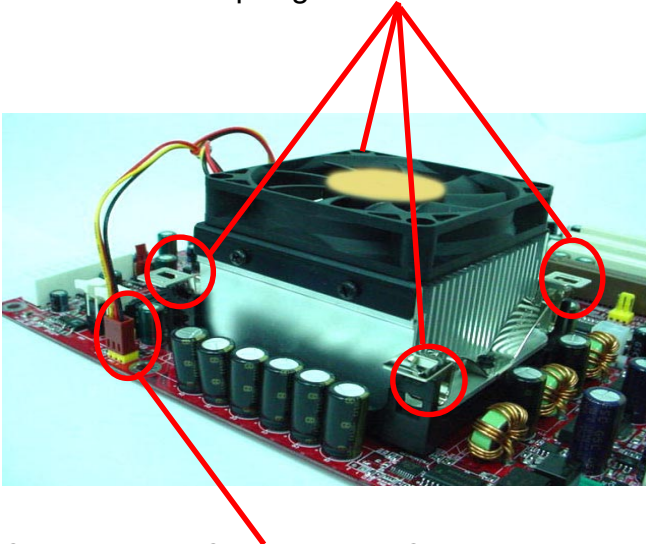


2-2 Pentium 4 CPU Fan Installation:

CPU Fan Connector Pentium 4 Fanbase



Press down 4 Spring Locks to lock fan to fanbase



Connect Fan Connector to CPU FAN connector

The above pictures are taken from sample mainboards as installation illustration. The layout in the pictures may be different from your mainboard.

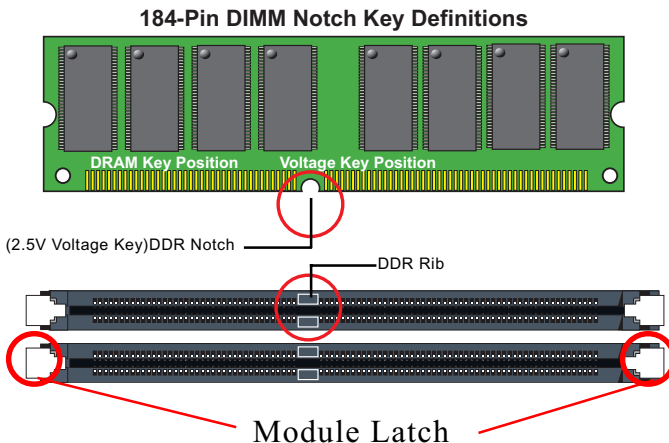
2-3 Memory Installation

How to tackle the memory Modules:

- Make sure to unplug your power supply before adding or removing memory module.
- Pay attention to the orientation of the DIMM slots. Forcing a DIMM into a slot improperly will damage the memory module and slot itself.
- Make sure you have the right type of memory module for your mainboard.

To Install DDR DRAM Module for this Series :

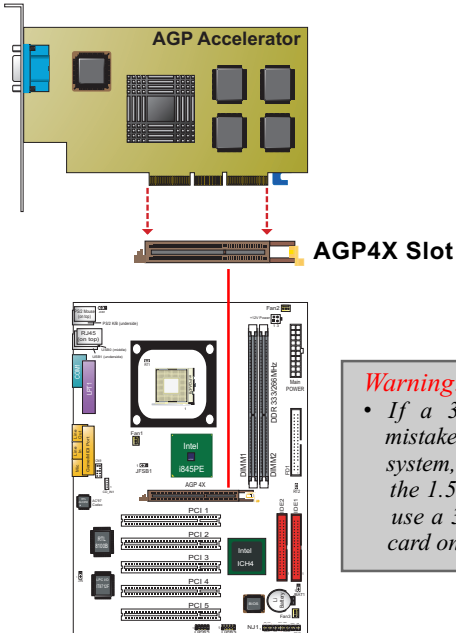
- This series only supports up to 2GB unbuffered DDR 333/266 DRAM, with 2 DDR DIMM slots on board. Do not insert other type of modules into these slots.
- DDR DIMM slot has 184-pins and one notch. Insert a DDR DRAM vertically into the 184-pin slot with the notch-to-rib matching. Press the Module down in a gradual way until it surely reaches the bottom and clicks straight up the two latches on the left and right of the slot. If any one of the latches has not turned up completely, you should unplug the module and press it down a bit more firmly.



- To remove the DIMM, just press down the holding latches on both sides of a DIMM slot and the module will be released from it.

2-4 To Install AGP4X card into AGP4X Slot

The AGP slot on board supports 1.5V AGP 4X card only. Any 3.3V AGP 2X card will burn the 1.5V circuitry.

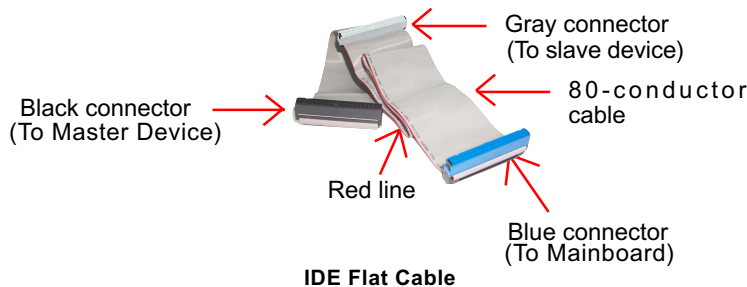
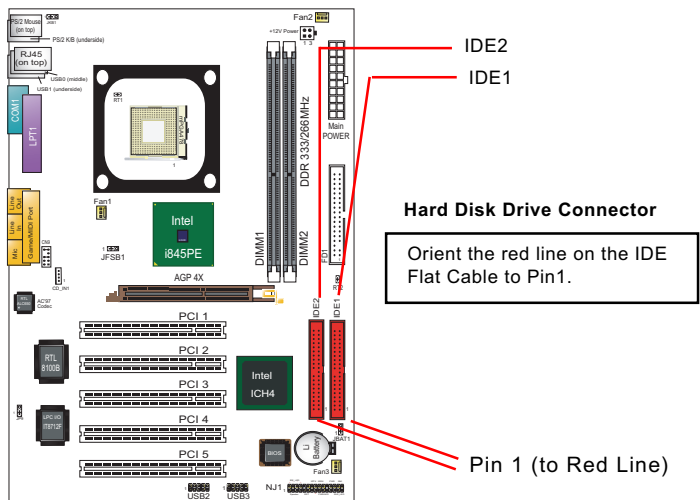


Warning:

- *If a 3.3V AGP 2X card is mistakenly inserted for booting the system, the high voltage will burn the 1.5V circuit on board. Never use a 3.3V or an unknown AGP card on this mainboard*

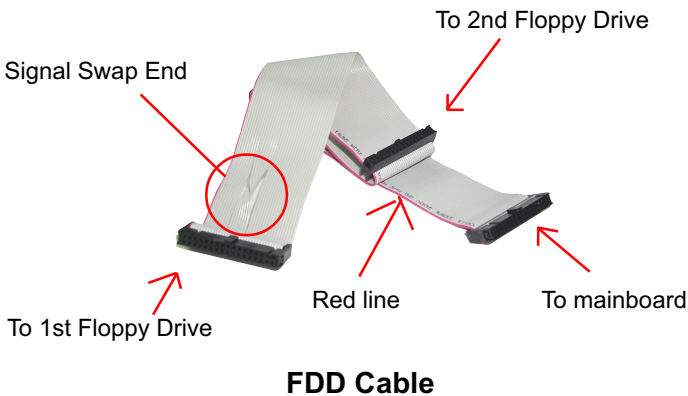
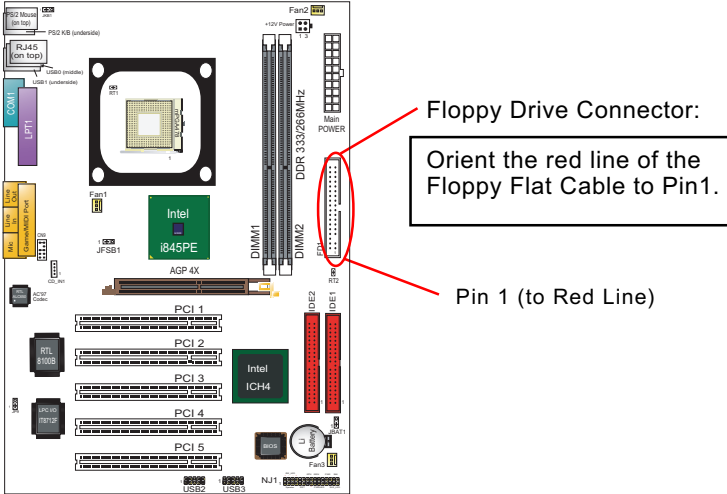
2-5 IDE Connector Installation

To install IDE Connector, you may connect the blue connector of IDE cable to the primary (IDE1) or secondary (IDE2) connector on board, and then connect the gray connector to your slave device and the black connector to your master device. If you install two hard disks, you must configure the second drive to Slave mode by setting its jumpers correctly. Please refer to your hard disk documentation for the jumper settings.

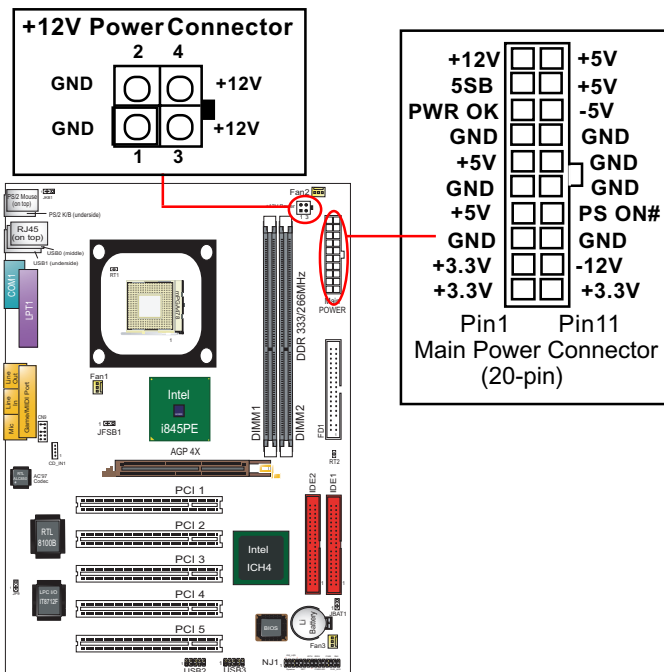


2-6 Floppy Drive Connector Installation

To install FDC, you should connect the end of FDC cable with single connector to the board , and connect the other end with two connectors to the floppy drives.



2-7 ATX V2.03 Power Supplier Installation



ATX V2.03 Power Supplier is strongly recommended for mainboard running with 2GHz or higher CPU.

To set up Power Supply on this mainboard:

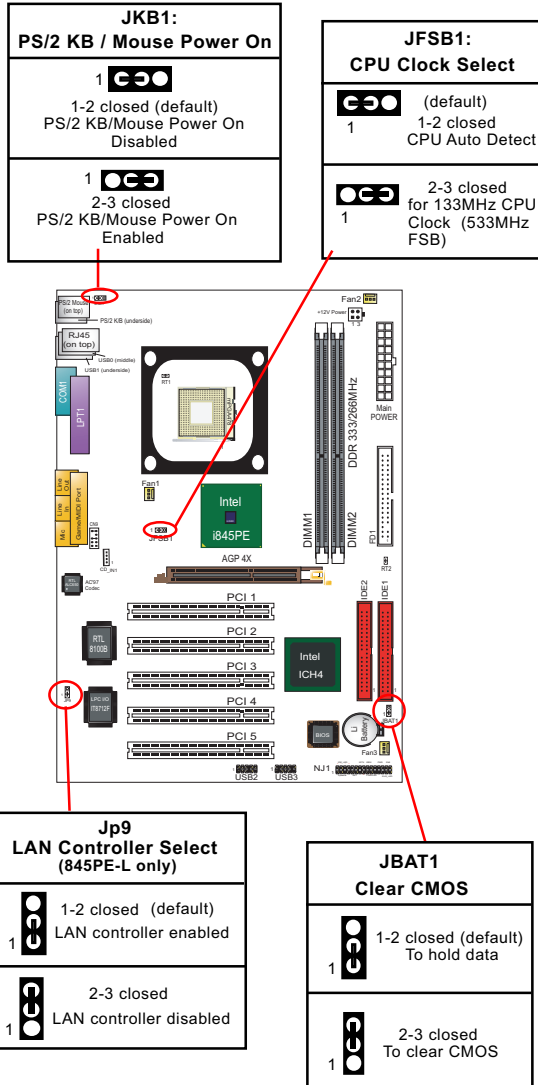
1. Connect the on-board Main Power Connector (20-pin) to the Main Power Connector (20-pin) of an ATX Power Supplier which can be of the latest version 2.03 model, and then connect the square-shaped +12V Power Connector on board to the square-shaped +12V Power Connector of the Power Supplier.

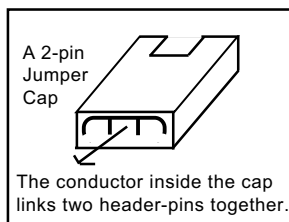
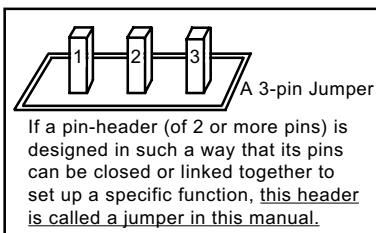
Warning: Both the Main Power Connector and the +12V Power Connector should be connected to Power Supplier; otherwise, the system may either not start or be damaged.

2. This ATX Power Supplier should be able to provide at least 720mA/ +5V standby power for Wake On Lan function.

2-8 Jumper Settings

The following diagrams show the locations and settings of jumper blocks on the mainboard.



How to tackle the Jumpers:

- A Jumper is usually but not necessarily given a “JpX” legend.
- In the Jumper setting diagram, the jumper pins covered with black marks stand for closed pins with jumper cap.

Jp X 1  3
Jumper with
Pin 2-3 closed

1  3
Jumper with
all pins open

1  3
Jumper with
Pin 1-2 closed



- Do not remove any jumper cap when power is on. Always make sure the power is off before changing any jumper settings. Otherwise, the mainboard will be damaged.

2-8.1 CPU Clock Select

JFSB1 is designed to select 100/133MHz CPU clock for the system. Setting JFSB1 to 1-2 closed will allow CPU on board to Auto Detect its own frequency and apply it to the System Bus.

Setting JFSB1 to 2-3 closed will manually configure a 100MHz CPU to 133MHz.

However, overclocking should always take the whole mainboard into account. There is no 100% guaranty of success. In case overclocking fails, system boot will fail. You should then take the Auto Detect setting to boot system. Even more, you should clear CMOS before rebooting system. (See JBAT 1 Clear CMOS).

JFSB1 CPU Clock Select	
 1	(default) 1-2 closed CPU Auto Detect
 1	2-3 closed for 133MHz CPU Clock (533MHz FSB)

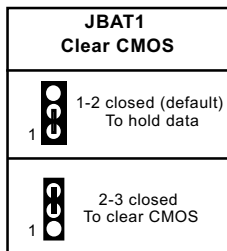
Further Notes on CPU Overclocking:

1. If you have successfully booted system, with or without CPU overclock, you still can try another CPU overclock in BIOS Setup. Please enter BIOS Setup, choose "Frequency/Voltage Control" menu, and take the "Use Linear" option of the "Use CPU Linear Frequency". Then configure the "CPU Clock" item to raise your CPU clock.
2. CPU overclocking should take all components on board into account. If you fail in BIOS overclocking, you will not be able to restart system. In such case, Power off system and clear CMOS by JBAT1 and then restart your system. And remember to reconfigure whatever should be reconfigured.
3. If your system is already fixed in a cabinet or case, you may not like to take the trouble to clear CMOS. Then power on your system with the power button on the PC case and simultaneously press down the "Insert" key on the keyboard until you see the initial bootup screen appear. And remember you should also enter CMOS BIOS Setup instantly and choose "Load Optimized Defaults" to restore default BIOS .

2-8.2 Clear CMOS



When you have problems with rebooting your system, you can clear CMOS data and restore it to default value. To clear CMOS with Jumper JBAT1, please follow the steps below:

1. Power off system.
2. Set JBAT1 to Pin 2-3 closed.
3. After 2 or 3 seconds, restore the JBAT1 setting to Pin1-2 closed.
4. CMOS data are restored to default now. Remember never clear CMOS when system power is on.





2-8.3 JKB1: PS/2 KB/Mouse Power On

JKB1 is designed to enable / disable PS/2 Keyboard/Mouse Power on function. Setting JKB1 to 1-2 closed will disable this function. Setting JKB1 to 2-3 closed will enable this function. Yet users still have to choose the K/B Power-on mode on BIOS. (See Integrated Peripherals" in BIOS Setup.)

JKB1: PS/2 KB / Mouse Power On	
1 	1-2 closed (default) PS/2 KB/Mouse Power On Disabled
1 	2-3 closed PS/2 KB/Mouse Power On Enabled

2-8.4 LAN Controller Select (845PE-L only)

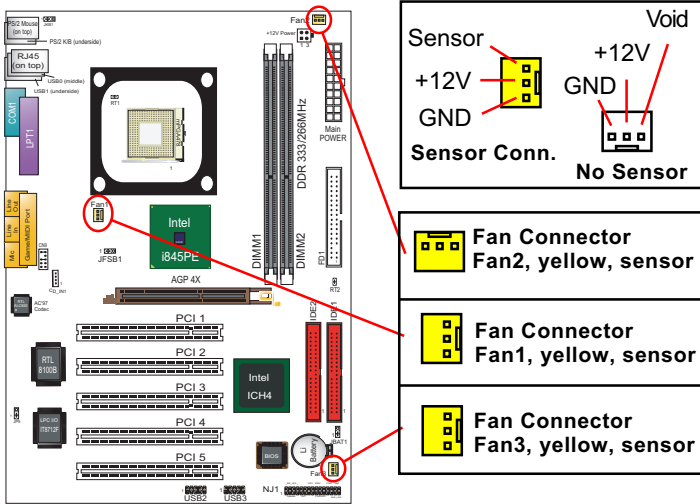
JP9 is a 3-pin jumper for enabling or disabling the on-board LAN Controller. Users can set JP9 1-2 closed to enable the on-board LAN Controller so as to set up the LAN driver, or to set JP9 2-3 closed to disable the on-board LAN Controller. In such case, users are free to use an add-on PCI LAN card for networking.

Jp9 LAN Controller Select (845PE-L only)	
1 	1-2 closed (default) LAN controller enabled
1 	2-3 closed LAN controller disabled

2-9 Other Connectors Configuration

This section lists out all connectors configurations for users' reference.

2-9.1 On Board Fan Connectors



Both Sensor and No-sensor Fan Connectors support CPU/AGP/System/Case cooling fan with +12V mode. When connecting the wire to any Fan Connector, users should make sure that the red wire is for the positive current and should be connected to pin +12V, and the black wire is Ground and should be connected to pin GND.

A Hardware Monitor chipset is on board, with which users can install a Hardware Monitor Utility and read the fan speed transmitted from the sensor fan. Otherwise, users can read the fan speed from the "Hardware Monitor Status" in CMOS BIOS.

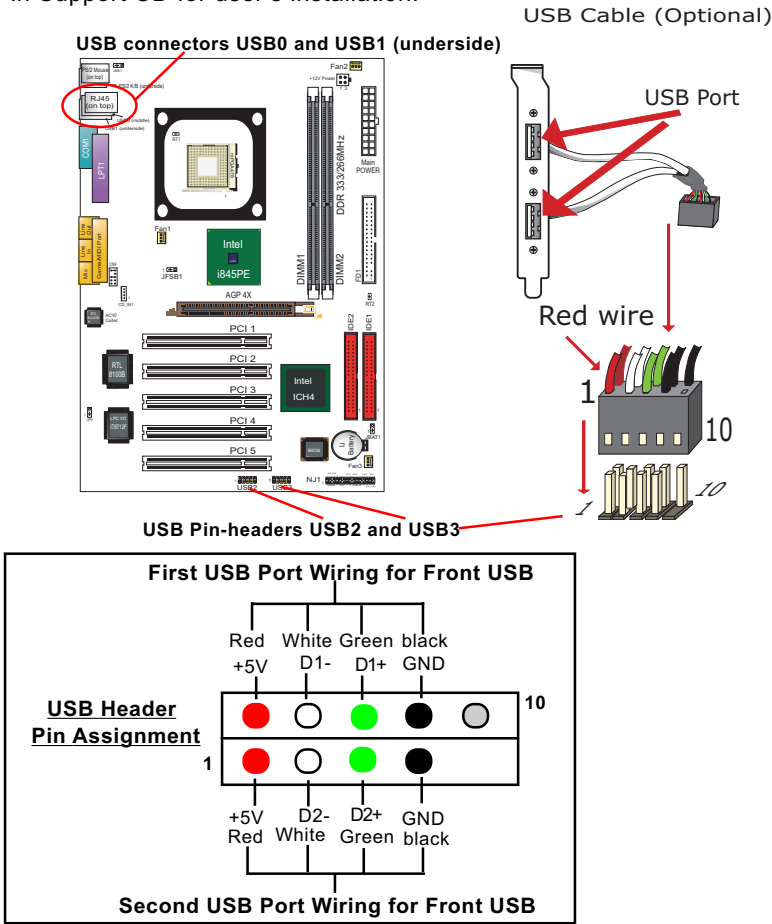
A running Fan will send out 2 electric pulses per rotation of its fan blade. A Sensor Fan Connector will count the electric pulses and send the information to the System Hardware Monitor which in turn will work out the fan rotation speed and display it on screen.

2-9.2 USB Ports and USB Pin-headers

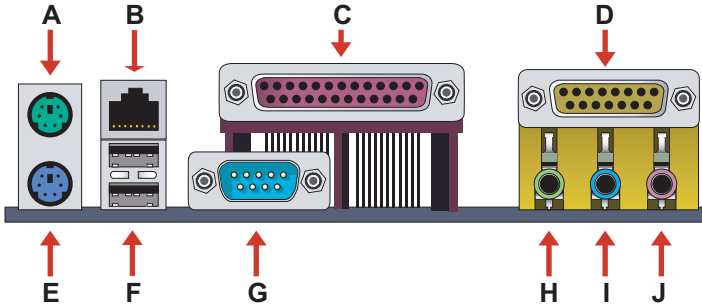
This series provides two USB ports USB0 and USB1 on board supporting various USB devices. In addition, two USB pin-headers are added on board to provide expansion of four more optional USB ports by using two additional USB cables. Users can order the optional USB cables from your mainboard dealer or vendor.

When plugging the USB cable to USB Header, user must make sure the red wire is connected to Pin 1.

All 6 USB ports are compliant with 1.1 / 2.0 USB Bus. USB 2.0 supports Win 2000 and up (not Win9X / Me). USB 1.1 / 2.0 drivers are provided in Support CD for user's installation.



2-9.3 Chassis Panel Connectors



A : PS/2 Mouse

B : RJ45 (top) (845PE-L)

C : LPT1 Port

D : GAME/MIDI

E : PS/2 Keyboard

F : USB 1 (underside)
USB 0 (middle)

G : COM1 Connector

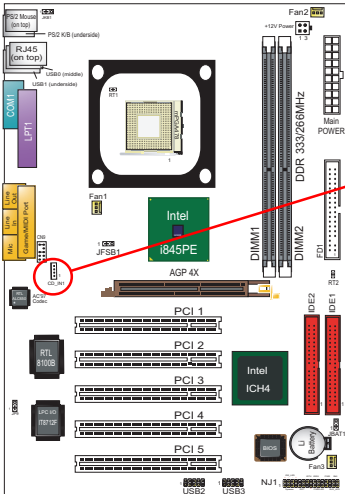
H : Line Out /
Front Speaker Out

I : Line in/
Rear Speaker Out


J : Microphone Input /
Center Subwoofer Out

2-9.4 CD-ROM Audio Connectors

CD_IN1 is an audio connector connecting CD-ROM audio to mainboard.

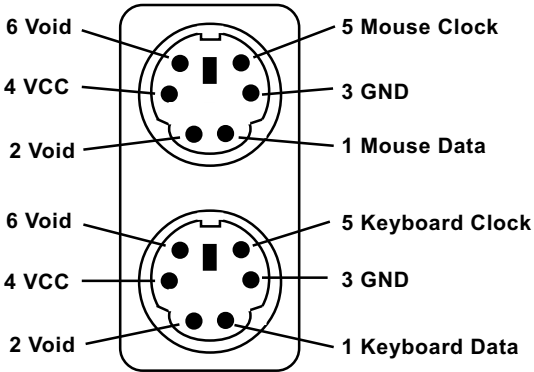


CD-ROM Audio Pin Assignment

CD_IN1	Pin 1	Pin 2	Pin 3	Pin 4
	Left Channel	GND	GND	Right Channel

2-9.5 PS/2 Mouse And PS/2 Keyboard

(PS/2 Mouse: On top of keyboard connector, green)

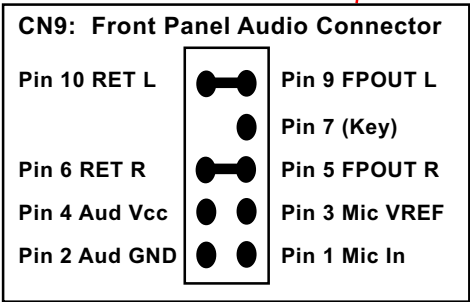
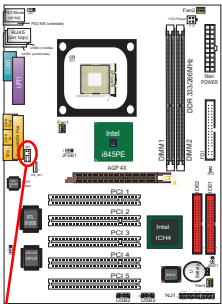


(PS/2 Keyboard Connector: Underside, purple)

2-9.6 Front Panel Audio Connector

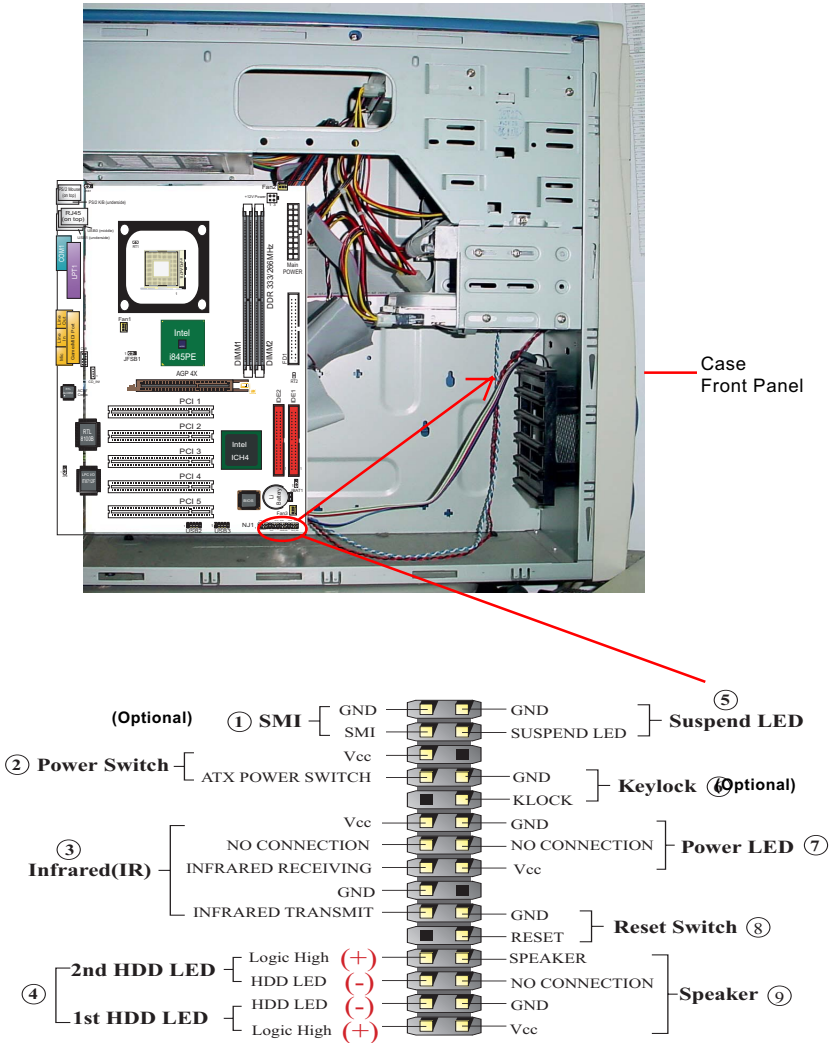
This Mainboard is designed with a Front Panel Audio connector “CN9” which provides connection to your chassis.

- 1. When CN9 is set to 5-6 closed and 9-10 closed, this default setting disables this connector and leaves the Back Panel Audio enabled.
- 2. To use this Front Panel Audio Connector, please open all pins of CN9 and connect it to your chassis.



2-9.7 Complex Pin-header

This complex Pin-header consists of the following connectors for various supports. When you have fixed the mainboard to the case, join the connectors of this Complex Pin-header to the case Front Panel.



(1) SMI Connector (Optional):

Connection: Connected to the case-mounted Suspend Switch.

Function: Manually selecting system into the Suspend Mode or "Green Mode" by System management interrupt.

(2) Power Switch Connector:

Connection: Connected to a momentary button or switch.

Function: Manually switching the system between "On" and "Soft Off". Pressing the momentary button for more than 4 seconds will also turn the system off.

(3) IR Connector (Infrared Connector):

Connection: Connected to Connector IR on board.

Function: Supporting wireless transmitting and receiving module on board.

(4) 1st HDD LED Connector/2nd HDD LED Connector:

Connection: Connected to HDD LED.

Function: To supply power to HDD LED.

(5) Suspend LED Connector:

Connection: Connected to Suspend Indicator.

Function: To supply power to "Suspend Indicator".

(6) Keylock Connector (Optional):

Connection: Connected to keyboard.

Function: To lock keyboard and disable keyboard function.

(7) Power LED Connector:

Connection: Connected to System Power LED.

Function: To supply power to "System Power LED".

(8) Reset Switch Connector:

Connection: Connected to case-mounted "Reset Switch".

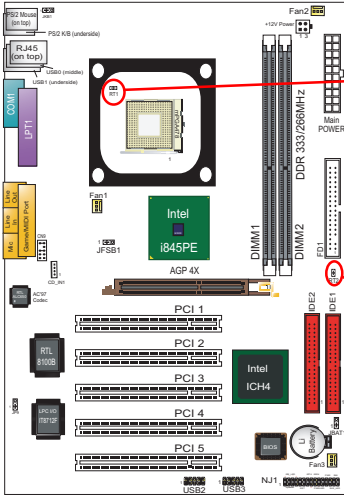
Function: To supply power to "Reset Switch" and support system reboot function.

(9) Speaker Connector:

Connection: Connected to the case-mounted Speaker.

Function: To supply power to the case-mounted Speaker.

2-9.8 Thermal Resistors



Thermal Resistor RT1



RT1 is mounted with Thermal Resistor by default for detecting external CPU temperature.

Thermal Resistor RT2



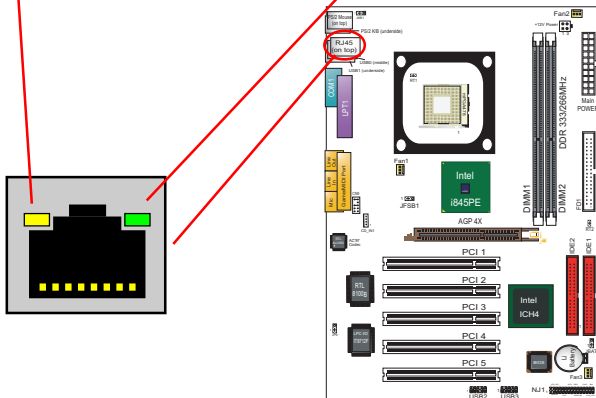
RT2 is mounted with Thermal Resistor by default for detecting system temperature.

2-9.9 LAN Connector (845PE-L Only)

One RJ45 connector is on board for network connection.

Yellow LED "On" to indicate Network hub is in connection with the system.

Green LED blinks to indicate that data transmission is undergoing in 10/100 Base T mode.



Chapter 3 Software Setup

Drivers, Utilities and Software Installation

- **Support CD:**

This series of mainboards will be shipped with a Support CD which contains those necessary driver files, Application Softwares and some helpful utilities. It is a user-friendly, auto-run CD which will open itself up in a CD-ROM automatically.

This chapter is devoted to describing the installations of all these essential drivers and utilities on Windows 98SE, Windows ME, Windows 2000 and Windows XP. The installation procedures for all these operating systems are all programed into an auto-run mode. What users have to do is to read and follow the pop-up instructions to carry out the installation. We therefore take the installation on Windows 98SE as the general illustration hereby.

The priority of drivers to be installed should also be noted. Users are recommended to take the following installation orders :

3-1 To Open up the Support CD

3-2 To Install Intel Chipset Software Installation Utility

3-3 To Install Intel Application Accelerator (IAA)

3-4 To Install AC'97 Audio Drivers

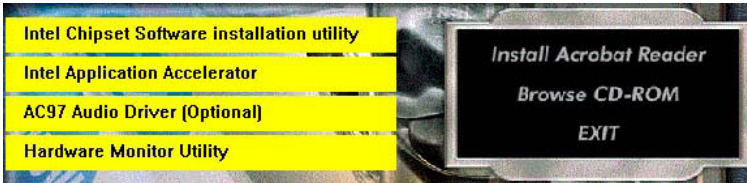
3-5 To Install Hardware Monitor Utility

3-6 To Install LAN Drivers (for 845PE-L only)

3-7 To Install Intel USB V2.0 Drivers

3-1 To Open up the Support CD

1. Please put the Support CD enclosed in your mainboard package into the CD-ROM drive. In a few seconds, the Main Menu will automatically appear, displaying the contents to be installed for this series:



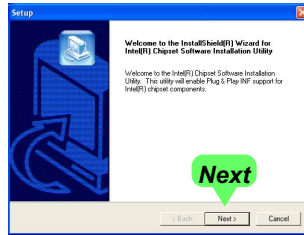
2. In case your system does not open the Support CD automatically, please click to the following path to enter the Main Installation Menu:

D:\Autorun.exe (assuming that your CD-ROM Drive is Drive D)
3. We should take "Intel Chipset Software installation Utility" as first installation priority to optimize the Intel system.
From next section, we provide detailed descriptions of all these installations with graphical illustrations.

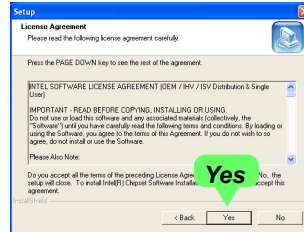
3-2 To Install Intel Chipset Software Installation Utility

1. Following the procedures of opening the Support CD, click to “Install Intel Chipset software installation Utility” to proceed.

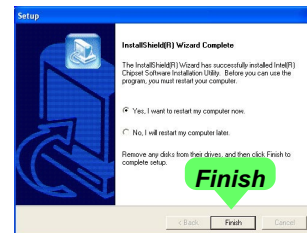
2. The Intel Service Pack InstallShield Wizard will pop up to guide you to the Intel Service pack installation. Press “**Next**” button to continue.



3. “Intel Software License Agreement” screen will appear, please click the “**Yes**” button to agree with the Licence Agreement and continue.



4. After all the setup process is finished, please restart your computer by clicking on “Finish” so as to take the Utility into effect.

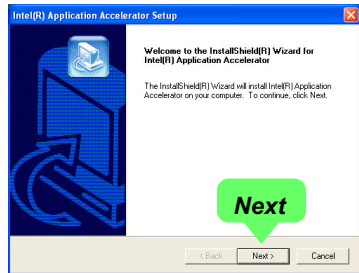


3-3 To Install Intel Application Accelerator

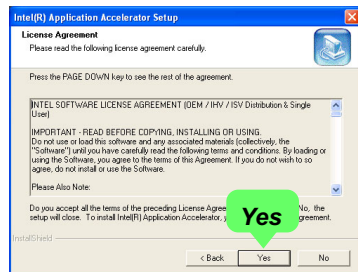
IAA supports all Windows 98SE/ME/2000/XP with Pentium III / 4 processor. Installations of this software for these operating systems are similarly programmed to an auto-run mode. It is typically designed to improve performance of the storage sub-system and overall system performance. Below is a model installation on Windows XP. Users of Windows 98SE/ME/2000 can also follow this example for IAA installation.

1. Following the procedures of opening the Support CD, click to “ Intel Application Accelerator” to proceed.

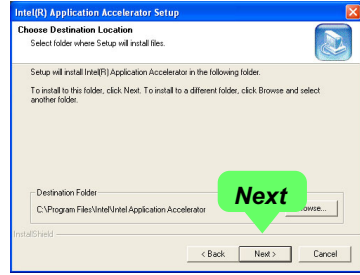
2. On the “InstallShield Wizard” screen, Click on “Next” to continue.



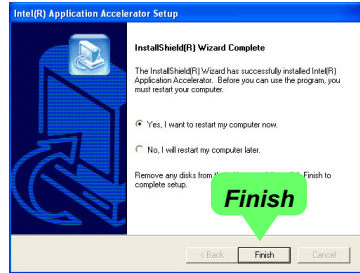
3. On the “Licence Agreement” screen, click on “Yes” to continue.



4. On "Choose Destination Location" screen, press **"Next"** to continue.



5. On "InstallShield Wizard Complete" screen, choose "Yes, I want to restart my computer now" and press "Finish" to restart. Remember you must restart computer to put setup into effect.



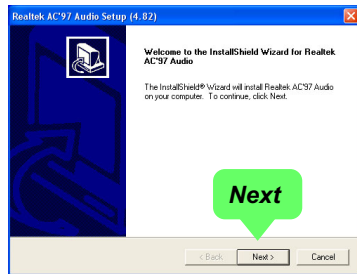
3-4 To Install AC'97 Audio Driver

Avance AC97 Audio Codec on board, AC'97 2.2 compatible, supporting 6/2-channel audio code for PC multimedia systems. Avance AC'97 Audio Codec Driver is provided in Support CD for user's installation.

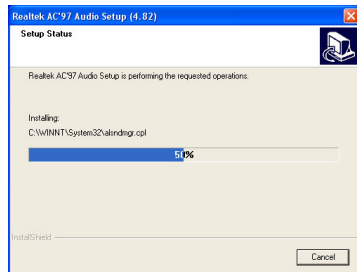
3-4.1 Install AC'97 6-channel Audio Driver

1. Following the procedures of opening the Support CD, click to "AC'97 Audio Driver" to proceed.

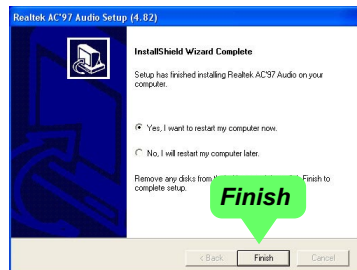
2. Instantly, the "installShield Wizard" screen appears to guide you through the "Avance AC'97 Audio Setup".



3. Instantly, the Setup program proceeds to install the softwares which include AC'97 driver and AVRack. (If you want to stop setup, click the "Cancel" button.)



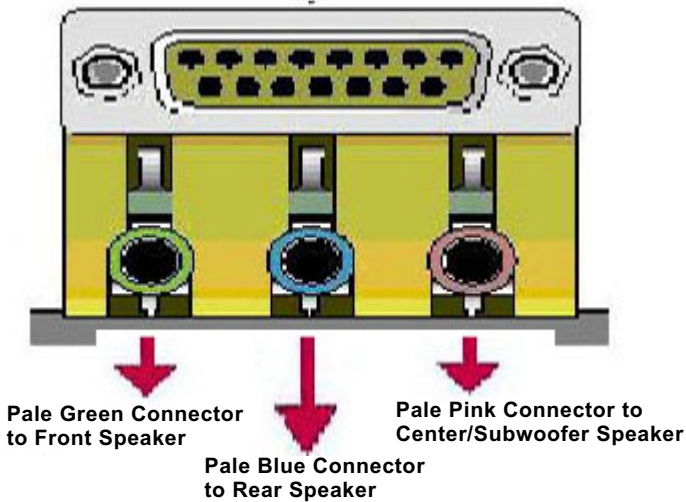
4. After the setup process is finished, please check the radial button "Yes, I want to restart my computer now." And click "Finish" to restart your system.



3-4.2 6-channel Verification

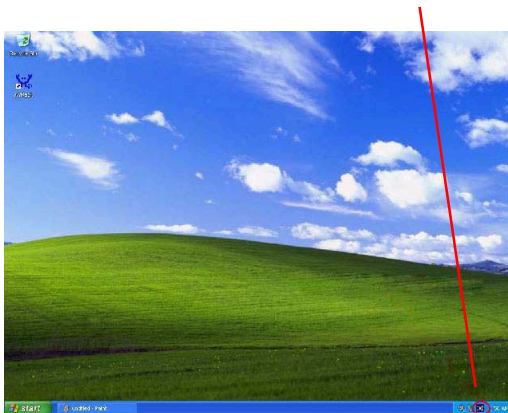
After installation of AC'97 6-channel Codec, you must configure the 5.1 Speaker connection to enable the 6-channel audio.

1. Connect your on-board Audio Connector to your 6-channel speakers as depicted in the figure below:

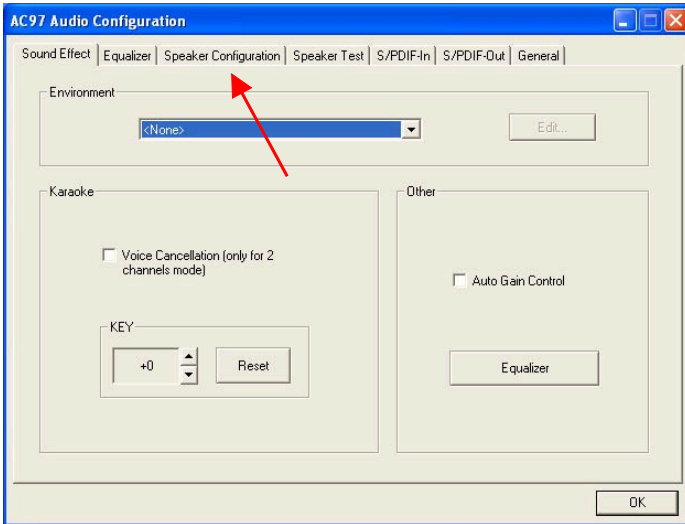


2. After Connection is done, start your Windows system and double click the Avance Sound Effect manager icon to enter 6-channel configuration:

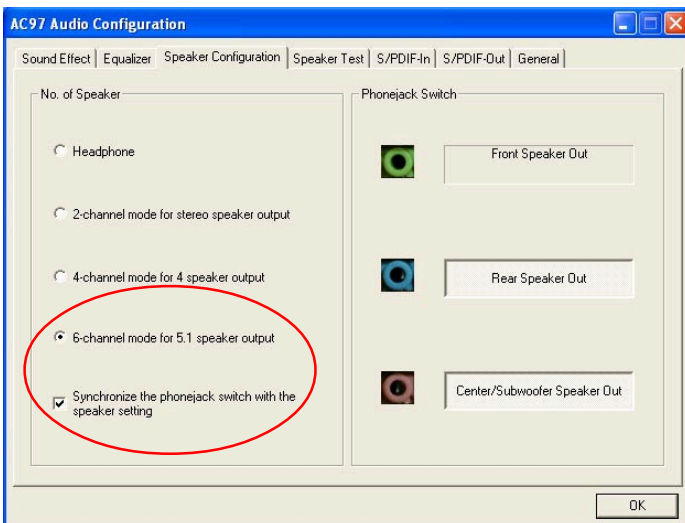
Avance Sound Effect Manager



3. The "AC'97 Audio Configuration" screen will pop out. Click the "Speaker Configuration" bar with your mouse.



4. Instantly, the "Speaker Configuration" screen will pop out. Pick the items "6-channel mode for 5.1 speakers output" and "Synchronize the phonejack switch with the speakers settings" and then click "OK" to finish configuration.



5. At finishing the Speakers Configuration, you can also click the “Speaker Test” bar on the screen to test the 6-channel performance. The figure below is the “Speaker Test” screen with testing instructions enclosed on it. Follow the instructions to perform the Speakers Test.



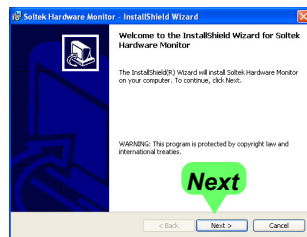
3-5 To Install Hardware Monitor Utility

3-5.1 Installation

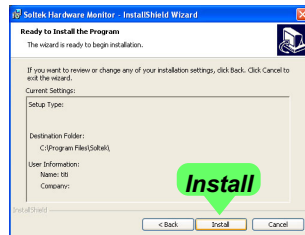
Hardware Monitor is built on this mainboard. Its installation is programmed to a fully automated mode on Windows 9X/Me/NT4/2000/XP. Users can follow the model installation below for its installation on various Windows System.

1. Following the procedures of opening the Support CD, click to “Hardware Monitor Utility” to proceed.

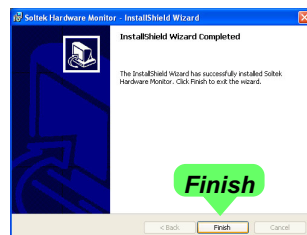
2. The Soltek Hardware Monitor InstallShield Wizard will pop up to guide you to the Intel Service pack installation. Press “**Next**” button to continue.



3. The **InstallShield Wizard** screen will show the current setting, please click the “**Install**” button to continue.

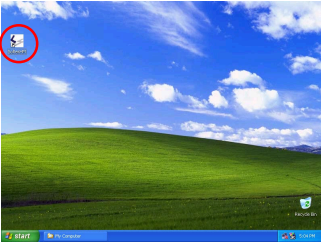


4. After all the setup process is finished, click “**Finish**” to exit the wizard.



3-5.2 Verification

- 1. After installing Soltek Hardware Monitor, double click “SoltekHM” icon on the desktop to open the main window of the Soltek Hardware Doctor.



- 2. Then the pop-up screen will show all information about CPU Temperature, Fan Speed and various Voltages.

Showing the Fan Speed(s) that is supported by the mainboard.

Showing the temperature(s), the function of which is supported by the mainboard.

Click on “Soltek” button to display the function menu.

The image shows the Soltek Hardware Monitor application window. It has a futuristic, metallic design. The interface is divided into several sections: 'TEMPERATURE' on the top left showing CPU, AGP, and RTG temperatures; 'FAN TACHOMETER' on the top right showing speeds for Fan 1, Fan 2, and Fan 3; 'VOLTAGE' on the bottom left showing CPU, DIMM, 3.3V, and 5V levels; and a '12V' and 'Battery' section on the bottom right. A large 'SOLTEK' logo is in the center-right, and below it is a 'Status Warning LED' indicator. A small 'About SoltekHM' dialog box is open over the logo. Red lines connect callout boxes to specific features: one points to the fan speed section, another to the temperature section, a third to the 'SOLTEK' logo, and a fourth to the voltage section.

Showing the Voltage(s) that is supported by the mainboard.

Status Warning LED

*Note: Not all items or functions showing in the above picture will show up. Only those items or functions that are supported by the mainboard will reveal themselves in the above screen.

3-6 To Install LAN Drivers (for 845PE-L only)

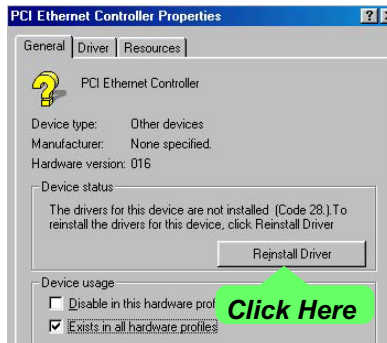
3-6.1 RTL8100B LAN driver on Windows ME / 2000 / XP

1. When you newly install Windows ME, Windows 2000 or Windows XP, the system will detect the LAN Controller on board and configure it automatically into system. Therefore, users need not bother to install the LAN controller into these operating systems.
2. To verify the existence of RTL8100B Controller and Driver, please enter the "Control Panel" of your system and click "Network" to open the "Configuration" screen. You can then see the "Realtek8139 (A/B/C) PCI Fast Ethernet Adapter" is already installed in system.

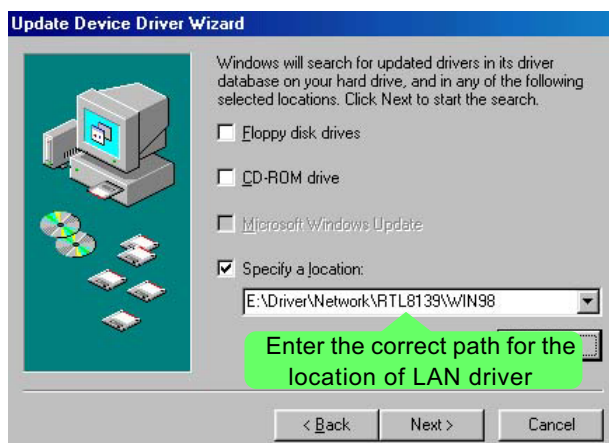
3-6.2 RTL8100B LAN driver on Windows 9X

The LAN driver contained in the Support CD is not included in the Autorun Menu. To install RTL8100B LAN driver on Windows 9X, please follow the steps shown below:

1. On the "Start" screen of your system, please click to the following path:
 \My Computer\properties\Device manager
2. In the "Device manager" screen, you can see the item "PCI Ethernet Controller" with a yellow question mark on its left side, which indicates that the LAN controller is already detected by system but the driver for this on-board RTL8100B Ethernet Controller is not installed yet. Please point to this item with your mouse and double click on it (or click the "Properties" button).
3. Instantly, the "PCI Ethernet Controller Properties" screen shows up. Please click the "General" bar to continue.
4. In the "General" screen, click "reinstall Driver" button to continue. Please note that the status of "Device Usage" should stay at "Exists in all hardware profiles".



5. In the “Update device Driver Wizard” screen, click “Next” to continue until you see a dialog box asking you to “Specify a location” for the driver. You should **now** insert the Support CD into your CD-ROM.
6. As illustrated in the picture below, check the item “Specify a location” and click the “Browse” button to find out the correct path for the driver. Supposing your CD-ROM drive is Drive E, please type:
E:\Driver\Network\RTL8139\Win98 into the blank bar. (Please note that both RTL8100B and RTL8139C controllers are supported by Driver RTL8139.) Then click the “Next” button to continue.

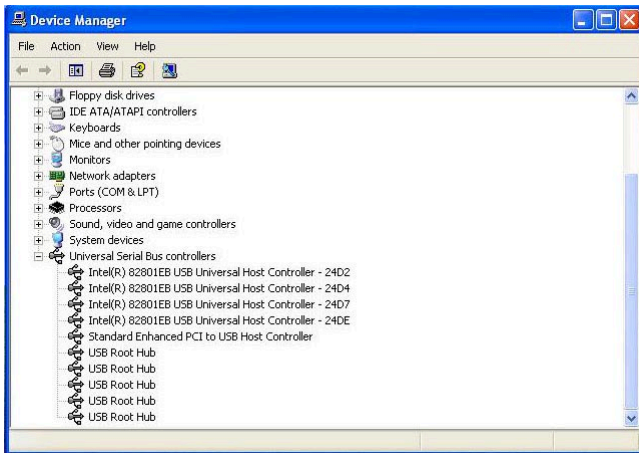


7. The Update Device Driver Wizard will then go on installing the driver until the “Insert Disk” dialog box shows up. Please withdraw your Support CD and insert the Windows 98 CD-ROM into the CD-ROM drive for updating system and click “OK” to continue.
8. The Update Device Driver Wizard will then proceed to update the system with the LAN driver. When the “Finish” screen shows up, click “Finish” to continue.
9. Final Dialog box will appear to remind you that you must restart your computer to finish updating the new hardware. Please click “Yes” to restart system and finish the LAN driver installation.

3-7 To Install USB 2.0 Driver for Windows 2000/XP

USB V2.0 with its 480Mb/s transfer rate supports operating system Windows 2000 and Windows XP via the Windows 2000 and Windows XP Service Pack. Users should install the latest Service Pack for Windows 2000 or Windows XP.

1. After installation of Intel Chipset software installation Utility in Windows 2000 or Windows XP, start to install the latest Service Pack version into the operating system. The installation of the latest Service Pack will support USB2.0 in Windows 2000 or Windows XP now.(The latest Service Pack can be found in Microsoft Web Site.)
2. To verify USB2.0 installation, please enter “Device Manager” of “My Computer”. On the “Device Manager” screen, you should be able to see the item “Standard Enhanced PCI to USB Host Controller”, verifying USB2.0 Driver is installed successfully.



Chapter 4 BIOS Setup

THE BIOS

BIOS stands for Basic Input and Output System. It was once called ROM BIOS when it was stored in a Read-Only Memory(ROM) chip. Now manufacturers would like to store BIOS in EEPROM which means Electrically Erasable Programmable Memory. BIOS used in this series of mainboard is stored in EEPROM, and is the first program to run when you turn on your computer.

BIOS performs the following functions:

1. Initializing and testing hardware in your computer (a process called "POST", for Power On Self Test).
2. Loading and running your operating system.
3. Helping your operating system and application programs manage your PC hardware by means of a set of routines called BIOS Run-Time Service.

This Chapter includes the following topics :

4-1 About BIOS Setup

4-2 To run BIOS Setup

4-3 About CMOS

4-4 The POST (Power On Self Test)

4-5 To upgrade BIOS

4-6 BIOS Setup

Attention: The BIOS Setup is subject to constant update without further notice to users. It is necessary for users to update the onboard BIOS by the latest BIOS version provided in our web site: www.soltek.com.tw

4-1 About BIOS Setup

BIOS setup is an interactive BIOS program that you need to run when:

1. Changing the hardware of your system. (For example: installing a new Hard Disk etc.)
2. Modifying the behavior of your computer. (For example: changing the system time or date, or turning special features on or off etc.)
3. Enhancing your computer's behavior. (For example: speeding up performance by turning on shadowing or cache)

4-2 To Run BIOS Setup

First access BIOS setup menu by pressing < DEL > key after "POST" is complete (before OS is loaded). BIOS will then display the following message:

Press "DEL" to enter "SETUP"

4-3 About CMOS

CMOS is the memory maintained by a battery. CMOS is used to store the BIOS settings you have selected in BIOS Setup. CMOS also maintains the internal clock. Every time you turn on your computer, the BIOS Looks into CMOS for the settings you have selected and configures your computer accordingly. If the battery runs out of power, the CMOS data will be lost and POST will issue a "CMOS invalid" or "CMOS checksum invalid" message. If this happens, you have to replace the battery and do some proper settings in BIOS Setup.

4-4 The POST (Power On Self Test)

POST is an acronym for Power On Self Test. This program will test all things the BIOS does before the operating system is started. Each of POST routines is assigned a POST code, a unique number which is sent to I/O port 080h before the routine is executed.

4-5 To Upgrade BIOS

- System BIOS is incorporated into a Flash memory component. Flash BIOS allows user to upgrade BIOS without the need to replace an EPROM component.
- The Upgrade Utility can be loaded on a floppy diskette to execute saving, verifying, and updating the system BIOS. The Upgrade Utility can also be run from a hard disk drive or a network drive.

4-5.1 Before Upgrading BIOS

- It is highly recommended that you save a copy of the original mainboard BIOS along with a Flash EPROM Programming utility (AWDFLASH.EXE) to a bootable floppy disk so that you can reinstall the BIOS when needed.

4-5.2 Upgrade Process

- Normally, to upgrade BIOS is unnecessary if the system is working fine. Users should only upgrade the BIOS when you experience incompatible problems or need to create new features.
- “AWDFLASH.EXE” is a Flash EPROM Programming utility that updates the BIOS by uploading a new BIOS file to the programmable flash ROM on the mainboard. This program only works in ***DOS environment, the utility can not be executed in Windows 95/98, ME, NT, WINDOWS 2000 or Windows XP environment.***
- Please follow the steps below for upgrading the system BIOS:

Step 1. Please visit the board maker's website, download the zip file which contains the latest BIOS file and Award Flash Utility “AWDFLASH.EXE”. After unzipping, the BIOS file format will be *.bin, of which “*” stands for the specific BIOS file name.

Step 2. Create a bootable diskette. Then copy the BIOS file and Award Flash Utility “AWDFLASH.EXE” into the diskette.

Step 3. Insert the diskette into drive A, reboot your system and boot from the diskette.

Step 4. Type **awdflash *.bin /sn/py/cc** and then press <Enter> to run BIOS upgrade program. (*.bin depends on your mainboard model and version code. Instead of typing “*”, you should type specific file name for your specific mainboard).

Step 5. Please press <F1> or <F10> to exit or reset your system.

Warning ! If the message “**Write Fail**” appears while Award “FLASH MEMORY WRITER” is verifying Flash memory, just repeat the process. Please DO NOT reset or turn off the system. If the award memory flash utility is not able to update the BIOS successfully, your system may not be able to boot up.

Step 6. You will need a message “CMOS checksum error-Default loaded” during booting the system. Press to run CMOS setup utility, then reload “LOAD SETUP DEFAULTS” or “**Load Optimized Defaults**” and save this change.

The parameters of AWDFLASH.EXE

/sn: No original BIOS backup

/py: Program flash memory

/cc: Clear CMOS data (and update data automatically) after programming

NOTE: Users can type AWDFLASH /? to get further details about the parameters. Incorrect usage of the parameter will damage the BIOS information, so we strongly recommend users to leave parameters alone unless you fully understand their function.

BIOS Update Illustration:

- (1) Executing the "awdf flash.exe pt880.bin" in DOS system, Award Flash Memory Writer Start Screen appears: To input BIOS file name.

AwardBIOS Flash Utility V8.24F (C)Phoenix Technologies Ltd. All Rights Reserved
For PT880-8237-6A7L2SN9C-00 Date: 09/18/2003 File Name to Program : PT880.BIN
Message: Input the (BIOS) file name





- (2) Press Y if you want to back up your old BIOS. Otherwise, press N to go on without saving.

AwardBIOS Flash Utility V8.24F (C)Phoenix Technologies Ltd. All Rights Reserved
For PT880-8237-6A7L2SN9C-00 Date: 09/18/2003 File Name to Program : PT880.BIN
Message: Do You Want To Save BIOS (Y/N)





- (3) Press Y to write the latest BIOS into system.

AwardBIOS Flash Utility V8.24F (C)Phoenix Technologies Ltd. All Rights Reserved
For PT880-8237-6A7L2SN9C-00 Date: 09/18/2003 File Name to Program : PT880.BIN
Message: Press "Y" to Program or "N" to Exit

- (4) Updating is in progress. Do not turn off power at this moment.

AwardBIOS Flash Utility V8.24F (C)Phoenix Technologies Ltd. All Rights Reserved	
For PT880-8237-6A7L2SN9C-00	Date: 09/18/2003
Flash Type - SST 39SF020 /5V	
File Name to Program : pt880.bin	
Writing Flash Memory - 0FE00 OK	
	
 Write OK	 No Update  Write Fail
Warning: Don't Turn Off Power Or Reset System !	

- (5) When the process is complete, remove the Floppy Diskette and press F1 to restart the system to put the new BIOS into effect.

AwardBIOS Flash Utility V8.24F (C)Phoenix Technologies Ltd. All Rights Reserved	
For PT880-8237-6A7L2SN9C-00	Date: 09/18/2003
Flash Type - SST 39SF020 /5V	
File Name to Program : pt880.bin	
Flashing Complete	
Remove Floppy Diskette & Hit <F1> to Continue	
	
 Write OK	 No Update  Write Fail
F1 Reset	

4-6 BIOS SETUP --- CMOS Setup Utility

Warning and Tips: If changing CMOS Configuration causes difficulty in rebooting system, you can take the following measures:

1. At pressing the power button to reboot, press the "Insert" key at the same time. As soon as the screen displays the booting message, release the "Insert" key and press "Delete" key to enter CMOS Setup Utility. Then choose the "Load Optimized (Optimal) Defaults" menu to restore the default values for a new start. Or,
2. Open your machine cabinet and clear CMOS with jumper setting. Please refer to the Jumper Setting Section of this User manual.

4-6.1 CMOS Setup Utility

1. Power on your system.
2. At the initial screen, enter CMOS Setup Utility by pressing < Del > key before POST(Power on Self Test) is complete and the main program screen will appear as follows.

Phoenix - AwardBIOS CMOS Setup Utility

<ul style="list-style-type: none"> ▶ Standard CMOS Features ▶ Advanced BIOS Features ▶ Advanced Chipset Features ▶ Integrated Peripherals ▶ Power Management Setup ▶ PnP/PCI Configurations ▶ SmartDoc Anti-Burn Shield 	<ul style="list-style-type: none"> ▶ Frequency/Voltage Control Load Optimized Defaults Set Supervisor Password Set User Password Save & Exit Setup Exit Without Saving
Esc: Quit F1: General Help	
↑↓←→ : Select Item F10: Save & Exit Setup	
Time, Date, Hard Disk Type...	

3. When one main item of the Main Menu is chosen and clicked on, its submenu will appear to display the related items and options. On the other hand, a list of operation guide will appear at the end of the submenu as below:

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

- (1) Use the arrow keys on your keyboard to select an option, and press <Enter>. Modify the system parameters to reflect the options installed in your system.
 - (2) Press <Enter> to select item or option.
 - (3) +/- /PU/PD: To adjust or select value.
 - (4) F10: Save configuration.
 - (5) Esc: Press <Esc> key to get out of the menu on screen.
 - (6) F1: Press F1 to display General Help List.
 - (7) F5: Press F5 to restore the Previous Value.
 - (8) F6: Press F6 to load the Fail-Safe default values.
 - (9) F7: Press F7 to load the Optimized Default Values.
4. You may return to the Main Menu anytime by pressing <ESC>.
5. In the Main Menu, "SAVE AND EXIT SETUP" saves your changes and reboots the system, and "EXIT WITHOUT SAVING" ignores your changes and exits the program.

Attention: The BIOS Setup is subject to constant update without further notice to users. It is necessary for users to update the onboard BIOS by the latest BIOS version provided in our web site: www.soltek.com.tw

4-6.2 Standard CMOS Setup

Standard CMOS Setup records some basic system hardware configuration and sets the system clock and error handling. You only need to modify the configuration values of this option if you want to change your system hardware configuration or when the data stored in the CMOS memory gets lost or damaged.

Run the Standard CMOS Setup as follows:
Choose “Standard CMOS Setup” from the Main Menu and a screen with a list of options will appear:

Phoenix - AwardBIOS CMOS Setup Utility
Standard CMOS Features

Date (mm:dd:yy)	Tue, Jan 13 2004	Item Help
Time (hh:mm:ss)	9 : 41 : 11	
IDE Primary Master	WDC WD400BB-00DEA0	Menu Level ►
IDE Primary Slave	None	
IDE Secondary Master	None	
IDE Secondary Slave	None	Change the day, month, year and century
Drive A	1.44M, 3.5 in.	
Drive B	None	
Video	EGA/VGA	
Halt On	All errors	
Base Memory	640K	
Extended Memory	252928K	
Total Memory	253952K	

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

Date (mm:dd:yy) The BIOS determines the day of the week from the other date information. This field is for information only.

Press the left or right arrow key to move to the desired field (date, month, year). Press the PgUp or PgDn key to increment the setting, or type the desired value into the field.

Time (hh:mm:ss) The time format is based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00. Press the left or right arrow key to move to desired field. Press the PgUp or PgDn key to increment the setting, or type the desired value into the field.

Primary / Secondary Master / Slave This field records the specifications for all non-SCSI hard disk drives installed in your system. Refer to the respective documentation on how to install the drives.

**Phoenix - AwardBIOS CMOS Setup Utility
IDE Primary Master**

IDE HDD Auto-Detection	Press Enter	Item Help
IDE Primary Master Access Mode	Auto Auto	Menu Level ►
Capacity	40022MB	To auto-detect the HDD's size, head... on this channel
Cylinder	19158	
Head	16	
Precomp	0	
Landing Zone	19157	
Sector	255	

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

Drive A / Drive B Select this field to the type(s) of floppy disk drive(s) installed in your system. The choices are:
360KB, 5.25 in.
1.2MB, 5.25 in.
720KB, 3.5 in.
1.44MB, 3.5 in.
2.88MB, 3.5 in.
None

Video Select the type of primary video subsystem in your computer. The BIOS usually detects the correct video type automatically. The BIOS supports a secondary video subsystem, but you do not select it in setup.

Halt On During the power-on self-test (POST), the computer stops if the BIOS detects a hardware error. You can tell the BIOS to ignore certain errors during POST and continue the boot-up process.

Base Memory Typically 640KB. Also called conventional memory. The DOS operating system and conventional applications use this area.

Extended Memory Above the 1MB boundary. Early IBM personal computers could not use memory above 1MB, but current PCs and their software can use extended memory.

Total Memory This option shows system memory capacity.

4-6.3 Advanced BIOS Features

Advanced BIOS Features improves your system performance or sets up system features according to your preference.

Run the Advanced BIOS Features as follows:

Choose "Advanced BIOS Features" from the Main Menu and a screen with a list of options will appear:

Phoenix - AwardBIOS CMOS Setup Utility Advanced BIOS Features

Virus Warning	Disabled	Item Help Menu Level ▶ Allows you to choose the VIRUS warning feature for IDE Hard Disk boot sector protection. If this functions is enabled and someone attempt to write data into this area, BIOS will show a warning message on screen and alarm beep
CPU L1 & L2 Cache	Enabled	
Hyper Threading Technology	Enabled	
Quick Power On Self Test	Enabled	
First Boot Device	Floppy	
Second Boot Device	HDD-0	
Third Boot Device	CDROM	
Boot Other Device	Enabled	
Swap Floppy Drive	Disabled	
Boot Up Floppy Seek	Disabled	
Boot Up NumLock Status	On	
Gate A20 Option	Fast	
Typematic Rate Setting	Disabled	
x Typematic Rate (Chars/Sec)	6	
x Typematic Delay (Msec)	250	
Security Option	Setup	
APIC Mode	Enabled	
OS Select For DRAM > 64MB	Non-OS2	
Video BIOS Shadow	Enabled	

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

Virus Warning When enabled, you receive a warning message if a program (specifically, a virus) attempts to write to the boot sector or the partition table of the hard disk drive.

You should then run an antivirus program. Keep in mind that this feature protects only the boot sector, not the entire hard drive.

NOTE: Many disk diagnostic programs that access the boot sector table can trigger the virus warning message. If you plan to run such a program, we recommend that you disable the virus warning.

CPU L1 & L2 Cache Cache memory is additional memory that is much faster than conventional DRAM (system memory). CPUs from 486-type up contain internal cache memory (L1), and most, but not all, modern PCs have additional (external) cache memory (L2). When the CPU requests data, the system transfers the requested data from the main DRAM into cache memory, for faster access by the CPU.

Hyper Threading Technology If a P4 CPU with Hyper Threading technology is installed on board, this item will appear and allow you to enable/disable the function. If not, this item will not appear.

Quick Power On Self Test Select Enabled to reduce the amount of time required to run the power-on self-test (POST). A quick POST skips certain steps. We recommend that you normally enable quick POST.

First/Second/Third/Boot Other Device The BIOS attempts to load the operating system from the devices in the sequence selected in these items. Choices: Floppy; LS/ZIP; HDD; SCSI; CDROM; USB; LAN; Disabled

Swap Floppy Drive When enabled, floppy drives A and B will be exchanging without any physical connection and modification on the cables.

- Boot Up Floppy Seek** When enabled, the BIOS tests (seeks) floppy drives to determine whether they have 40 or 80 tracks. Only 360-KB floppy drives have 40 tracks; drives with 270KB, 1.2MB, and 1.44MB capacity all have 80 tracks. Because very few modern PCs have 40-track floppy drives, we recommend that you set this field to disabled to save time.
- Boot Up NumLock Status** Toggle between On or Off to control the state of the NumLock key when the system boots. If On, the numeric keypad is in numeric mode. If off, the numeric keypad is in cursor control mode.
- Gate A20 Option** Gate A20 refers to the way the system addresses memory above 1MB (extended memory). When set to *Fast*, the system chipset controls Gate A20. When set to *Normal*, a pin in the keyboard controller controls Gate A20. Setting Gate A20 to *Fast* improves system speed, particularly with OS/2 and Windows.
- Typematic Rate Setting** When *Disabled*, the following two items (Typematic Rate and Typematic Delay) are irrelevant. Keystroke repeats at a rate determined by the keyboard controller in your system.
When *Enabled*, you can select a typematic rate and typematic delay.
- Typematic Rate (Chars / Sec)** When the typematic rate setting is enabled, you can select a typematic rate (the rate at which character repeats when you hold down a key) of 6, 8, 10, 12, 15, 20, 24, or 30 characters per second.
- Typematic Delay (Msec)** Choices: 250; 500; 750; 1000. This option sets the time interval for displaying the first and the second characters. If enabled, the time interval is optional.
- Security Option** If you have set a password, select whether the password is required every time the System boots, or only when you enter setup.
Choices: System; Setup

APIC Mode Allows you to enable (default) / disable the APIC (Advanced Programmable Interrupt Controller) function. APIC mode will expand available IRQs for the system when enabled.

OS Select For DRAM > 64MB Select OS2 only if you are running OS/2 operating system with greater than 64MB of RAM on your system.

4-6.4 Advanced Chipset Features

Advanced Chipset Features is used to modify the values of chipset buffers. These buffers control the system options.

Run the Advanced Chipset Features as follows:

Choose "Advanced Chipset Features" from the Main Menu and a list of option will appear:

Phoenix - AwardBIOS CMOS Setup Utility
Advanced Chipset Features

		Item Help
DRAM Timing Selectable	By SPD	Menu Level ►
CAS Latency Time	2	
Active to Precharge Delay	6	
DRAM RAS# to CAS# Delay	3	
DRAM RAS# Precharge	3	
Memory Frequency For	Auto	
System BIOS Cacheable	Enabled	
Video BIOS Cacheable	Disabled	
Memory Hole at 15M-16M	Disabled	
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** This item allows you to set the DRAM Timing. Choices: By SPD; Manual
- SDRAM CAS Latency** With SDRAM Timing by SPD disabled, you can select the SDRAM CAS# (Column Address Strode)lancy manually. Choices: 1.5; 2.0; 2.5
- Active to Precharge Delay** This value appears when "DRAM Timing Selectable" is set at "Manual". Choices: 5; 6; 7
- DRAM RAS# to CAS# Delay** This value appears when "DRAM Timing Selectable" is set at "Manual". Choices: 2; 3
- DRAM RAS# Precharge** This value appears when "DRAM Timing Selectable" is set at "Manual". Choices: 2; 3
- Memory Frequency For** This item is to detect and determine the current DRAM Frequency.
- System BIOS Cacheable** Selecting Enabled allows caching of the system BIOS ROM at F0000h-FFFFFh, resulting in better system performance.
- Video BIOS Cacheable** Selecting Enabled allows caching of the video memory (RAM) at A0000h-AFFFFh, resulting in better video performance. However, check your AGP manual to find out if any compatibility problem exists.
- Memory Hole At 15M-16M** In order to improve performance, certain space in memory is reserved for ISA cards. This memory must be mapped into the memory space below 16MB. The choices: 15M-16M; Disabled
- Delay Prior to Thermal** This item allows the system to send the signal to detect the temperature of the mainboard under DOS mode in a regular time. Choices: 4 mins; 8 mins; 16 mins; 32 mins
- AGP Aperture Size** Series of options are available: 4, 8, 16, 32, 64, 128 or 256 MB. Memory mapped and graphics data structures can reside in a Graphics Aperture. This area is like a linear buffer. BIOS will automatically report the starting address of this buffer to the O.S.

4-6.5 Integrated Peripherals

Integrated Peripherals option allows you to get some information inside your system when it is working.

Run the Integrated Peripherals as follows:

Choose “Integrated peripherals” from the Main Menu and a list of options will appear:

Phoenix - AwardBIOS CMOS Setup Utility Integrated Peripherals

			Item Help
On-Chip Primary PCI IDE	Enabled		
IDE Primary Master PIO	Auto		
IDE Primary Slave PIO	Auto		
IDE Primary Master UDMA	Auto		
IDE Primary Slave UDMA	Auto		
On-Chip Secondary PCI IDE	Enabled		
Secondary Master PIO	Auto		
Secondary Slave PIO	Auto		
Secondary Master UDMA	Auto		
Secondary Slave UDMA	Auto		
USB Controller	Enabled		
USB 2.0 Controller	Enabled		
USB Keyboard Support	Disabled		
AC97 Audio	Auto		
Init Display First	AGP		
IDE HDD Block Mode	Enabled		
POWER ON Function	Any Key		
x KB Power ON Password	Enter		
x Hot Key Power ON	Ctrl-F1		
Onboard FDC Controller	Enabled		
Onboard Serial Port 1	Auto		
Onboard Serial Port 2	Auto		
UART Mode Select	Normal		
x UR2 Duplex Mode	Half		
Onboard Parallel Port	378/IRQ7		
Parallel Port Mode	SPP		
x ECP Mode Use DMA	3		
Game Port Address	201		
Midi Port Address	330		
Midi Port IRQ	10		

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

- On-Chip Primary/Secondary PCI IDE** The chipset contains a PCI IDE interface with support from two IDE channels. Select Enabled to activate the first and/or the second IDE interface. Select Disabled to inactivate an interface if you install a primary and/or second add-on IDE interface.
- IDE Primary Master / Slave PIO IDE Secondary Master / Slave PIO** Choose Auto or Mode 0~4. The BIOS will detect the HDD mode type automatically when you choose Auto. You need to set to a lower mode than Auto when your hard disk becomes unstable.
- IDE Primary Master / Slave UDMA IDE Secondary Master / Slave UDMA** Ultra DMA33/66/100 implementation is possible only if your IDE hard drive supports it, if the operating environment includes a DMA drive, and if your system software supports Ultra DMA33/66/100. Select "Auto" to enable BIOS support.
- USB Controller** Allows you to enable/disable the Onboard USB controller.
Choices: Disabled; Enabled
- USB 2.0 Controller** Allows you to enable/disable the Onboard USB 2.0 controller.
Choices: Disabled; Enabled
- USB Keyboard Support** Select Enabled if your system contains a Universal Serial Bus (USB) controller and you have a USB keyboard.
- AC'97 Audio** Select "Auto" to use the on-chip audio capability of your system. Most of the field do not appear when this field is "Disabled", for user who wants to use add-on sound card, this item must be disabled.
- Init Display First** Allows you to select the initial Graphics Adapter.
Choices: PCI Slot; AGP
- IDE HDD Block Mode** Block mode is also called block transfer, multiple commands, or multiple sector read/write. Select Enabled for automatic detection of the optimal number of block read/write per sector the drive can support.

POWER ON Function Allows you to set the way to boot up the system.
Choices: Password; Hot KEY; Mouse Move; Mouse Click; Any KEY; BUTTON ONLY(default); Keyboard 98

KB Power On Password If Keyboard Power-on function is set at "Password", this item shows up to allow you to type a password for the power-On function.
Choices: N/A; Password

Hot Key Power ON Allows you to set the hot key to boot up the system.

Onboard FDC Controller Select Enabled if your system has a floppy drive controller (FDC) installing in the system board and you want to use it. If you install add-in FDC or the system has no floppy drive, select Disabled in this field.

Onboard Serial Port 1 / Port 2 Select a logical COM port name and matching address for the first and second serial ports. Select an address and corresponding interrupt for the first and second serial ports.
Choices: Disabled; Auto;
3F8/IRQ4; 2F8/IRQ3;
3E8/IRQ4; 2E8/IRQ3

UART Mode Select The serial port 2 on your system may offer a variety of infrared port modes. Click here for a description of various modes.
The choices: Normal; IrDA; ASKIR; SCR

UR2 Duplex Mode This options controls the operating mode between receiving and transmitting of IrDA or ASKIR. The operating mode will be synchronous bi-directional transmission and reception when Full mode is selected. Nevertheless, the operating mode will be asynchronous bi-directional transmission and reception when Half mode is selected.
Choices: Half; Full

Onboard Parallel Port This item allows you to determine onboard parallel port controller I/O address setting.
Choices: 378H/IRQ7; 278H/IRQ5; 3BC/IRQ7; Disabled

Parallel Port Mode Select an operating mode for the on-board parallel (printer) port. Select Normal, Compatible, or SPP unless you are sure your hardware and software both support one of the other available modes.
Choices: SPP; EPP; ECP; ECP+EPP;

ECP mode Use DMA Select a DMA channel for the port when you choose ECP or ECP+EPP mode for the Parallel Port Mode.
Choices: 1; 3

Game Port Address This item allows you to select the Game Port Address.
The choices: Disabled, 201, 209

Midi Port Address Allows you to configure the onboard Midi port address.
The choices: Disabled, 330, 300

Midi Port IRQ This item allows you to select the Midi Port IRQ.
The choices: 5, 10

4-6.6 Power Management Setup

Power Management Setup allows you to set the system's power saving functions.

Run the Power Management Setup as follows:

Choose "Power Management Setup" from the Main Menu and a list of options will appear:

Phoenix - AwardBIOS CMOS Setup Utility Power Management Setup

ACPI function	Enabled	Item Help
ACPI Suspend Type	S1(POS)	
Power Management	User Define	
Video Off Method	V/H SYNC+Blank	
Video Off In Suspend	Yes	
Suspend Type	Stop Grant	
MODEM Use IRQ	3	
Suspend Mode	Disabled	
HDD Power Down	Disabled	
Soft-off by PWRBTN	Instant-off	
AC Loss Auto Restart	Off	
Wake-Up by PCI card	Disabled	
Power On by Ring	Disabled	
Wake Up On LAN	Disabled	
Resume by Alarm	Disabled	
x Date(of Month) Alarm	0	
x Time(hh:mm:ss) Alarm	0: 0: 0	
** Reloa 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	

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

ACPI Function Select Enabled(default) only if your computer's operating system supports the Advanced Configuration and Power Interface (ACPI) specification. Currently, Windows 98SE/ME, Windows 2000 and Windows XP supports ACPI.

ACPI Suspend Type This item allows you to select the ACPI Suspend type. You can select S3(STR) for Suspending To RAM if your system supports this mode. Or you can select S1(POS) for Power On Suspend under ACPI mode.

Choices: S1(POS); S3(STR)(Optional);

- Power Management Option** This option allows you to select the type (or degree) of power saving for Doze, Standby, and Suspend modes. Choices:
- User Define: To set the Suspend mode time by user.
- Max Saving: Maximum power savings. Inactivity period is 1 minute in each mode.
- Min Saving: Minimum power savings. Inactivity period is 1 hour in each mode (except the hard drive).
- Video Off Method** This determines the manner by which the monitor is blanked.
- V/H SYNC+Blank: To turn off the vertical and horizontal synchronization ports and write blanks to the video buffer.
- Blank Screen: To write blanks to the video buffer.
- DPMS Support: Select this option if your monitor supports the Display Power Management Signaling (DPMS) standard of the Video Electronics Standards to select video power management values.
- Video Off In Suspend** When enabled, this feature allows the VGA adapter to operate in a power saving mode.
- Yes: Monitor will remain on during power saving modes.
- No: Monitor blanked when the system enters the suspend mode.
- Suspend Type** Allows you to set the suspend type.
- Choices: Stop Grant; PwrOn Suspend
- MODEM Use IRQ** Name the interrupt request (IRQ) line assigned to the modem (if any) on your system. Activity of the selected IRQ always awakens the system.
- The choices: 3; 4; 5; 7; 9; 10; 11; NA.
- Suspend Mode** Allows you to set a suspend time for HDD inactivity.
- HDD Power Down** When enabled and after the set time of system inactivity, the hard disk drive will be powered down while all other devices remain active.

- Soft-Off by PBTN** When Enabled, turning the system off by pressing the on/off button places the system in a very low-power-usage state.
- AC Loss Auto Restart** Allows you to automatically restart from AC/Power Loss.
Choices: On; Off; Former-Sts
- Wake Up by PCI Card** This item allows system wake up by PCI Device.
- Power On by Ring** An input signal on the serial Ring Indicator (RI) Line (in other words, an incoming call on the modem) Awakens the system from a soft off state.
- Wake Up On LAN** Allows you to enable / disable the Wake up on Lan function.
- Resume by Alarm** When Enabled, you can set the data and time at which the RTC (Real Time Clock) alarm awakens the system from suspend mode.
- Date (of Month) Alarm** Set a certain date when RTC Alarm Resume option is Enabled to awaken the system. This option is concurrent with Resume Time option.
- Time (hh:mm:ss) Alarm** Set a certain time when RTC Alarm Resume option is Enabled to awaken the system. This option is concurrent with Date option.

**** Reload Global Timer Events ****

Primary/Secondary IDE 0/1 When HDD is ON, any activity from one of the listed system peripheral devices wakes up the system.

FDD, COM, LPT Port When LPT & COM is ON, any activity from one of the listed system peripheral devices or IRQs wakes up the system.

PCI PIRQ[A-D]# When PCI PIRQ[A-D]# is ON, any activity from one of the listed system peripheral devices wakes up the system.

4-6.7 PnP / PCI Configurations

PnP/PCI Configurations allow you to modify the system's power saving functions.

Run the PnP/PCI Configuration as follows:

Choose "PnP/PCI Configuration" from the Main Menu and a screen with a list of options will appear:

Phoenix - AwardBIOS CMOS Setup Utility
PnP PCI Configurations

Reset Configuration Data	Disabled	Item Help
Resources Controlled by	Auto(ESCD)	
x IRQ Resources	Press Enter	
PCI/VGA Palette Snoop	Disabled	

↑↓←→ : 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 Normally, you leave this Disabled(default). 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 operating system cannot boot.

Resource Controlled The Plug and Play Award BIOS can automatically
By configure all the boot and Plug and Play compatible devices. If you select *Auto*(default), all the interrupt request (IRQ) and DMA assignment fields will not appear, as the BIOS automatically assigns them. If you select *Manual*, the IRQ Resources item will appear for your configuration (see below).

IRQ Resources Press Enter. Please refer to the list below:

Phoenix - AwardBIOS CMOS Setup Utility
IRQ Resources

IRQ-3 assigned to	PCI Device	Item Help
IRQ-4 assigned to	PCI Device	
IRQ-5 assigned to	PCI Device	
IRQ-7 assigned to	PCI Device	
IRQ-9 assigned to	PCI Device	
IRQ-10 assigned to	PCI Device	
IRQ-11 assigned to	PCI Device	
IRQ-12 assigned to	PCI Device	
IRQ-14 assigned to	PCI Device	
IRQ-15 assigned to	PCI Device	

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

PCI/VGA Palette Snoop This option allows the BIOS to preview VGA status, and to modify the information delivered from the feature Connector of the VGA card to MPEG card. This option can solve the display inversion to black after you have used a MPEG card.

4-6.8 SmartDoc Anti-Burn Shield

This section helps you to get more information about your system including CPU temperature, FAN speed and voltage. It is recommended that you contact your mainboard supplier to get proper values about the setting of the CPU temperature.

Run the "SmartDoc Anti-Burn Shield" as follows:

Choose "SmartDoc Anti-Burn Shield" from the Main Menu and a screen with a list of options will appear:

Phoenix - AwardBIOS CMOS Setup Utility SmartDoc Anti-Burn Shield

		Item Help
CPU Vcore	1.45V	
+1.5V	1.48V	
+3.3V	3.20V	
+5V	5.13V	
+12V	11.64V	
-12V	-10.96V	
+5VSB	5.08V	
Battery	3.10V	
CPU Internal Temp.	55°C	
CPU External Temp.	38°C	
SYSTEM Temp.	36°C	
CPU Fan Speed	3068 RPM	
SYStem Fan Speed	0 RPM	

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

CPU Vcore Shows actual CPU core actual voltage value.

+1.5V, +3.3V, +5V, +12V, -12V, +5VSB, Shows actual voltage value of all these default voltage value on board.

Voltage Battery

CPU Internal Temp. Shows current CPU temperature.

CPU External Temp. Shows current External CPU temperature.

System Temp. Shows current system temperature.

CPU/System Fan Speed These fields display the current speed of the CPU / System fan.

4-6.9 Frequency/Voltage Control

Run the “Frequency/Voltage Control” as following:

Choose “Frequency/Voltage Control” from the Main Menu and a screen with a list of options will appear:

Phoenix - AwardBIOS CMOS Setup Utility
Frequency/Voltage Control

Auto Detect PCI Clk	Enabled	Item Help
Spread Spectrum	Disabled	
CPU Clock	100MHz	
DIMM Voltage Select	2.5V	
AGP Voltage Select	1.5V	

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

Auto Detect PCI CLK To enable / disable the Auto-detect PCI clock function.

Spread Spectrum When the system clock generator pulses, the extreme values of the pulse generate excess EMI. Enabling pulse spectrum spread modulation changes the extreme values from spikes to flat curves, thus reducing EMI.

CPU Clock This items allows users to adjust CPU frequency.

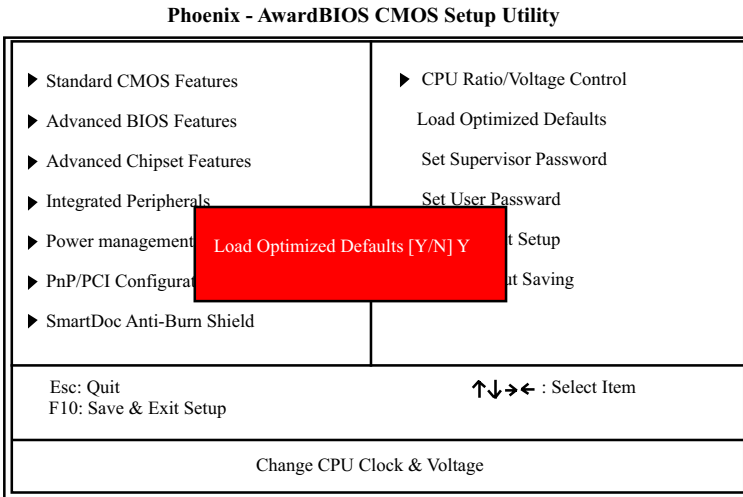
DIMM Voltage Select Allows you to configure the DIMM Voltage.
Choices: 2.5V; 2.6V; 2.7V; 2.8V

AGP Voltage Select Allows you to configure the AGP Voltage.
Choices: 1.5V; 1.6V; 1.7V; 1.8V

4-6.10 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 "



"Y" is for "Yes", and "N" is for "No".

Pressing "Y" loads the BIOS Optimized default values to restore the BIOS to its original status.

4-6.11 SET SUPERVISOR / USER PASSWORD

These two options allow you to set your system passwords. Normally, the supervisor has a higher priority to change the CMOS setup option than the users. The way to set up the passwords for both Supervisor and Users are as follows:

1. Choose "Change Password" in the Main Menu and press <Enter>. Then following message appears:

"Enter Password : "

2. The first time you run this option, enter your password up to 8 characters and press <Enter>. (The screen does not display the entered characters.)
3. After you enter the password, the following message appears prompting you to confirm the password:

"Confirm Password : "

4. Enter the same password "exactly" the same as you have just typed to confirm the password and press <Enter>.
5. Move the cursor to Save & Exit Setup to save the password.
6. If you need to delete the password entered before, choose the Supervisor Password and press <Enter>. It will delete the password that you have entered before.
7. Move the cursor to Save & Exit Setup to save the option you have just configured; otherwise the old password will still be there the next time you turn your system on.
8. Press <Enter> to exit to the Main Menu.

NOTE: If you forget or lose the password, the only way to access the system is to clear the CMOS RAM. All setup information will be lost and you need to run the BIOS setup program again.

4-6.12 SAVE & EXIT SETUP

SAVE & EXIT SETUP allows you to save all modifications you have specified into the CMOS memory. Highlight this option on the Main Menu and the following message appears:

"SAVE to CMOS and EXIT (Y/N) ? Y "

"Y" is for "Yes", and "N" is for "No".

Press <Enter> key to save the configuration changes.

4-6.13 EXIT WITHOUT SAVING

EXIT WITHOUT SAVING option allows you to exit the Setup Utility without saving the modifications that you have specified. Highlight this option on the Main Menu and the following message appears:

"Quit Without Saving (Y/N) ? N "

"Y" is for "Yes", and "N" is for "No".

You may change the prompt to "Y" and press <Enter> key to leave this option .