Contents

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 848P. The Intel P4 processor is a rapid execution engine providing 800/533/400MHz system bus, while North Bridge Intel 848P is a high performance integrated chipset providing DDR 400/333/266 SDRAM memory interface, Hub interface as well as AGP interface.

Integrated with 848P, South Bridge Intel ICH5 supports the LPC I/O, upstream Hub interface, PCI interface, IDE interface, Serial ATA 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
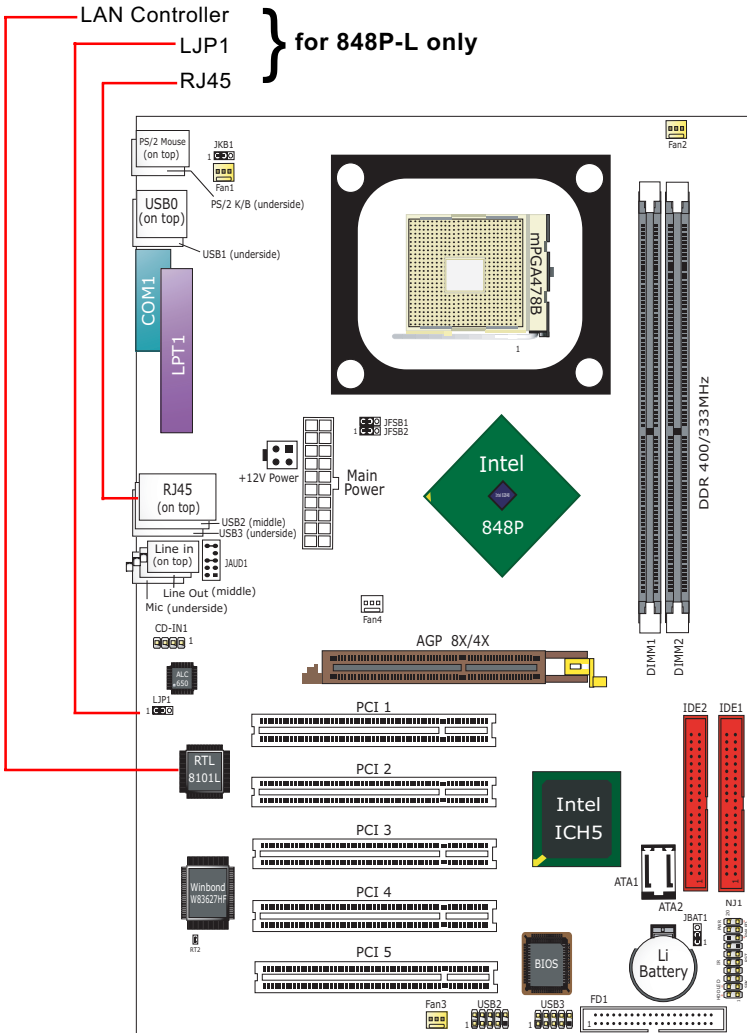
1-2 Mainboard Specifications

1-2.1 CPU Socket

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

> -- 800/533/400MHz 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 848P:

• A high performance integrated chipset providing processor interface (including Hyper-Threading Technology), DDR 400/333/266 SDRAM memory interface, Hub interface, AGP interface.
• Showing Hyper-Threading Logo when booting with a Hyper-threading CPU.

South Bridge Intel ICH5:

• Supporting the LPC I/O, upstream Hub interface, PCI interface, IDE interface, Serial ATA 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 :

• Supporting unregistered, non-ECC DDR 400/333/266 SDRAM up to 2GBs
• SPD (Serial Presence Detect) Scheme for DIMM Detection supported

1-2.4 AMI BIOS

Flash Memory for easy upgrade, Year 2000 compliant, and supporting various hardware configuration during booting system (See Chapter 4 BIOS Setup):

• Standard BIOS Features(Times, Date, System Information etc.)
• Advanced BIOS Features (CPU, IDE, Floppy, Super I/O, Hardware Health, ACPI, USB, and Frequency/Voltage Control)
• Advanced Chipset Features (NorthBridge, SouthBridge Configuration)
• PCI/PNP Resource Management (IRQ Settings, Latency Timers etc.)
• Boot Configuration Setup (Boot Settings, Boot Device Priority etc.)
• BIOS Security Features (Supervisor Password, User Password)

1-2.5 Accelerated Graphics Port (AGP) Interface

AGP Controller embedded on board, supporting:

• 1.5V (4x/8x) power mode only
• 8x 66MHz AD and SBA signalling, AGP pipelined split-transection longburst transfers up to 2GB/sec
• AGP 8X/4X supported, AGP V3.0 compliant

1-2.6 Advanced System Power Management

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

1-2.7 Multi-I/O Functions :

- Serial ATA Controller integrated in ICH5, supporting:
  - -- 2x Serial ATA connectors supporting up to 150MByte/s transfer rate
- 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 Windows 2000 or later operating system (no support for Windows 9X/ME)
  - -- 4 built-in USB connectors and 2 USB Headers which require 2 additional USB cables to provide 4 more optional USB ports
- PS/2 Keyboard and PS/2 Mouse
- UARTs (Universal Asynchronous Receiver / Transmitter):
  - -- One serial port (COM1) on board

1-2.8 LAN on board (for 848P-L only)

PCI local bus single-chip Fast Ethernet Controller RTL8101L 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.

1-2.9 Hardware Monitor on board

• Hardware Monitor supported by W83627HF, 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.

1-2.10 AC'97 Audio Codec on board

AC'97 Audio Codec 2.2 compliant on board
• Supporting 6-channel display 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.

1-2.11 Form Factor

• ATX Form Factor, ATX Power Supply, version 2.03 compliant, supported by one Main Power Connector, one +12V Power Connector.
• Mainboard size: 305mm x 210mm

1-3 Mainboard Specification Table

848P/848P-L Specifications and Features	
CPU	Socket 478B for P4 CPU(HT CPU included)
North Bridge	Intel 848P, supporting 800/533/400MHz FSB
South Bridge	Intel ICH5
BIOS	AMI BIOS
Memory	Supporting DDR 400/333/266 SDRAM, up to 2GB in 2 DIMM slots
I/O Chip	W83627HF, with Hardware Monitor
AGP interface	AGP8X/4X Mode only; 1 AGP Slot on board
Audio	AC'97 Audio 2.2 compliant, 6 channel audio
IDE Interface	2 UATA 66/100 IDE ports
SATA Interface	1 Serial ATA connector
PCI Slots	5 PCI Master slots on board
I/O Connectors	8 USB V2.0, 1 FDD port, 1 COM port, 1 LPT, 1 IrDA, 1 PS/2 K/B, 1 PS/2 Mouse
Networking	LAN Controller RTL8101L and Connector RJ45 (for 848P-L only)
Other optional feature	Keyboard/Mouse Wake Up

Optional Features ╲ Models	848P	848P-L
LAN Controller on board	No	Yes

Chapter 2 Hardware Setup

2-1 CPU and CPU Fan Installation with Socket 478B

2-1.1 CPU Installation with Socket 478B

(1) Pentium 4 CPU
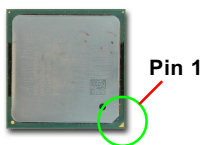
(2) Pull up the lever and insert P4 CPU into socket 478

Pin 1

Pin 1
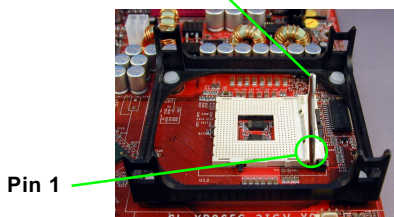
(3) Pull down the lever to fix down CPU
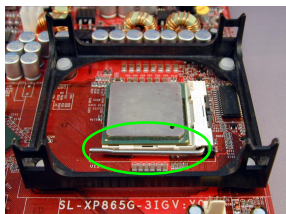
(4) Load down the P4 CPU Fan into Fan base
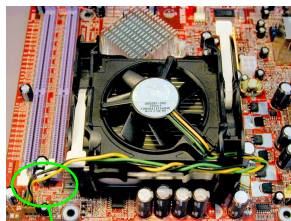
Connect Fan Power cable to onboard FAN connector

2-1.2 Hyper-threading CPU supported by Win XP

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 Windows XP, the O/S will enable the dual-in-one CPU function.)
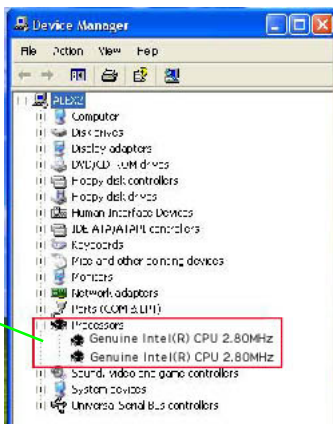
2-2 Memory Installation

2-2.1 To Install DDR SDRAM Module

• Make sure to unplug your power supply before adding or removing memory module.

• Pay attention to the orientation of the DIMM slots.

• This mainboard supports up to 2GB unbuffered DDR 400/333/266 SDRAM, 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 SDRAM vertically into the 184-pin slot with the notch-to-rib matching.

184-Pin DIMM Notch Key Definition
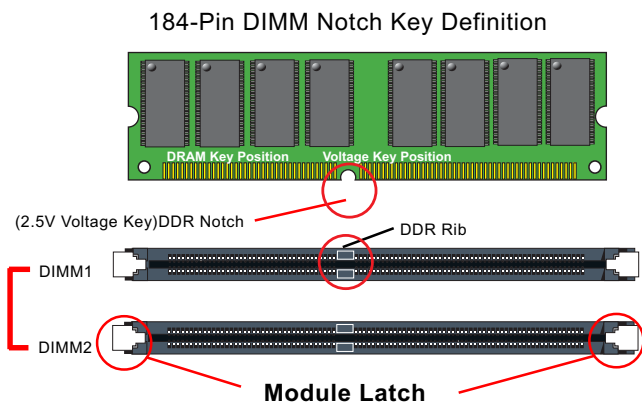
2-3 AGP 8X/4X Slot Installation

The AGP slot on board supports 1.5V AGP 8X/4X card only. A Rib is specifically added to the 8X/4X slot so as to match the AGP 8X/4X card. To insert a 3.3V AGP 2X card into the AGP 4X slot will damage the system chip and burn the 1.5V circuitry.

An AGP 8X card will support a data transfer rate up to 2GB/sec, while an AGP 4X card will provide 1GB/sec transfer rate.

2-4 IDE Connectors 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 hard disk. 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.

AGP Slot for AGP 8X/4X card

IDE2

IDE1

Hard Disk Drive Connector
Orient the red line on the IDE Flat Cable to Pin1.

Pin 1 (to Red Line)

Gray connector
(To Slave device)

80-conductor cable

Black connector
(To Master Device)

Red line

Blue connector
(To Mainboard)

IDE Flat Cable

15
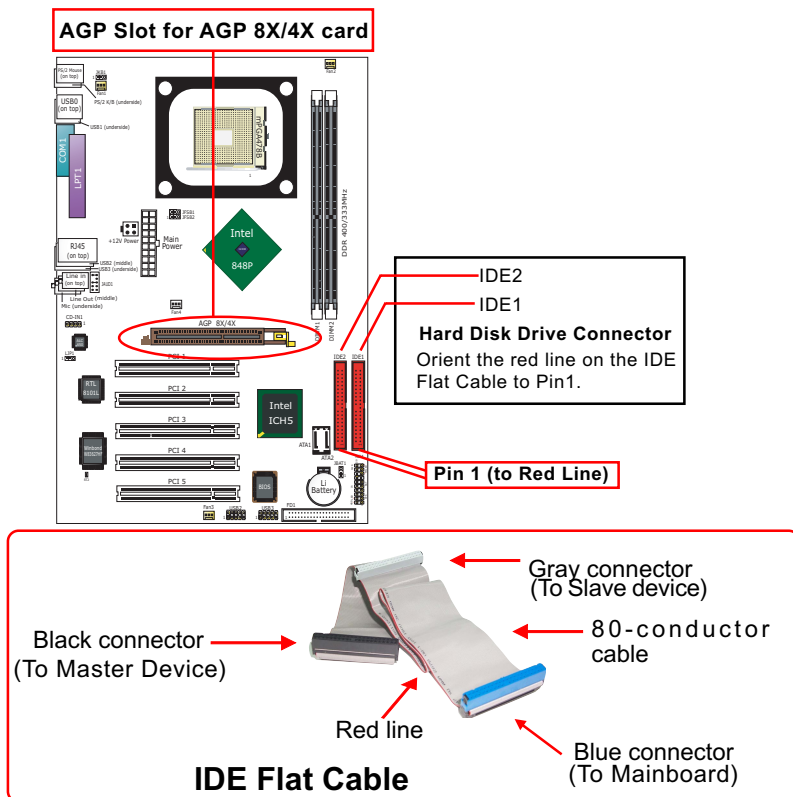
2-5 Floppy Drive Connector Installation

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.

Signal Swap End   To 2nd Floppy Drive

Red line

To 1st Floppy Drive   To Mainboard

FDD Cable
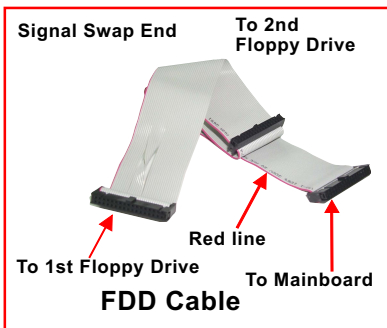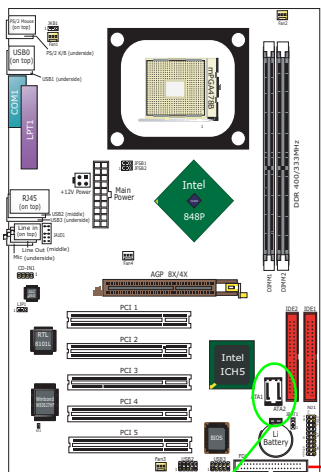
Floppy Drive Connector:

Orient the red line of the Floppy Flat Cable to Pin1.

ATA1 ATA2

Serial ATA Connectors

Serial ATA Cable

To Power Supply

SATA Power Connector

Serial ATA Hard Disk

Serial ATA Power Cable (optional)
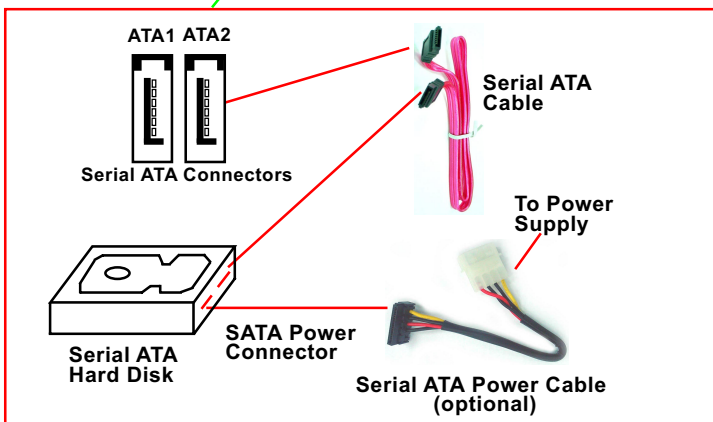
2-6 Serial ATA Connectors Setup

The Serial ATA interface improves the Parallel ATA with the capability of Hot Plug and offers a data bandwidth of 150Mbytes/second. It also reduces voltage and pin count.

2 Serial ATA connectors are built on board, supported by the ICH5 for SATA Hard Disk Drives setup.

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2-7 ATX V2.03 Power Supply Installation

+12V Power connector

+12V		GND
3	○ ○	1
4	○ ○	2
+12V		GND

+12V	□□	+5V
5SB	□□	+5V
PWR OK	□□	-5V
GND	□□	GND
+5V	□□	GND
GND	□□	GND
+5V	□□	PS ON#
GND	□□	GND
+3.3V	□□	-12V
+3.3V	□□	+3.3V

Pin1   Pin11
Main Power Connector
(20-pin)
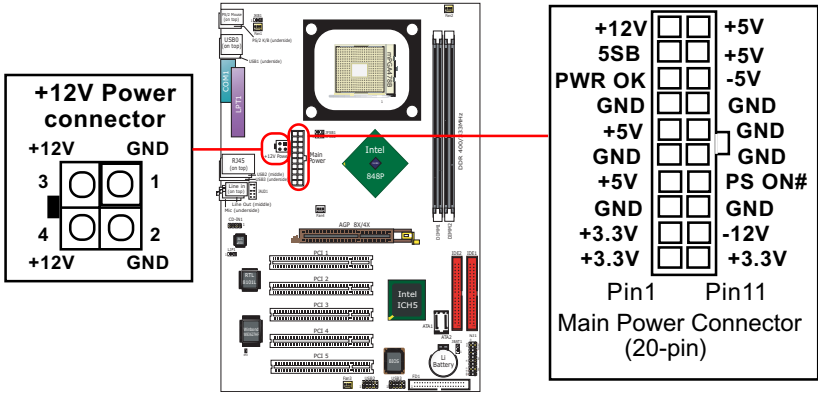
1. ATX V2.03 compliant Power Supply is needed for this mainboard to support both the Main Power Connector and the +12V Power Connector.
2. This ATX Power Supply should be able to provide at least 720mA/ +5V standby power for Wake On Lan function.

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

2-8 On Board Fan Connectors

Sensor
+12V
GND
Sensor Conn.

Void
+12V
GND
No Sensor

▦	**Fan Connector** Fan2, yellow, sensor
▦	**Fan Connector** Fan1, yellow, sensor
▦	**Fan Connector** Fan4, white, no sensor
▦	**Fan Connector** Fan3, yellow, sensor
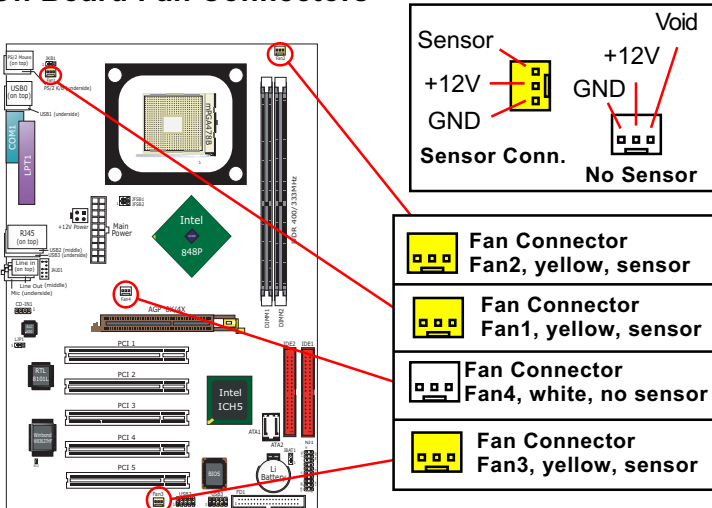
2-9 Jumper Settings

The following diagrams show the locations and settings of jumper blocks on the mainboard.
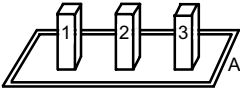
JKB1: Keyboard / Mouse Wake Up	
1	**1-2 closed** (default) Disabled
1	**2-3 closed** Enabled

JFSB1&JFSB2: CPU Frequency Select			
(default) **CPU Auto- Detection**	**100MHz** (FSB400)	**133MHz** (FSB533)	**200MHz** (FSB800)
JFSB1 1 1 JFSB2	JFSB1 1 1 JFSB2	JFSB1 1 1 JFSB2	JFSB1 1 1 JFSB2

LJP1 LAN Controller Select	
1	1-2 closed (default) LAN controller Enabled
1	2-3 closed LAN controller Disabled
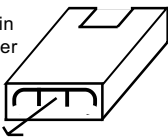
JBAT1 Clear CMOS	
1	**1-2 closed (default)** To hold data
1	**2-3 closed** To clear CMOS

How to tackle the Jumpers:

A 3-pin Jumper

If a pin-header (of 2 or more pins) is designed in such a way that its pins can be closed or linked together to set up a specific function, this header is called a jumper in this manual.

A 2-pin Jumper Cap

The conductor inside the cap links two header-pins together.

• 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

Jumper with Pin 2-3 closed   **Jumper with all pins opened**   **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.

2-9.1 JFSB1 & JFSB2: CPU Frequency Select

JFSB1 and JFSB2 are designed on board for CPU frequency select.

1. Setting JFSB1 1-2 closed and JFSB2 to 1-2 closed will allow CPU on board to Auto Detect its own frequency and apply it to the System Bus.
2. Setting JFSB1 2-3 closed and JFSB2 2-3 closed is for 100 MHz CPU.
3. Setting JFSB1 opened and JFSB2 2-3 closed is for 133 MHz CPU.
4. Setting JFSB1 2-3 closed and JFSB2 opened is to select a CPU clock at 200 MHz for your CPU. If 200MHz is an overclock for your CPU, it may or may not boot your system. If an overclok fails to boot system, you should restore the default setting and then clear CMOS to reboot your system. (See Clear CMOS in next paragraph.)

JFSB1&JFSB2: CPU Frequency Select			
(default) CPU Auto-Detection	100MHz (FSB400)	133MHz (FSB533)	200MHz (FSB800)
JFSB1	JFSB1	JFSB1	JFSB1
JFSB2	JFSB2	JFSB2	JFSB2

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" of Advanced BIOS Features, and 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 .

2-9.2 JBAT1: Clear CMOS

When you have problem 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.

JBAT1 Clear CMOS
1-2 closed (default) To hold data
2-3 closed To clear CMOS
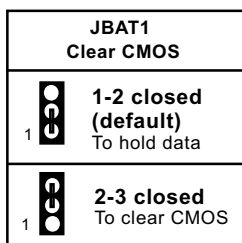
2-9.3 LJP1: LAN Controller Select (for 848P-L only)

LJP1 is a 3-pin jumper for enabling or disabling the on-board LAN Controller. User can set LJP1 1-2 closed to enable the on-board LAN Controller so as to set up the LAN driver, or set LJP1 2-3 closed to disable the on-board LAN Controller. Whether LJP1 is enabled or not, it is still free for user to add an add-on PCI LAN card for networking.

LJP1 LAN Controller Select
1-2 closed (default) LAN controller Enabled
2-3 closed LAN controller Disabled

2-9.4 JKB1: Keyboard / Mouse Wake Up

JKB1 is designed on board as a jumper to enable/disable the PS/2 keyboard/ mouse Wake Up from suspend mode. USB keyboard/mouse Wake Up function is not supported on this mainboard.

JKB1: Keyboard / Mouse Wake Up
1-2 closed (default) Disabled
2-3 closed Enabled

2-10 Other connectors setup

2-10.1 Chassis Panel Connectors
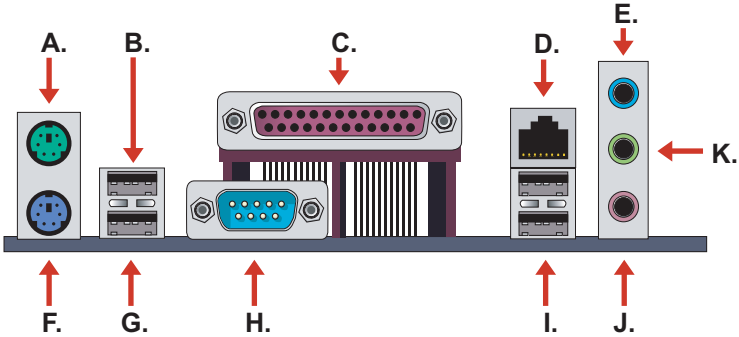
A : PS/2 Mouse	**G : USB 0 (underside)**
B : USB 1 (on top)	**H : COM1 Connector**
C : LPT1 Port	**I : USB 2 (middle)**
D : RJ45 (848P-L only)	**USB 3 (underside)**
E : Line in/	**J : Microphone Input /**
Rear Speaker Out	**Center Subwoofer Out**
F : PS/2 Keyboard	**K : Line Out /**
	Front Speaker Out

2-10.2 LAN Connector (for 848P-L Only)

One RJ45 connector is on board for network connection.

Yellow LED "On" to indicate Network hub is in connection with the system.
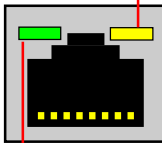
Green LED blinks to indicate that data transmission is undergoing in 10/100 Base T mode.
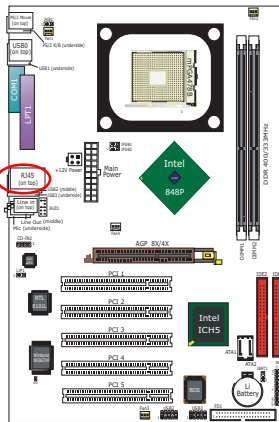
2-10.3 CD-ROM Audio Connectors

CD-IN1 is an audio connector connecting CD-ROM audio to mainboard.

2-10.4 External Audio Connector

This Mainboard is designed with an External Audio connector "JAUD1" which provides connection to your chassis.
1. When JAUD1 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 JAUD1 and connect it to your chassis.

2-10.5 Thermal Detector

Detector RT2: A thermal detector is mounted by default to connector RT2 so as to detect the temperature of the system. What RT2 does is to transmit the thermal signal to Hardware Monitor.

JAUD1: External Audio Connector

Pin 10 RET L		Pin 9 FPOUT L
Pin 6 RET R		Pin 7 (Key)
Pin 4 Aud Vcc		Pin 5 FPOUT R
Pin 2 Aud GND		Pin 3 Mic VREF
		Pin 1 Mic In

<u>CD-ROM Audio Pin Assignment</u>

CD-IN1	Pin 1	Pin 2	Pin 3	Pin 4
1	Left Channel	GND	GND	Right Channel

Thermal Resistor RT2

RT2

RT2 is mounted with Thermal Resistor by default for detecting system temperature.
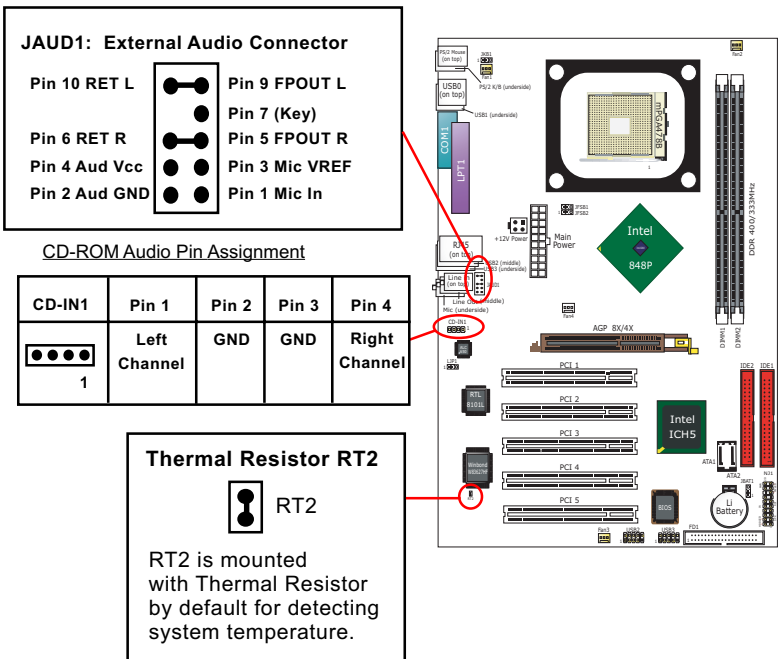
2-10.6 Complex Pin-header (Front Panel Connector)

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

(1)Power Switch	PWRBT#	PLED-	
	PWRBT	NC	Power LED (4)
		PLED+	
	IR_VCC		
(2)Infrared(IR)	NC	RSTGND	Reset Switch(5)
	IRRX	RST1	
	IRGND	SP1	
	IRTX	NC	Speaker (6)
(3)HDD LED	HDLED-	SP3	
	HDLED+	SPVCC	

To Case Front Panel
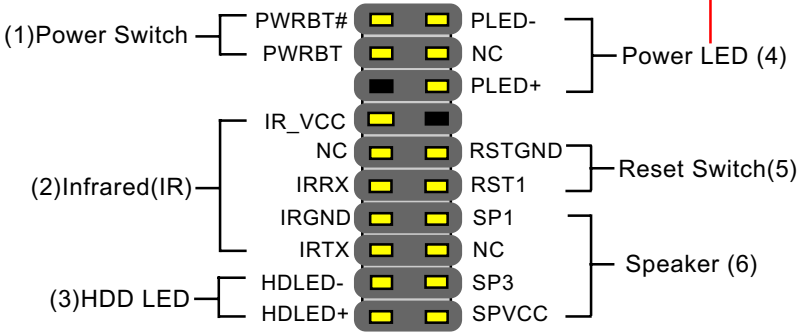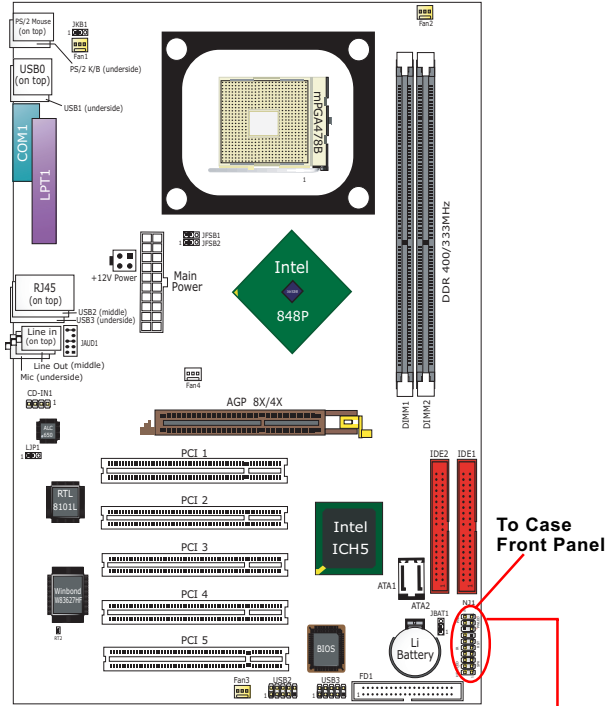
2-10.7 USB Ports and USB Pin-headers

This series provides 4 USB ports on board supporting various USB devices. In addition, 2 USB pin-headers are added on board to provide expansion of 4 more optional USB ports by using 2 additional USB cables. Users can order the optional USB cables from your mainboard dealer or vendor.

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

All 8 USB ports are compliant with 1.1 / 2.0 USB Bus. USB 2.0 supports Windows 2000 and up (no support for Windows 9X/ME). Please see Chapter 3 for USB2.0 Installation.

USB connectors

USB Cable (Optional)

USB Port

Red wire

Header USB2 for USB4/5 ports   **Header USB3 for USB6/7 ports**

First USB Port Wiring for Front USB

Red	White	Green	black	
+5V	D1-	D1+	GND	

USB Header Pin Assignment

+5V	D2-	D2+	GND	
Red	White	Green	black	

Second USB Port Wiring for Front USB
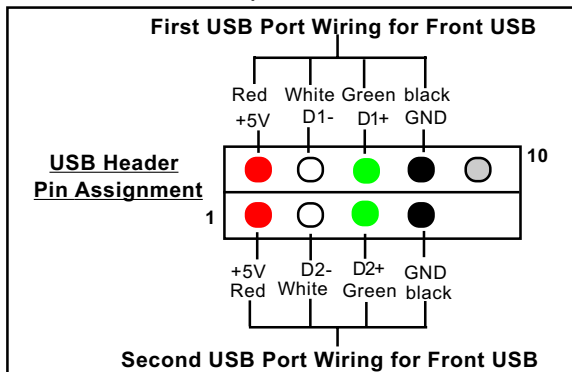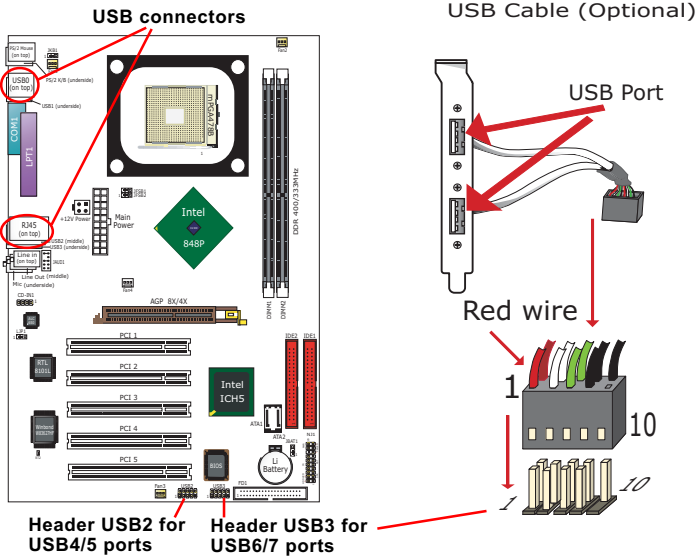
Chapter 3 Software Setup

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.

    3-1 To Open up the Support CD
    3-2 To Install Intel Chipset Software Installation Utility
    3-3 To Install AC'97 Audio Drivers
    3-4 To Install Hardware Monitor Utility
    3-5 To Install LAN Drivers (for 86SPE2-L only)
    3-6 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 automatic-ally 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 recommand that drivers installation should be started from top to bottom of main menu.

4. Drivers may be updated from time to time in our web site. If you are installing a newer driver than the one illustrated in this chapter, please be aware that the illustration pictures might be different.

3-2 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.
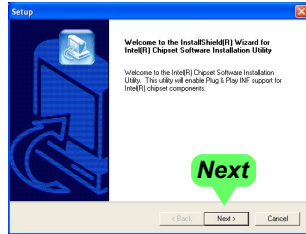
3. In a few seconds, the setup
process is finished,. Please
restart your computer by
clicking on "Finish" so as to
take the Utility into effect.
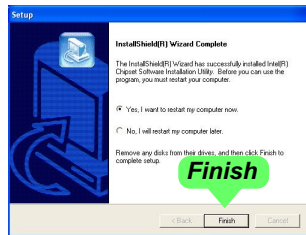
3-3 AC'97 Audio Driver Installation

3-3.1 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"".
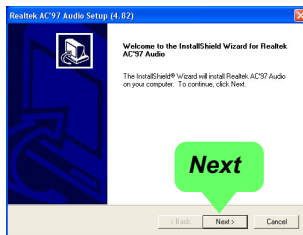
3. In a few seconds, the setup
process is finished, please
check the radial button "Yes, I
want to restart my computer
now." And click "Finish" to
restart your system.
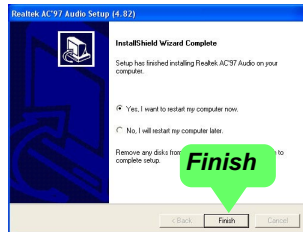
3-3.2 Verify 6-channel Audio

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:

Pale Blue Connector to Rear Speaker

Pale Green Connector to Front Speaker

Pale Pink Connector to Center/Subwoofer Speaker
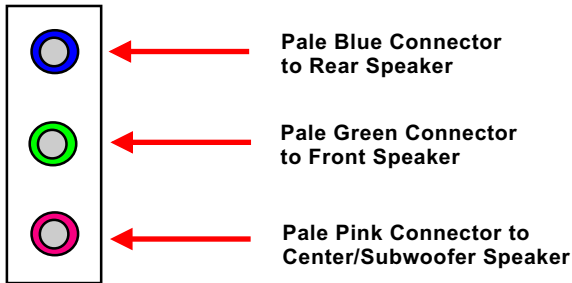
2. After Connection is done, start your Windows system and double click the Avance Sound Effect manager icon to enter 6-channel configuration:

Sound Effect Manager icon on Windows XP

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3. The AC'97 Audio Configuration" screen will pop out. Clikc the "Speaker Configuration" bar with your mouse.
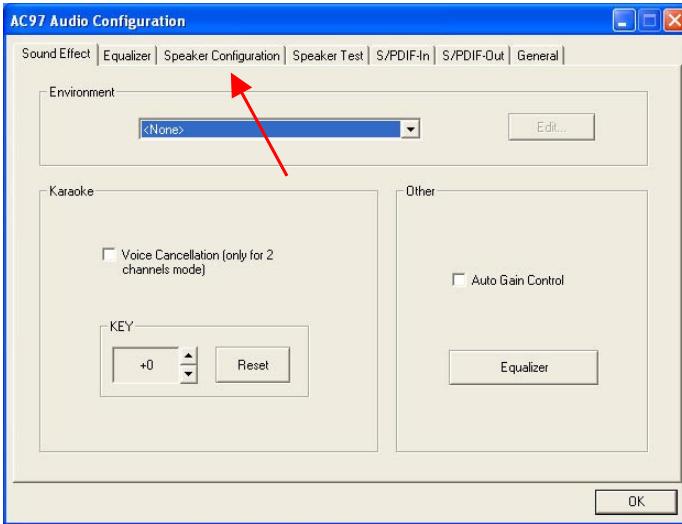
4. Instantly, the "Speaker Configuration" screen will pop out. Pick the items "6-channel mode for 5.1 speakers output" and " Synchronize the phonejack switch with the speakers settings" and then click "OK" to finish configuration.
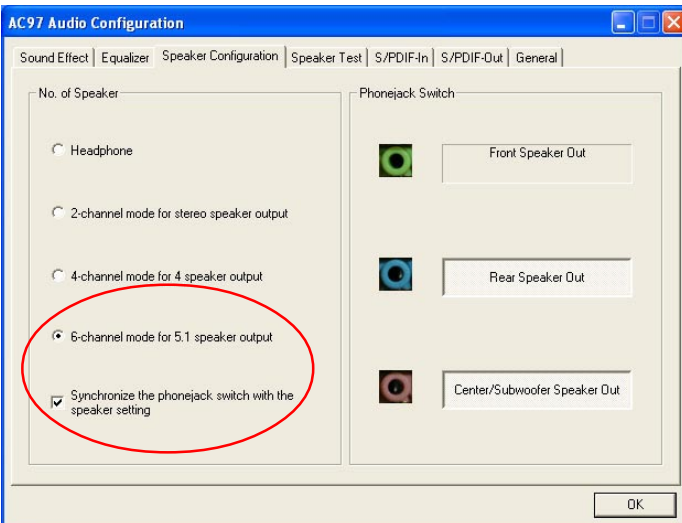
3-4 To Install LAN Drivers (for 848P-L only)

3-4.1 RTL8101L/VIA6107 LAN driver on Win 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 RTL8101L 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.

3-4.2 RTL8101L / VIA 6107 LAN driver on Windows 9X

The LAN driver contained in the Support CD is included in the Autorun Menu. To install RTL8101L LAN driver on Windows 9X, please click on the "Onboard LAN Driver" bar and start autorun installation.
The InstallShield Wizard will pop out to guide you through the whole setup in a few seconds.

3-5 To Install Hardware Monitor Utility

3-5.1 Installation

Hardware Monitor is built on this mainboard. Its installation is pro-
grammed 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.
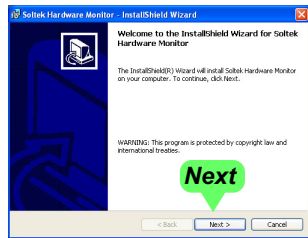
3. The **InstallShield Wizard**
   screen will show the current
   setting, please click the
   "Install" button to continue.

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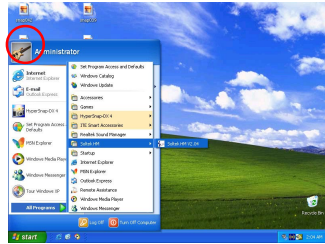
2. Then the pop-up screen will show all information about CPU
   Temperature, Fan Speed and various Voltages.

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.

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.

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3-6 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. <u>For archieving Intel USB 2.0 support, users should install the latest Service Pack for Windows 2000 or Windows XP. (intel USB 2.0 does not support Windows 9X/ME.)</u>

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.
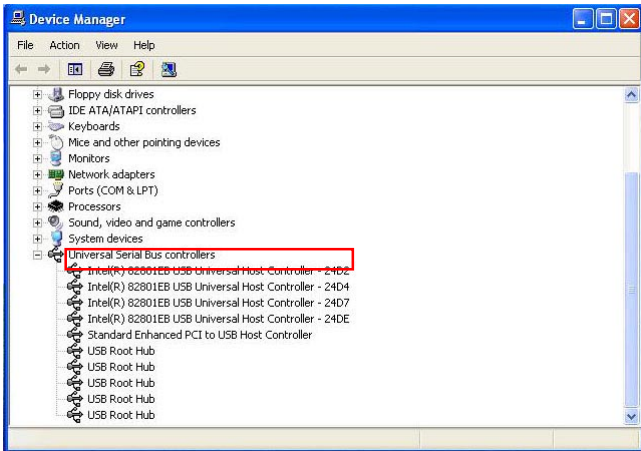
Chapter 4 AMI BIOS Setup

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 Update 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:

       DEL: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 check and configure the BIOS Setup for the new start.

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 Update BIOS

- System BIOS is incorporated into a Flash memory component. Flash BIOS allows user to update BIOS without replacing an EPROM component.
- The Update BIOS Utility "AMIflash.EXE" is a Flash EPROM Programming utility that can be loaded on a floppy diskette or a hard disk drive for updating BIOS.

- Normally, to update BIOS is unnecessary if the system is working fine. Users should only update BIOS when incompatible problems are encountered or new features have to be added to system.

- AMIflash.exe only works in *DOS environment. It can not be executed in Windows 95/98, ME, NT, 2000 or Windows XP environment.*

• Please follow the steps below for updating the system BIOS:

Step 1. Please visit the board maker's website, download the zip files of the latest BIOS and AMI flash utility "**amiflash.exe**" for your mainboard. After unzipping, the BIOS file format will be *.ROM, of which " * " stands for the specific BIOS file name.

Step 2. Create a bootable diskette. Then copy the BIOS file and AMI flash utility "**amiflash.exe**" into the diskette.

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

Step 4. Under " A " prompt, type **" amiflash *.ROM "** and then press <Enter> to run BIOS update program. (*.ROM depends on your mainboard model and version code. Instead of typing "*", you should type the specific file name for your specific mainboard). For example, you may type "amiflash MP005.rom ".

Step 5. When the message "Flash ROM Update Completed - Pass." appears, please restart your system.

Step 6. You will see a message "CMOS Memory Size Wrong" during booting the system. Press <Del> or <F1> to run CMOS setup utility, then reload "Load Failsafe Defaults" or **"Load Optimal Defaults"** and save this change.

4-6 BIOS SETUP --- CMOS Setup Utility

4-6.1 CMOS Setup Utility

This mainboard comes with the AMI BIOS from American Megatrends Inc. Enter the CMOS Setup Utility Main Menu by:

1. Turn on or reboot your system. After a series of diagnostic checks, the following message will appear:

PRESS <Del> TO RUN SETUP

2. Press the <Del> key and the main program screen will appear as follows.

CMOS Setup Utility - Copyright (C) 1985-2004, American Megatrends, Inc.

▶ Standard BIOS Features   ▶ BIOS Security Features
▶ Advanced BIOS Features   ▶ Load Optimal Defaults
▶ Advanced Chipset Features   ▶ Discard Changes
▶ PCI/PNP Resource Management   ▶ Save Changes and Exit
▶ Boot Configuration Features   ▶ Discard Changes and Exit

↑↓←→ : Move   Enter : Select   +/- : Values   F10: Save   Esc: Exit   F1: General Help
     F7 : Previous Values   F8 : Fail-Safe Defaults   F9: Optimize Defaults

Configure Time and Date.   Display System Information ...

3. 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.
4. You may return to the Main Menu anytime by pressing <Esc>.
5. In the Main Menu, "Save Changes and Exit" saves your changes and reboots the system, and "Discard Changes and Exit" ignores your changes and exits the program.

6. In entering the Main option of the Main Menu, please use the functions in the Function List to configure the setting:

↑↓←→ : Move   Enter : Select   +/- : Values   F10: Save   Esc: Exit   F1: General Help
         F7 : Previous Values   F8 : Fail-Safe Defaults   F9: Optimized Defaults

Use [Enter], [Tab] or [Shift-Tab] to select a field.
Use [+] or [-] to choose the options.

<F1>: "General Help" provides explanations of the hot-key functions available.
<F7>: "Previous values" allows user to discard previous values or not.
<F8>: "Fail-safe defaults" allows user to load Fail-safe Defaults or not. Save and Exit Setup.
<F9>: "Optimized Defaults" alows user to load Optimal Defaults or not.

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 BIOS Features

"Standard BIOS Features" allows users to configure Time and Date. This menu also displays system information.

Run the Standard BIOS Features as follows:
Choose "Standard BIOS Features" from the Main Menu and press <Enter>. The following screen will appear:

CMOS Setup Utility - Copyright (C) 1985-2002, American Megatrends, Inc.
Standard BIOS Features

System Overview	Help Item
AMIBIOS Version : 08.00.09 Build Date : 12/03/03 ID : 1ABRQ011 **Processor** Type : Intel(R) Pentium(R) 4 CPU 1500MHz Speed : 1500MHz Count : 1 **System Memory** Size : 256MB **System Time** **00 : 19 : 29** **System Date** **Fri 13/02/2004**	Use [Enter], [Tab] or [Shift-Tab] to select a field. Use [+] or [-] to configure system Time.

↑↓←→ : Move   Enter : Select   +/- : Values   F10: Save   Esc: Exit   F1: General Help
F7 : Previous Values   F8 : Fail-Safe Defaults   F9: Optimized Defaults

AMIBIOS/Processor/ System memory These three items only show the respective current statuses. They cannot be changed in the BIOS Setup.

System Time The BIOS shows the time of the day in the format: hh:mm:ss. Choose the field with the Arrow keys and change the time with the Page Up/Page Down +/- keys.

System Date The BIOS shows the date of the day in the format: mm:dd:yy :day of the Week. Choose the field with the Arrow keys and change the value with the Page Up/Page Down +/- keys.

4-6.3 Advanced BIOS Features

Advanced BIOS Features allows user to configure HDD, Floppy, Serial Port, Parallel Port etc....
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:

CMOS Setup Utility - Copyright (C) 1985-2002, American Megatrends, Inc.
Advanced BIOS Features

Advanced Settings	Help Item
Warning: Setting wrong values in below sections may cause system to malfunction.	Configure CPU.
▶ CPU Configuration Press Enter ▶ IDE Configuration Press Enter ▶ Floppy Configuration Press Enter ▶ SuperIO Configuration Press Enter ▶ Hardware Health Configuration Press Enter ▶ ACPI Configuration Press Enter ▶ Clock Generator Configuration Press Enter ▶ USB Configuration Press Enter ▶ Voltage Control Press Enter ▶ Power Management Press Enter	

↑↓←→ : Move   Enter : Select   +/- : Values   F10: Save   Esc: Exit   F1: General Help
F7 : Previous Values   F8 : Fail-Safe Defaults   F9: Optimized Defaults

4-6.3.1 CPU Configuration: Press Enter to reveal submenu

CPU Configuration

Configure advanced CPU settings	Help Item

Manufacturer : Intel
Brand String : Intel(R) Pentium (R) 4 CPU 1500MHz
Frequency   : 1500MHz
FSB Speed   : 400MHz
 	
Cache L1   :8KB
Cache L2   :512KB
Cache L3   :0KB
 	
Ratio Status   : Unlocked(Max:19, Min:12)
Ratio Actual Value   : 16
  Ratio CMOS Setting   : 12
  VID CMOS Setting   : 62
 	
Max CPUID Value Limit :   Disabled
 	
Hyper Threading Technology   Enabled
	Sets the ratio between CPU core clock and the FSB Frequency.
	Note: If an invalid ratio is set in CMOS, then actual and setpoint values may differ.

Manufacturer	BIOS shows the current manufacturer of on-board CPU.
Brand String	BIOS shows the current brand of on-board CPU.
Frequency	BIOS shows the current on-board CPU frequency.
FSB Speed	BIOS shows the current Front Side Bus of the on-board CPU.
Cache L1/L2/L3	BIOS shows the actual CPU internal Level 1/2/3 cache size.
Ratio Status	BIOS shows the current ratio (multiplier) status of on-board CPU. For P4 CPUs, the ratio is usually locked.
Ratio Actual Value	BIOS shows the actual CPU ratio.
Ratio CMOS Setting	BIOS shows the CPU Ratio in CMOS. If an invalid ratio is set in CMOS, then actual and setpoint values may differ.
VID CMOS Setting	BIOS shows VID setting at which the processor is to run.
Max CPUID Value Limit	lkj
Hyper Threading Technology	BIOS shows the current status of Hyper Threading Technology. If a Hyper Threading CPU is running on board, this item will show "Enabled" status. If a Hyper-threading CPU is not on-board, this item shows "Disabled".

4-6.3.2 IDE Configuration: Press Enter to reveal submenu

IDE Configuration

IDE Configuration		Help Item
IDE Configuration	P/S-ATA (Auto)	
S-ATA Running Enhanced Mode	Yes	
P-ATA Channel Selection	Both	
S-ATA Ports Definition	P0-3rd./P1-4th	
▶ Primary IDE Master	Hard Disk	
▶ Primary IDE Slave	ATAPI CDROM	
▶ Secondary IDE Master	Not Detected	
▶ Secondary IDE Slave	Not Detected	
▶ Third IDE Master	Not Detected	
▶ Fourth IDE Master	Not Detected	
Hard Disk Write Protect	Disabled	
IDE Detect Time Out (Sec)	35	
ATA(PI) 80Pin Cable Detection	Host & Device	

4-6.3.2-1 IDE Configuration

IDE Configuration	Allows you to configurare IDE device mode. Choices: P/S-ATA(Auto): Parallel/Serial ATA combined mode; S-ATA Only: For S-ATA running on board only; P/S-ATA(Win98/Me): P/S-ATA on Win98/Me only Disabled: IDE Configuration disabled

IDE Configuration ——	Choosing "P/S-ATA(Auto)" to configure the following:
S-ATA Running En- **hanced Mode** **(Combined Mode** **Option)**	If P/S-ATA (Auto) is chosen, use this item to choose S-ATA Running Enhanced Mode. Choices: Yes : Choose from the following option: P-ATA (parallel ATA) Channel Selection: Choices: Primary; Secondary; Both S-ATA Ports Definition: Choices: P0-3rd./P1-4th; P0-4th./P1-3rd. No : Choose from the following options: P-ATA (parallel ATA) Channel Selection: Choices: Primary; Secondary; Both

IDE Configuration ——	Choosing "S-ATA Only" to configure the following:
S-ATA Ports Defini- **tion**	Allows you to assign the S-ATA port locations. Choices: P0-3rd./P1-4th.; P0-4th./P1-3rd.;

IDE Configuration ——	Choosing "P/S-ATA(Win98/Me)" to configure the following:
Combined Mode **Option**	Choices: P-ATA 1st Channel; S-ATA 1st Channel;
S-ATA Ports Defini- **tion**	Choices: P0-Master/P1-Slave; P0-Slave/P1-Master;

4-6.3.2-2 Primary/Secondary IDE Master/Slave and Third/Fourth IDE Master

▶ Primary IDE Master	Hard Disk
▶ Primary IDE Slave	ATAPI CDROM
▶ Secondary IDE Master	Not Detected
▶ Secondary IDE Slave	Not Detected
▶ Third IDE Master	Not Detected
▶ Fourth IDE Master	Not Detected

Primary/Secondary IDE Master/Slave   Press <Enter> To show the detected information of Primary / Secondary IDE Master/Slave device(s).

Third/Fourth IDE Master   Press <Enter> to show the detected information of third/fourth IDE Master device(s).

If any IDE device is detected in any one of the above items press <Enter> to reveal the IDE information:

Primary/(Secondary/Third/Fourth) IDE Master/(Slave)

Primary/(Secondary/Third/Fourth) IDE Master/(Slave)	**Help Item**
Device : Hard Disk Vendor : WDC WD400BB-00DEA0 Size : 40.0GB LBA Mode : Supported Block Mode : 16Sectors PIO Mode : 4 Async DMA : MultiWord DMA-2 Ultra DMA : Ultra DMA-5 S.M.A.R.T. : Supported	Select the type of device connected to the system.
Type Auto LBA/Large mode Auto Block (Multi-Sector Transfer) Auto PIO Mode Auto S.M.A.R.T. Auto 32Bit Data Transfer Disabled	

Type   To select the types of the IDE devices:
       Not Installed; Auto: Setting type automatically
       CD-ROM: ATAPI (Packet Interface) CD-ROM drive
       ARMD: ATAPI Removable Media Device

LBA/Large mode   To auto-select (default) or disable LBA/Large mode.

Block (Multi-Sector Transfer)   To auto-select (default) or disable Block Mode.

PIO Mode   To auto-select (default) or disable PIO Mode. Choices: Disabled; 1, 2, 3, 4

S.M.A.R.T   Allows you to enable / disable the Self Monitoring Analysis and Reporting Technology for the hard disk.

32Bit Data Transfer   To auto-select (default) or disable 32Bit Data Transfer.

4-6.3.2-3 Hard Disk Write Protect

Hard Disk Write Allows you to Enabled / Disable(default) Hard Disk
Protect Write Protection

4-6.3.2-4 IDE Detect Time Out

IDE Detect Time Out Allows you to set time out for IDE Detection.
(Sec) Choices: 0 - 35 seconds in 5 seconds stepping

4-6.3.2-5 ATA(P) 80Pin Cable Detection

ATA(PI) 80Pin Cable Allows you to select ATA(PI) devices for 80Pin Cable
Detection Detection. To set Host & Device allows onboard IDE
controller and IDE disk drive to detect the type of
IDE cable used.
Choices: Host & Device, Host, Device

4-6.3.3 Floppy Configuration: Press Enter to reveal submenu

Floppy Configuration

Floppy Configuration		Help Item
Floppy A	1.44 MB 3.5 in	Select the type of floppy drive connected to the system.
Floppy B	Disabled	

Floppy A/B Press Enter on "Floppy A/B" will let you 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.
Disabled

4-6.3.4 Super IO Configuration: Press Enter to reveal submenu

SuperIO Configuration

Configure Win627THF Super IO Chipset		Help Item
OnBoard Floppy Controller	Enabled	Allows BIOS to Enable or Disable Floppy Controller.
Serial Port1 Address	3F8/IRQ4	
Serial port2 Address	2F8/IRQ3	
Serial port2 Mode	Normal	
OnBoard CIR Port	Disabled	
Parallel Port Address	378	
Parallel Port Mode	Normal	
Parallel Port IRQ	IRQ7	

OnBoard Floppy Controller — Allows you to enable / disable the Onboard Floppy Controller.
Choices: Enabled; Disabled

Serial Port1 Address — Allows you to set the Onboard Serial Port1 Address.
Choices: Disabled; 3F8/IRQ4; 3E8/IRQ4; 2E8/IRQ3;

Serial Port2 Address — Allows you to set the Onboard Serial Port2 Address.
Choices: Disabled; 2F8/IRQ3; 3E8/IRQ4; 2E8/IRQ3;

Serial Port 2 Mode — If Serial Port2 Address is not disabled, it allows you to set the Serial Port 2 Mode. Choices:
-- Normal;
-- IrDA: Providing 2 items for configuration:
    IR I/O Pin Select: SINB/SOUTB; IRRX/IRTX
    IR Duplex Mode: Half Duplex; Full Duplex
-- ASK IR: Providing 2 items for configuration:
    IR I/O Pin Select: SINB/SOUTB; IRRX/IRTX
    IR Duplex Mode: Half Duplex; Full Duplex

OnBoard CIR Port — Allows you to set the onboard CIR Port.
Choices: Disabled; 2E0; 3E0

Parallel Port Address — Allows you to configure Parallel Port Address.
Choices: Disabled; 378; 278; 3BC;

OnBoard CIR Port   Allows you to set the onboard CIR Port.
                       Choices: Disabled; 2E0; 3E0

CIR Port IRQ   Allows you to set the onboard CIR Port IRQ for 2E0
                   or 3E0.
                   Choices: IRQ3; IRQ4; IRQ9; IRQ10; IRQ11

Parallel Port Address   Allows you to configure Parallel Port Address.
                            Choices: Disabled; 378; 278; 3BC;

-- Disabled: To disable this function;
-- 378: 2 items to configure for address 378:
  --- Parallel Port Mode:
      Normal;
      Bi-Directional;
      EPP:
        EPP Version: 1.9; 1.7
      ECP:
        ECP Mode DMA Channel: DMA0; DMA1; DMA3
  --- Parallel Port IRQ: IRQ5; IRQ7

4-6.3.5 Hardware Health Configuration

Choose "Hardware Health Configuration" in "Advanced BIOS Features" and press <Enter>. The following sub-screen will appear for configuration:

Hardware Health Configuration

Hardware Health Configuration		Help Item
System Temperature	: 34˚C/93˚F	Enables Hardware Health
CPU Temperature	: 45˚C/113˚F	Monitoring Device.
Fan1 Speed	: 3125 RPM	
Fan2 Speed	: 3169 RPM	
Fan3 Speed	: N/A	
CPU Core	: 1.500 V	
AGP	: 1.532 V	
+1.50V	: 1.516 V	
+3.30V	: 3.258 V	
+5.00V	: 5.094V	
+12.0V	: 12.074 V	
-12.0V	: -12.048 V	
5VSB	: 5.467 V	
Battery	: 3.444 V	

↑↓← → : Move   Enter : Select   +/- : Values   F10: Save   Esc: Exit   F1: General Help
F7 : Previous Values   F8 : Fail-Safe Defaults   F9: Optimize Defaults

System Temperature Shows current system temperature.

CPU Temperature Shows current CPU internal temperature.

Fan1/2/3 Speed Displaying the current speed of Chassis/CPU/Power Fan.

CPU Core Showing CPU core actual voltage value.

AGP Showing AGP actual voltage value.

1.5V/3.3V/+12V/+5.00V/ 5VSB/Battery Showing current voltage against the 1.5V/3.3V/ +12V/+5V/5VSB/Battery power supply.

4-6.3.6 ACPI Configuration: Press Enter to reveal submenu

ACPI Configuration

ACPI Settings		Help Item
▶ General ACPI Configuration	Press Enter	General ACPI Configuration setting
▶ Advanced ACPI Configuration	Press Enter	

▶ General ACPI Configuration:

To press< Enter > on General ACPI Configuration will reveal the following item(s).

Suspend mode	This item allows you to select the Suspend mode. You can select S3(STR) for suspending to DRAM 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); Auto
(Optional) Repost Video at S3 Resume	If STR mode or Auto mode is selected, this item allows you to enable / disable this function. Choices: Yes; No
(Optional) USB Device Wakeup From S3/S4	This item allows you to enable / disable the USB device Wakeup function from S3/S4 mode.

▶ Advanced ACPI Configuration:

To press< Enter > on Advanced ACPI Configuration will reveal the following item(s).

ACPI 2.0 Support	Allows you to enable / disable ACPI (Advanced Configuration and Power Interface) 2.0 Support function. Choices: Yes; No
ACPI APIC Support	Allows you to enable / disable ACPI APIC (Advanced Programmable Interrupt Controller) Support function.
APIC ACPI SCI IRQ	If APIC ACPI Support is enabled (Yes), it allows you to enable / disable APIC ACPI SCI IRQ function.
BIOS-->AML ACPI table	Allows you to enable / disable BIOS-->AML ACPI table function.
Headless mode	Allows you to enable / disable Headless operation mode through ACPI.

4-6.3.7 Clock Generator Configuration

Clock Generator Configuration

Configure ICS ICS952603 Clock Generator		
CPU Frequency Setting	133	Allows BIOS to Select CPU Over Clock.
AGP/PCI Frequency Setting	66.66/33.33 Fixed	
Spread Spectrum	Disable	
Auto PCI Clock	Disable	

↑↓←→ : Move   Enter : Select   +/- : Values   F10: Save   Esc: Exit   F1: General Help
F7 : Previous Values   F8 : Fail-Safe Defaults   F9: Optimized Defaults

CPU Frequency Setting   This item allows you to enable / disable this setting function.

CPU Clock   If CPU Frequency is set at Enabled, this item allows you to set CPU Clock.
Choices: 100MHz ~350MHz in 1MHz stepping.
(100MHz~250MHz is for 100MHz CPU; 133MHz~283MHz is for 133MHz CPU; 200MHz~350MHz is for 200MHz CPU.)

AGP/PCI Frequency Setting   Allows you to fix AGP/PCI Frequency.
Choices: Disabled; 66.66/33.33 Fixed;
 72.73/36.36 Fixed; 80.00/40.00 Fixed

Spread Spectrum   Allow BIOS to Set Clock Spectrum for EMI Control
Choices: Disabled; 0.35%; 0.50%; 0.75%; 1.00%

Auto PCI Clock   Set BIOS to Auto Set PCI Clock
Choices: Disabled; Enabled

4-6.3.7 USB Configuration: Press Enter to reveal submenu

USB Configuration

USB Configuration		Help Item
Module Version - 2.23.2-7.4		Enable USB host controllers.
USB Devices Enabled : 　　　　None		
USB Function	8 USB Ports	
Legacy USB Support	Enabled	
USB 2.0 Controller	Enabled	
USB 2.0 Controller Mode	FullSpeed	
▶ USB Mass Storage Device Config Press Enter		

USB Function Allows you to set the USB Function on the USB port (s).
Choices: 8 USB Ports; Disabled

Legacy USB Support Allows you to enable / disable the Legacy USB support.

USB 2.0 Controller Allows you to enable/ disable the USB 2.0 Controller.

USB 2.0 Controller Mode Allows you to configure the USB 2.0 Controller Mode. Choices: FullSpeed; HiSpeed.

▶ **USB Mass Storage Device Config** Press "Enter" to view its submenu shown below.

USB Mass Storage Reset Delay To select number of seconds POST waits for the USB mass storage device after start unit command. Choices: 10 Sec; 20 Sec; 30 Sec; 40 Sec

No USB Mass Storage Device detected If no USB Mass Storage device is detected, this line will appear on screen.

4-6.3.8 Voltage Control

Choose "Frequency/Voltage Control" in "Advanced BIOS Features" and press <Enter>. The following sub-screen will appear for configuration:

Voltage Control

Voltage Configuration		Help Item
AGP Voltage Control	1.5V	Press "+"/"-" to select.
DIMM Voltage Control	2.6V	
CPU Voltage Control	Auto	

↑↓←→ : Move   Enter : Select   +/- : Values   F10: Save   Esc: Exit   F1: General Help
F7 : Previous Values   F8 : Fail-Safe Defaults   F9: Optimized Defaults

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

DIMM Voltage Control   Allows you to configure the DIMM Voltage.
Choices: 2.6V; 2.7V; 2.8V; 2.9V

CPU Voltage Control   Allows you to configure the CPU Voltage. Usually, to raise CPU voltage will raise the chance of CPU overclocking and yet risk damage of CPU.
Choices: Auto; 0.8375V ~1.8000V in 0.0125V stepping

4-6.3.9 Power Management: Press Enter to reveal submenu

Power Management

APM Configuration		Help Item
Power Management/APM	Enabled	Enable or disable APM.
Video Power Down Mode	Suspend	
Hard Disk Power Down Mode	Suspend	
Standby Time Out	Disabled	
Suspend Time Out	Disabled	
Power Button Mode	On/Off	
Restore on AC Power Loss	Power Off	
Resume On Ring	Disabled	
Resume On LAN/PME#	Disabled	
Resume On RTC Alarm	Disabled	

Power Management/ APM Allows you to enable / disable the Power management / Advanced Power Management function.

Video Power Down Mode Allows you to select the Video Power Down Mode. Choices: Disabled; Standby; Suspend

Hard Disk Power Down Mode Allows you to select the Hard Disk Power Down Mode. Choices: Disabled; Standby; Suspend

Standby Time Out (Minute) To set the duration of Standby Time Out. Choices: Disabled; 1; 2; 4; 8; 10; 20; 30; 40; 50; 60

Suspend Time Out (Minute) To set the duration of Suspend Time Out. Choices: Disabled; 1; 2; 4; 8; 10; 20; 30; 40; 50; 60

Power Button Function Allows you to set power Button function. Choices: On/Off (default); Suspend

Restore on AC/Power Loss Allows you to set the restore state from AC/Power Loss. Choices: Last State; Power Off (default); Power On

Resume on Ring   Allows you to enable / disable (default)the Resume on Ring Signal function.
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.

Resume on LAN/PME#   Allows you to enable / disable (default)the Resume on LAN/PME# function.

Resume On RTC Alarm   Allows you to enable / disable (default)the Resume On RTC Alarm function.

RTC Alarm Date / Hour / Minute / Second	If resume On RTC Alarm is enabled, this field allows you to set the Alarm date Hour, Minute and second. Date Choices: Every Day; 01 ~ 31 Hour Choices: 00 ~ 23 Minute Choices: 00 ~ 59 Second Choices: 00 ~ 59

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:

CMOS Setup Utility - Copyright (C) 1985-2004, American Megatrends, Inc.
Advanced Chipset Features

Advanced Chipset Settings	Help Item
Warning: Setting wrong values in below sections may cause system to malfunction.	Options for NBEnable USB host controllers.
▶ NorthBridge Configuration Press Enter ▶ SouthBridge Configuration Press Enter	

↑↓←→ : Move   Enter : Select   +/- : Values   F10: Save   Esc: Exit   F1: General Help
     F7 : Previous Values   F8 : Fail-Safe Defaults   F9: Optimized Defaults

4-6.4.1 NorthBridge Configuration

Choose "NorthBridge Configuration" in "Advanced Chipset Features" and press <Enter>. The following sub-screen will appear for configuration:

NorthBridge Configuration

DRAM Frequency Configure DRAM Timing by SPD	Auto Enabled	Help Item
Memory Hole Init. Graphic Adapter Priority Graphics Aperture Size	Disabled AGP/PCI 64MB	

DRAM Frequency   Allows you to set the current SDRAM frequency. Choices: Auto; 266MHz; 333MHz; 400MHz

Configure SDRAM Timing by SPD   SPD (Serial presence detect) is a device in memory module for storing the module information such as DRAM timing and chip parameters. If this option is enabled, BIOS will access SPD automatically to configure module timing. If disabled, DRAM timing can be configured manually.

DRAM CAS# Latency With SDRAM Timing by SPD disabled, you can se-
lect the SDRAM CAS# (Column Address Strode)la-
tency manually.
Choices: 2 Clocks; 2.5 Clocks; 3 Clocks

DRAM RAS# With SDRAM Timing by SPD disabled, you can se-
Precharge lect the SDRAM RAS# (Row Address Strode)
Precharge cycle manually.
Choices: 2 Clocks; 3 Clocks; 4 Clocks

DRAM RAS# to CAS# With SDRAM Timing by SPD disabled, you can se-
Delay lect the SDRAM RAS# to CAS# delay cycle
manually.
Choices: 2 Clocks; 3 Clocks; 4 Clocks

DRAM Precharge Allows you to set SDRAM Precharge Delay cycle.
Delay Choices: 5 Clocks; 6 Clocks; 7 Clocks; 8 Clocks

DRAM Burst Length With SDRAM Timing by SPD disabled, you can se-
lect the SDRAM Burst length manually.
Choices: 8; 4

Memory Hole Allows you to enable / disable (default) the support
of Memory Hole which is reserved for ISA card.
Choices: Disabled; 15MB-16MB

Init. Graphics Adapter Allows you to select the initial Graphics Adapter.
Priority Choices: AGP/PCI(default); PCI/AGP;

AGP Aperture Size Series of options are available: 4, 8, 16, 32, 64, 128,
256MB. Memory mapped and graphics data struc-
tures 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. The
default setting is 64MB.

4-6.4.2 SouthBridge Configuration

Choose "SouthBridge Configuration" in "Advanced Chipset Features"
and press <Enter>. The following sub-screen will appear for
configuration:

SouthBridge Configuration

OnBoard AC'97 Audio	Auto	**Help Item**

Onboard AC'97 Audio Allows you to disable AC' 97 Audio.
Choices: Auto (default); Disabled

4-6.5 PCI/PNP Resource Management

PCI/PNP Resource Management allows you to modify the system's power saving functions.

1. Choose "PCI/PNP Resource Management" from the Main Menu and a screen with a list of options will appear:

CMOS Setup Utility - Copyright (C) 1985-2004, American Megatrends, Inc.

PCI/PNP Resource Management

Advanced PCI/PNP Settings		Help Item
Warning: Setting wrong values in below sections may cause system to malfunction.		No: lets the BIOS configure all the devices in the system.
Plug & Play O/S	No	Yes: lets the operating system configure Plug and Play (PnP) devices not required for boot if your system has a Plug and Play operating system.
PCI Latency Timer	32	
Allocate IRQ to PCI VGA	Yes	
Palette Snooping	Disabled	
PCI IDE BusMaster	Disabled	
OffBoard PCI/ISA IDE Card	Auto	
IRQ3	Available	
IRQ4	Available	
IRQ5	Available	
IRQ7	Available	
IRQ9	Available	
IRQ10	Available	
IRQ11	Available	
IRQ14	Available	
IRQ15	Available	
DMA Channel 0	Available	
DMA Channel 1	Available	
DMA Channel 3	Available	
DMA Channel 5	Available	
DMA Channel 6	Available	
DMA Channel 7	Available	
Reserved Memory Size	Disabled	

↑↓←→ : Move   Enter : Select   +/- : Values   F10: Save   Esc: Exit   F1: General Help
F7 : Previous Values   F8 : Fail-Safe Defaults   F9: Optimized Defaults

Plug & Play O/S Allows you to configure the PNP devices by BIOS or O/S.
Choices: No(by BIOS) (default); Yes(by O/S)

PCI Latency Timer (PCI Clocks) Allows you to set the PCI Latency Time.
Choices: 32(default); 64; 96; 192; 128; 160; 192; 224; 248;

Allocate IRQ to PCI VGA Allows you to assign IRQ to PCI VGA card if card requests IRQ.
Choices: Yes(default); No

Palette Snooping 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.

PCI IDE BusMaster Allows you to enable / disable(default) the PCI IDE Bus Master function.

OffBoard PCI/ISA IDE Card Some PCI IDE cards may require this to be set to the PCI slot number that is holding the card. Choices: Auto; PCI Slot1; PCI Slot2; PCI Slot3; PCI Slot4; PCI Slot5;

IRQ 3/4/5/7/9/10/11/14/15 Allows you to specify available IRQs to be used by PCI/PNP devices. Choices: Available(default); Reserved

DMA 0/1/3/5/6/7 Allows you to specify available DMAs to be used by PCI/PNP devices. Choices: Available(default); Reserved

Reserved Memory Size Allows you to specify memory size to reserve for legacy ISA devices. Choices: Disabled(default); 16K; 32K; 64K

4-6.6 Boot Configuration Setup

Boot Configuration Setup allows you to modify the system's boot settings.

Choose "Boot Configuration Setup" from the Main Menu and a screen with a list of options will appear:

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Boot Configuration Setup

Boot Settings		Help Item
▶ Boot Setting Configuration	Press Enter	Configure Settings during System Boot.
▶ Boot Device Priority	Press Enter	

↑↓←→ : Move   Enter : Select   +/- : Values   F10: Save   Esc: Exit   F1: General Help
F7 : Previous Values   F8 : Fail-Safe Defaults   F9: Optimized Defaults

4-6.6.1 Boot Settings Configuration

Choose "Boot Settings Configuration" in "Boot Configuration Setup" and press <Enter>. The following items will appear for onfiguration:

Boot Configuration Setup

Boot Settings		Help Item
Quick Boot	Enabled	Configure Settings during System Boot.
Quiet Boot	Disabled	
AddOn ROM Display Mode	Force BIOS	
Bootup Num-Lock	On	
PS/2 Mouse Support	Auto	
Wait For 'F1' If Error	Enabled	
Hit 'DEL' Message Display	Enabled	
Interrupt 19 Capture	Disabled	

Quick Boot Allows you to enable (default)/ disable quick boot of your system. If enabled, BIOS will skip certain tests whle booting. This will decrease the time needed to boot the system.

Quiet Boot The bootup screen displays normal POST messages with Disabled selected; the bootup screen displays OEM Logo instead of POST messages with Enabled selected.
Choices: Enabled; Disabled

AddOn ROM Display Mode If "Force BIOS" (default) is chosen, the vendor's logo screen will be followed by the "AddOn ROM" initial screen (the screen showing the add-on card BIOS message). If "Keep Current" is chosen, no "Add-On ROM" screen is followed.

Bootup Num-lock Allows you to toggle between On (default) or Off to control the state of the NumLock keys when the system boots. If On, the numeric keypad is in nu-meric mode. If off, the numeric keypad is in cursor control mode.

PS/2 Mouse Support Enabled (default), PS/2 mouse is supported. Disabled, PS/2 Mouse is not supported. If "Auto" is set, the system will auto detect the PS/2 Mouse.

Wait For 'F1' If Error Allows you to hit F1 key when errors occur.
Choices: Enabled(default); Disabled

Hit 'DEL' Message Display The system will show "Press DEL key to run Setup when enabled.
Choices: Enabled(default); Disabled

Interrupt 19 Capture Allows option ROMs to trap interrupt 19.
Choices: Enabled; Disabled(default)

4-6.6.2 Boot Device Priority

Choose "Boot Device Priority" in "Boot Configuration Setup" and press <Enter>. The bootable devices installed on board will appear and are allowed to assign the Boot Priority.

Boot Device Priority

Boot Device Priority		Help Item
1st Boot Device 2nd Boot Device	1st FLOPPY DRIVE PM-WDC WD400BB-00	Configure Settings during System Boot.

1st/2nd/3rd Boot Device Allows you to set (by pressing <Enter>) floppy or IDE devices already installed to be the 1st/2nd/3rd boot device.
Choices: Disabled; Device(s) installed

4-6.7 Boot Security Features

Boot Security Features allows you to modify the system's boot security settings.

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

CMOS Setup Utility - Copyright (C) 1985-2002, American Megatrends, Inc.
Boot Security Features

Security Settings		Help Item
		Install or Change the password.
Supervisor Password : Not Installed		
User Password : Not Installed		
Change Supervisor Password	Press Enter	
User Access Level	Full Access	
Change User Password	Press Enter	
Clear User Password	Press Enter	
Password Check	Setup	
Boot Sector Virus Protection	Disabled	

↑↓←→ : Move   Enter : Select   +/- : Values   F10: Save   Esc: Exit   F1: General Help
            F7 : Previous Values   F8 : Fail-Safe Defaults   F9: Optimized Defaults

4-6.7.1 Supervisor Password

To show the status of Supervisor Password. "Installed" is displayed when supervisor password is set up. Otherwise, "Not Installed" is displayed.

4-6.7.2 User Password

To show the status of User Password. "Installed" is displayed when supervisor password is set up. Otherwise, "Not Installed" is displayed.

4-6.7.3 Change Supervisor Password

This option allows you to set a new Supervisor password for the system:

1. Choose "Change Supervisor Password" in the "BIOS Security Features" and press <Enter>. Then the following message appears:

[Enter new supervisor password]

2. The first time you run this option, enter your password up to 6 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 New Password]

4. Enter the same password "exactly" the same as you have just typed to confirm the password and press <Enter>.
5. The following message appears to confirm the new password setup.

[Password installed]
[OK]

6. Then press any key to continue your CMOS Setup. To save the password setup, you should press "Save Changes and Exit" and choose "OK" to exit and save setup.
7. If you enter a new password into the box, you will be using this new password after you have finished and saved this new setup. Instead, if you press <Enter> before you enter any new password into the instruction box, another message box appears, telling you that you have disabled the Supervisor Password. That means, no password is set for either entering BIOS Setup or system:

[Password uninstalled]
[OK]

User Access Level   Allows you to set four different Access Levels when Supervisor Password has been set.
Choices: Full Access; Limited; View Only; No Access

Note: "User Access Level" and "Password Check" will appear when "Supervisor Password" has been set.

4-6.7.4 Change User Password

This option allows you to set a new User password for the system:

1. Choose "Change User Password" in the "BIOS Security Features" and press <Enter>. Then the following message appears:

[Enter New Password]

2. The first time you run this option, enter your password up to 6 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 New Password]

4. Enter the same password "exactly" the same as you have just typed to confirm the password and press <Enter>.

5. The following message appears to confirm the new password setup.

[Password installed]
[OK]

6. Then press any key to continue your CMOS Setup. To save the password setup, you should press "Save Changes and Exit" and choose "OK" to exit and save setup.

4-6.7.5 Clear User Password

1. To remove the current user password, choose "Clear User Password" and press <Enter>. An instruction box appears on the screen, assuring to clear User Password:

Clear User Password?	
[OK]	[Cancel]

2. Then choose [OK] and press <Enter>. The User Password is successfully removed.

Password Check   Allows you to set BIOS to check up password with
                       a password prompt at BIOS Setup or whenever re-
                       starting system. This option will appear when you
                       have set Supervisor Password or User Password.
                       Choices: Setup (default); Always

4-6.7.6 Boot Sector Virus Protection

Boot Sector Virus   When enabled, you receive a warning message if a
Protection   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 dis-
>   able the virus warning.

4-6.8 Load Optimal Defaults

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

[Load Optimal Defaults ?]	
[OK]	**[Cancel]**

Press <Enter> now to load Optimal values for all the Setup options.

4-6.9 Discard Changes

Discard Changes option allows you to cancel the modifications that you
have specified in the Setup Utility. Highlight this option on the Main
Menu and press <Enter> and the following message appears:

[Discard Changes?]	
[OK]	**[Cancel]**

Follow the message and press <Enter> key to cancel the modifications
that you have specified.

4-6.10 Save Changes and Exit

Save Changes and Exit allows you to save all modifications you have specified into the CMOS memory. Highlight this option on the Main Menu and press <Enter>. The following message appears:

[Saving configuration changes and exit setup?]
[OK]   **[Cancel]**

Press <Enter> key to save the configuration changes and exit CMOS Setup to restart your system.

4-6.11 Discard Changes and Exit

Discard Changes option allows you to exit (or not exit) the Setup Utility without saving the modifications that you have specified. Highlight this option on the Main Menu and press <Enter> and the following message appears:

[Discard Changes (and exit setup?)]
[OK]   **[Cancel]**

Follow the message and press <Enter> key to exit CMOS Setup and restart system.