# **Contents**

# APPENDICES.......................................................... 88

## ITEM CHECKUP

☑ Mainboard
☑ Support CD
☑ Bundled Bonus Pack CD
☑ Bundled Bonus Pack Manual
☐ Thermal Sensor Cable (optional)
☑ ATA33/66/100 IDE Cable
☑ FDD Cable
☑ User's Manual
☐ RS232 Cable (optional)
☐ USB Cable (optional)

# Chapter 1 Specification

## Introduction

This mainboard 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 processor interface, DDR333/266/200 DRAM memory interface, Hub interface as well as AGP interface.

Integrated with i845PE, South Bridge Intel ICH4 supports the LPC Super I/O, upstream Hub interface, PCI interface, IDE interface, LAN interface, USB interface, AC'97 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 Specifications Table**
**1-4 Chipset System Block Diagram**

**\*\*  If any difference is found between the manual 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 SL-85DIR3 / 85DIR3-L Layout

LAN Controller
RJ45 connector } **for Mainboard 85DIR3-L only**



Optional 6-channel Audio-out connector
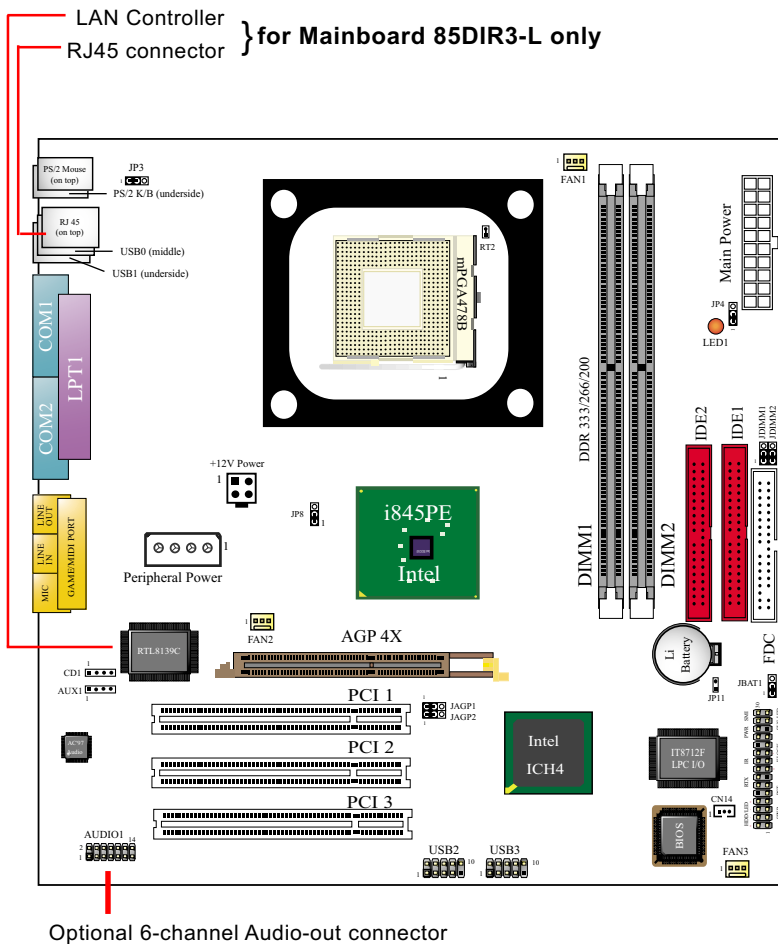
## 1-2 Mainboard Specifications

### 1-2.1 CPU Socket
CPU Socket 478 on board, supporting Intel® Pentium 4  processors (including Intel hyper-threading CPUs) in  478-pin package for :

-- 533/400MHz System Bus;
-- Hyper-pipelined technology;
-- Advanced dynamic execution;
-- Advanced transfer cache;

### 1-2.2 System Chipsets
North Bridge Intel 845PE plus South Bridge Intel ICH4 working with Intel Pentium 4 Processor for managing and arbitrating operations between system interfaces:

### 1-2.3 Memory
2 DDR DIMM 184-pin slots on board for DDR 333/266/200 DRAMs :
• Supporting unregistered, non-ECC DDR 333/266/200 DRAM up to 2 GBs
• Supporting installation of mixed volumes yet same type of DDR DRAM modules
• No support for double-sided x16 DDR DIMMs

### 1-2.4 AMI BIOS
• Supporting Plug & Play V1.0
• Flash Memory for easy upgrade
• Supporting BIOS Writing Protection and Year 2000 compliant
• Supporting BIOS Setup (See Chapter 4 BIOS Setup)

### 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)
• APM V1.2 compliant (Legacy Power Management)
• ACPI POS (Power On Suspend) (see Power Management in BIOS Setup)
• PS/2 Keyboard/ Mouse Power On
• Supporting Wake-on-LAN (ring signal) through CN14 connector
• Real Time Clock (RTC) with date alarm, month alarm, and century field

## 1-2.7 Multi-I/O Functions

• PCI EIDE Controller, supporting:
    -- 2x Ultra ATA100 / 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):
    -- Two complete serial ports (COM1 & COM2) on board

## 1-2.8 Expansion Slots

• 3 PCI Bus Master slots
• 1 AGP 4X slot
• 2 DDR DIMM slots

### 1-2.9 LAN (Local Area Network) on board (85DIR3-L only)

PCI local bus single-chip Fast Ethernet Controller RTL8139C on board:
• Supporting 10/100Mb data transfer
• Supporting Wake On LAN function through the on-board RJ45 LAN Connector
• LAN Controller Driver enclosed in Support CD for user's installation

### 1-2.10 Hardware Monitor on board

• Hardware Monitor in Super I/O IT8712F, providing monitoring and alarm for flexible desktop management of hardware voltage, temperatures and fan speeds.
• Utility Software SmartGuardian for displaying monitoring 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 up to 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 6-channel Audio-out Support (optional)

• This series is designed with an optional 6-channel Audio-out connector "Audio1". If this option is chosen, it will provide 3 additional audio-out ports for the 6-channel sound.

### 1-2.13 Form Factor

• Micro-ATX form factor, ATX power supply, version 2.03 compliant, supported by one Main Power Connector, one +12V Power Connector and one Peripheral Power Connector
• Mainboard size: 245mm x 245mm

## 1-3 Mainboard Specification Table

| SL-85DIR3 / 85DIR3-L Specifications and Features | | |
|---|---|---|
| CPU | Socket 478B for Intel Pentium 4 CPUs | |
| North Bridge | Intel 845PE, supporting 533/400MHz System Bus | |
| South Bridge | Intel ICH4 | |
| BIOS | AMI BIOS | |
| Memory | Supporting DDR 333/266/200 DRAM, up to 2GB in two DDR DIMM slots | |
| I/O Chip | IT8712F | |
| AGP interface | AGP4X mode only | |
| Audio | AC'97 Audio V2.2 compliant, 6-channel audio | |
| IDE Interface | 2 UATA 100/66/33 IDE ports | |
| Networking | Fast Ethernet Controller, 1xRJ45 on board | |
| PCI Slots | 3 PCI Master slots on board | |
| I/O Connectors | 6xUSB ports (V2.0), 1xFDD port, 2xCOM ports, 1xLPT, 1xIrDA, 1xPS/2 K/B, 1xPS/2 Mouse, | |
| Other Features | BIOS Writing Protection; Hardware Monitoring in IT8712F Keyboard/Mouse Power On; ATX 2.03 Power Supply; Micro-ATX form factor | |
| Optional Features | 85DIR3 | 85DIR3-L |
| LAN Controller On board | No | **Yes** |

## 1-4 Chipset System Block Diagram

```
                    ┌─────────────────────┐
                    │ Intel Pentium 4 CPU │
                    └─────────────────────┘
                              ↕
                    System Bus 533/400MHz
                    ┌─────────────┐
                    │             │  DDR memory
                    │             │  Interface        ┌──────────┐
  ┌──────────┐ AGP 4X │ Intel 845PE │                 │ System   │
  │ AGP Slot │──────│ North Bridge│  DDR 333/         │ Memory   │
  └──────────┘      │             │  266/200          └──────────┘
                    │             │  DRAM
                    └─────────────┘
                          ↕  Bi-directional
                             16-bit Data
                             Bus, 266MHz
                                                    ┌────────────┐
                    ┌─────────────┐    PCI Bus      │ 3 PCI Slots│
                    │             │─────────────────└────────────┘
 ┌──────────┐ ATA 100/66/33        │             ┌────────────────┐
 │ 4 IDE    │──────│    ICH4     │  AC'97 2.2   │ Audio Codec    │
 │ Devices  │      │   South     │──────────────│ (6-channel)    │
 └──────────┘      │   Bridge    │              └────────────────┘
 ┌──────────┐      │             │  ┌──────────┐      ┌──────┐
 │ USB      │──────│             │──│ RTL8139C │──────│ RJ45 │
 │ Ports    │ USB Bus V2.0       │  └──────────┘      └──────┘
 └──────────┘      └─────────────┘      (Optional)

 ┌───────────────┐
 │          IR   │  ┌──────────┐              ┌──────┐
 │         FDD   │  │ LPC I/O  │              │      │
 │Mouse/Keyboard │──│ IT8712F  │──────────────│ BIOS │
 │ Serial Ports  │  └──────────┘              └──────┘
 │ Printer Port  │
 │  Game/MIDI    │
 │  H/Monitor    │
 └───────────────┘
```

**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 processor, you can also refer to the pamphlet enclosed in your CPU package.
2. Installing a cooling fan with a good heatsink is a must for proper heat dissipation for your CPU. Get ready an appropriate fan with heatsink 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 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 Identification and Installation**
**2-2 Pentium 4 CPU Fan Installation**
**2-3 Memory Installation**
**2-4 AGP4X Installed with Jumper and LED Safeguard**
**2-5 IDE Connector Installation**
**2-6 Floppy Drive Connector ( FDC) Installation**
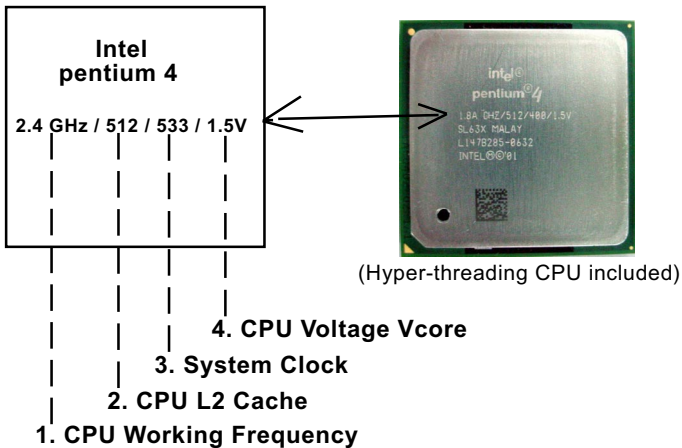**2-7 ATX 2.03 Power Supply Installation**
**2-8 Jumper Settings**
**2-9 Other Connectors Configuration**
**2-10 IRQ Description**

## 2-1 CPU Identification and Installation

### 2-1.1 To Identify a Pentium 4 CPU



(Hyper-threading CPU included)

**4. CPU Voltage Vcore**
**3. System Clock**
**2. CPU L2 Cache**
**1. CPU Working Frequency**

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. For example,
   2.4 GHz depicts that this CPU is locked to 2.4 GHz working frequency (18 x 133MHz CPU clock);
   2A GHz depicts that this CPU is an A version, locked to 2.0 GHz working frequency (20 x 100MHz CPU clock)
   3.06GHz depicts that this is a 3.06GHz hyper-threading CPU
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 Clock: this part depicts the System Clock (Front Side Bus) provided by the CPU. For example,
   533 stands for a 533MHz system clock provided by a 133MHz CPU times 4;
   400 stands for a 400 system clock provided by a 100 MHz CPU x 4.
4. CPU Voltage Vcore: this part depicts the CPU Voltage. For example,
   1.5V stands for a CPU of 1.5V Vcore.

Note: System Clock vs CPU Clock
P4 CPU is a quadpumped CPU. The system bus is provided by the CPU clock x 4. Therefore, users can figure out the P4 CPU clock by the System Clock divided by 4.

### 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 Hyperthreading dual-in-one CPU, the function of which can be enabled by Windows XP. (See illustration on the right.)
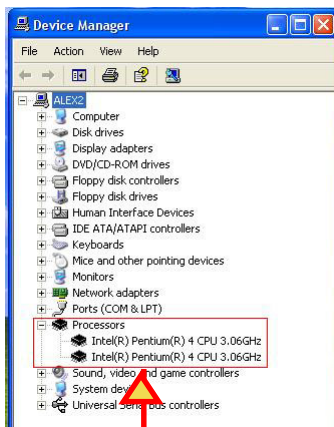
( If Hyper-threading CPU is installed successfully with O/S Win XP, the O/S will enable the dual-in-one CPU function.)

1. First pull sideways the lever of Socket 478,  and then turn it up $90^0$ so as to raise the upper layer of the socket from the lower platform.
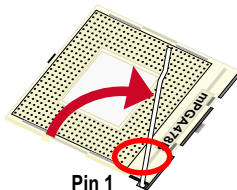
**Pin 1**

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.
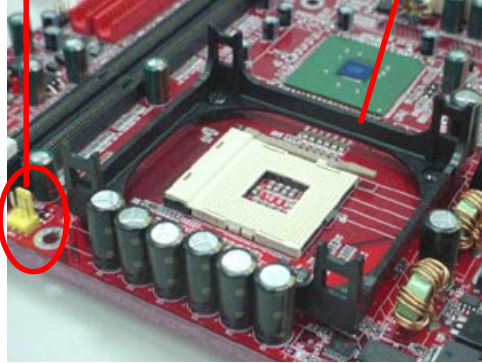
Pin 1
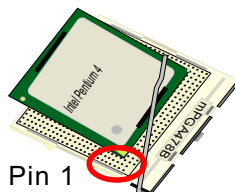
3. Make sure that all CPU pins have completely entered  the socket and then lower down the lever to lock up CPU to socket.

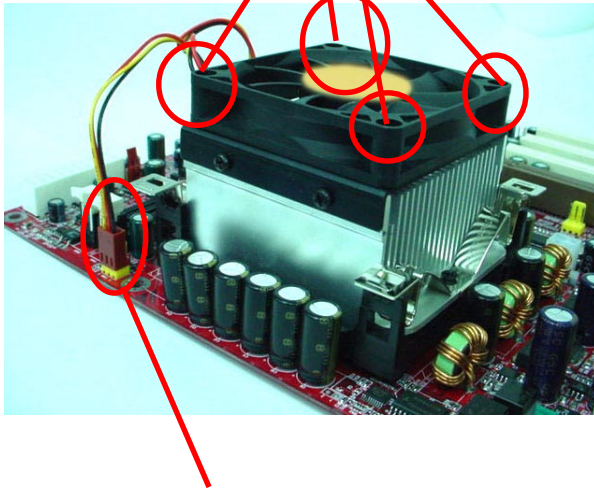Pin 1

**18**
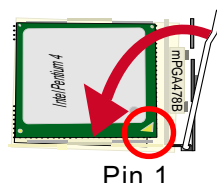
## 2-2 Pentium 4 CPU Fan Installation

CPU Fan Connector        Pentium 4 Fanbase



Press down 4 corners to lock fan to fanbase



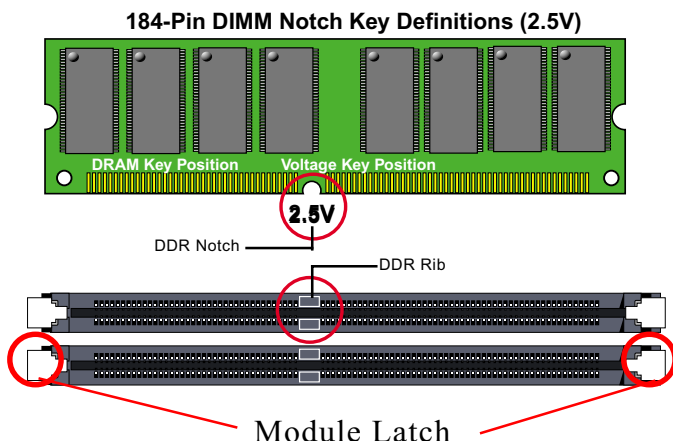Connect Fan Connector to CPU FAN connector

## 2-3 Memory Installation

How to tackle the memory Modules:
- Make sure to unplug your power supply before adding or removing memory  module. Failure to do so may cause severe damage to both your mainboard and the 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.

### 2-3.1 To Install DDR DRAM Module for this Mainboard

- This Mainboard only supports up to 2GB unbuffered DDR 333/266/ 200 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.

**184-Pin DIMM Notch Key Definitions (2.5V)**



DRAM Key Position      Voltage Key Position

2.5V

DDR Notch

DDR Rib

Module Latch

## 2-3.2 To Remove a DIMM

To remove a DIMM Module, first power off system and then press down the holding latches on both sides of slot to release the module from the DIMM slot.
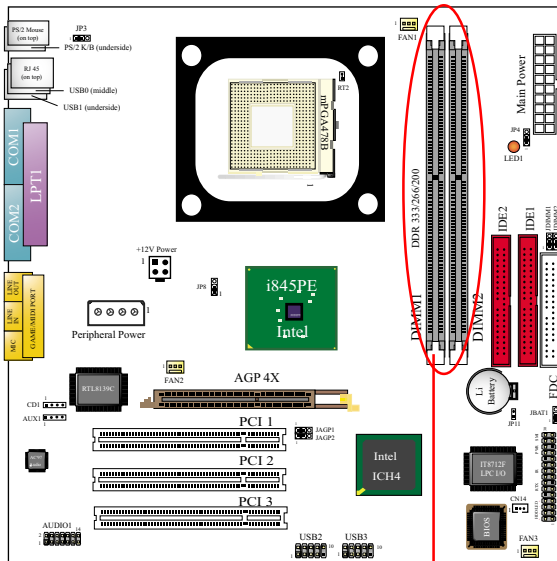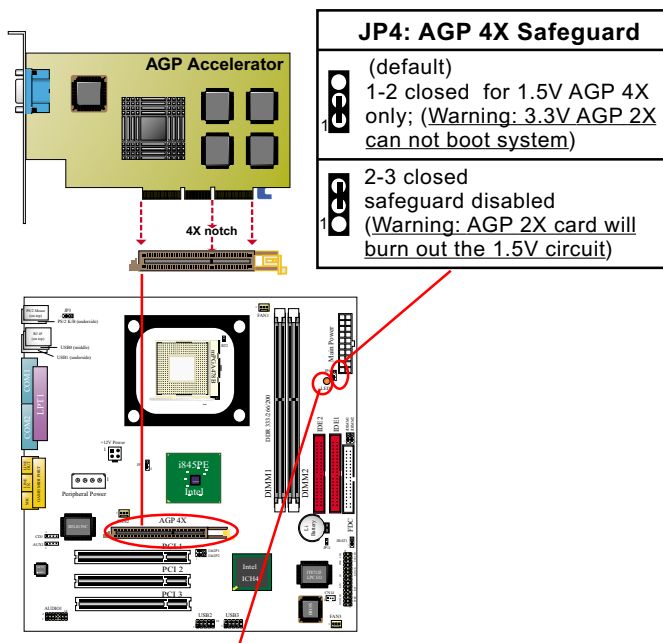
DDR DIMM Slots (184-pin)

## 2-4 Install AGP4X with LED1 & JP4 Safeguard

1. To install AGP 4X add-on card, please insert the card into the AGP slot on board, and connect your monitor directly to the AGP 4X card. To protect the system from burning out by an incorrect AGP card, please set JP4 1-2 closed, so it will allow only 1.5V AGP 4X card to boot system. If users cannot boot up the system with an AGP card inserted in the slot, then the card is not a correct one. Simply changing the AGP card to a 1.5V AGP 4X card will solve the problem.

2. LED1 is a Warning LED. Whenever an AGP card is not inserted to the AGP slot, or if the card is not a correct one, LED1 will keep lighting up until a proper installation is done.

> Warning: <u>if 3.3V AGP 2X card is mistakenly inserted for booting the system, the high voltage will burn out the 1.5V circuitry on board. Never use a 3.3V or an unknow AGP in this case</u>.

| JP4: AGP 4X Safeguard |
|---|
| (default) 1-2 closed for 1.5V AGP 4X only; (<u>Warning: 3.3V AGP 2X can not boot system</u>) |
| 2-3 closed safeguard disabled (<u>Warning: AGP 2X card will burn out the 1.5V circuit</u>) |

**AGP Accelerator**

**4X notch**

LED1: AGP Installation Failure LED

## 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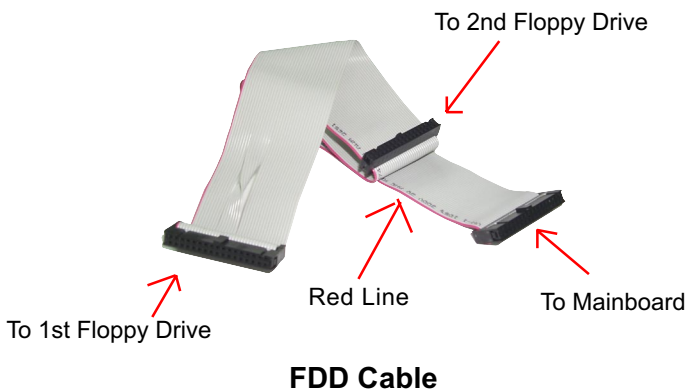 hard disks, you must configure the second drive to Slave mode by setting its jumpers correctly. Please refer to your hard disk documentation for the jumper settings.

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)

Black connector
(To Master Device)

Red line

(To Mainboard)

**IDE Flat Cable**
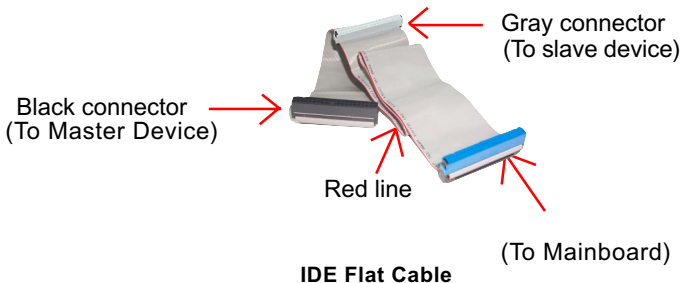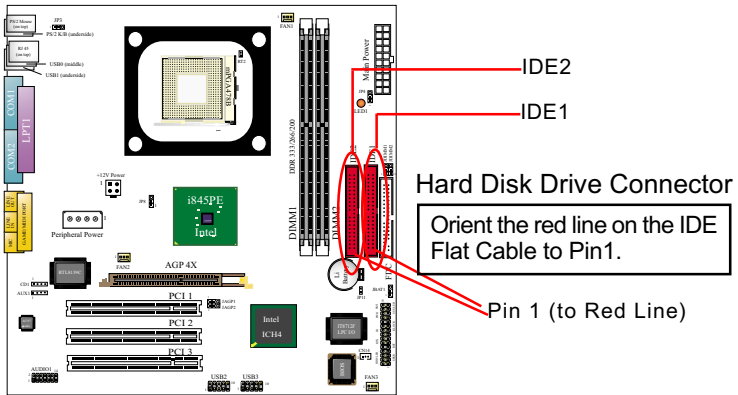
## 2-6 Floppy Drive Connector ( FDC ) Installation

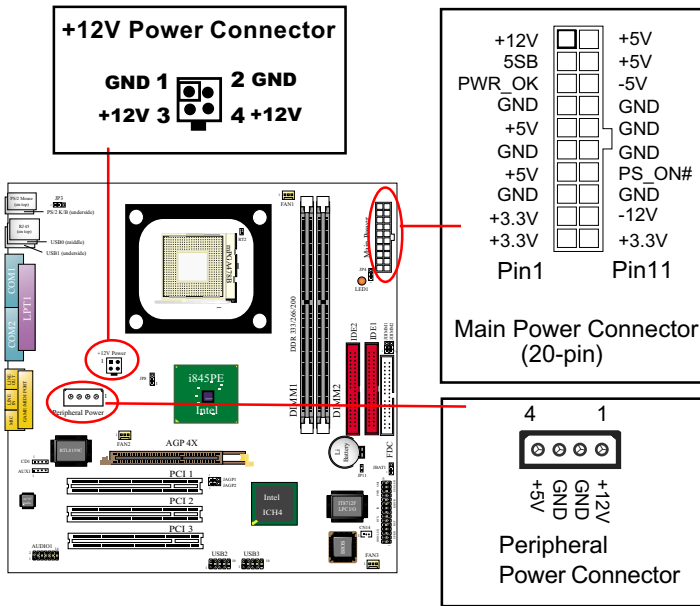To install FDC, you should connect the end of FDC cable with single connector to the board , and connect the other end with two connectors to the floppy drives.



FDC
Floppy Drive Connector:

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

Pin 1 (to Red Line)



To 2nd Floppy Drive

Red Line

To Mainboard

To 1st Floppy Drive

**FDD Cable**

24

## 2-7 ATX V 2.03 Power Supply Installation

**+12V Power Connector**

GND 1    2 GND
+12V 3    4 +12V

```
+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)

4    1

○ ○ ○ ○

+5V / GND / GND / +12V

Peripheral
Power Connector
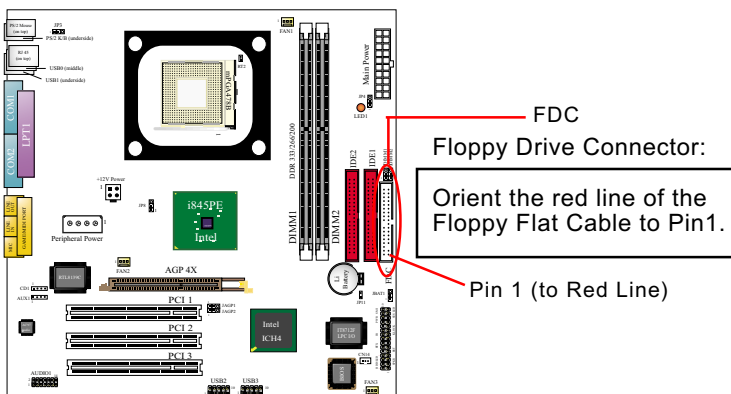
ATX V2.03 power supply is strongly recommended for mainboard running with 2GHz or higher CPU.

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 Supply which can be either of the latest version 2.03 or of earlier ATX model.
2. If you use an ATX Power Supply Version 2.03 or later, you can now connect the onboard square-shaped +12V Connector to the square-shaped +12V Connector of your ATX Power Supply. In this case, it is not necessary for you to connect the on-board 4-pin Peripheral Power Connector to your Power Supply.
3. If you use an ATX power Supply of an older version than V2.03, there will be no square-shaped +12V Connector. So please connect the onboard 4-pin Peripheral Power Connector to the 4-pin Peripheral Power Connector of your Power Supply.

## 2-8 Jumper Settings

The following diagrams show the locations and settings of jumper blocks on the mainboard.
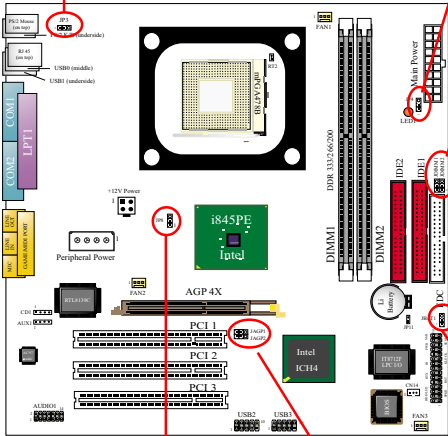
### JP3: Keyboard / Mouse / Power Button Select

| | |
|---|---|
|  1 | 1-2 closed (default)<br>To power on by Power Button |
|  1 | 2-3 closed<br>To power on by keyboard or mouse |

### JP4: AGP4X Safeguard

| | |
|---|---|
|  1 | 1-2 closed (default)<br>For 1.5V AGP 4X only |
|  1 | 2-3 closed<br>Safeguard disabled<br>(Warning: 3.3V AGP card will cause 1.5V circuit burn.) |



### JDIMM1 & JDIMM2: DIMM Voltage Select

| DIMM Voltage | JDIMM1 | JDIMM2 |
|---|---|---|
| 2.5V (default) |  1 |  1 |
| 2.6V |  1 |  1 |
| 2.7V |  1 |  1 |

### JP8 CPU Clock Select

| | |
|---|---|
|  1 | 1-2 closed (default) CPU Autodetect |
|  1 | 2-3 closed 133MHz CPU Clock Selected |

### JAGP1 & JAGP2 AGP Voltage Select

| AGP Voltage | JAGP1 | JAGP2 |
|---|---|---|
| 1.5V (default) |  1 |  1 |
| 1.6V |  1 |  1 |
| 1.7V |  1 |  1 |

### JBAT1 Clear CMOS

| | |
|---|---|
|  1 | 1-2 closed (default) To hold data |
|  1 | 2-3 closed To clear CMOS |

**26**

**How to tackle the Jumpers:**

1 2 3

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, <u>this header is called a jumper in this manual.</u>

A 2-pin Jumper Cap

The conductor inside the cap links two header-pins together.
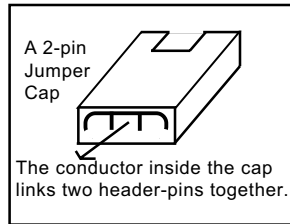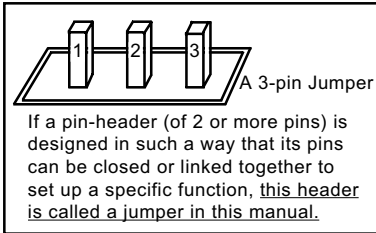
- A Jumper is usually but not necessarily given a "JpX" legend.
- In the Jumper setting diagram, the jumper pins covered with black marks stand for closed pins with jumper cap.

Jp X

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 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, return the JBAT1 setting to Pin1-2 closed.
4. CMOS data are restored to default now. Never clear CMOS when system power is on.

| JBAT1 Clear CMOS |
|---|
| 1-2 closed (default) To hold data |
| 2-3 closed To clear CMOS |

### 2-8.2 JP8: CPU Clock/Overclock Select

JP8 is designed on board to select 100/133MHz CPU clock for the system. By adjusting JP8, users can overclock the 100MHz CPU up to 133MHz.

1. Before setting the CPU clock, read the Identification Legend on the CPU, find the Max FSB and divide it by two. The result is the default value of your CPU clock.

2. If JP8 is set to 1-2 closed, CPU clock will be autodetected by BIOS, indicating that overclocking is not desired. The CPU then will boot up system with the default CPU clock.

3. If JP8 is set to 2-3 closed, CPU clock is set to 133MHz, indicating that overclocking (from 100 to 133MHz) is desired. The CPU will try to boot up system with 133MHz even if a 100MHz CPU is used.

   However, if overclocking fails, system will not be able to boot. In such case, you should restore default Jumper Setting and clear CMOS before rebooting system.

| JP8 CPU Clock Select |
| :---: |
| (default) 1-2 closed CPU Autodetect |
| 2-3 closed 133MHz CPU Clock Selected |

Notes on CPU Overclocking:

1. If you have successfully booted system with or without CPU overclocking, you still can try another CPU overclocking on BIOS. Please enter BIOS Setup, choose "Frequency/Voltage Control" menu, and select 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 as stated below 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 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 and choose "Load Optimized Defaults" to restore default BIOS .

### 2-8.3 JAGP1 & JAGP2: AGP Voltage Select

The default voltage 1.5V at AGP slot is for normal operation of the supported AGP 4X. In some case, when you try to do CPU overclocking, you may need to raise the transfer rate of the AGP interface. JAGP1 & JAGP2 are designed to provide settings for selecting a higher AGP voltage so as to raise the speed of the AGP interface.

**Warning: By selecting a higher voltage than the default , you are risking the stability of your system.**

| JAGP1 & JAGP2 AGP Voltage Select | | |
|---|---|---|
| AGP Voltage | JAGP1 | JAGP2 |
| 1.5V (default) |  1 |  1 |
| 1.6V |  1 |  1 |
| 1.7V |  1 |  1 |

### 2-8.4 JDIMM1 & JDIMM2: DIMM Voltage Select

The default voltage 2.5V at DIMM sockets is for the optimum operation of the supported DDR DRAM. In some case, when you are doing CPU overclocking, you may find a higher DIMM voltage work will better. JDIMM1 & JDIMM2 are designed to provide settings for adjusting the DIMM voltage so as to optimize the operation stability.

**Warning: In selecting a higher voltage than the default , you are risking the stability of your system.**

| JDIMM1 & JDIMM2: DIMM Voltage Select | | |
|---|---|---|
| DIMM Voltage | JDIMM1 | JDIMM2 |
| 2.5V (default) |  1 |  1 |
| 2.6V |  1 |  1 |
| 2.7V |  1 |  1 |

### 2-8.5 JP3: Keyboard / Mouse / Power Button Select

JP3 is designed to select keyboard / mouse / Power Button as the power-on controller. Setting JP3 to 1-2 closed allows users to power on system by power button, while setting JP3 to 2-3 closed enables keyboard / mouse power-on. Yet users still have to choose the K/B / Mouse Power-on mode on BIOS. (See Integrated Peripherals" in BIOS Setup.)

| JP3: | K/B / Mouse / Power Button Select |
|---|---|
|  1 | 1-2 closed (default) To power on by Power Button |
|  1 | 2-3 closed To power on by keyboard or mouse |

### 2-8.6 JP4: AGP4X Safeguard

Boot system with AGP4X card:
To assure the use of a correct 1.5V AGP4X card, please set JP4 to 1-2 closed, which permits only 1.5V AGP 4X card to boot system. In such case, if users cannot boot up the computer with an AGP card inserted in the slot, it means the AGP card is a wrong one or improperly installed. Make sure you are using a 1.5V AGP4X card.

| JP4: AGP4X Safeguard |
|---|
|  1   1-2 closed (default) For 1.5V AGP 4X only |
|  1   2-3 closed Safeguard disabled (Warning: 3.3V AGP card will burn out the 1.5V circuit.) |

Warning: if 3.3V AGP 2X card is mistakenly inserted for booting the system, the high voltage will burn out the 1.5V circuitry on board. Never use a 3.3V or an unknow AGP card on this mainboard.

## 2-9 Other Connectors Configuration

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

### 2-9.1 On-board FAN Connectors



Sensor Conn.

No Sensor

FAN1, sensor Fan Connector

FAN2, sensor Fan Connector

FAN3, sensor Fan Connector
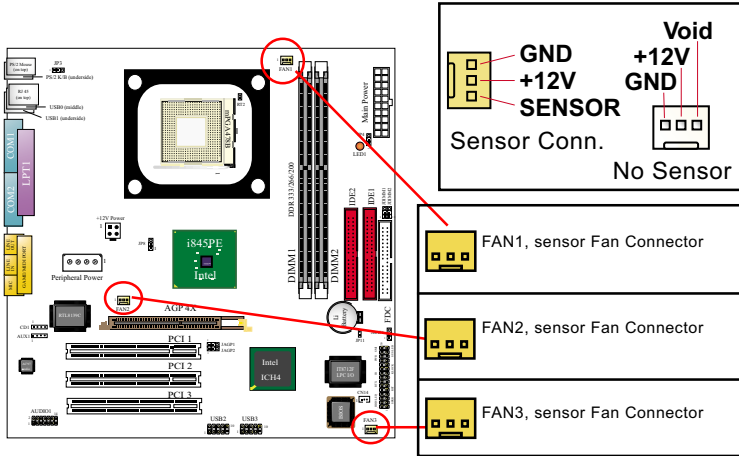
Both Sensor and No-sensor Fan Connectors support CPU/AGP/System/Case cooling fan with +12V mode. Sensor Fan Connector is yellow in color on board. When connecting the wire to any Fan Connector, users should make sure that the red wire is for the positive current and should be connected to pin +12V, and 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 with the monitoring program.

## 2-9.2 Connector AUX1

This connector connects the Video Tuner Card and acts as Audio Input connector.
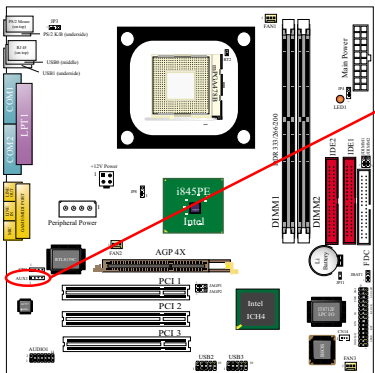


**1**

## Connector AUX 1

Pin 1  R-Channel

Pin 2  GND

Pin 3  GND

Pin 4  L-Channel

## 2-9.3 CD-ROM Audio Connectors (CD 1)

CD 1 is an audio connector connecting CD-ROM audio to mainboard.
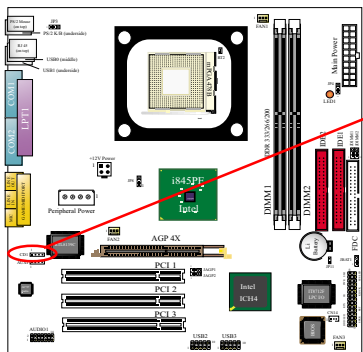


### CD-ROM Audio Pin Assignment

|  | Pin 1 | Pin 2 | Pin 3 | Pin 4 |
|---|---|---|---|---|
| 1 ▢▢▢▢ CD1 | Left Channel | GND | GND | Right Channel |

## 2-9.4  Chassis Panel Connectors

**A.     B.                    C.                         D.**

**E.     F.           G.                 H.        I.   J.   K.**

**A  : PS/2 Mouse**
**B  : LAN Port RJ45 (85DIR3-L**
      **only)**
**C  : LPT1 Port**
**D  : GAME/MIDI**
**E  : PS/2 Keyboard**
**F  : USB 1 (underside)**

**F  : USB0 (middle)**
**G  : COM1**
**H  : COM2**
**I  : Line Out/**
      **Front Speaker Out**
**J  : Line In/**
      **Rear Speaker Out**
**K  : Microphone Input/**
      **Center Subwoofer**
      **Out**
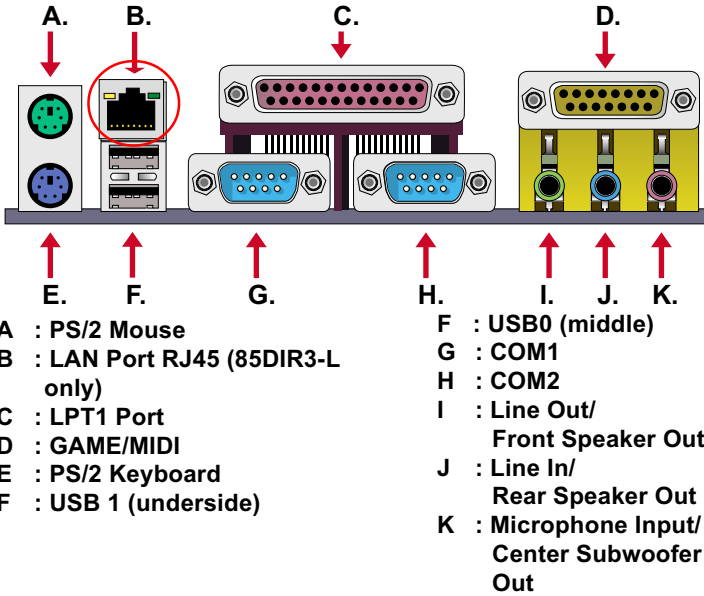
## 2-9.5  LAN Connector RJ45 (85DIR3-L only)

One RJ45 connector is on board for networking connection and  also
provides support for Wake On LAN function.

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.
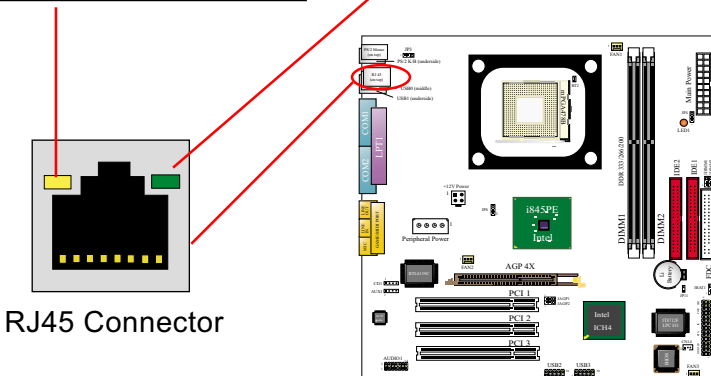
RJ45 Connector

### 2-9.6 Thermal Sensor Connectors RT2 and JP11
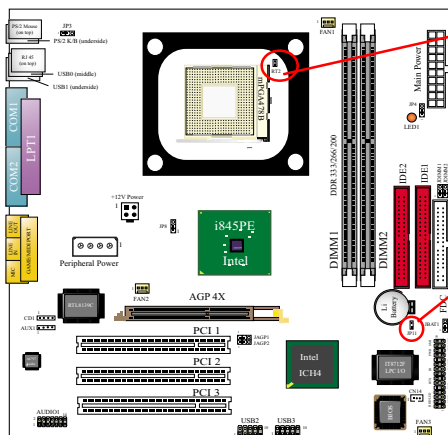


RT2

RT2 is mounted
with Thermal Resistor
by default.

JP11

To JP11

To Devices

b.

a.
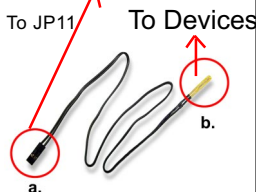
Thermal Cable
( optional)

1. Connector RT2: A thermal resistor is mounted by default to connector RT2 so as to detect the temperature of the CPU. What RT2 does is to transmit the thermal signal to BIOS or Hardware Monitor.

2. Connector JP11: A thermal cable is needed to connect JP11 to on-board devices such as HDD, Graphics card etc., so as to detect the temperature generated therein. Please connect the end (a) of the thermal cable to JP11, and tape another end (b) of thermal cable on to the device which you want to monitor. After you have finished the thermal cable installation, you will **see the detected temperature in BIOS setup or Hardware Monitor utility.**

### 2-9.7 PS/2 Mouse And PS/2 Keyboard



PIN 6 : Void
PIN 5 : Mouse Clock
PIN 4 : Vcc
PIN 3 : GND
PIN 2 : Void
PIN 1 : Mouse Data

**PS/2 MOUSE**

PIN 6 : Void
PIN 5 : Keyboard Clock
PIN 4 : Vcc
PIN 3 : GND
PIN 2 : Void
PIN 1 : Keyboard Data
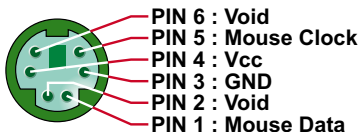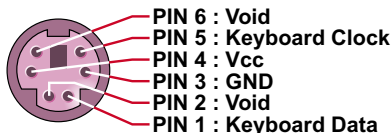
**PS/2 KEYBOARD**

## 2-9.8 Complex Header

This complex Header consists of the following connectors for various supports:



Case
Front Panel

**(Optional)** ① **SMI** ⎱ GND ─── GND ⎰ **Suspend LED** ⑤
⎱ SMI SIGNAL ─── SUSPEND LED SIGNAL ⎰

② **Power Switch** ⎱ Vcc
⎱ ATX POWER SWITCH ─── GND ⎰ **Keylock** ⑥ **(Optional)**
─── KLOCK ⎰

③ ⎡ Vcc ─── GND (–) ⎤
**Infrared(IR)** ⎢ NO CONNECTION ─── NO CONNECTION ⎥ **Power LED** ⑦
⎢ INFRARED TRANSMIT SIGNAL ─── Vcc (+) ⎦
⎢ GND
⎣ INFRARED TRANSMIT SIGNAL ─── GND ⎱ **Reset Switch** ⑧
─── RESET SIGNAL ⎰

④ ⎡ **2nd HDD LED** ⎱ Logic High (+) ─── SPEAKER SIGNAL
⎢ ⎱ HDD LED SIGNAL (–) ─── GND ⎤ **Speaker** ⑨
⎣ **1st HDD LED** ⎱ HDD LED SIGNAL (–) ─── NO CONNECTION ⎦
⎱ Logic High (+) ─── Vcc

**35**

**(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.

## 2-9.9 USB Ports and USB Headers (Header USB2 & USB3)

This mainboard provides two USB ports USB0 and USB1 on board supporting various USB devices. In addition, two USB 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 dealers or venders.

When plugging the USB cable to USB Header USB2 or 3, users must make sure the red wire is connected to Pin 1.

All 6 USB ports are compliant with V2.0 USB Bus, supporting operating systems Win 2000 and Win XP. USB V2.0 drivers are provided in Support CD for user's installation.



**USB Ports USB 0 & 1**

USB Cable (Optional)

USB Port

Red wire

Pin Header USB 2, 3

**First USB Port Wiring**

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

**USB Header Pin Assignment**

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

**Second USB Port Wiring**
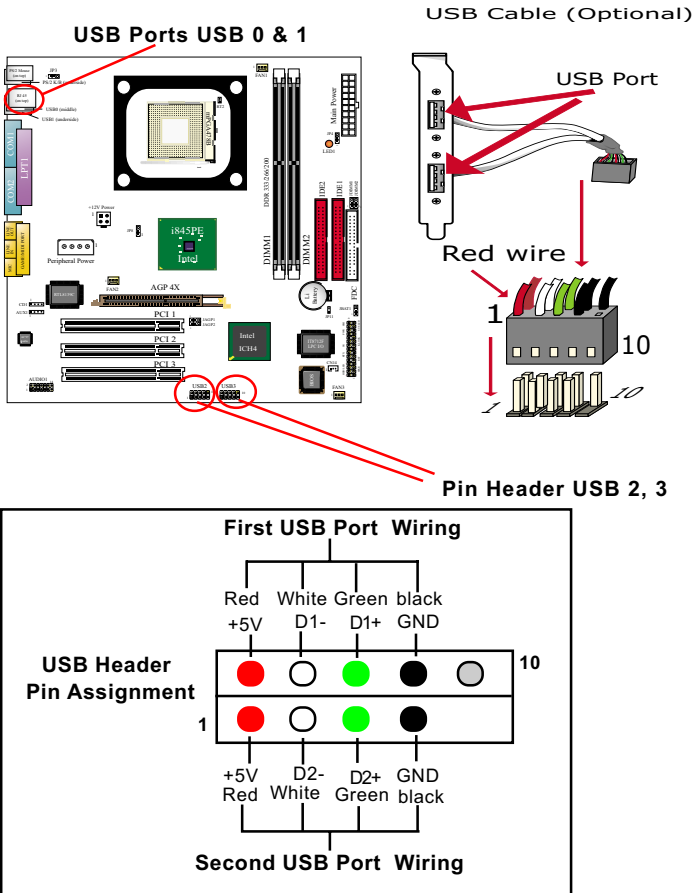
## 2-9.10 Connector CN14: Wake On LAN

1. This connector connects to a LAN card with a Ring signal output. The connector powers up the system when it receives a wake-up packet or signal through the LAN card.
2. This feature requires that Resume On Ring feature is enabled in the BIOS setting "Power Management Setup" and that your system must be on ATX power supply with at least 720mA / +5V standby power.

**CN14**

**GND**
**+5V**
**Standby**        **Ring**

Connect the Wake On LAN signal from LAN card to CN14
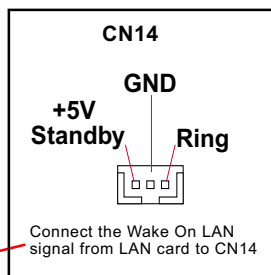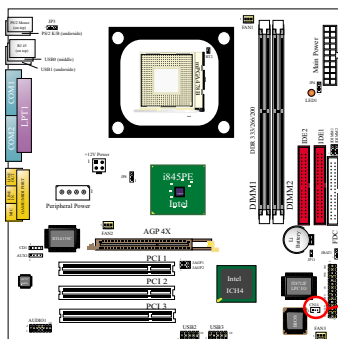
## 2-9.11 Audio 1: 6-channel Sound Output Connector (optional)

This series is designed with a 6-channel Audio-out connector "Audio1". If this option is chosen, an Audio-out card will be enclosed in package to provide 3 additional audio-out ports for the 6-channel sound.

**6-channel Audio-out Pin Assignment**

2    14
1    13
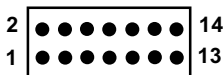
Pin 1  LFE-out
Pin 3  Center-out
Pin 5  Surround-out-R
Pin 7  Surround-out-L
Pin 9  Jack-detect
Pin11  SPDIFI
Pin13  SPDIFO

Pin 2  Gnd
Pin 4  Gnd
Pin 6  Gnd
Pin 8  Gnd
Pin10  (Void)
Pin12  Gnd
Pin14  Gnd
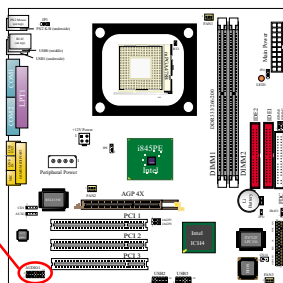
## 2-10 IRQ Description

| IRQ | Function Description | Priority |
|-----|---------------------|----------|
| IRQ 0 | System Timer | 1 |
| IRQ 1 | Keyboard Controller | 2 |
| IRQ 2 | Programmable Interrupt | N/A |
| IRQ 3 | Serial Port (COM 2) | 11 |
| IRQ 4 | Serial Port (COM 1) | 12 |
| IRQ 5 | Free | 13 |
| IRQ 6 | Floppy Disk Controller | 14 |
| IRQ 7 | Parallel Port (LPT1) | 15 |
| IRQ 8 | Real Time Clock (RTC) | 3 |
| IRQ 9 | Free | 4 |
| IRQ 10 | Free | 5 |
| IRQ 11 | Free | 6 |
| IRQ 12 | PS/2 Mouse Port | 7 |
| IRQ 13 | Coprocessor | 8 |
| IRQ 14 | Primary IDE Channel | 9 |
| IRQ 15 | Secondary IDE Channel | 10 |

• Both ISA and PCI expansion cards may require IRQs. System IRQs are available to cards installed in the ISA expansion bus first, then any remaining IRQs are available to PCI cards. Currently, there are two types of ISA cards.

• The original ISA expansion card design, now referred to as "Legacy" ISA card, requires you to configure the card's jumpers manually and then install it in any available slot on the ISA bus. To see a map of your used and free IRQs in Windows 98, the *Control Panel* in *My Computer*, contains a *System* icon, which gives you a *Device Manager* tab. Double-Clicking on a specific hardware device gives you a *Resources* tab which shows the Interrupt number and address. Double-Clicking *Computers* to see all the interrupts and addresses for your system. Make sure that each ISA device should be assigned to one IRQ respectively. If ISA device share IRQ with any other device, your computer will easily get into trouble.

# 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.

• Contents of Support CD:

For this series, users should be able to find in the Support CD the following drivers and utilities:

 1. INF Utility (Intel Chipset Software Installation Utility);
 2. Intel Application Accelerator ( IAA )
 3. AC'97 Audio Drivers
 4. Hardware Monitor Utility
 5. Other Drivers (including Network and Intel USB2.0)

This chapter is devoted to describing the installations of all these essential drivers and utilities on Windows 9X, Windows ME, Windows 2000 and Windows XP. The installation procedures for all these operating systems are all programmed 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 98 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 Open up the Support CD**
>  **3-2 Intel Chipset Software Installation Utility ( INF Utility )**
>  **3-3 Intel Application Accelerator ( IAA )**
>  **3-4 AC'97 Audio Drivers**
>  **3-5 Hardware Monitor Utility**
>  **3-6 LAN Drivers (for 85DIR3-L only)**
>  **3-7 Intel USB V2.0 Drivers**

## 3-1 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:
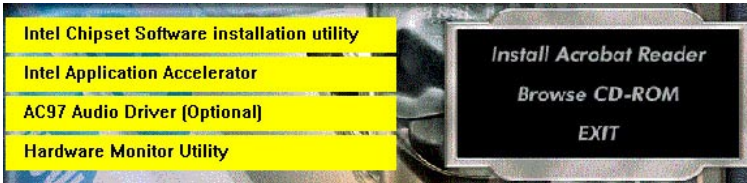


2. In case your system does not open the Support CD automatically, please click to the following path to enter the Main Installation Menu:

   D:\ Autorun.exe  (assuming that your CD-ROM Drive is Drive D)

3. We 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 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.
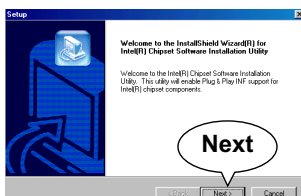
**3. "Intel Software License Agreement"** screen will  appear, please click the **"Yes"** button to agree with the Licence Agreement and  continue.
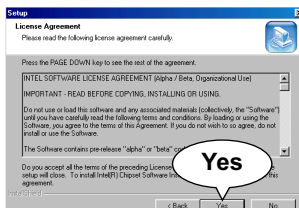
4. After all the setup process is finished, please restart your computer by clicking on "Finish" so as to take  the Utility into effect.
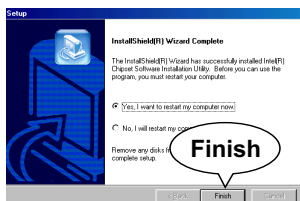
### 3-3 Install "Intel Application Accelerator"

IAA supports all Windows 98/98se/Mellennium/NT4/2000/XP with Pentium III / 4 processor. Installations of this software for these operating systems are similarly programed 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 98. Users of Windows Me/NT4/2000/XP 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.
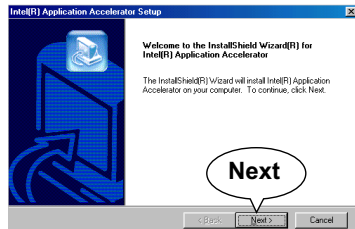
3. On the "Licence Agreement" screen, click on "Yes" to continue.
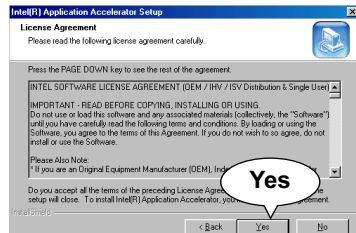
4. On "Choose Destination Location" screen, press **"Yes"** to continue.
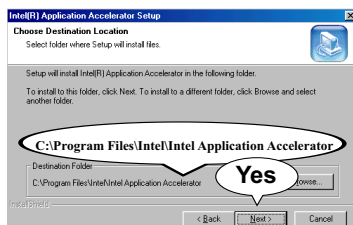
5. On "InstallShield Wizard Complete" screen, choose "Yes, I want to restart my computer now" and press "finish" to restart. Remember you must restart computer to put setup into effect.
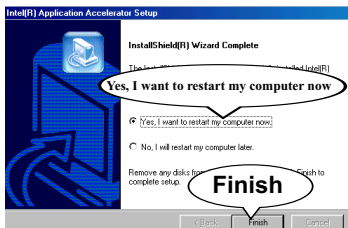
## 3-4 Install AC'97 Audio Driver

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  Installation

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"".
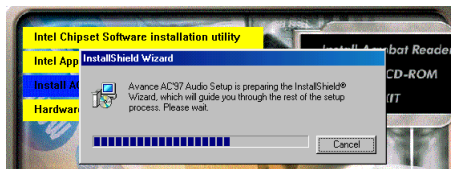


3. instantly, the Setup program
   proceeds to install the softwares
   which include AC'97 driver and
   AVRack. (If you want to stop
   setup, click the "Cancel"
   button.)
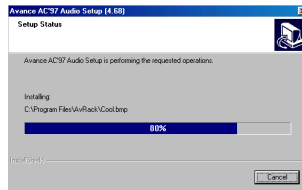


4. After the setup process  is
   finished, please check the radial
   button "Yes, I want to restart my
   computer now." and click "OK"
   to restart your system.
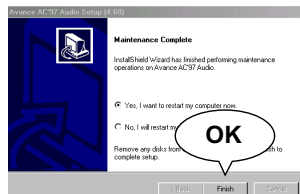
### 3-4.2 6-channel Verification

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:



**Pale Green Connector
to Front Speaker**

**Pale Blue Connector
to Rear Speaker**

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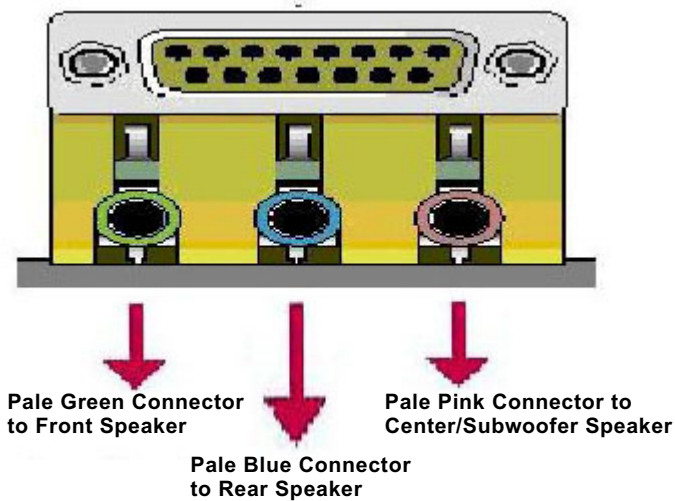
2. After Connection is done, start your Windows system and double click the Avance Sound Effect manager icon to enter 6-channel configuration:



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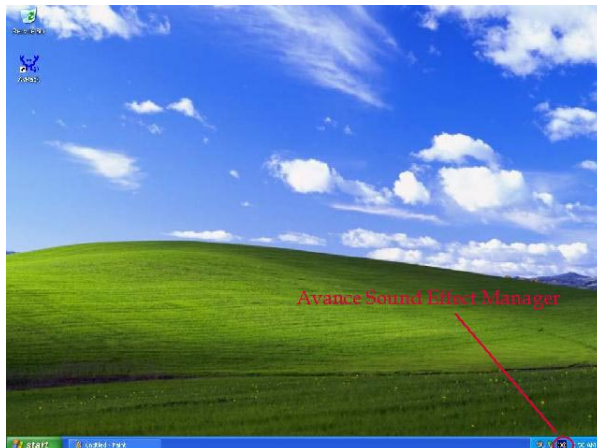
3. The AC'97 Audio Configuration" screen will pop out. Click the "Speaker Configuration" bar with your mouse.
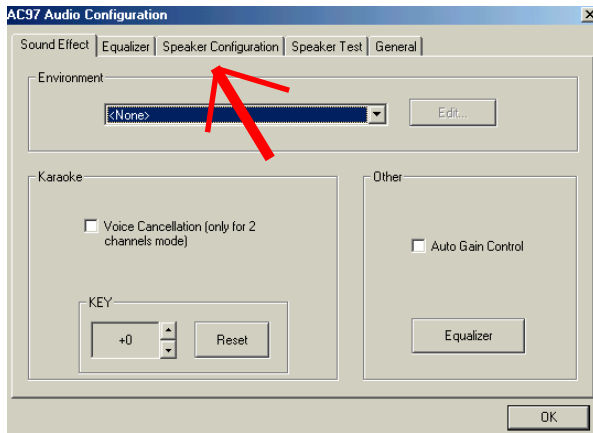


4. Instantly, the "Speaker Configuration" screen will pop out. Pick the items "6-channel mode for 5.1 speakers output" and " Synchronize the phonejack switch with the speakers settings" and then click "OK" to finish configuration.
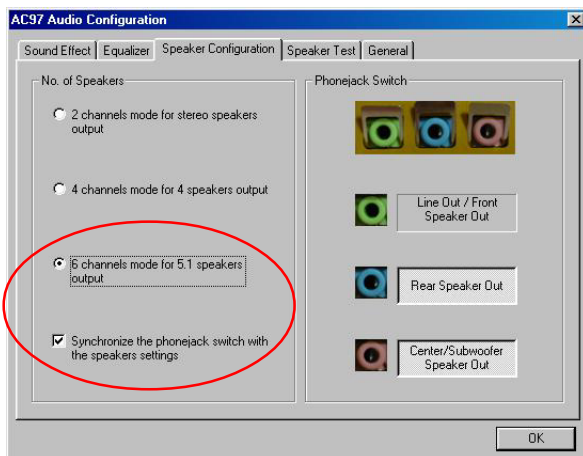
5. At finishing the Speakers Configuration, you can also click the "Speaker Test" bar on the screen to test the 6-channel performance. The figure below is the "Speaker Test" screen with testing instructions enclosed on it. Follow the instructions to perform the Speakers Test.
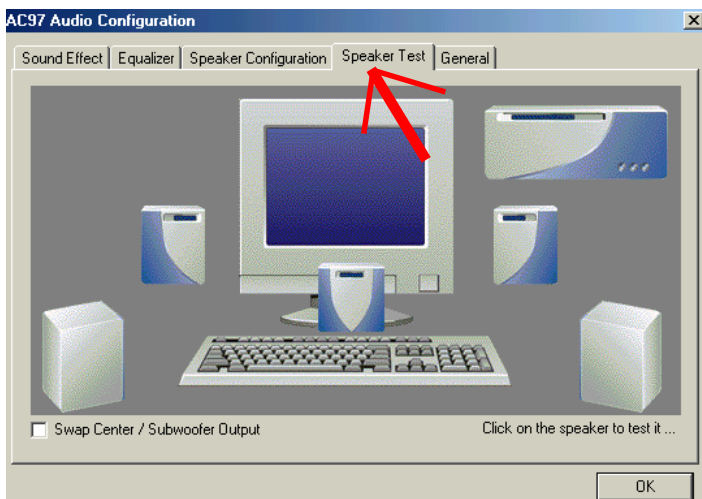
## 3-5 Install Hardware Monitor Utility

### 3-5.1 Installation

Hardware Monitor is built in chip IT8712F of this series. Its installation is programed to a fully automated mode on Windows 9X/Me/NT4/2000/XP. User 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. Instantly the " Smart Guardian Setup" screen appears to announce the setup of Hardware Monitor software "Smart Guardian".

3. Next, the Setup Program will suggest to you the destination directory where the "Smart Guardian" will be installed. Select the Program folder and click "Next" to continue.
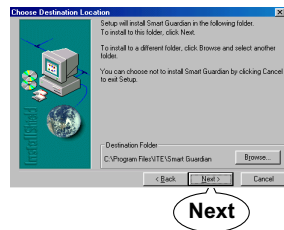
4. Instantly, Setup Program starts to copy files and install the software.
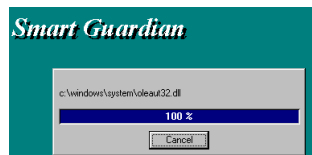
4. In one or two second, the "Setup complete" screen appears. Click "Finish" to restart your computer so that the Utility can be put into effect.
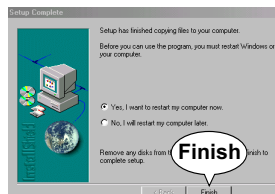
### 3-5.2  Verification

1. After restarting your computer, click "Start" and choose the path \Programs \ITE Smart Accessories\ITE Smart Guardian to open the main window of the Hardware Doctor.
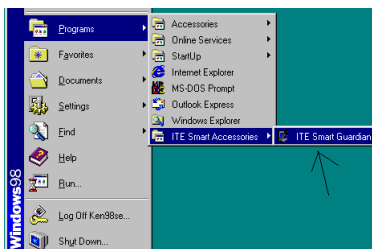


2. Instantly, the Smartguardian Main Panel appears, telling you the CPU current temperature, CPU current Voltage and Current fan speed.

## 3-6 Install LAN Drivers (for 85DIR3-L only)

### 3-6-1. RTL8139C 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 RTL8139C 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".
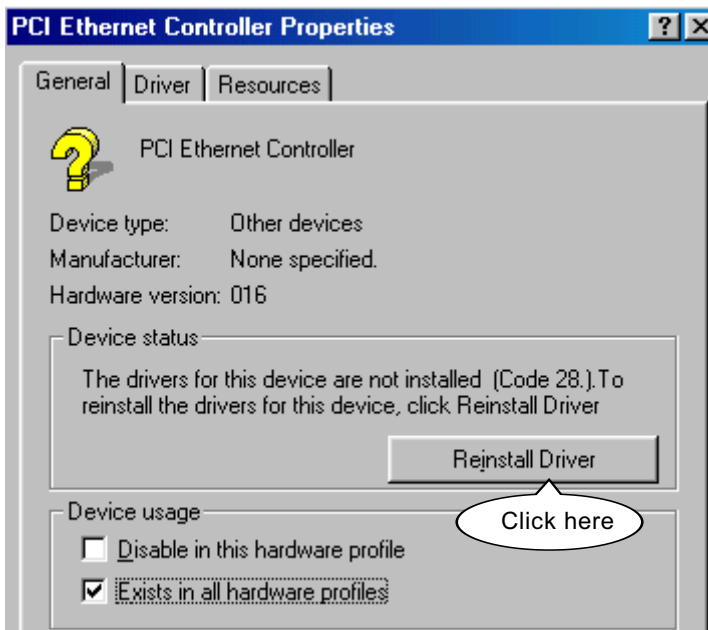
5. In the "Update device Driver Wizard" screen, click "Next" to continue until you see a dialog box asking you to "Specify a location" for the driver. You should **now** insert the Support CD into your CD-ROM.

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.
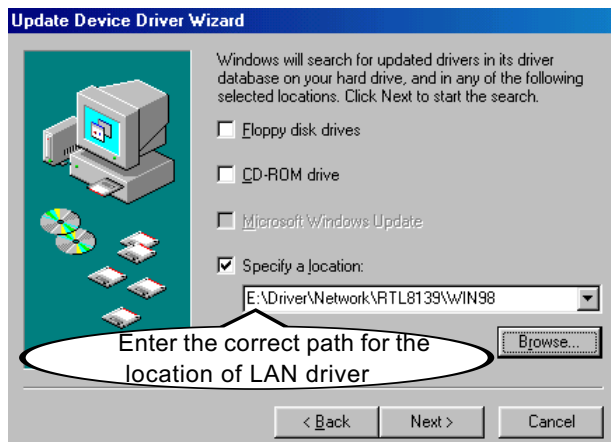


7. The Update Device Driver Wizard will then go on installing the driver, until the "Insert Disk" dialog box shows up. Please withdraw your Support CD and insert the Win 98 CD-ROM into the CD-ROM drive for updating system and click "OK" to continue.

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.

### 3-6-2. RTL8139C LAN driver on Windows NT4.0

1. When you newly install Win NT4, the Setup program will ask you whether your computer will participate on a network. please check "Do not connect this computer to a network at this time" and continue with your installation.  That means, you are going to install the LAN Adapter and driver after you have finished system installation. By this way, you will set up your LAN Adapter and driver more surely.
2. If you have now installed Win NT4 in your computer, please boot your system and in the "Start" screen click the following path to install your computer networking:
     \Start\Settings\Control Panel\Network (double click)
3. Instantly, a dialog box pops up, asking you, "Windows NT Networking is not installed. Do you want to install it now?" Please click "Yes" to continue.
4. The Network Setup Wizard will then proceed to guide you to the installation of LAN Adapter and Driver, until the "Select Network Adapter" screen pops up, on which you should click "Have Disk" to install the on-board RTL8139C LAN Controller.
5. Instantly, the "Insert Disk" dialog box pops up. You should **now** insert the Support CD into your CD-ROM drive, and then type to the white bar the correct path for the location of the LAN driver. Supposing your CD-ROM drive is drive D, please type the following path:
     D:\Driver\Network\RTL8139\Winnt4 and click "OK" button to continue. (Controller RTL8100B is supported by Driver RTL8139)
6. Instantly, the Setup program detects the "Realtek RTL8139(A/B/C/ 8130) PCI Fast Ethernet Adapter" and shows it on the "Select OEM Option" screen. Please click "OK" to continue.
7. The Setup program will then proceed to install the RTL8139 Adapter and then other networking components such as TCP/IP protocol.
8. During the setup process, if "windows NT Setup" needs to copy some Windows files, you should then withdraw the Support CD and insert back the Win NT4 CD-ROM into your CD-ROM drive to continue.
9. After you have finished other networking components setup, you should restart your syustem to put all the new setups into effect.

10. To verify that the onboard RTL8100B Controller has been set up in system, please click "Start", then "Control Panel", then "Network".

11. In the "Network" screen, click the "Adapter" bar. You can now see the "Realtek RTL8139(A/B/C/8130) PCI Fast Ethernet Adapter is already installed in system.

### 3-6-3. RTL8139C LAN driver on Win ME / 2000 / XP

1. When you newly install Windows ME , Windows 2000or 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 RTL8139C 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.

## 3-7 Install USB 2.0 Driver for Win2000 or WinXP

USB V2.0 with its 480Mb/s transfer rate supports operating system Win2000 and WinXP with Intel USB drivers and Microsoft USB drivers. USB Driver installation procedures are of similar steps in Win2000 and WinXP. The point is the Intel USB drivers are already open toIntel Chipset users, while Microsoft USB drivers are to be found in the Win 2K and Win XP Service pack.  <u>User should install the latest Service Pack for Win 2K or Win XP  before installing the Intel USB2.0 driver.</u> The following procedures are for installation of USB2.0 drivers on both Win 2K and Win XP:

1. In Win2000 or WinXP, install the latest Service Pack version into the operating system ( latest Service Pack can be found in Microsoft Web Site).
2. After installation of the Service Pack, insert the Mainboard Support CD into CD-ROM for installation of the USB2.0 driver.
3. Take the following path to search for the USB 2.0 driver for installation:

   \My Computer(right click of Mouse)\Properties\
   Hardware\Device Manager\
   Universal Serial Bus(USB) Controller (left double click of Mouse)\
   Driver\Update Driver\

4.  Instantly the "Upgrade Device Driver Wizard" will show up on screen. Click "Next" to continue.
4. Instantly, the Wizard Program will guide you through to search for the USB driver.
5. The following "Upgrade Device Driver Wizard" screen will appear. Tick "Specify a Location" and mouse click "Next" button to continue.
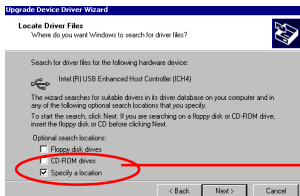


"Specify a Location" of driver in "Win2000".
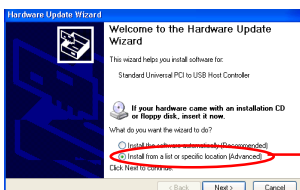
"Specify a Location" of driver in "Win XP".

6. When a dialog box pops out, asking user to key in the correct path for Intel_USB2.0 driver, please type the following path and mouse click "OK" button to install the Intel_USB 2.0 driver:

        For both Win2000 and Win XP:

          d:\driver\usb20\Intel_USB20

(supposing the CD-ROM Drive holding the Support CD is Drive D)

7. After clicking "OK" button, the program will go on installing Intel_USB20" driver until installation completes.When the following screen appears. Click "Finish" to complete the installation, and your system supports USB 2.0 now.
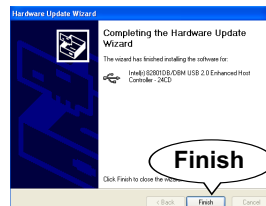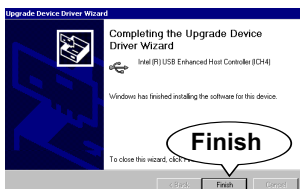
# Chapter 4 AMI BIOS Setup

## 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**

## 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 upgrade BIOS without the need to replace an EPROM component.
- The Upgrade Utility can be loaded on a floppy diskette for upgrading saving, and verifying  the system BIOS. The Upgrade Utility can also be run from a hard disk drive or a network drive.

### 4-5.1 Before Updating BIOS

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

### 4-5.2 Update Process

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

- "AMIFLASH.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 win95/98, ME, NT WINDOWS 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 latest BIOS file and  AMI flash utility "AMIFLASH.EXE". 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, reboot your system and boot from the  diskette.

Step 4. Type **AMIFLASH \*.ROM** and then press <Enter> to run BIOS update program. (\*.ROM will vary, depending on your mainboard model and version code. Instead of typing "\*", you should type specific file name for your specific mainboard).

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 SETUP DEFAULTS" or **"Load Optimal Defaults"** and save this change. BIOS update is complete now.

## 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.

| AMIBIOS NEW SETUP UTILITY - VERSION 3.31a | |
|---|---|
| ▶ Standard CMOS Features | Set Supervisor Password |
| ▶ Advanced BIOS Features | Load Optimal Defaults |
| ▶ Advanced Chipset Features | Save & Exit Setup |
| ▶ Power Management Features | Exit Without Saving |
| ▶ PNP/PCI Configurations | |
| ▶ Integrated Peripherals | |
| ▶ Hardware Monitor Status | |
| ▶ Frequency/Voltage Control | |

F1: Help    ↑↓: Select Item    +/- : Change Values    F9: Setup Defaults
Esc: Exit    ←→: Select Menu    Enter: Select ▶Sub-Menu    F10: Save and Exit

Set Time, Date, Hard Disk Type ...

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 & Exit Setup" saves your changes and reboots the system, and "Exit Without Saving" ignores your changes and exits the program.

## 4-6.2 Standard CMOS Setup

Standard CMOS Setup records some basic system hardware configuration and sets the system clock and error handling. Modify the configuration values of this option if you want to change your system hardware configuration or after you clear CMOS data.

Run the Standard CMOS Setup as follows:

1. Choose "Standard CMOS Setup" from the Main Menu and a screen with a list of options will appear:

| **Standard CMOS Features** | | **Setup Help** |
|---|---|---|
| System Time | 00 19 29 | |
| System Date | Dec 05 2001 Wed | |
| ▶ Floppy options. | | |
| ▶ IDE Devices Config | | |
| | | |

F1: Help    ↑↓ : Select Item     +/- : Change Values      F9: Setup Defaults
Esc: Previous Menu      Enter: Select ▶ Sub-Menu      F10: Save and Exit

2. Use one of the arrow keys to move between options and modify the selected options by using PgUp / PgDn / + / -  keys. An explanation of the <F> keys follows:

   <F1>: "Help" gives options available for each item.
   <F9>: Setup BIOS default values.
   <F10>: Save and Exit Setup.

3. Press <ESC> to return to the Main Menu when you finish setting up all items.  The following item descriptions are provided as a quick guide to your 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.

**Floppy options** Press Enter on "Floppy options" will let you select this field to the type(s) of floppy disk drive(s) installed in your system. The choices are:
1.2MB, 5.25 in.
720KB, 3.5 in.
1.44MB, 3.5 in.
2.88MB, 3.5 in.
Not Installed

**IDE Device Config** Press Enter on IDE Device Config will let you configure the IDE devices on board and the following menu will reveal the following submenu for your configuration of the hard Disk you have installed:

| Primary IDE Master :Maxtor 82560 A4 | | Setup Help |
|---|---|---|
| Type | Auto | |
| Cylinders | 4962 | |
| Heads | 16 | |
| Write Precompensation | | |
| Sectors | 63 | |
| Maxium Capacity | 2561 Mb | |
| LBA Mode | On | |
| Black Mode | On | |
| Fast Programmed I/O Modes | 4 | |
| 32 Bit Transfer Mode | On | |

F1: Help   ↑↓: Select Item      +/- : Change Values      F9: Setup Defaults
Esc: Previous Menu            Enter: Select ▶ Sub-Menu     F10: Save and Exit

**Type** This option shows the types of configuration for the IDE devices:

   1-50: Predefined types

   USER: set Parameters by User

   Auto: Set parameters automatically

   CD-ROM: Use for ATAPI CD-ROM drives

Double click [Auto] to set all HDD parameters automatically, including "Cylinders, Heads, Write Precompensation, Sectors, Maximum Capacity and 32 Bit Transfer Mode.

## 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:

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

**AMIBIOS NEW SETUP UTILITY - VERSION 3.31a**

| Advanced BIOS Features | | Setup Help |
|---|---|---|
| Quick Boot | Enabled | |
| Delay for Hard Drive (Sec.) | 2 | |
| 1st Boot Device | Floppy: 1.44 MB 3.5 | |
| 2nd Boot Device | IDE-0:Maxtor 20560 A4- | |
| 3rd Boot Device | CD-ROM | |
| Try Other Boot Devices | Yes | |
| S.M.A.R.T for Hard Disks | Disabled | |
| Bootup Num-lock | On | |
| Floppy Drive Swap | Disabled | |
| Floppy Drive Seek | Disabled | |
| PS/2 Mouse Support | Enabled | |
| Primary Display | VGA/EGA | |
| Password Check | Setup | |
| Boot To OS/2 | No | |
| CPU Microcode Update | Enabled | |
| L1 Cache | Enabled | |
| L2 Cache | Enabled | |
| System BIOS Cacheable | Enabled | |
| C000,32K Shadow | Cached | |
| C800,16K Shadow | Disabled | |
| CC00,16K Shadow | Disabled | |
| D000,16K Shadow | Disabled | |
| D400,16K Shadow | Disabled | |
| D800,16K Shadow | Disabled | |
| DC00,16K Shadow | Disabled | |

F1: Help    ↑↓: Select Item    +/- : Change Values     F9: Setup Defaults
Esc: Previous Menu      Enter: Select ▶ Sub-Menu     F10: Save and Exit

2. Use one of the arrow keys to move between options and modify the selected options by using PgUp / PgDn / + / - keys. An explanation of the <F> keys follows:

<F1>: "Help" gives options available for each item.
<F9>: Setup BIOS default values.
<F10>: Save and Exit Setup.

3. Press <ESC> to return to the Main Menu when you finish setting up all items.  The following item descriptions are provided as a quick guide.

| | |
|---|---|
| **Quick Boot** | Allows you to enable / disable quick boot of your system. |
| **Delay for Hard Drive (Sec.)** | Allows you to adjust the time of detecting hard disk on board at booting system. Choices: Disabled; 1~10 sec. in 1 sec. stepping. |
| **1st/2nd/3rd Boot Device** | Allows you to set floppy or IDE devices already installed to be the 1st/2nd/3rd boot device. Choises: Disabled; Device(s) installed |
| **Try Other Boot Devices** | Allows you to enable/disable system to try to boot with other boot devices. Choises: Yes; No |
| **S.M.A.R.T. for Hard Disks** | Allows you to enable / disable the Self Monitoring Analysis and Reporting Technology for the hard disk. Choices: Enabled; Disabled |
| **Bootup Num-lock** | Allows you to toggle between On or Off to control the state of the NumLock keys when the system boots. If On, the numeric keypad is in numeric mode. If off, the numeric keypad is in cursor control mode. |
| **Floppy Drive Swap** | Disabled (default), Floppy Drive A will not be changed to B, nor B to A.  Enabled, Floppy Drive A and B will change position. |

**Floppy Drive Seek** Disabled (default), Floppy Drives will not be checked and diagnosed at system bootup; Enabled, Floppy Drives will be checked and diagnosed at system bootup.

**PS/2 Mouse Support** Enabled (default), PS/2 mouse is supported. Disabled, PS/2 Mouse is not supported

**Primary Display** Allows you to choose the primary display for the system. Choices: VGA/EGA (default); CGA40x25; CGA80x25; Mono; Absent

**Password Check** Allows you to set BIOS to check up password with a password prompt at BIOS Setup or at restarting system.
Choices: Setup (at BIOS Setup); Always (System)

**Boot to OS/2** Allows you to set your system to OS/2 operating system.
Choices: Yes; No (default)

**CPU Microcode Updation** Allows you to enable/disable the CPU Microcode Update function.
Choices: Disabled; Enabled (default)

**L1 /L2 Cache** Allows you to enable/disable Cache Mode.
Choices: Disabled; Enabled (default)

**System BIOS Cacheable** Allows you to enable / disable the System BIOS Cacheable function.

**C000, 32K Shadow** Allows you to set these addresses cached, Enabled or Disabled. Default: Cached

**C800,CC00,D000,D400, D800,DC00 16K Shadow** Allows you to set these addresses cached, Enabled or Disabled. Default: Disabled

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

**AMIBIOS NEW SETUP UTILITY - VERSION 3.31a**

| Advanced Chipset Features | | Setup Help |
|---|---|---|
| (Hyper-threading Function) | (Enabled) | |
| DRAM Timing | | |
| SDRAM Frequency | Auto | |
| Configure SDRAM Timing by SPD | Enabled | |
| SDRAM CAS# Latency | 2.5 Clocks | |
| SDRAM RAS# Precharge | 3 Clocks | |
| SDRAM RAS# to CAS# Delay | 3 Clocks | |
| SDRAM Precharge Delay | 7 Clocks | |
| SDRAM Burst Length | 4 | |
| Memory Hole | Disabled | |
| AGP Aperture Size | 64MB | |
| USB Controller | 6 USB Ports | |
| USB 1.1 Device Legacy Support | Disabled | |
| USB 1.1 Port 64/60 Emulation | Disabled | |

| | | |
|---|---|---|
| F1: Help    ↑↓: Select Item | +/- : Change Values | F9: Setup Defaults |
| Esc: Previous Menu | Enter: Select ▶ Sub-Menu | F10: Save and Exit |

2. Use one of the arrow keys to move between options and modify the selected options by using PgUp / PgDn / + / - keys. An explanation of the <F> keys follows:

<F1>: "Help" gives options available for each item.
<F9>: Setup BIOS default values.
<F10>: Save and Exit Setup.

3. Press <ESC> to return to the Main Menu when you finish setting up all items. The following item descriptions are provided as a quick guide to your setup.

| | |
|---|---|
| **(Hyper-threading Function)** | If hyper-threading CPU is running on board, this item appears to show the enabled status. Choices: Enabled; Disabled |
| **SDRAM Frequency** | Allows you to set the SDRAM frequency. Choices: Auto; 200MHz; 266MHz;333MHz |
| **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. |
| **SDRAM CAS# Latency** | With SDRAM Timing by SPD disabled, you can select the SDRAM CAS# (Column Address Strode)latency manually. Choices: 1.5 Clocks;2Clocks; 2.5 Clocks |
| **SDRAM RAS# Precharge** | With SDRAM Timing by SPD disabled, you can select the SDRAM RAS# (Row Address Strode) Precharge cycle manually. Choices: 2Clocks; 3 Clocks |
| **SDRAM RAS# to CAS# Delay** | With SDRAM Timing by SPD disabled, you can select the SDRAM RAS# to CAS# delay cycle manually. Choices: 2Clocks; 3 Clocks |
| **SDRAM Precharge Delay** | Allows you to set the SDRAM Precharge Delay cycle. Choices: 5 clocks; 6 clocks; 7 clocks |
| **SDRAM Burst Length** | With SDRAM Timing by SPD disabled, you can select the SDRAM Burst length manually. Choices: 8; 4 |
| **Memory Hole** | Allows you to enabled / disabled (default) the support of Memory Hole which is reserved for ISA card. Choices: Disabled;15MB-16MB |

**AGP Aperture Size** Allows you to set the AGP Aperture Size.
Choices: 4MB; 8MB; 16MB; 32MB; 64MB; 128MB;
256MB;

**USB Controller** Allows you to set the USB Controller on the USB
port(s).
Choices: 6 USB Ports; 4 USB Ports;
2 USB Ports; disabled

**USB 1.1 Device Legacy** Allows you to select the USB Device Legacy support.
**Support** Choices: No Mice; All Device; Disabled

**USB 1.1 Port 64/60** Allows you to enable / disable (default) the Port 64/
**Emulation** 60 Emulation.

## 4-6.5 Power Management Features

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

Run the Power Management Features as follows:

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

**AMIBIOS NEW SETUP UTILITY - VERSION 3.31a**

| Power Management Features | | Setup Help |
|---|---|---|
| ACPI Standby State | S1/POS | |
| Power Management/APM | Enabled | |
| Video Power Down Mode | Suspend | |
| Hard Disk Power Down Mode | Stand By | |
| Standby Time Out (Minute) | Disabled | |
| Suspend Time Out (Minute) | Disabled | |
| Power Button Function | On/Off | |
| Restore on AC/Power Loss | Last State | |
| Resume On Ring | Disabled | |
| Resume On LAN/PME# | Disabled | |
| Resume On RTC Alarm | Disabled | |
| RTC Alarm Date | 15 | |
| RTC Alarm Hour | 12 | |
| RTC Alarm Minute | 30 | |
| RTC Alarm Second | 30 | |

| F1: Help | ↑↓ : Select Item | +/- : Change Values | F9: Setup Defaults |
|---|---|---|---|
| Esc: Previous Menu | | Enter: Select ▶ Sub-Menu | F10: Save and Exit |

2. Use one of the arrow keys to move between options and modify the selected options by using PgUp / PgDn / + / -  keys. An explanation of the <F> keys follows:

 <F1>: "Help" gives options available for each item.
 <F9>: Setup BIOS default values.
 <F10>: Save and Exit Setup.

3. Press <ESC> to return to the Main Menu when you finish setting up all items.  The following item descriptions are provided as a quick guide to your setup.

**ACPI Standby State** This item allows you to select the ACPI Suspend type. However, this mainboard only supports S1 (POS) for Power on Suspend under ACPI mode.

**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: 1; 2; 4; 8; 10; 20; 30; 40; 50; 60

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

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

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

**Resume on Ring** Allows you to enable / disable 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 the Resume on LAN (PCI LAN) and PME function.

**Resume On RTC Alarm**  Allows you to enable / disable 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

## 4-6.6 PNP / PCI Configurations

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

Run the PNP/PCI Configurations as follows:

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

**AMIBIOS NEW SETUP UTILITY - VERSION 3.31a**

| PNP/PCI Configurations | | Setup Help |
|---|---|---|
| Clear NVRAM | No | |
| PCI Latency Timer (PCI Clocks) | 32 | |
| Init. Graphics Adapter Priority | AGP/PCI | |
| PCI IDE BusMaster | Disabled | |
| PCI Slot1 IRQ  Priority | Auto | |
| PCI Slot2 IRQ  Priority | Auto | |
| PCI Slot3 IRQ  Priority | Auto | |

| | | |
|---|---|---|
| F1: Help      ↑↓: Select Item | +/- : Change Values | F9: Setup Defaults |
| Esc: Previous Menu | Enter: Select ▶ Sub-Menu | F10: Save and Exit |

2. Use one of the arrow keys to move between options and modify the selected options by using PgUp / PgDn / + / -  keys. An explanation of the <F> keys follows:

 <F1>: "Help" gives options available for each item.
 <F9>: Setup BIOS default values.
 <F10>: Save and Exit Setup.

3. Press <ESC> to return to the Main Menu when you finish setting up all items.  The following item descriptions are provided as a quick guide to your setup.

**Clear NVRAM** Allows BIOS to clear the NVRAM data.
Choices: No (default); Yes

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

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

**PCI IDE BusMaster** Allows you to enable / disable the PCI IDE Bus
Master function.

**PCI Slot 1/2/3 IRQ** Allows you to specify the IRQ for the PCI slots.
**Priority** Choices: Auto; 3; 4; 5; 7; 9; 10; 11

## 4-6.7 Integrated Peripherals

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

Run the Integrated Peripherals as follows:

1. Choose "Integrated Peripherals" from the Main Menu and a list of options will appear:

**AMIBIOS NEW SETUP UTILITY - VERSION 3.31a**

| Integrated Peripherals | | Setup Help |
|---|---|---|
| Onboard IDE | Both | |
| Onboard LAN (optional) | Disabled | |
| Onboard AC'97 Audio | Auto | |
| Onboard FDC | Auto | |
| Onboard Serial Port 1 | Auto | |
| Onboard Serial Port 2 | Auto | |
|   Serial Port 2 Mode | Normal | |
| Onboard Parallel Port | Auto | |
|   Parallel Port Mode | ECP | |
|   Parallel Port IRQ | Auto | |
|   Parallel Port DMA Channel | Auto | |
| Onboard MIDI Port | Disabled | |
|   MIDI Port IRQ | 5 | |
| Onboard Game Port | 200 | |
| K/B Power-on function | Disabled | |
|   Stroke Keys Selected | N/A | |
| PS/2 Mouse Power-on function | Disabled | |

| | | |
|---|---|---|
| F1: Help    ↑↓ : Select Item | +/- : Change Values | F9: Setup Defaults |
| Esc: Previous Menu | Enter: Select ▶ Sub-Menu | F10: Save and Exit |

2. Use one of the arrow keys to move between options and modify the selected options by using PgUp / PgDn / + / -  keys. An explanation of the <F> keys follows:

  <F1>: "Help" gives options available for each item.
  <F9>: Setup BIOS default values.
  <F10>: Save and Exit Setup.

3. Press <ESC> to return to the Main Menu when you finish setting up all items.  The following item descriptions are provided as a quick guide to your setup.

**OnBoard IDE** Allows you to choose the Onboard IDE Mode.
Choices: Disabled; Primary; Secondary; Both

**(Optional) OnBoard LAN** If On-board LAN is chosen, use this item to enable / disable onboard LAN.
Choices: Enabled; Disabled

**OnBoard AC'97 Audio** Allows you to disable AC' 97 Audio.
Choices: Auto; Disabled

**OnBoard FDC** Allows you to enable / disable the Onboard FDC.
Choices: Auto; Enabled; Disabled

**OnBoard Serial Port 1** Allows you to set the Onboard Serial Port 1.
Choices; Auto; Disabled; 3F8/COM1; 2F8/COM2; 3E8/COM3; 2E8/COM4;

**OnBoard Serial Port 2** Allows you to set the Onboard Serial Port 2.
Choices; auto; Disabled; 3F8/COM1; 2F8/COM2; 3E8/COM3; 2E8/COM4;

**Serial Port 2 Mode** Allows you to set the Serial Port 2 Mode.
Choices: Normal; IrDA; ASKIR;

**OnBoard Parallel Port** Allows you to configure onboard Parallel port .
Choices: Auto; Disabled; 378; 278; 3BC;

**Parallel Port Mode** If Parallel Port is not disabled, this item allows you to configure parallel port mode.
Choices: ECP; EPP + ECP; Normal; EPP

**Parallel Port IRQ** If Parallel Port Mode is set at EPP, this item allows you to set the Parallel Port IRQ.
Choices: 5; 7

**Parallel Port DMA Channel** If Parallel Port Mode is set at ECP, this item allows you to set the DMA Channel.
Choices: 0; 1; 3

**OnBoard MIDI Port** Allows you to configure onboard MIDI port address.
The choices: Disabled; 300h; 330h

**MIDI PORT IRQ** If the onboard MIDI port is set at 300h or 330h, this item shows up to allow you to configure the MIDI Port IRQ to IRQ 5.

**OnBoard Game Port** Allows you to configure Onboard Game port address.
The choices: Disabled; 200h; 208h

**Keyboard Power On function** Allows you to configure the Keyboard PowerOn Function.
Choices: Disabled; By StrokeKey

**Stroke Keys Selected** If Keyboard PowerOn function is set at "by Stroke Key", this item shows up to allow you to select the stroke key.
Choices: Wake; Power; Ctrl + F1~F6

**PS/2 Mouse Power-on Function** Allows you to disable or use the PS/2 mouse to power on system..
choices: Disabled; Enabled

## 4-6.8 Hardware Monitor Status

This menu helps you to read only and get more information on the working CPU temperature, FAN speed and voltage.

1. Choose "Hardware Monitor Status" from the Main Menu and a screen with a list of current status of your working system will appear:

**AMIBIOS EASY SETUP UTILITY - VERSION 3.31a**

| Hardware Monitor Status | | Setup Help |
|---|---|---|
| Temperature 1 | 44 $^0$C/111 $^0$F | |
| Temperature 2 | -55 $^0$C/-131 $^0$F | |
| Temperature 3 | | |
| Fan 1 | 4891 RPM | |
| Fan 2 | 4905 RPM | |
| Fan 3 | 0 RPM | |
| CPU Vcore | +1.680 V | |
| +1.5V | +1.504 V | |
| +3.3V | +3.408 V | |
| +5.0V | +5.126 V | |
| +12.0V | +11.187V | |
| -12.0V | -11.972V | |
| -5.0V | -4.939V | |
| 5V SB | +5.164V | |
| Battery | +3.296V | |

F1: Help   ↑↓: Select Item    +/- : Change Values     F9: Setup Defaults
Esc: Previous Menu     Enter: Select ▶ Sub-Menu    F10: Save and Exit

2. Press <ESC> to return to the Main Menu. In case any irregular reading appears about your system, it indicates that a problem exists therein. To solve the problem, a hardware engineer or your dealer is recommended.

**Temperature 1** Shows current CPU internal temperature.

**Temperature 2** Shows current CPU external temperature.

**Temperature 3** Shows current system temperature.

**Fan 1 / 2 /3** Displays the current speed of CPU Fan, and other two onboard devices which user has connected to the onboard Fan Connectors.

**CPU Vcore** Shows CPU core actual voltage value.

**+1.5V** Shows current voltage against the +1.5V power supply.

**+3.3V** Shows current voltage against the +3.3V power supply.

**+5.0V** Shows current voltage against the +5.0V power supply.

**+12V** Shows current voltage against the +12V power supply.

**-12V** Shows current voltage against the -12V power supply.

**-5.0V** Shows current voltage against the -5.0V power supply.

**+5V SB** Shows current voltage against the +5V SB power supply.

**Battery** Shows current voltage against battery power supply.

### 4-6.9 Frequency/Voltage  Control

Run the "Frequency/Voltage Control" as following:

1. Choose "Frequency/Voltage Control" from the Main Menu and a screen with a list of options will appear:

**AMIBIOS EASY SETUP UTILITY - VERSION 3.31a**

| Frequency/Voltage Control | | Setup Help |
|---|---|---|
| RedStorm Overclocking (optional) | Press Enter | |
| CPU Ratio Selection | Locked | |
| CPU Linear Frequency | Disabled | |
| CPU Clock | (100 MHz) | |
| PCI Clock Auto Detection | Disabled | |
| Spread Spectrum Selection | Disabled | |

F1: Help     ↑↓: Select Item     +/- : Change Values     F9: Setup Defaults
Esc: Previous Menu          Enter: Select ▶ Sub-Menu     F10: Save and Exit

2. Use one of the arrow keys to move between options and modify the selected options by using PgUp / PgDn / + / -  keys. An explanation of the <F> keys follows:

 <F1>: "Help" gives options available for each item.
 <F9>: Setup BIOS default values.
 <F10>: Save and Exit Setup.

3. Press <ESC> to return to the Main Menu when you finish setting up all items.  The following item descriptions are provided as a quick guide to your setup.

**(Optional) Redstorm Overclocking Tech** If this option is chosen in BIOS, press <Enter> to start *RED STORM OVERCLOCKING TECH*. This option helps user to do CPU overclocking. It will increase CPU clock automatically until an unacceptably high value is reached. BIOS will then restart your system and run at the highest acceptable CPU clock.

**CPU Ratio Selection** If CPU onboard is one with an adjustable or unlocked CPU ratio, this item allows user to adjust the CPU Ratio. If your CPU is one with the CPU Ratio locked, this item will be invalid.

**CPU Linear Frequency** Use this item to enable/disable the setting of CPU clock by linear mode.

**CPU Clock** If CPU Linear Frequency is set Enabled, this item allows you to set CPU Clock.
Choices: 100MHz ~200MHz in 1MHz stepping.

**PCI Clock Auto Detection** Use this item to enable/disable the PCI clock Auto-detection.

**Spread Spectrum Selection** If CPU Linear Frequency is disabled, use this item to enable/disable this Spread Speectrum Selection function. If enabled, this function will reduce the EMI (Electromagnetic Interference) in your system. If you do not have an EMI problem, leave this item disabled.

### 4-6.10 Set Supervisor Password

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

1. Choose "Set Supervisor Password" in the Main Menu 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 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:

   **[ Retype new supervisor 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.

   ```
   [ New supervisor password installed ]

   Any Key to Continue
   ```

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

7. After the Supervisor password is set, you have to choose whether the password is for entering the system or only for entering BIOS Setup program. To make the choice, please enter BIOS Setup and choose "Advanced BIOS Features" in the main menu. (At entering BIOS Setup, you have to enter the password now.) In "Advanced BIOS Features", choose "Password Check" and change the option. The "Setup" option is to set the password only for entering BIOS Setup. The "Always" option is to set the password for entering the system.

8. To change or remove a current supervisor password, choose "Set Supervisor Password" and press <Enter>. An instruction box appears on the screen, prompting you to enter the current password first:

```
[ Enter current supervisor password ]
```

9. Type the current password with keyboard and then press <Enter>. An instruction box appears, prompting you to enter new supervisor password:

```
[ Enter new supervisor password ]
```

10. 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:

```
[ Supervisor password disabled ]

Any Key to Continue
```

**NOTE:** If you forget or lose a supervisor password, the only way to access the system is to clear the CMOS. All setup information will then be cleared including the password and you need to run the BIOS setup program again so as to reconfigure BIOS.

### 4-6.11 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 ]

Press [Enter] to continue
or [ESC] to abort
```

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

### 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 press <Enter>. The following message appears:

```
[ Saving current settings and exit ]

Press [Enter] to continue
or [ESC] to abort
```

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

### 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 press <Enter> and the following message appears:

```
[ Quit Without Saving Changes ]

Press [Enter] to continue
or [ESC] to abort
```

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