Contents

Item Checkup

- Mainboard
- Multi-lingual Quick Installation Guide
- User Manual (Mainboard)
- Support CD
- Bundled Bonus Pack CD
- Bundled Bonus Pack Manual
- Cable :
    ATA66/100 IDE Cable
    FDD Cable
    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 82845E. The Intel P4 processor is a rapid execution engine providing 533/400MHz system bus, while North Bridge Intel 845E is a high performance integrated chipset providing processor interface, DDR266/200 SDRAM memory interface, Hub interface and AGP interface to work for the whole system.

Integrated with i845E, South Bridge Intel ICH2 supports the LPC Super I/O, upstream Hub interface, PCI interface, IDE interface, USB interface V1.1, AC'97 Audio interface as well as 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 Components Locations
1-2 Mainboard Specifications
1-3 Chipset System Block Diagram

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

1-1 Mainboard Components Locations

Mouse (on top)

PS/2 K/B (underside)

JP15

USB0 (on top)

USB1

FAN2

COM1

LPT1

COM2

LINE OUT

LINE IN

MIC

GAME/MIDI PORT

+12 Power Connector

Peripheral Power Connector

Main Power Connector

JP14

RT1

mPGA478B

DDR266/200MHz

DIMM1

DIMM2

Intel 845E

AGP 4X

CD9

CD10

FAN3

JP2

LED1

PCI 1

WOL1

PCI 2

JAGP1

JAGP2

PCI 3

PCI 4

PCI 5

PCI 6

CNR

RTL ALC650A

AC'97 Audio

LPC I/O Controller

BIOS

FDC1

JP3 JP4

IDE2

IDE1

RT2

ICH2

Li Battery

JBAT1

PWR SW

RST

PWR LED

KEYLOCK

SLP LED

IDE LED

SPEAK

USB1

FAN1

1-2 Mainboard Specifications

1-2.1 CPU Socket
• CPU Socket 478B on board, supporting Intel® Pentium 4(including Intel Hyper-Threading CPUs) and Northwood processors in the 478-pin package for 533/400MHz System Bus

1-2.2 System Chipset
INTEL 82845E Memory Control Hub (MCH) working with Intel Pentium 4 Processor for managing and arbitrating between 4 interfaces:
    -- the System Bus (Host Interface)
    -- the memory Interface
    -- the AGP Port
    -- the Hub Interface
MCH Clockings:
    -- Asynchronous
    -- System Bus target speed at 533/400MHz
    -- AGP and Hub Interface constantly at 66MHz base
Intel ICH2 Chipset (Second generation I/O Controller Hub) communicating with Intel 82845E by the Hub interface for
    -- Transmitting Interrupt related messages
    -- Transmitting Power management events
    -- Transmitting SMI, SCI, SERR indication messages

1-2.3 Memory
2 DDR DIMM 184-pin slots on board for DDR 266/200 SDRAMs :
• Supporting unregistered, non-ECC DDR266/200 SDRAM up to 2 GBs
• Supporting installation of mixed volumes yet same type of DDR SDRAM 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.
• Year 2000 compliant.

1-2.5 Multi-I/O Function
• Integrated IDE Controller, supporting:
   -- 2x Ultra ATA100 / 66 / 33 Connectors
   -- Two UARTs for Complete Serial Ports (2x COM)
• Dedicated IR Connector:
   -- 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 connector:
   -- Standard mode, ECP and EPP support
• Floppy Disk connector:
   -- One FDD connector with drive swap support.
• Universal Serial Bus connector:
   -- USB V1.1 compliant
   -- 2 built-in USB connectors and one USB Header (USB1) which requires an
      additional USB cable to provide 2 more optional USB ports
• PS/2 Keyboard connector
• PS/2 Mouse connector
• UARTs (Universal Asynchronous Receiver / Transmitter):
   -- Two complete Serial Ports (COM1 & COM2) on board

1-2.6 Expansion Slots
• Six PCI Bus Master slots
• One AGP 4x slot
• One CNR slot
• Two DDR DIMM slots

1-2.7 Sound Controller
Avance AC97 Audio Codec on board, AC'97 2.1 compatible stereo audio
code for PC multimedia systems. Avance AC'97 Audio Codec Driver is pro-
vided in Support CD for user's installation.

1-2.8 CNR Slot on board
CNR Slot on board for Modem Riser card or Audio Riser Card.

1-2.9 Hardware Monitoring

Winbond Hardware Monitor in W83627HF, providing monitoring and alarm for flexible desktop management of hardware voltage, temperatures and fan speeds. Utility Software Winbond HWDoctor for displaying Monitoring statuses is enclosed in Support CD for user's installation.

1-2.10 Power Management

• ACPI 1.0B compliant (Advanced Configuration and Power Interface)
• APM V1.2 compliant (Legacy power management)
• Supporting ACPI suspend POS mode (Power On Suspend)
• System event monitoring with two event classes
• Supporting Wake On LAN & Wake On Ring (with WOL1 connector)
• Supporting Real Time Clock (RTC) with date alarm, month alarm, and century field

1-1.11 Redstorm Overclocking Technology (optional)

Redstorm Overclocking Tech is a program embedded in BIOS for CPU automatic overclocking. Please see " Freguency / Voltage Control " of BIOS Setup for Redstorm Overclocking Technology setting.

1-2.12 Form Factor

• ATX form factor
• Compatible with both ATX Power Supply Version 2.03 (with +12V Power Connector) and the older ATX Power Supply (with Peripheral Power Connector)
• Mainboard size: 30.5cm x 21.0 cm

1-3 Chipset System Block Diagram
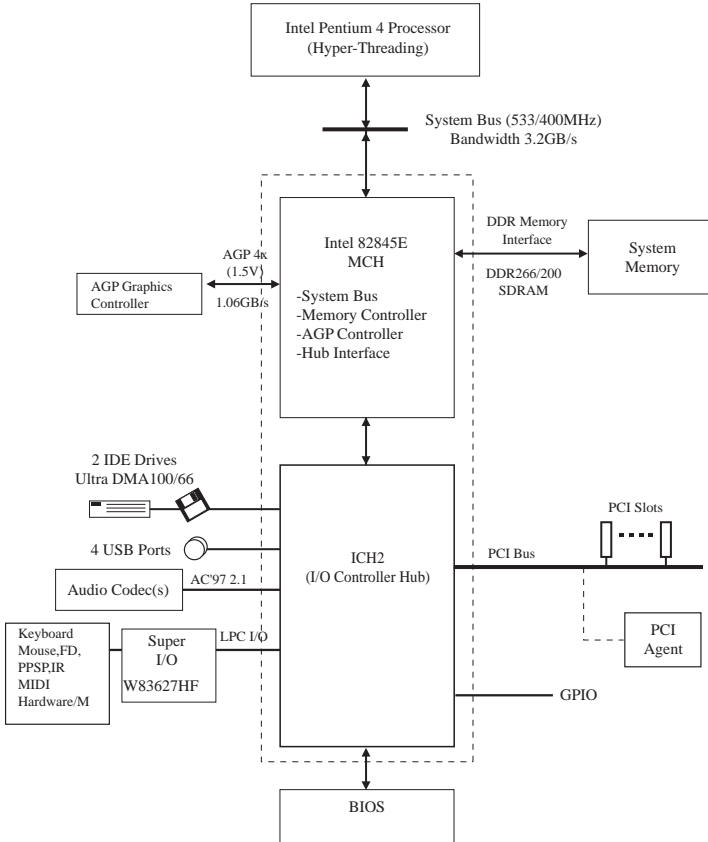
Intel Pentium 4 + Intel 82845E + Intel ICH2 Diagram

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 Installation
2-2 CPU Installation with Socket 478B
2-3 Pentium 4 CPU Fan Installation
2-4 Memory Installation
2-5 AGP4X Installed with Jumper and LED Safeguard
2-6 IDE Connector Installation
2-7 Floppy Drive Connector (FDC) Installation
2-8 ATX 2.03 Power Supply Installation
2-9 Jumper Settings
2-10 Other Connectors Configuration

2-1 Pentium 4 CPU Identification

(Hyper-threading CPU included)

4. CPU Voltage Vcore

3. System Clock

2. CPU L2 Cache

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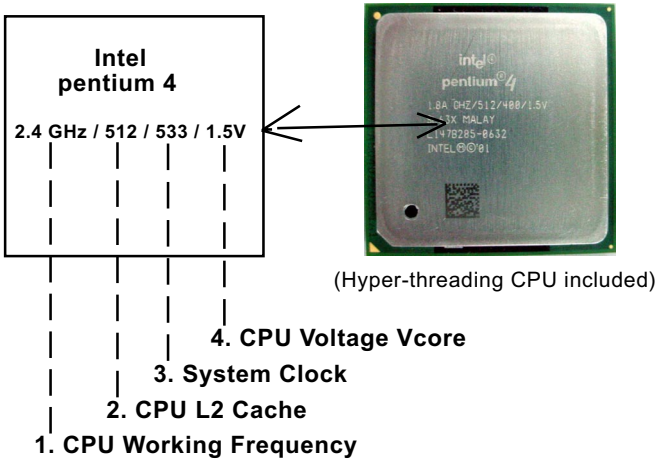
On the heatsink side of a Pentium 4 CPU, there printed a line of figures to identify its specifications. The line consists of 4 parts:

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.

2-2 CPU Installation with Socket 478B

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

• Follow the steps described in this section to install the 478-pin Pentium 4 CPU into the on board Socket 478.

• After installation of Pentium 4 CPU, you must also install the specific Pentium 4 CPU fan designed in tandem with this CPU. This CPU Fan installation is described in next section.

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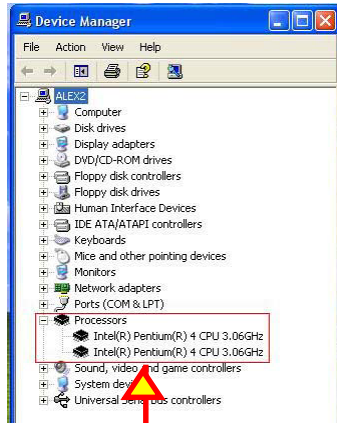
(If Hyper-threading CPU is installed successfully with O/S Win XP, the O/S will enable the dual-in-one CPU function.)

1. First pull sideways the lever of Socket 478, and then turn it up 90^0 so as to raise the upper layer of the socket from the lower platform.
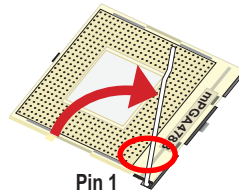
2. Configure Pin 1 of CPU to Pin 1 of the Socket, just as the way shown in the diagram on the right. Adjust the position of CPU until you can feel all CPU pins get into the socket with ease.
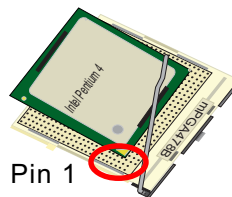
3. Make sure that all CPU pins have completely entered the socket and then lower down the lever to lock up CPU to socket.

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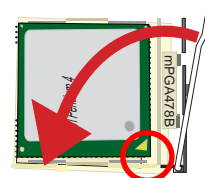
2-3 Pentium 4 CPU Fan Installation

Pentium 4 Fanbase
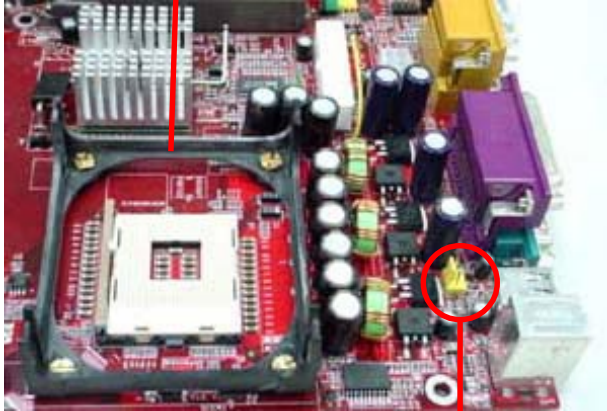
Pentium 4 Fan Connector
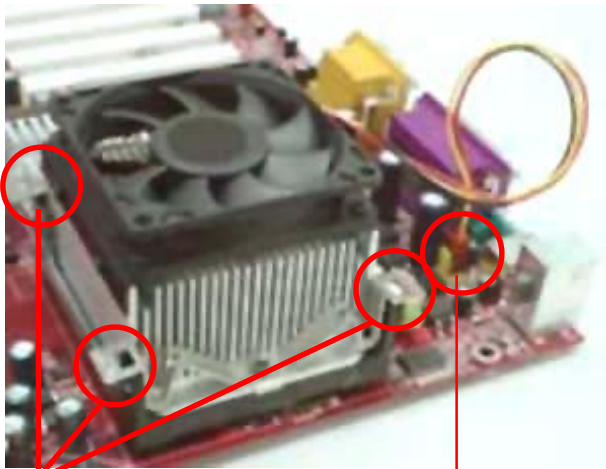
Press down 4 latches to lock fan to Fan Base

Connect Fan Cable to CPU Fan Connector

2-4 Memory Installation

How to tackle with 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.

2-4.1 To Install DDR SDRAM Module for this Mainboard

• This Mainboard only supports up to 2GB unbuffered DDR 266/200 SDRAM, with 2 DDR DIMM slots on board. Do not insert other type of modules into these slots.

• DDR DIMM slot has 184-pins and one notch. Insert a DDR SDRAM vertically into the 184-pin slot with the notch-to-rib matching. 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

DRAM Key Position   Voltage Key Position

DDR Notch
DDR Rib
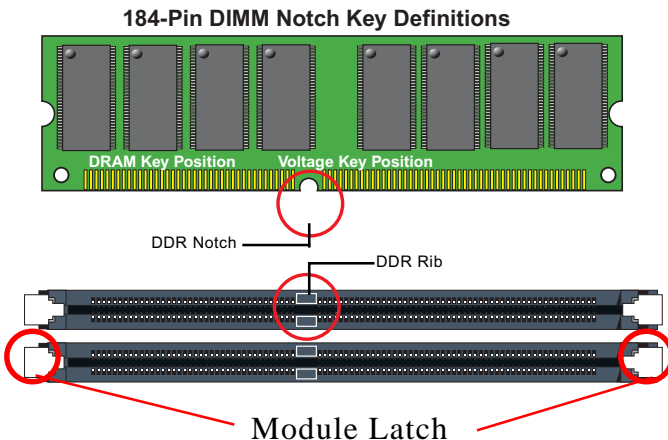
Module Latch

2-4.2 To Remove a DIMM

Press down the holding latches on both sides of slot to release the module from the DIMM slot.

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2-5 AGP 4X Installed with Jumper and LED Safeguard

1. The AGP slot on board supports 1.5V AGP 4X card only. A Rib is specifically added to the 4X AGP slot so as to match the AGP 4X card. To insert a 3.3V AGP 2X card into the AGP 4X slot will damage the system chip as well as burn the 1.5V circuitry.
Jp2 is designed on board to check the voltage of the AGP card inserted in the AGP slot. When Jp2 is set to 1-2 closed, safeguard is enabled to allow only 1.5V AGP4X card to boot system. If a 3.3V AGP2X card is mistakenly inserted to AGP slot, it will not boot system.

2. In case you have to use a PCI VGA card for the display, you must first set Jp2 to 2-3 closed to disable the safeguard. If a 3.3V AGP2X card is mistakenly inserted to AGP slot under no safeguard, the 3.3V power will burn the 1.5V circuitry. So, take care never to apply 3.3V AGP card to this mainboard.(See Jumper Setting Section for detailed jumper setting description).

3. 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.

Jp2
1.5V AGP4x Safeguard

LED1: AGP Failure LED
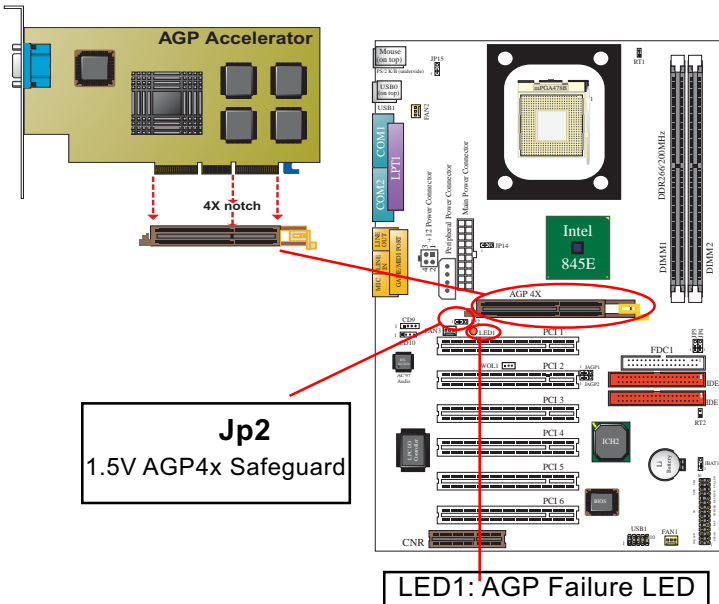
2-6 IDE Connector Installation

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)

80-conductor cable

Black connector
(To Master)

Red line

Blue connector

IDE Flat Cable *(To Mainboard)*
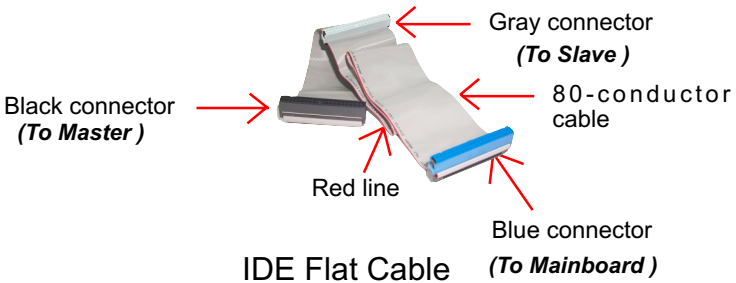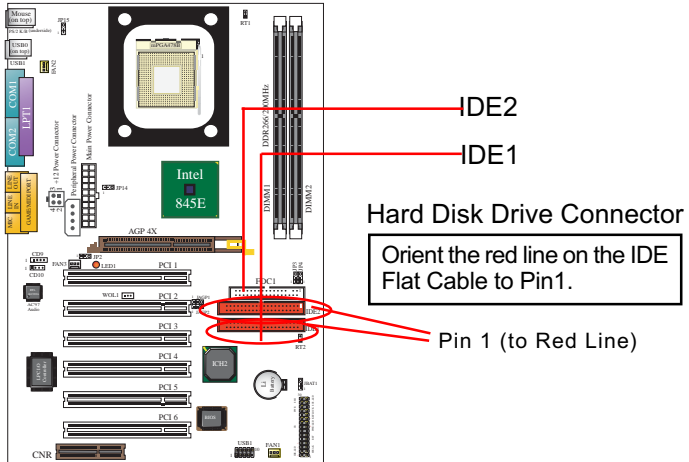
2-7 Floppy Drive Connector (FDC) Installation

To install FDC (Floppy Drive Connector), you should connect the end of FDD 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

Signal Swap End

To 1st Floppy Drive

Red line

To mainboard

FDC Cable

2-8 ATX V 2.03 Power Supply Installation

+12V Power Connector

```
        3    1
+12V   ( O  ( O   GND
+12V   ( O  ( O   GND
        4    2
```

Main Power Connector (20-pin)

```
 +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)

Peripheral Power Connector

```
Pin1  / O \  +12V
        O    GND
        O    GND
Pin4  \ O /  +5V
```

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 format.
2. If you use an ATX Power Supply Version 2.03 or later, you can now connect the on-board 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, you cannot find a square-shaped +12V Connector with your Power Supply; you must then connect the on-board 4-pin Peripheral Power Connector to the 4-pin Peripheral Power Connector of your Power Supply.

2-9 Jumper Settings

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

Jp15:
PS/2 KB/Mouse Power On

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

Jp14:
Front Side Bus Select

| 1-2 closed (default) for CPU Auto-select 533/400MHz |
| 2-3 closed 533MHz select |

Jp2:
1.5V AGP4X Safeguard

| 1-2 closed (default) allowing only 1.5V AGP 4X to boot system ; |
| 2-3 closed Safeguard disabled, allowing PCI VGA to boot system; (Warning: 3.3V AGP card will damage the 1.5V AGP circuitry.) |

JAGP1&JAGP2: **AGP Voltage Select**		
1.5V (Default)	JAGP1 JAGP2	
1.6V	JAGP1 JAGP2	
1.7V	JAGP1 JAGP2	

JBAT1:
Clear CMOS

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

Jp3&Jp4 **DIMM Voltage Select**		
DIMM Voltage	**Jp3**	**Jp4**
2.5V (Default)		
2.6V		
2.7V		

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2-9.1 How to tackle the Jumpers:

A 3-pin Jumper

If a pin-header (of 2 or more pins) is designed in such a way that its pins can be closed or linked together to set up a specific function, <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, all 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, mainboard could be damaged.

2-9.2 Jp14: CPU Front Side Bus Select

This Mainboards is shipped to users with a Jp14 FSB (Front Side Bus) Frequency Select design, with which user can select the FSB Frequency to match with the Pentium 4 processor selected on board. Yet users are not recommended to take Jp14 as a tool for overclocking. It is saver and more advisible for users to select the default (CPU auto-select) clock on board.

Jp14: Front Side Bus Select
1-2 closed (default) for CPU Auto-select 533/400MHz
2-3 closed 533MHz select
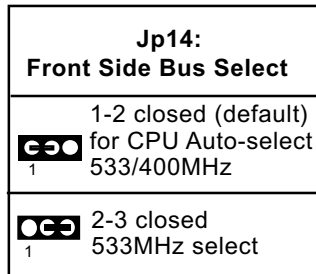
Further Notes on CPU Overclocking:

1. If you have successfully booted system, with or without CPU overclock, you still can try another CPU overclock in BIOS Setup. Please enter BIOS Setup, choose "Frequency/Voltage Control" menu, then configure the "CPU Clock" item to raise your CPU clock.

2. CPU overclocking should take all components on board into account. If you fail in BIOS overclocking, you will not be able to restart system. In such case, Power off system and clear CMOS by JBAT1 and then restart your system. And remember to reconfigure whatever should be reconfigured.

3. If your system is already fixed in a cabinet or case, you may not like to take the trouble to clear CMOS. Then power on your system with the power button on the PC case and simultaneously press down the "Insert" key on the keyboard until you see the initial bootup screen appear. And remember you should also enter CMOS BIOS Setup instantly and choose "Load Optimized Defaults" to restore default BIOS .

2-9.3 Jp1: PS/2 KB/Mouse Power On

Jp1 is designed to enable / disable PS/2 Keyboard/Mouse Power on function. Setting Jp1 to 1-2 closed will disable this function. Setting Jp1 to 2-3 closed will enable this function. Yet user still has to enter BIOS Setup for choosing the KB/ Mouse Power-on mode. (See Integrated Peripherals" in BIOS Setup.)

Jp15: PS/2 KB/Mouse Power On
1-2 closed (default) PS/2 KB/Mouse Power 1 On Disabled
2-3 closed PS/2 KB/Mouse Power 1 On Enabled

2-9.4 Jp2: 1.5V AGP4X Safeguard

Jp2: 1.5V AGP4X Safeguard
1-2 closed (default) allowing only 1.5V AGP 4X to boot system ;
2-3 closed Safeguard disabled, allowing PCI VGA to boot system; (Warning: 3.3V AGP card will damage the 1.5V AGP circuitry.)

1. Jp2 is designed on board to check the voltage of the AGP card inserted in the AGP slot. <u>When Jp2 is set to 1-2 closed, safeguard is enabled to allow only 1.5V AGP4X card to boot system</u>. If a 3.3V AGP2X card is mistakenly inserted to AGP slot, it will not boot system.

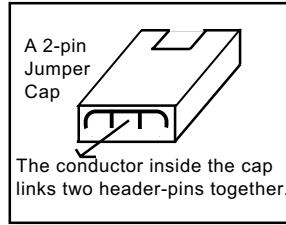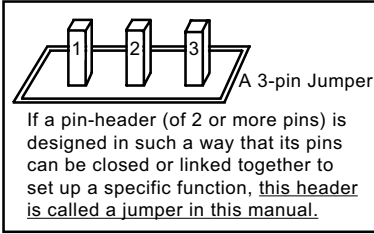2. <u>In case you have to use a PCI VGA card for the display, you must first set Jp2 to 2-3 closed to disable the safeguard.</u> If a 3.3V AGP2X card is mistakenly inserted to AGP slot under no safeguard, the 3.3V power will burn the 1.5V circuitry. So, take care never to apply 3.3V AGP card to this mainboard.

2-9.5 Jp3 & Jp4: DIMM Voltage Select:

The default voltage 2.5V at DIMM sockets is for normal operation of the supported DDR SDRAM. In some case, when you try to do CPU overclocking, you then may also need to raise the transfer rate of the memory interface. Jp3 & Jp4 are designed on board to provide settings for selecting a higher DIMM voltage so as to raise the speed of the memory interface.

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

Jp3&Jp4 DIMM Voltage Select		
DIMM Voltage	Jp3	Jp4
2.5V (Default)		
2.6V		
2.7V		

2-9.6 JBAT1: Clear CMOS

When you have problem with rebooting you system, you can clear CMOS data and restore it to default value. To clear CMOS with Jumper Jp10, 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. Remember never clear CMOS when system power is on.

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

2-9.7 JAGP1 & JAGP2: AGP Voltage Select

JAGP1 & JAGP2 is a design for selecting a higher AGP voltage than the default 1.5V . Just as adjusting the DIMM voltage to cope with CPU overclocking, a higher AGP voltage will also raise the chance of CPU overclocking. However, it is important to bear in mind that CPU over-clocking will risk the stability of your PC system.

JAGP1&JAGP2: AGP Voltage Select		
1.5V (Default)	JAGP1 JAGP2	
1.6V	JAGP1 JAGP2	
1.7V	JAGP1 JAGP2	

2-10 Other Connectors Configuration

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

2-10.1 On Board FAN Connectors
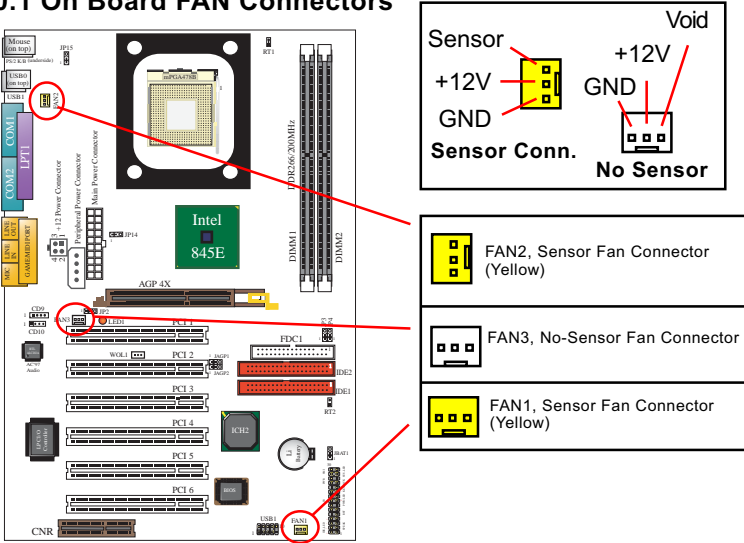
Both Sensor and No-sensor Fan Connectors support CPU/AGP/System/Case cooling fan with +12V mode. When connecting the wire to any Fan Connector, user should make sure that the red wire is for the positive current and should be connected to pin +12V, and the black wire is Ground and should be connected to pin GND. A Hardware Monitor chipset is on board, with which user can install a Hardware Monitor Utility and read the fan speed transmitted from the sensor fan connector. Otherwise, user 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 to a Sensor Fan Connector which in turn will count the electric pulses and send the information to the System Hardware Monitor. The hardware Monitor Program will work out the fan rotation speed and display it on screen.

28

2-10.2 Connector WOL1: 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.

WOL1

+5V
Standby
GND
Ring

Connect the Wake On LAN signal from LAN card to WOL1
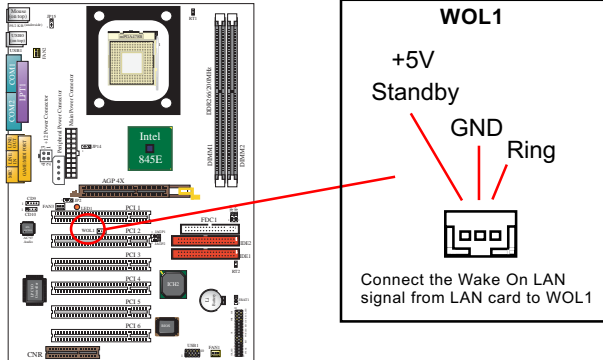
2-10.3 CD-ROM Audio Connectors (CD-In1/CD-In2)

Both CD-In1 and CD-In2 are audio connectors connecting CD-ROM audio to mainboard. Take notice that Connector CD-In2 is of narrower pin pitch.
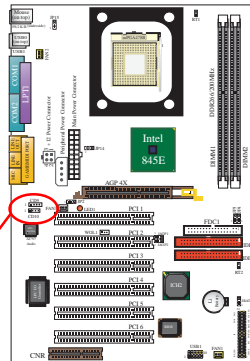
CD-ROM Audio Pin Assignment

	Pin 1	Pin 2	Pin 3	Pin 4
1 [••••] **CD 9**	Left Channel	GND	GND	Right Channel
1 [••••] **CD 10**	GND	Left Channel	GND	Right Channel

2-10.4 Slot CNR: Communication And Networking Riser Slot

This slot allows you to use network, modem or audio riser cards.

1. If modem CNR is installed, the modem CNR must be set as primary.
2. The audio CNR must be set as secondary if on-chip AC '97 is enabled
   at the same time.
3. CNR devices are not provided with this mainboard.
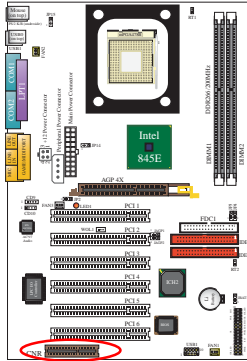
Slot CNR

2-10.5 Chassis Panel Connectors

| A. | B. | C. | D. |
| E. | F. | G. | H. | I. | J. | K. |
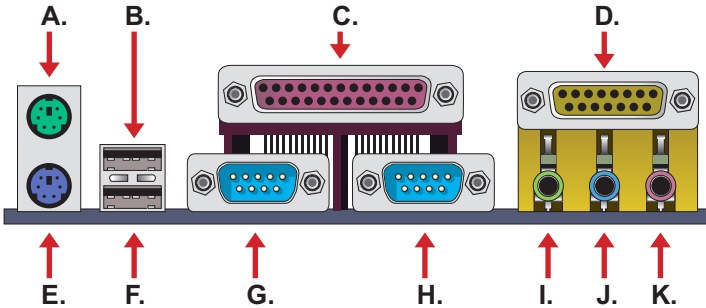
A : PS/2 MOUSE PORT
B : USB 0 PORT
C : LPT1 PORT
D : GAME/MIDI PORT
E : PS/2 KEYBOARD PORT
F : USB 1 PORT

G : COM1 PORT
H : COM2 PORT
I   : LINE/SPEAKER OUT
J : LINE IN
K : MICROPHONE INPUT

2-10.6 Thermal Resistor and Connector RT1 and RT2

RT1

RT1 is mounted
with Thermal Resistor
by default.

RT2

To RT2   To Devices

a.

b.

Thermal Cable
(Optional)
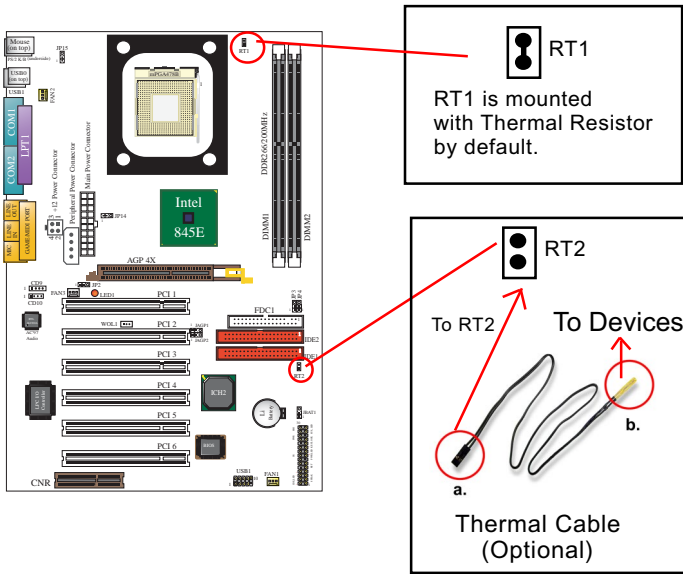
1. Resistor RT1: A thermal resistor is mounted by default to connector
   RT1 so as to detect the temperature of the CPU. What RT1 does is
   to transmit the thermal signal to BIOS or Hardware Monitor.

2. Connector RT2: A thermal cable is needed to connect RT2 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 RT2, 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.**

2-10.7 Complex Header

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

(optional) ① SMI — GND ——— GND — ⑤ **Suspend LED**
SMI SIGNAL ——— SUSPEND LED SIGNAL

② **Power Switch** — Vcc
ATX POWER SWITCH ——— GND — **Keylock** ⑥ **(optional)**
——— KLOCK

③ **Infrared(IR)** —
Vcc ——— GND (-)
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

32

(1) SMI Connector (Optional):
   Connection: Connected to the case-mounted Suspend Switch.
   Function: Manually selecting the Suspend Mode or "Green
   Mode" by System mangement Interupt for DOS system.

(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.

2-10.8 USB Ports and USB Header (Header USB 1)

   This mainboard provides two USB ports USB0 and USB1 on board supporting various USB devices. In addition, Header USB1 is added on board to provide expansion of 2 more optional USB ports by using one additional USB Cable. User can order the optional USB cable from your mainboard dealer or vender.

   When plugging the USB cable to USB Header USB1, user must make sure the red wire is connected to Pin 1.

USB Ports USB 0 & 1

USB Cable (Optional)

USB Port

Red wire

1

10

Header USB 1

First USB Port Wiring for Front USB

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

**USB Header
Pin Assignment**

10

1

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

Second USB Port Wiring for Front USB
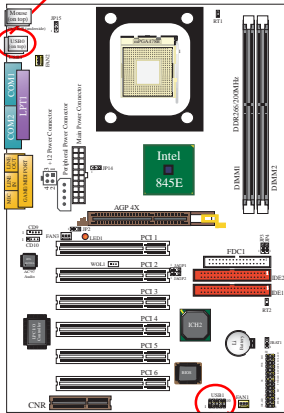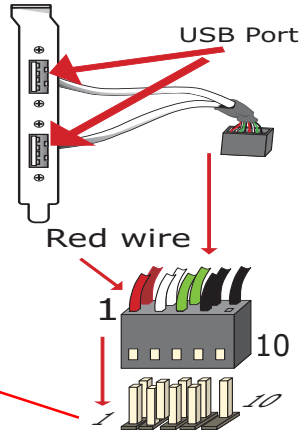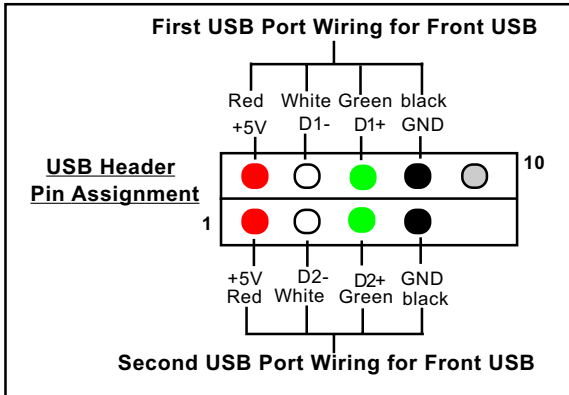
2-10.9 PS/2 Mouse And PS/2 Keyboard

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

6 Void	**5 Mouse Clock**
4 VCC	**3 GND**
2 Void	**1 Mouse Data**
6 Void	**5 Keyboard Clock**
4 VCC	**3 GND**
2 Void	**1 Keyboard Data**
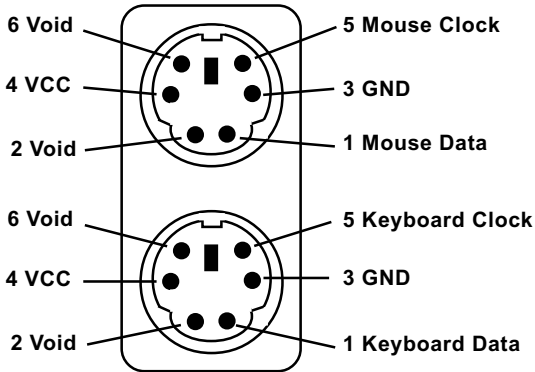
(PS/2 Keyboard Connector: Underside, purple)

Chapter 3 Software Setup

Drivers, Utilities and Software Installation

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

This chapter is devoted to describing the installations of all these essential drivers and utilities on Windows 9X, Windows ME, Windows 2000 and Windows XP. The installation procedures for all these operating systems are all programed into an auto-run mode. What users have to do is to read and follow the pop-up instructions to carry out the installation. We therefore take the installation on Windows 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 Suport CD

3-2 Intel Chipset Software Installation Utility (INF Utility)

3-3 Intel Application Accelerator (IAA)

3-4 AC'97 Audio Drivers Installation

3-5 Hardware Monitor Utility

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 automatically appear, displaying the contents to be installed for this mainboard:
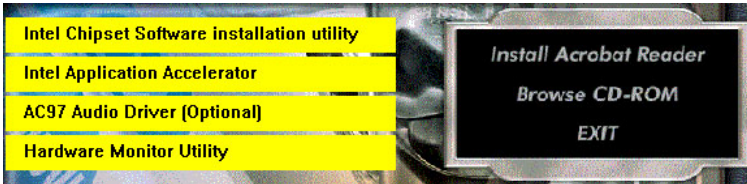
2. In case your system does not open the Support CD automatically, please click to the following path to enter the Main Installation Menu:

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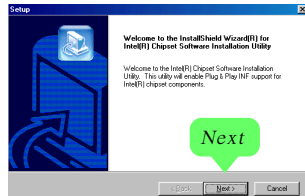
3. **"Intel Software License Agreement"** screen will appear, please click the **"Yes"** button to agree with the Licence Agreement and continue.
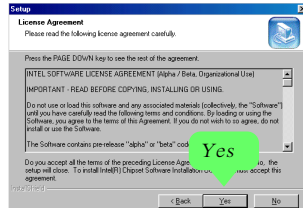
4. After all the setup process is finished, please restart your computer by clicking on "Finish" so as to take the Utility into effect.
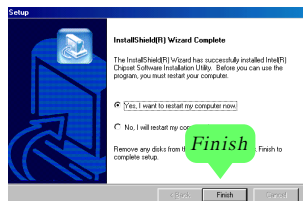
3-3 Install "Intel Application Accelerator"

IAA supports all Windows 98/98se/Me/NT4/2000/XP with Pentium III / 4 processor. Installations of this software for these operating systems are similarly programed to an auto-run mode. Iit 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.
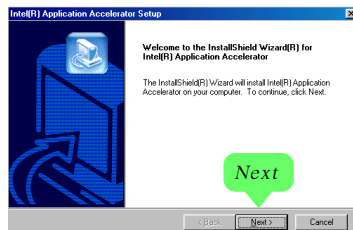
3. On the "Licence Agreement" screen, click on "Yes" to continue.
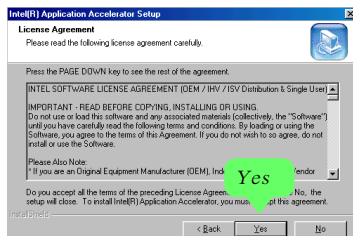
4. On "Choose Destination Location" screen, press **"Next"** to continue.

C:\Program Files\Intel\Intel Application Accelerator

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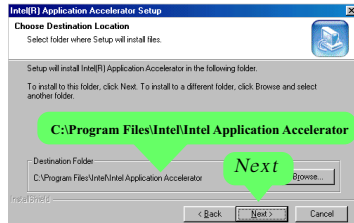
5. On "InstallShield Wizard Complete" screen, choose "Yes, I want to restart my computer now" and press "Finish" to restart. Remember you must restart computer to put setup into effect.

Yes, I want to restart my computer now

Finish
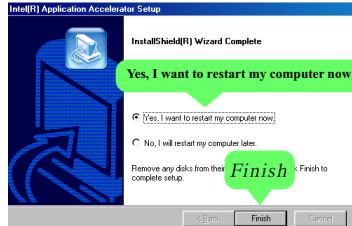
3-4 AC'97 Audio Driver Installation

Avance AC97 Audio Codec on board, AC'97 2.1 compatible stereo audio code for PC multimedia systems. Avance AC'97 Audio Codec Driver is provided in Support CD for user's 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"".
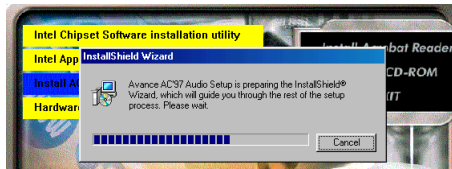
3. Instantly, the Setup program proceeds to install the softwares which include AC'97 driver and AVRack. (If you want to stop setup, click the "Cancel" button.)
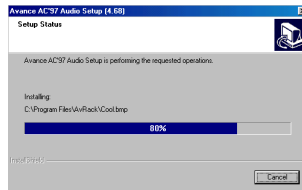
4. After the setup process is finished, please check the radial button "Yes, I want to restart my computer now." And click "Finsih" to restart your system.

3-5 Install Hardware Monitor Utility

3-5.1 Installation

Hardware Monitor is built on this mainboard. 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 " InstallShield Wizard" screen appears to help you through the setup. Click "Next" to continue.

3. Next, the Setup Program will suggest to you the destination directory where the "HWDoctor" will be installed. Select the Program folder and click "Next" to continue.
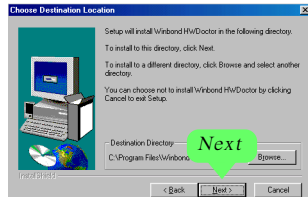
4. On the "Setup complete" screen, click "Finish" to restart your computer so that the Utility can be put into effect.
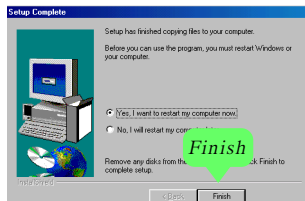
3-5.2 Verification

1. After restarting your computer, click "Start" and choose the path Programs \Winbond\HWDoctor to open the main window of the Hardware Doctor.
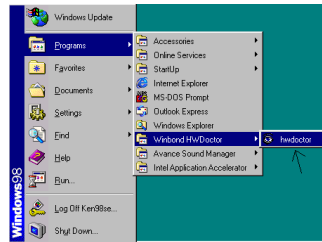
2. The "Voltage/CaseOpen" window is for CPU voltage and temperature information.
The "Fan/Temperature" window is for fan speed and temperature information.
The "CPU/Memory" window is for processor and memory information.

"Voltage/Case Open" button

"Fan/Temperature" button

"CPU/Memory" button
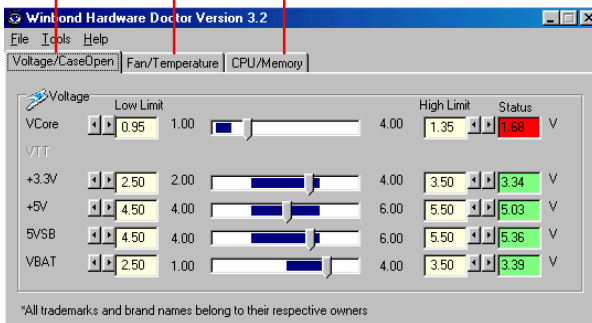
Chapter 4 AMI BIOS Setup

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 the zip file which contains the latest BIOS file and AMI flash utility "AMIFLASH. EXE". After unzipping, the BIOS file format will be *.ROM, of which " * " stands for the specific BIOS file name.

Step 2. Create a bootable diskette. Then copy the BIOS file and AMI flash utility "AMIFLASH.EXE" into the diskette.

Step 3. Insert the diskette into drive A, 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. For example, you may type "amiflash (space)DR2C005.rom).

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

Step 6. You will see a message "CMOS Memory Size Wrong" during booting the system. Press <Del> or <F1> to run CMOS setup utility, then reload "LOAD 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 EASY SETUP UTILITY - VERSION 2.01a             │
├───────────────────────────────┬─────────────────────────────┤
│ ▶ 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    │                             │
├───────────────────────────────┴─────────────────────────────┤
│ ↑↓ :Select Item      Enter: Select ▶ Sub-Menu   F6: Setup Defaults │
│ ← → : Select Menu         F10: Save & Exit          Esc: Exit │
├─────────────────────────────────────────────────────────────┤
│    Set System/DRAM Timing ...                                │
└─────────────────────────────────────────────────────────────┘
```

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. You only need to modify the configuration values of this option if you want to change your system hardware configuration or when the data stored in the CMOS memory get lost or damaged.

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	Feb 19 2003 Wed	
Floppy Drive A	1.44M, 3.5 in.	
▶ Primary IDE Master	Maxtor 20560 A4	
▶ Primary Slave	Not Installed	
▶ Secondary Master	Not installed	
▶ Secondary Slave	Not Installed	

↑↓ : Select Item	+/- : Change Values	F6: Setup Defaults
Esc: Previous Menu	Enter: Select ▶ Sub-Menu	F10: Save & Exit

2. Use one of the arrow keys to move between options and modify the selected options by using PgUp / PgDn / + / - keys.

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 Drive A 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

Primary/Secondary IDE Master/Slave Press Enter on any one of these four items 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	
Maximum Capacity	2561 Mb	
LBA Mode	On	
Block Mode	On	
Fast Programmed I/O Modes	4	
32 Bit Transfer Mode	On	

↑↓ : Select Item	+/- : Change Values	F6: Setup Defaults
Esc: Previous Menu	Enter: Select ▶ Sub-Menu	F10: Save & 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 EASY SETUP UTILITY - VERSION 2.01a

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	CD-ROM	
3rd Boot Device	IDE-0 :Maxtor 20560 A4 -	
Try Other Boot Devices	Yes	
Initial Display Mode	Silent	
Display Mode at Add-On ROM Init	Force BIOS	
S.M.A.R.T for Hard Disks	Disabled	
Bootup Num-lock	On	
Floppy Drive Swap	Disabled	
Floppy Drive Seek	Disabled	
Primary Display	VGA/EGA	
Password Check	Setup	
Boot To OS/2	No	
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	

↑↓ : Select Item	+/- : Change Values	F6: Setup Defaults
Esc: Previous Menu	Enter: Select ▶ Sub-Menu	F10: Save & 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.
<F6>: 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 (default)/ 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 (default); No
Initial Display Mode	If option is "Silent", it allows user to add logo to initial screen. If option is "BIOS", the normal BIOS display mode will be shown. Choices: Silent (default); BIOS
Display Mode at Add-On ROM Init	If the item "Initial Display Mode" is set to "Silent", two sub-modes are provided for the initial display mode. If "Force BIOS" (default) is chosen, the vendor's logo screen will be followed by the "Add-on ROM" initial screen (the screen showing the add-on card BIOS message). If "Keep Current" is chosen, no "Add-On ROM" screen is followed.

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 (default)

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

Floppy Drive Swap Disabled (default), Floopy Drive A will not be chnged 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.

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 whenever re-starting system. Choices: Setup (default); Always

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

L1 /L2 Cache Use this item to enable/disable the L1/L2 cache. Choices: Enabled (default); Disabled

System BIOS Cacheable Allows you to enable (default)/ 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 EASY SETUP UTILITY - VERSION 2.01a

Advanced Chipset Features		Setup Help
DRAM Timing		
SDRAM Frequency	Auto	
Configure SDRAM timing by SPD	Disabled	
SDRAM CAS# Latency	2.5 Clocks	
SDRAM RAS# Precharge	3 Clocks	
SDRAM RAS# to CAS# Delay	3 Clocks	
SDRAM Precharge Delay	7 Clocks	
SDRAM Read Thermal Management	Disabled	
DRAM Integrity Mode	Disabled	
Memory Hole	Disabled	
(Hyper-threading Function)	(Enabled)	
APIC interrupt Mode	Disabled	
AGP Aperture Size	64MB	
USB Controller	All USB Port	
USB Device Legacy Support	Disabled	
Port 64/60 Emulation	Disabled	

↑↓ : Select Item	+/- : Change Values	F6: Setup Defaults
Esc: Previous Menu	Enter: Select ▶ Sub-Menu	F10: Save & 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.
 <F6>: 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.

SDRAM Frequency	Allows you to set the SDRAM frequency. Choices: Auto; 200MHz; 266MHz
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. Default: Enabled
SDRAM CAS# Latency	With SDRAM Timing by SPD disabled, you can select the SDRAM CAS# (Column Address Strode)latency manually. Choices: 2 Clocks; 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: 2 Clocks; 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: 2 Clocks; 3 Clocks
SDRAM Precharge Delay	Allows you to set the SDRAM Precharge Delay cycle. Choices: 5 clocks; 6 clocks; 7 clocks
SDRAM Read Thermal management	Allows you to enable / disable (default) the function. Choices: Enabled; Disabled
DRAM Integrity Mode	Allows you to enabled / disabled (default) this function.
Memory Hole	Allows you to enabled / disabled (default) the support of Memory Hole which is reserved for ISA card. Choices: Disabled; 15MB-16MB
(Hyper-threading Function)	If hyper-threading CPU is running on board, this item appears to show the enabled status. Choices: Enabled; Disabled

APIC Interrupt Mode Allows you to enabled / disabled (default) the extended interrupt control for the multi-processor system. In this single processor system, this item is disabled.

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: All USB; USB Port 0&1;
USB Port 2&3; disabled

USB Device Legacy Support Allows you to select the USB Device Legacy support. Choices: No Mice; All Device; Disabled (default)

Port 64/60 Emulation Allows you to enable / disable (default) the Port 64/60 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 EASY SETUP UTILITY - VERSION 2.01a

Power Management Features		Setup Help
ACPI Standby State	S1/POS	
Power Management/APM	Enabled	
Video Power Down Mode	Suspend	
Hard Disk Power Down Mode	Standby	
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	Disabled	
Resume On RTC Alarm	Disabled	
RTC Alarm Date	15	
RTC Alarm Hour	12	
RTC Alarm Minute	30	
RTC Alarm Second	30	

↑↓ : Select Item	+/- : Change Values	F6: Setup Defaults
Esc: Previous Menu	Enter: Select ▶ Sub-Menu	F10: Save & 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.
   <F6>: 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 to see the supported ACPI Standby state S1 (POS) for Power on Suspend under ACPI mode. This Mainboard does not support S3 (STR).

Power Management/ APM Allows you to enable(default) / 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 (optional)

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

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

Resume on Ring Allows you to enable / disable (default) the Resume On Ring Signal function.
An input signal on the serial Ring Indicator (RI) Line (in other words, an incoming call on the modem) Awakens the system from a soft off state.

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

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

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

4-6.6 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 EASY SETUP UTILITY - VERSION 2.01a

PNP/PCI Configurations		Setup Help
Plug and Play Aware O/S	No	
PCI Latency Timer (PCI Clocks)	32	
Primary Graphics Adapter	AGP	
PCI IDE Busmaster	Enabled	
PCI Slot1 IRQ Priority	Auto	
PCI Slot2 IRQ Priority	Auto	
PCI Slot3 IRQ Priority	Auto	
PCI Slot4 IRQ Priority	Auto	
PCI Slot5 IRQ Priority	Auto	
PCI Slot6 IRQ Priority	Auto	

↑↓ : Select Item	+/- : Change Values	F6: Setup Defaults
Esc: Previous Menu	Enter: Select ▶ Sub-Menu	F10: Save & 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.
  <F6>: 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.

Plug & Play Aware O/S Select Yes for Windows systems supporting Plug and Play function. Select No for systems not supporting PNP.

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

Primary Graphics Adapter Allows you to select the Graphics Adapter.
Choices: AGP; PCI

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

PCI Slot1/2/3/4/5/6 IRQ Priority Allows you to specify the IRQ for the PCI slot.
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 EASY SETUP UTILITY - VERSION 2.01a

Integrated Peripherals		Setup Help
Onboard IDE	Both	
Onboard AC'97 Audio	Auto	
Onboard MC'97 Modem	Disabled	
Onboard FDC	Auto	
Onboard Serial Port A	Auto	
Onboard Serial Port B	Auto	
Serial Port B Mode	Normal	
IR Duplex Mode	Half Duplex	
IR Pin Select	IRRX/IRTX	
Onboard Parallel Port	Auto	
Parallel Port Mode	Normal	
EPP Version	N/A	
Parallel Port IRQ	Auto	
Parallel Port DMA Channel	N/A	
Onboard MIDI Port	Disabled	
MIDI IRQ Select	5	
Onboard Game Port	200	
PS/2 Keyboard PowerOn Function	Disabled	
Specific Key for PowerOn	N/A	
PS/2 Mouse PowerOn Function	Disabled	

↑↓ : Select Item	+/- : Change Values	F6: Setup Defaults
Esc: Previous Menu	Enter: Select ▶ Sub-Menu	F10: Save & 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.
<F6>: 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

Onboard AC'97 Audio Allows you to enable / disable the Onboard AC'97
Audio.
Choices: Auto; Disabled

Onboard MC'97 Modem Allows you to enable / disable the Onboard MC'97
Modem. If a modem card is inserted in CNR slot,
this item should not be disabled.
Choices: Auto; Disabled

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

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

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

Serial Port B Mode Allows you to set the Serial Port B Mode.
Choices: Normal; 1.6 uS; 3/16 Baud; ASKIR;

IR Duplex Mode If Serial Port B is not at Normal mode, this item
allows you to set the Serial Port B to Half or Full
Duplex.

IR Pin Select If Serial Port B is not at Normal mode, this item
allows you to set the Serial Port B Pin to IRRX/IRTX
or SINB/SOUTB.

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 port mode.

EPP Version If Parallel Port Mode is EPP, this item allows you to set the EPP Version.
Choices: 1.9; 1.7

Parallel Port IRQ If Parallel Port Mode is set at EPP, this item will set the Parallel Port IRQ automatically.

Parallel Port DMA Channel If Parallel Port Mode is set at ECP, this item will set the DMA Channel automatically.

OnBoard MIDI Port Allows you to configure onboard MIDI port .
Choices: Disabled; 300h; 310h; 320h; 330h

MIDI IRQ Select If the onboard MIDI port is set at 300h or 380h, this item appears to allow you to configure the MIDI Port IRQ.
Choices: 3; 4; 5; 7; 10; 11

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

PS/2 Keyboard Power On Function Allows you to configure the Keyboard PowerOn Function.
Choices: Disabled; Specific Key.

Specific Key for PowerOn If Keyboard PowerOn function is set at Specific Key, this item allows you to type a password with the keyboard for Power On.

PS/2 Mouse PowerOn Function Allows you to disable or use the mouse to power on system.
Choices: Disabled; Right Botton; Left Button

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 2.01a

Hardware Monitor Status		Setup Help
CPU1 Temperature	44 ^{0}C/111 ^{0}F	
CPU2 Temperature	29 ^{0}C/84 ^{0}F	
System Temperature	0^{0}C/32 ^{0}F	
CPU Fan Speed	4891 RPM	
Case Fan Speed	0 RPM	
Vcore	1.680 V	
+1.5V	1.520 V	
+3.3V	3.408 V	
Battery	3.312 V	
+5V SB	5.126 V	

↑↓ : Select Item   +/- : Change Values   F6: Setup Defaults
Esc: Previous Menu   Enter: Select ▶ Sub-Menu   F10: Save & 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 professional or your dealer is recommended.

CPU1Temperature Shows current temperature of the CPU body.

CPU 2 Temperature Shows current temperature round the CPU.

System Temperature Shows current system temperature.

CPU Fan Speed Displays the current speed of CPU Fan.

Case Fan Speed Shows current Case Fan Speed.

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.

Battery Shows current voltage against battery power supply.

+5V SB Shows current voltage against the +5V SB 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 2.01a

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

↑↓ : Select Item   +/- : Change Values   F6: Setup Defaults
Esc: Previous Menu   Enter: Select ▶ Sub-Menu   F10: Save & 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.
 <F6>: 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 Overclocing Tech Press <Enter> to start *RED STORM OVERCLOCK-ING TECH*. This option gives user an easy way to overclocking. It will raise CPU clock automatically. When CPU clock is raised to an unacceptable value, BIOS will restart your system, then running at an acceptable higher CPU clock.

CPU Linear Frequency This item allows you to enable / disable (default) this setting function.

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

CPU Ratio Selection If CPU onboard is one with an adjustable CPU ration, this item allows you user to adjust the CPU Ratio.

PCI Clock Auto Detection Allows you to enable / disable (default) this auto detection function.

Spread Spectrum Selection Allows you to enable / disable (default) this Spread Speectrum Selection function.

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.

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

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 Optimal 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 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.