

Chapter 1 Specification

Introduction

This mainboard features an integration of the powerful processor Intel Pentium 4 and the single-chip North Bridge Intel 845GL. The Intel P4 processor is a rapid execution engine providing 400MHz system bus, while North Bridge Intel 845GL is a high performance integrated chipset providing processor interface, DDR266/200 SDRAM memory interface, Hub interface, AGP interface for DVO as well as an integrated VGA Graphics supported by a CRT display connector.

Integrated with i845GL, South Bridge Intel ICH4 supports 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:

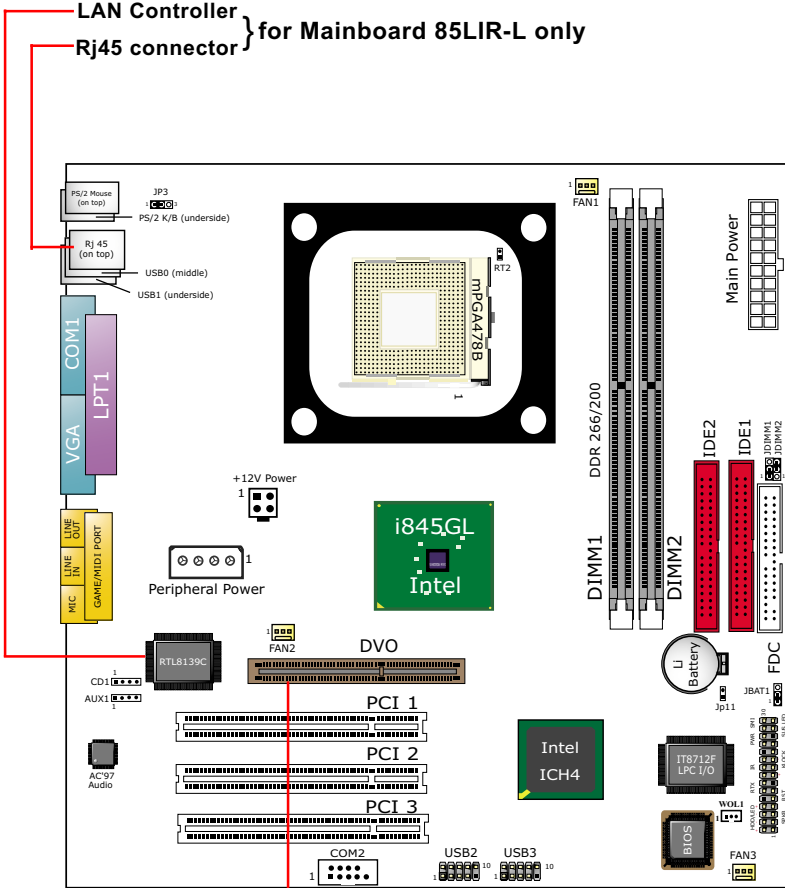
1-1 Mainboard Components Locations

1-2 Mainboard Specifications

1-3 Mainboard Specifications Table

1-4 Chipset Diagram

1-1 SL-85LIR / 85LIR-L Components Locations



AGP Slot for DVO card only
(AGP card will not boot system.)

1-2 Mainboard Specifications

1-2.1 CPU Socket

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

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

1-2.2 System Chipsets

North Bridge Intel 845GL:

- a high performance integrated chipset providing 400MHz System Bus, DDR266/200 SDRAM memory interface, Hub interface, integrated VGA interface with a CRT display connector
- Supporting FSB533MHz overclocking and HT CPUs with HT Logo to be displayed on Bootup screen

South Bridge Intel ICH4:

- supporting LPC Super I/O, upstream Hub interface, PCI interface, IDE interface, LAN interface, USB interface, AC'97 Audio interface and the interrupt control.

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 and Year 2000 compliant
- Supporting BIOS Setup (See Chapter 4 BIOS Setup)

1-2.5 Integrated VGA Interface Supported by VGA Connector

- one 1.5V 15-pin connector on board
- Integrated 2D/3D graphics accelerator
- Hardware motion compensation assist for software MPEG/DVD decode
- VGA Driver enclosed in Support CD for user's installation

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) ; no support for Suspend To RAM (STR)
- PS/2 Keyboard & Mouse Power On
- Supporting Wake-on-LAN (ring signal) through WOL1 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
- 2 DDR DIMM slots
- 1 AGP slot for DVO card only

1-2.9 LAN (Local Area Network) on board (85LIR-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 chip IT8712F, providing monitoring and alarm for flexible desktop management of hardware voltage, temperatures and fan speeds.
- HWDoctor utility "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-channel compliant on board

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

1-2.12 AGP Slot for Digital Video Out (DVO)

- This series is designed with an AGP Slot which is typically designed for Digital-Video-Out (DVO) display only. If this option is chosen on board, user can use a DVO card for digital display but an AGP card will not work on this series.

1-2.13 533MHz FSB supported by CPU Overclock

- 533MHz Front Side Bus supported by CPU overclock with the latest Mainboard BIOS

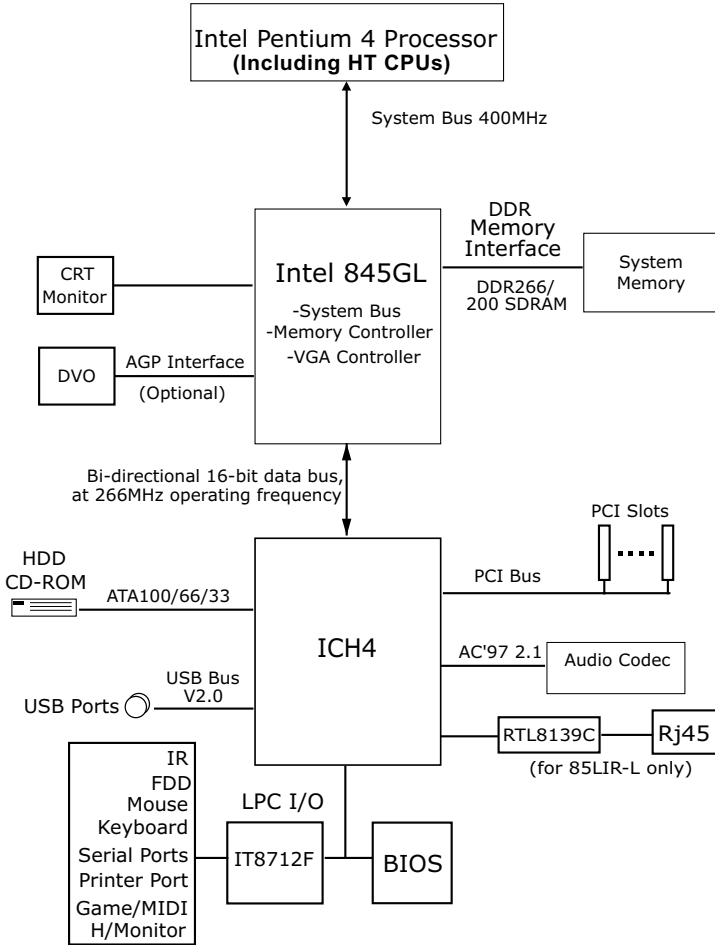
1-2.14 Form Factor

- 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-85LIR / 85LIR-L Specifications and Features	
CPU	Socket 478B for P4 CPUs (HT CPU included)
North Bridge	Intel 845GL, supporting 400MHz System Bus
South Bridge	Intel ICH4
BIOS	AMI BIOS
Memory	Supporting DDR 266/200 SDRM, up to 2GB in two DDR DIMM slots
I/O Chip	IT8712F
AGP Slot	1 x AGP slot for DVO only
Audio	AC'97 Audio compliant
IDE Interface	2 UATA 33/66/100 IDE ports
Networking	Fast Ethernet Controller, 1xRj45 (85LIR-L only)
PCI Slots	3 PCI Master slots on board
I/O Connectors	3xUSB ports (V2.0), 1xFDD port, 2xCOM ports, 1xLPT, 1xIrDA, 1xPS/2 K/B, 1xPS/2 Mouse,
VGA Display	1 x VGA connector on board for CRT VGA display
Other Features	BIOS Writing Protection; Hardware Monitoring in IT8712F keyboard/Mouse Power On; ATX 2.03 Power Supply; Micro ATX form factor

1-4 Chipset System Block Diagram



Pentium 4 + Intel 845GL + Intel ICH4 Diagram

Chapter 2 Hardware Setup

To Get things ready for hardware setup !

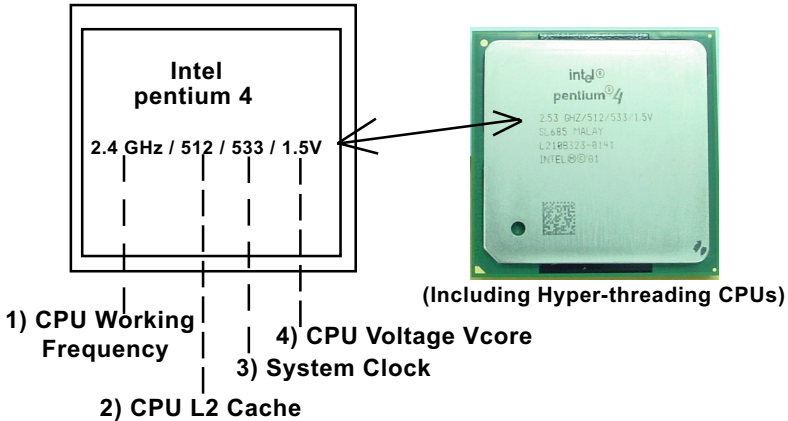
1. We recommend to install your CPU before any other components. For detailed installation instructions of processor, you can also refer to the pamphlet enclosed in your CPU package.
2. Installing a cooling fan with a good heatsink is a must for proper heat dissipation for your CPU. Get ready an appropriate 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 Installation**
- 2-2 Pentium 4 CPU Fan Installation**
- 2-3 Memory Installation**
- 2-4 VGA / DVO Display Installation**
- 2-5 IDE Connector Installation**
- 2-6 Floppy Drive (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 Pentium 4 CPU and Installation

2-1.1 To Identify a Pentium 4 CPU



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

1. CPU Working Frequency: this part depicts the working frequency of the CPU. 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.

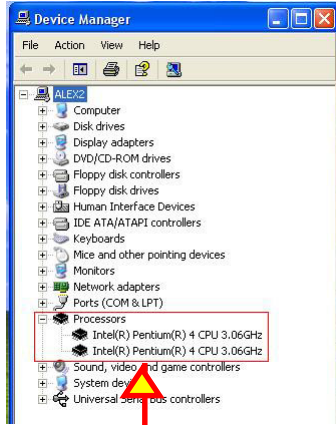
Note: System Clock vs CPU Clock

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

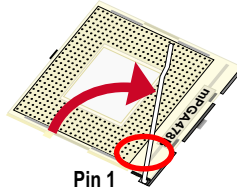
This mainboard is built with CPU Socket 478B (478-pin) supporting the Intel Pentium 4 CPU:

- 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 Hyper-threading dual-in-one CPU, the function of which can be enabled by Windows XP. (See illustration on the right.)

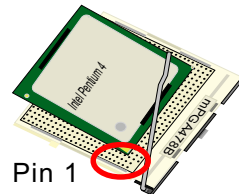


(If Hyper-threading CPU is installed successfully with O/S Win XP, the O/S will enable the dual-in-one CPU function.)

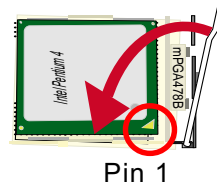
1. First pull sideways the lever of Socket 478, and then turn it up 90° so as to raise the upper layer of the socket from the lower platform.



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



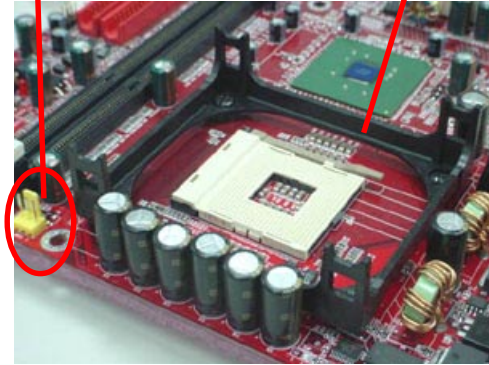
3. Make sure that all CPU pins have completely entered the socket and then lower down the lever to lock up CPU to socket.



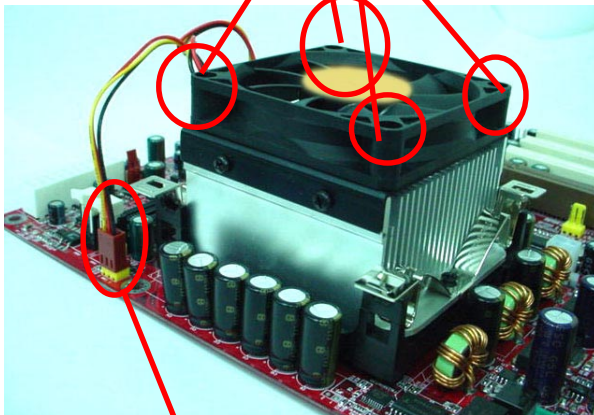
2-2 Pentium 4 CPU Fan Installation

CPU Fan Connector

Pentium 4 Fanbase



Press down 4 corners to lock fan to fanbase



Connect Fan Connector to CPU FAN connector

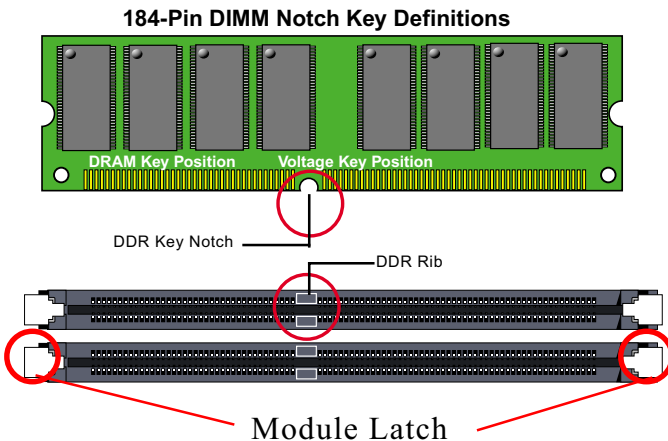
2-3 Memory Installation

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.

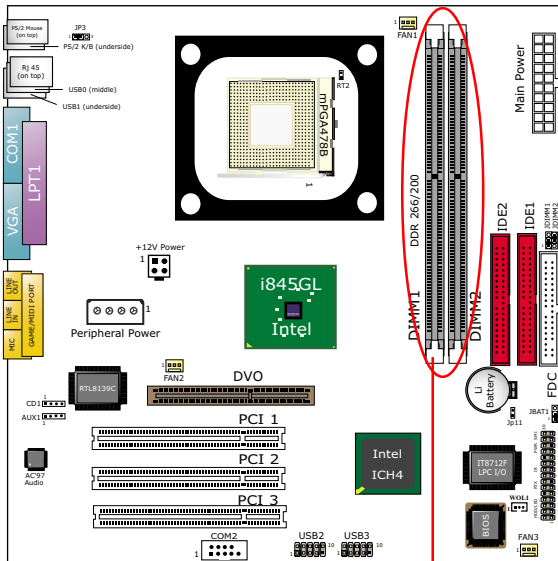
2-3.1 To Install DDR SDRAM Module

- This series 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.



2-3.2 To Remove a DIMM

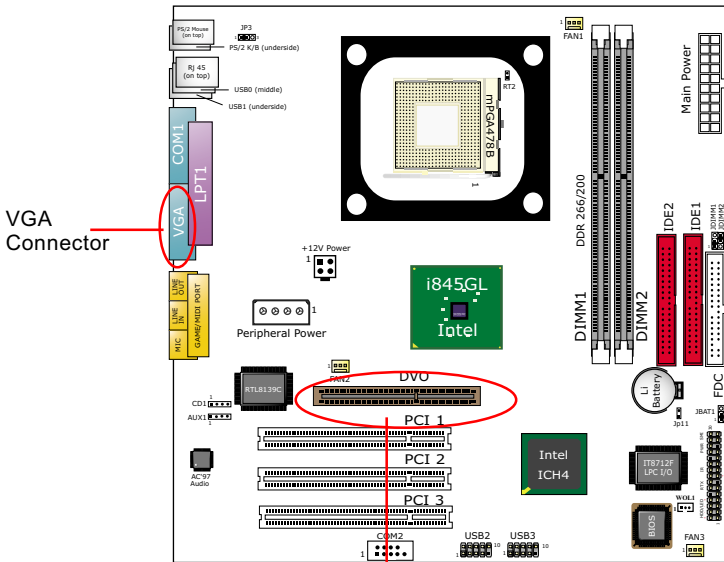
To remove a DIMM module from slot, first power off system and then press down the holding latches on both sides of slot to release the module from the DIMM slot.



DDR DIMM Slots
(184-pin)

2-4 Install VGA / DVO Display

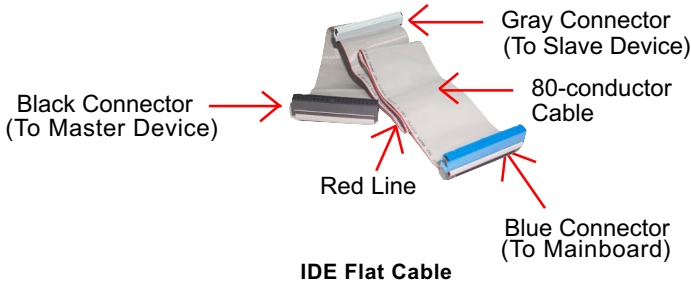
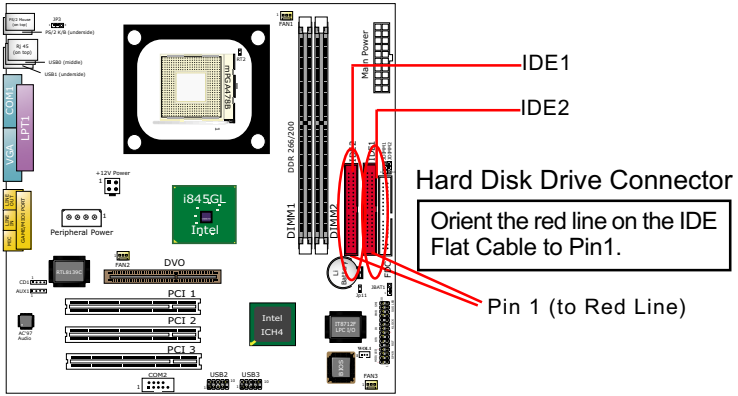
1. To install on-board VGA, please connect your monitor directly to VGA connector on board.
2. To install Digital-Video-Out (DVO) display, please insert a DVO card into the AGP slot which in this board is typically for DVO only. An AGP card cannot boot this system.



Insert a DVO card to AGP slot for DVO display
(An AGP card will not boot system.)

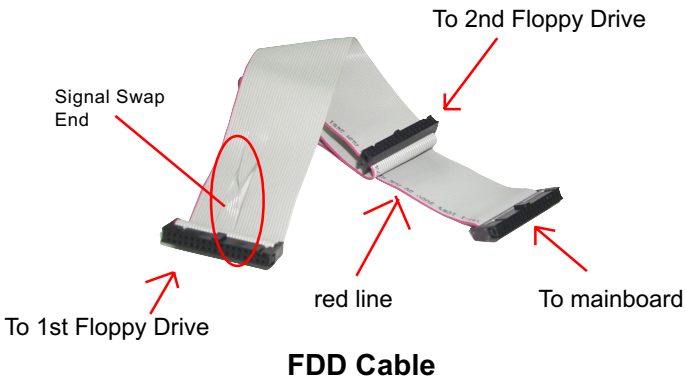
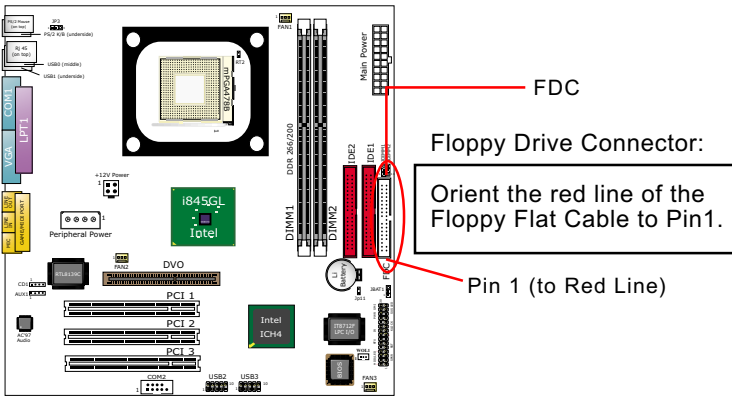
2-5 IDE Connector Installation

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

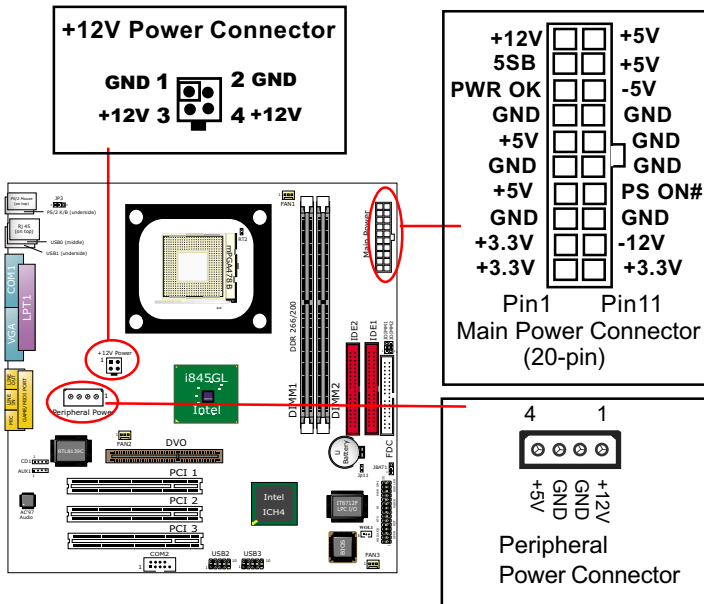


2-6 Floppy Drive Connector (FDC) Installation

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.



2-7 ATX V 2.03 Power Supply Installation





ATX V2.03 power supply is strongly recommended for mainboard running with 2GMHz or higher CPU.

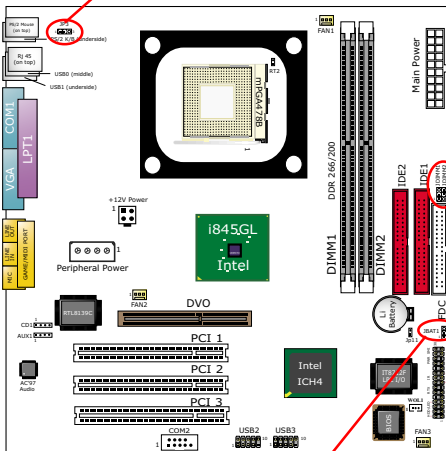
To set up Power Supply on this mainboard:







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.



2-8 Jumper Settings

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

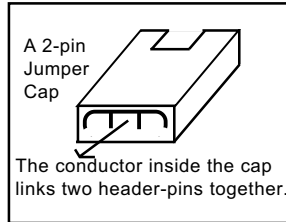
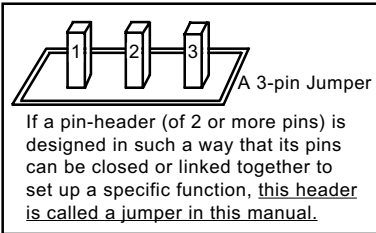
Jp3:PS/2 K/B / Mouse Power On	
 1	1-2 closed (default) Disabled
 1	2-3 closed Enabled



JDIMM1 & JDIMM2: DIMM Voltage Select		
DIMM Voltage	JDIMM1	JDIMM2
2.5V	 3 1	 3 1
2.6V	 3 1	 3 1
2.7V (Default)	 3 1	 3 1

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

2-8.1 How to tackle the Jumpers



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

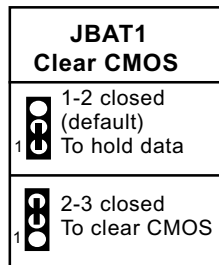


- Do not remove any jumper cap when power is on. Always make sure the power is off before changing any jumper settings. Otherwise, the mainboard will be damaged.

2-8.2 JBAT1: Clear CMOS



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

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



2-8.3 Jp3: PS/2 KB/Mouse Power On







Jp3 is designed to select PS/2 keyboard or Mouse to power on system. Setting Jp3 to 1-2 closed will disable the function. Setting Jp3 to 2-3 closed will allow user to power up system by keyboard or Mouse. Yet user still has to enter BIOS Setup for choosing the KB/Mouse Power-on mode. (See Integrated Peripherals” in BIOS Setup.)

Jp3:PS/2 K/B / Mouse Power On	
 1-2 closed (default) Disabled	
 2-3 closed Enabled	

2-8.4 JDIMM1 & JDIMM2: DIMM Voltage Select

The default voltage 2.7V at DIMM sockets is for the optimum operation of the supported DDR SDRAM. In some case, when you are not doing any overclocking, you may find a lower DIMM voltage would work better. JDIMM1 & JDIMM2 are designed on board to provide settings for adjusting the DIMM voltage so as to optimize the operation stability.

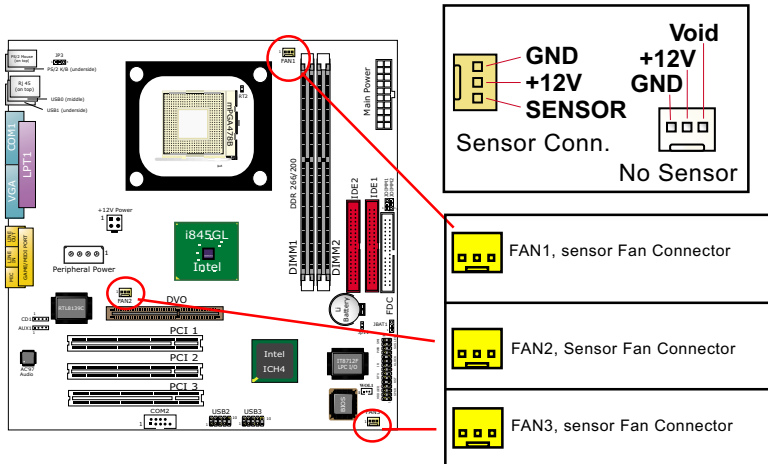
Warning: In selecting a higher voltage than the default , you are risking the stability of your system.

JDIMM1 & JDIMM2: DIMM Voltage Select		
DIMM Voltage	JDIMM1	JDIMM2
2.5V		
2.6V		
2.7V (Default)		

2-9 Other Connectors Configuration

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

2-9.1 On Board FAN Connectors



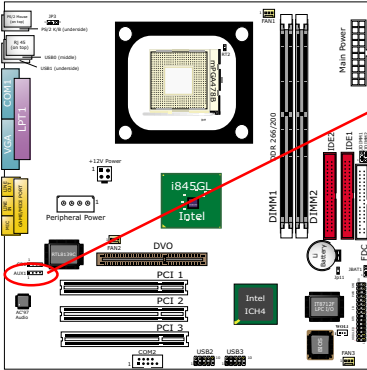
These fan connectors support CPU/AGP/System cooling fan with +12V. When connecting the wire to FAN connectors, users should make sure that the red wire is for the positive current and should be connected to pin +12V, and the black wire is Ground and should be connected to pin GND. If your mainboard has Hardware Monitor chipset on board, you must use a specially designed fan with speed sensor to take advantage of the monitoring function.

For fans with speed sensors, each rotation of the fan blades will send out 2 electric pulses, By counting the pulses, System Hardware Monitor will work out the fan rotation speed and show it by the monitoring program.

NOTE : 3 “Yellow” fan connectors are used on this series to mark that they support fan speed sensor function. (White fan connector does not support sensor function.)

2-9.2 Connector AUX1

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



1

Connector AUX 1

Pin 1 R-Channel

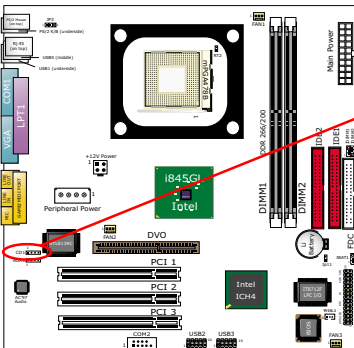
Pin 2 GND

Pin 3 GND

Pin 4 L-Channel

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

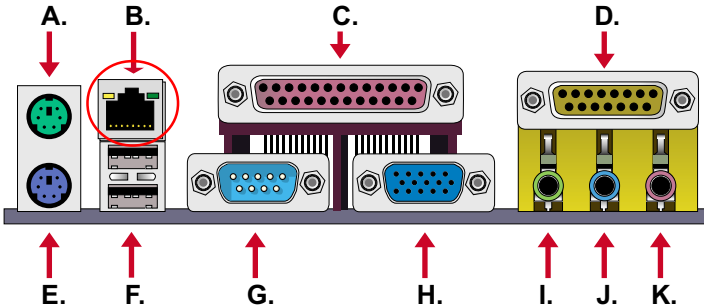
CD 1 is an audio connector connecting CD-ROM audio to mainboard.



CD-ROM Audio Pin Assignment

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

2-9.4 Chassis Panel Connectors



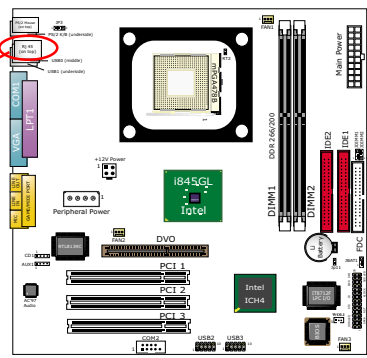
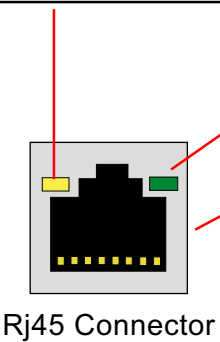
- | | |
|----------------------------------|----------------------|
| A : PS/2 MOUSE | F : USB0 (middle) |
| B : LAN Port Rj45 (85LIR-L only) | G : COM1 |
| C : LPT1 PORT | H : VGA |
| D : GAME/MIDI | I : LINE/SPEAKER OUT |
| E : PS/2 KEYBOARD | J : LINE IN |
| F : USB 1 (underside) | K : MICROPHONE INPUT |

2-9.5 LAN Connector Rj45 (85LIR-L only)

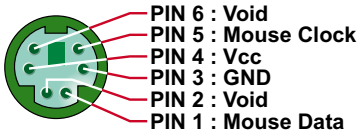
One Rj45 connector is on board for network connection and also provide support for Wake On LAN function.

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

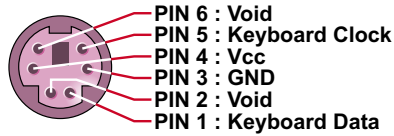
Green LED blinks to indicate that data transmission is undergoing in 10/100 Base T mode.



2-9.6 PS/2 Mouse And PS/2 Keyboard

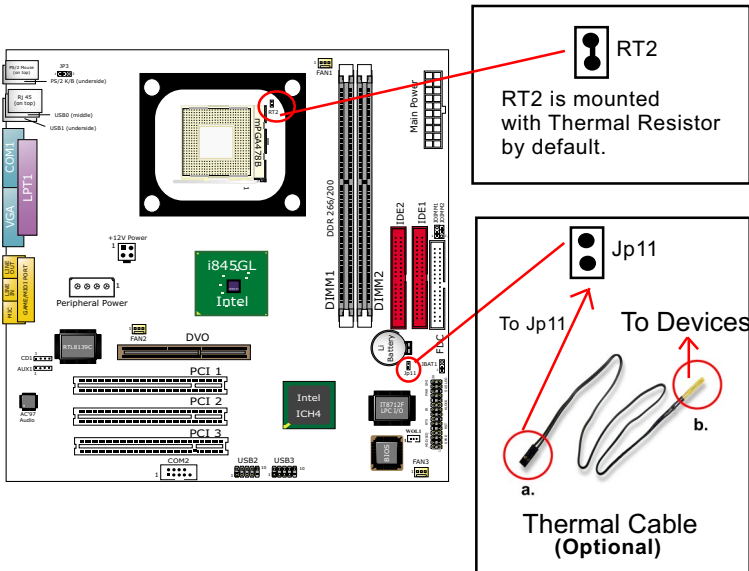


PS/2 MOUSE



PS/2 KEYBOARD

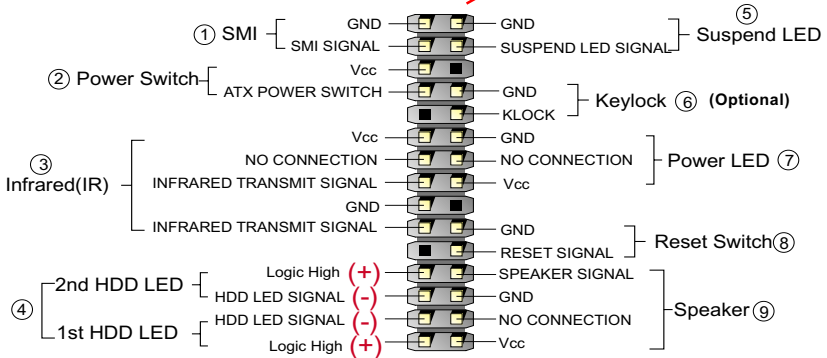
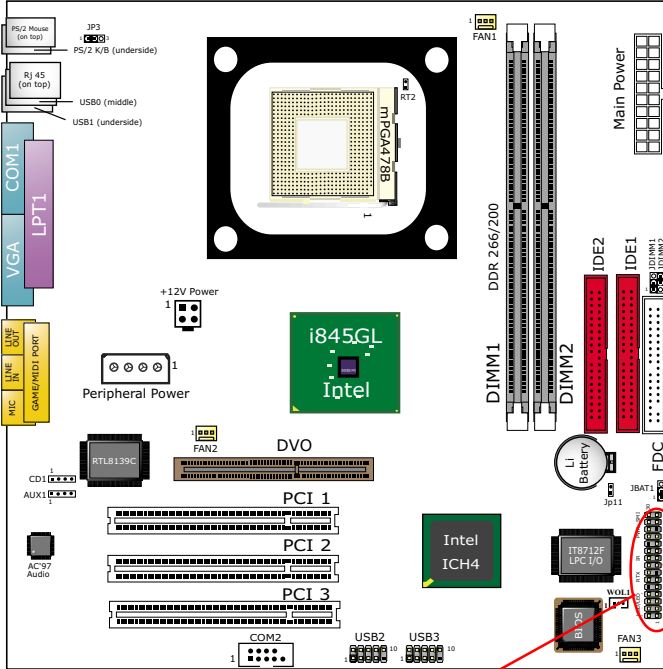
2-9.7 Thermal Connector and Thermal Resistor



1. Resistor 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.**

2-9.8 Complex Header

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



(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:

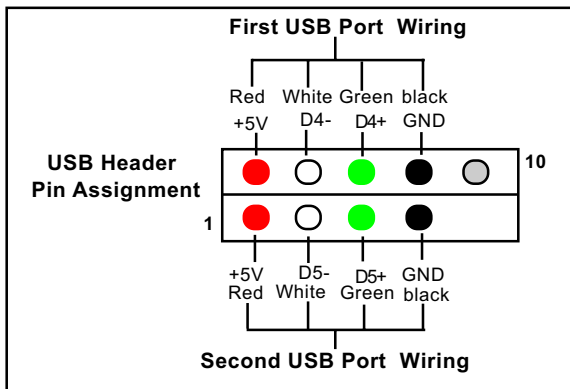
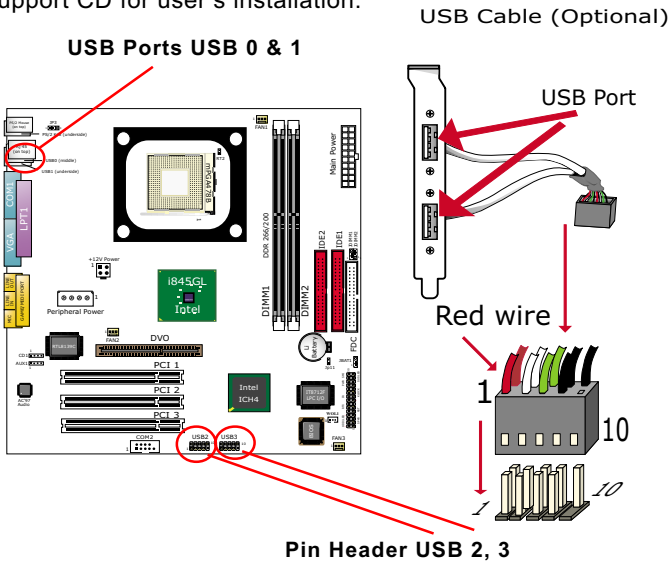
Connection: Connected to the case-mounted Speaker.
Function: To supply power to the case-mounted Speaker.

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. User can order the optional USB cables from your mainboard dealer or vender.

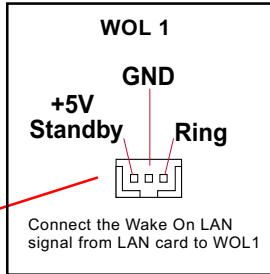
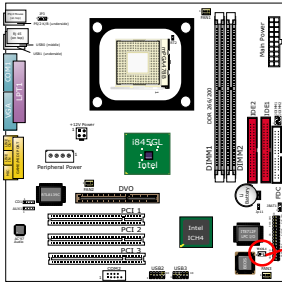
When plugging the USB cable to USB Header USB2, or 3, user must make sure the red wire is connected to Pin 1.

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.



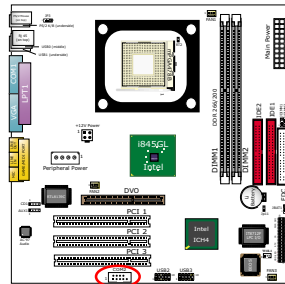
2-9.10 Connector WOL1: Wake On LAN

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.

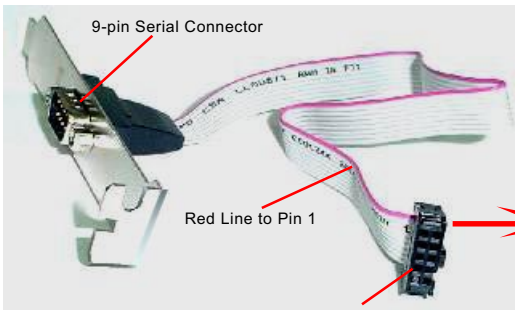


2-9.11 Pin-header COM 2: for one serial port

COM 2 Header is built on board , which requires a serial RS232 cable to provide a 9-pin serial connector for a serial device connection. When you insert RS-232 cable to COM 2 header, take notice that the red line of the cable must connect to Pin 1 of COM 2.



(Optional RS-232 Cable)



COM 2 Header



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 Upgrade 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 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 TO RUN SETUP

2. Press the 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
Esc: Exit	<- ->: Select Menu	Enter: Select ▶Sub-Menu
		F9: Setup Defaults
		F10: Save & 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 & 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 & 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
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
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 & 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.

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

Try Other Boot Devices Allows you to enable/disable system to try to boot with other boot devices.
Choices: Yes; No

Initial Display Mode If option is "Silent", the initial display mode will be set to one with Soltek logo. 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" 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

- 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 whenever re-starting system. Choices: Setup; Always
- Boot to OS/2** Allows you to set your system to OS/2 operating system. Choices: Yes; No (default)
- CPU Microcode Update** Allows you to enable/disable the CPU Microcode Update function. Choices: Disabled; Enabled (default)
- L1 /L2 Cache** Allows you to set the Internal/External Cache Mode. Choices: WriteBack (default); WriteThru; Disabled
- 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:

AMBIOS NEW SETUP UTILITY - VERSION 3.31a

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 Burst Length	4
SDRAM Turbo Mode	Disabled
Memory Hole	Disabled
(Hyper-Threading Technology)	Enabled
APIC interrupt Mode	Disabled
Internal Graphics Mode Select	1MB
AGP Aperture Size (optional)	64MB
USB Controller	6 USB Ports
USB 1.1 Device Legacy Support	Disabled
USB 1.1 Port 64/60 Emulation	Disabled
Display Setting	
Boot display Device	Auto
Flat Panel Type	1
TV Standard	Auto
Flat Panel Scaling	Auto

F1: Help ↑↓ : Select Item +/- : Change Values F9 : 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.

<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.

- 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.
- SDRAM CAS# Latency** With SDRAM Timing by SPD disabled, you can select the SDRAM CAS# (Column Address Strode)lacency manually.
Choices: 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
- SDRAM Turbo Mode** Allows you to enable / disable the SDRAM Turbo mode
- Memory Hole** Allows you to enabled / disabled (default) the support of Memory Hole which is reserved for ISA card.
- (Hyper-threading Technology)** If Hyper-threading CPU is running on board, this item will automatically appear to show the Hyper-threading technology status.
Choices: Enabled; Disabled

- APIC Interrupt Mode** Allows you to enable / disable (default) the APIC function for selecting the APIC interrupt Mode.
- Internal Graphic Mode Select** Allows you to set the internal graphic mode.
Choices: 512KB; 1MB; 8MB; Disabled
- (Optional) 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 Support** Allows you to select the USB Device Legacy support.
Choices: No Mice; all Devices; Disabled
- USB 1.1 Port 64/60 Emulation** Allows you to enable / disable (default) the Port 64/60 Emulation.
- Boot display Device** Allows you to select the Boot isplay device.
Choices: Auto; CRT; TV; EFP; CRT+EFP
- Flat panel Type** Allows you to select the flat panel type.
Choices: 1~15 inclusive
- TV Standard** Allows you to select the TV standard.
Choices: Auto; NTSC; PAL; SECAM
- Flat Panel Scaling** Allows you to select the mode for flat panel scaling.
Choices: Auto; Force Scaling; Disabled

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	Suspend
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 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 & 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** The Standby mode supported on this mainboard is S1 (POS) for Power on Suspend under Windows 98 or later O/S 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** Allows you to enable / disable the Resume on LAN function.

Resume on PME# Allows you to enable / disable the Resume on 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 PCI Latency Timer (PCI Clocks) Init. Graphics Adapter Priority PCI IDE Busmaster PCI Slot1 IRQ Priority PCI Slot2 IRQ Priority PCI Slot3 IRQ Priority	No 32 AGP/Int-VGA Disabled Auto Auto Auto

F1: Help ↑↓ : Select Item +/- : Change Values F9 : 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.

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

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

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

PCI Slot 1/2/3 IRQ Priority Allows you to specify the IRQ for the PCI slots.
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)	Enabled
Onboard AC'97 Modem	Disabled
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	Normal
Parallel Port IRQ	Auto
Parallel Port DMA Channel	Auto
Onboard MIDI Port	Disabled
MIDI Port IRQ	5
Onboard Game Port	200
K/B PowerOn Function	Disabled
Stroke Keys Selected	N/A
Password for PowerOn	N/A
PS/2 Mouse PowerOn Function	Disabled

F1: Help ↑↓ : Select Item +/- : Change Values F9 : 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.

<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 there is a built-in LAN on board, this item allows you 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 A.
Choices; auto; Disabled; 3F8/COM1; 2F8/COM2;
3E8/COM3; 2E8/COM4;
- Onboard Serial Port 2** Allows you to set the Onboard Serial Port B.
Choices; auto; Disabled; 3F8/COM1; 2F8/COM2;
3E8/COM3; 2E8/COM4;
- Serial Port 2 Mode** Allows you to set the Serial Port B Mode.
Choices: Normal; 1.6 uS; 3/16 Baud; 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 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 Stroke Key; By Password.
- 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
- Password for PoweOn** If Keyboard Power-on function is set at “By Password”, this item shows up to allow you to type a password for the power-0n function.
Choices: N/A; Password
- PS/2 Mouse PowerOn 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 °C/111 °F	
Temperature 2	-55 °C/-131 °F	
Temperature 3		
Fan 1 Speed	4891 RPM	
Fan 2 Speed	4905 RPM	
Fan 3 Speed	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 & 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 2.01a

Frequency/Voltage Control	Setup Help
RedStrom Overclocking Tech (Optional) (Press “Enter” Key) CPU Ratio Selection Locked CPU Linear Frequency Disabled CPU Clock 100 MHz PCI Cock 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 & 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 Press <Enter> to start *RED STORM OVERCLOCKING TECH*. This option gives user an easy way to overclocking. It will increase CPU external clock automatically. When CPU external clock increases to an unacceptable value, BIOS will restart your system, then running at an acceptable CPU external clock.

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

CPU Linear Frequency This item allows you to enable / disable 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.

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

Spread Spectrum Selection Allows you to enable / disable this Spread Spectrum 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.
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.

- 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]

- 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]

- 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 informations 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 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.