Intel845GL/GV Main board
User's Manual
Rev: 1.0/1.2
PCB: M248

CONTENTS

Chapter 1 Package Contents

Your main board package contains the following items:

1. One M248 Rev:1.0/1.2 main board
2. One 80-Pin Ultra DMA 66/100 IDE drive ribbon cable
3. One 34-Pin Floppy drive ribbon cable
4. One front panel connector ribbon cable (optional)
5. Software Install CD
6. One user's manual

Chapter 2 Introduction

This main board has the Intel 845GL/GV chipset that contains Intel 82845GL/GV Memory Controller Hub and Intel 82801DB I/O Controller Hub. This main board has a Socket-478 support for Intel Pentium 4 processors with front-side bus (FSB) speeds up to 400/533, supports DDR200/DDR266 memory bus, supports AC97 audio codec, integrated AC97 audio that supports full surround sound with up to six channels, front panel audio output function, provides Ultra DMA66/100 function, the integrated display function technologies without extend display card, provides three PCI slots. The main board integrated main board, VGA card, sound card three function all in one.

Key Features:
-Chipset:
  Intel 845GL/GV chipset GMCH: Intel 82845GL/GV; ICH4: Intel 82801DB (DBM)

-Processor:
Supports Intel Celeron CPU Socket 478 CPU
Supports Intel Pentium 4 (Northwood) Socket 478 CPU
Supports Intel Pentium 4 (Willamette) Socket 478 CPU
Supports Intel Pentium 4 (Prescott) Socket 478 CPU
Supports Intel Celeron D (Prescott) Socket 478 CPU

-Supports 400/533MHz **HOST BUS** Frequency

-Memory Support:
  Supports DDR200/DDR266 (Double Data Rate) SDRAM
  Two 184-pin DIMM slots for DDR SDRAM memory modules

-Integrated display function technologies without extend **VGA** card
Integrated 2D/3D Graphics Controller

-USB Ports
Six USB ports
Supports compliant with Universal Serial Bus Specification Revision 2.0

-BIOS Supports
Supports Plug and Play
Supports Advanced Power Management Interface

-IDE Port
Provides two channel connecting four IDE drives
Supports Ultra ATA66/100 synchronous DMA modes

-I/O Ports
One Floppy port support format 360k/720k/1.2M/1.44M/2.88M disk driver
One serial port
One parallel port
Six USB ports (two back-panel USB ports, onboard USB headers providing
Maximum four extra ports)
One PS/2 Keyboard port
One PS/2 Mouse
One Game/MIDI port
One IrDA port support 115.2KB/S transfers' data.

-Onboard Sound AC'97 2.2 specification compliant
Support 16bit stereo codec
Multiple stereo input mixers
Provides onboard Line-in Jack, Microphone-in Jack

-**Expansion Slot**
Three PCI slots 2.2 specifications compliant

-Hardware detects function (Optional)
Auto detect CPU Voltage and CPU Temperature
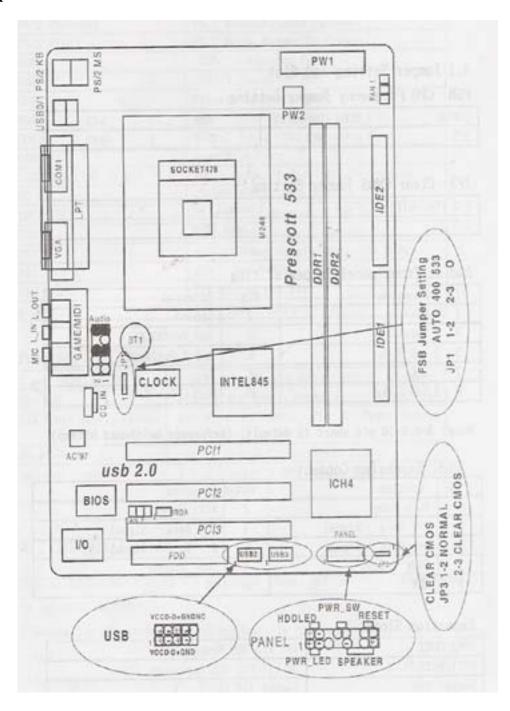Auto detect CPU FAN and Power FAN speed

-Other function
Supports Wake-on-LAN
Supports Wake-on-Modem

-Dimension
Micro ATX form factor

Chapter 3 Main board Locations

Chapter 4 Installation

4.1 Jumper Setting and Slot

FSB CPU Frequency Jumper Setting

JUMPER	AUTO (Default)	400	533
JP1	1-2	2-3	OPEN

JP3: Clear CMOS Jumper Setting

1-2 (Default)	Normal
2-3	Clear CMOS

Audio: Front panel Jumper setting

PIN	Function	PIN	Function
1	MIC+	2	Ground
3	Vbias	4	AuD_Vcc (AVCC)
5	AuD_R_Out	6	AuD_R_Out Back
7	N.C.	8	Key
9	AuD_L_Out	10	AuD_L_Out Back

Note: 5-6, 9-10 pin short is default. (Reference main board bitmap)

USB: Expansion Connector

PIN	Function	PIN	Function
1	VCC: Power	2	Ground
3	D-: Data – Signal	4	AuD_Vcc (AVCC)
5	D+: Data + Signal	6	AuD_R_Out Back
7	GND: Ground	8	Key
9	KEY	10	AuD_L_ Back

Expansion Slots

DDR1/DDR2	184 Pin DDR Memory Slots
PCI1/PCI2/PCI3	32 bit PCI BUS Expansion Slots
Socket 478	Socket 478 CPU Slots

Connectors

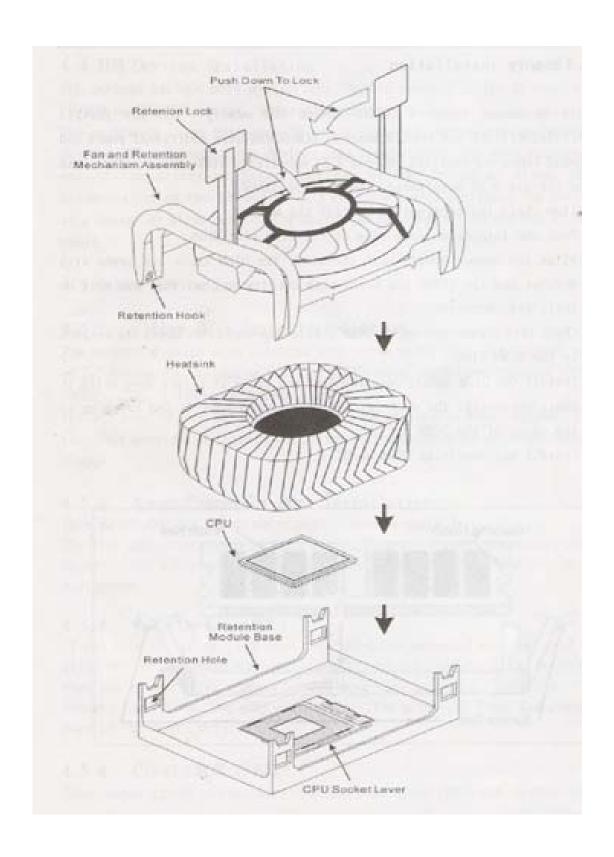|	
PS/2 (Bottom)	PS/2 Keyboard (Down Purple)
PS/2 (Top)	PS/2 Mouse Header (Up Green)
USB 0/1	USB 0/1 Connector Port
USB 2/3	USB 2/3 Connector Port
LPT	Printer Connector Port
VGA	VGA Display Connector Port
COM1	Serial Ports COM1 Connector Port
GAME/MIDI	Game/MIDI Port
LINE OUT/LINE IN/MIC	Audio Output/Audio Input/Microphone
CD_IN	CD-ROM Audio Input Port
IDE1/IDE2	Primary IDE/Secondary IDE Port
FDD	Floppy Disk Drive Connector Port
PW1	ATX_20 Power Supply Connector Port
PW2	ATX_4 Power Supply Connector Port
FAN ½	CPU System Fan Port
IrDA	IrDA Infrared Port

Function Port Pane1

Power Supply LED	Pin 1:Power Supply Anode; Pin 3: Ground
HDD LED	Pin 2: Power Supply Anode; Pin 4: LED Signal
ATX Power Supply Switch	Pin 8: Switch Signal; Pin 10: Power Supply Anode
Reset Switch	Pin 14: Ground; Pin 16:Reset Signal
Speaker Input	Pin 9: Speaker Audio Input; Pin 15 : Power Supply Anode

4.2 CPU Installation

This main board has a socket 478 processor socket. Follow these instructions to install the CPU:
1. Unhook the CPU socket's locking lever pulling it away from socket and raising it to the upright position.
2. Match the pin 1 corner of CPU socket to the one of processor, and insert the processor into the socket. Do not use force.
3. Push the locking lever down and hook it under the latch on the edge of socket.
4. Apply thermal grease to the top of the CPU.
5. Lower the CPU fan/heat sink unit onto the CPU and CPU socket, and then use the retention module clamps to snap the fan/heat sink into place.
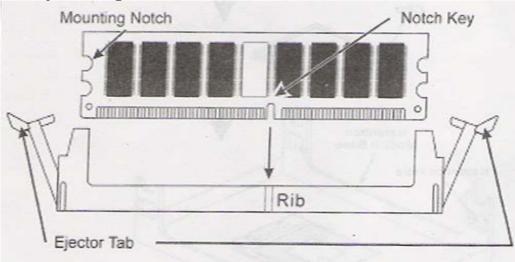6. Plug the CPU fan power cable into the CPU cooling fan power supply connector on the main board.

Push Down To Lock

Retention Lock

Fan and Retention
Mechanism Assembly

Retention Hook

Heatsink

CPU

Retention
Module Base

Retention Hole

CPU Socket Lever

4.3 Memory installation

This main board supports DDR200/DDR266 DDR memory you may install 64/128/256/512MB 184 pin DDR memory. DDR SDROM uses additional power and ground lines and requires 184-pin 2.5V unbuffered DIMM module rather than the 168-pin 3.3V unbuffered DIMM used by SDRAM.
Follow these instructions to install the Memory:
1. Push the latches on each side of the DIMM slot down.
2. Align the memory module with the slot. The DIMM slots are keyed with notches and the DIMMS are keyed with cutouts so that they can only be installed correctly.
3. Check that the cutouts on the DIMM module edge connector match the notches in the DIMM slot.
4. Install the DIMM module into the slot and press it firmly down until it seats correctly. The slot latches are levered upwards and latch on to the edges of the DIMM.
5. Install any remaining DIMM modules.

4.4 IDE Devices Installation
IDE devices include hard disk drives, high-density diskette drives, and CD-ROM or DVD-ROM drives, among others.
The main board ships with an IDE cable that can support one or two IDE devices. If you connect two devices to a single cable, you must configure one of the drives as Master and one of the drives as Slave. The documentation of the IDE device will tell you how to configure the device as a Master or Slave device. The Master device connects to the end of the cable.

4.5 Other Device Installation

4.5.1 Floppy Disk Drive Installation
This main board ships with a floppy disk drive cable that can support one or two drives. Drives can be 3.5" or 5.25" wide, with capacities of 360K, 720K, 1.2MB, 1.44MB, or 2.88MB.
Install your drives and connect power from the system power supply. Use the cable provided to connect the drives to the floppy disk drive connector floppy.

4.5.2 Sound Connector Port Installation
This main board has three audio ports connects audio device.
The left side jack (green) is for a stereo line-out signal. The middle jack (gray) is for a stereo line-in signal. The right side jack (red) is for a microphone.

4.5.3 Wake on LAN (WOL)
If you have installed a LAN card, use the cable provided with the card to plug into the main board WOL connector. This enables the Wake on LAN feature. When you system is in a power saving mode, any LAN signal automatically resumes the system. You must enable this item using the power Management page of the Setup Utility.

4.5.4 Clear CMOS (JP3)
This jumper allows you to clear the Real Time Clock (RTC) RAM in CMOS. You can clear the CMOS memory of date, time, and system setup parameters by erasing the CMOS RTC RAM data. The RAM data in CMOS, that include system setup information such as system passwords, is powered by the onboard button cell battery.
1. Turn OFF the computer and unplug the power cord.
2. Move the jumper cap from pin 1-2(default) to pin 2-3. Keep the cap on pin 2-3 for about 5-10 seconds, and then move the cap back to pinsl-2.
3. Plug the power cord and turn ON the computer.
4. Hold down the <DEL> key during the boot process and enter BIOS setup to re-enter data.

Note1: Except when clearing RTC RAM, never remove the cap on CLRTC1 jumper default position. Removing the cap will cause system boot failure!

Note2: You do not need to clear the RTC when the system hangs due to over clocking. For system failure due to over clocking, use the C.P.R. (CPU Parameter Recall) feature. Shut down and reboot the system so BIOS can automatically reset parameter settings to defaults values.

4.5.5 ATX Power connectors (20-pin ATXPWRI, 4-pin ATX 12V1)

These connectors connect to an ATX 12V power supply. The plugs from the power supply are designed to fit these connectors in only one orientation. Find the proper orientation and push down firmly until the connectors completely fit. In addition to the 20-pin ATXPWR1 connector, connect the 4-pin ATX +12v power plug to provide sufficient power to the CPU.

Note1: Make sure that you ATX 12V power supply can provide at least 15A on the +12V lead and at least 2A on the +5-volt standby lead (+5VSB). The minimum recommended wattage is 300W or above for a fully configured system. The system may become unstable and may experience difficulty powering up if the power supply is inadequate.

Note2: Do not forget to connect the 20-pin ATXPWRI and 4-pin ATX12V1power plugs. Failure to do so may cause severe damage to the CPU or motherboard!

Chapter 5 Driver Installation

5.1 Installation Directory
The utility CD is supplied with that main board the connects contained in it is showed as below:

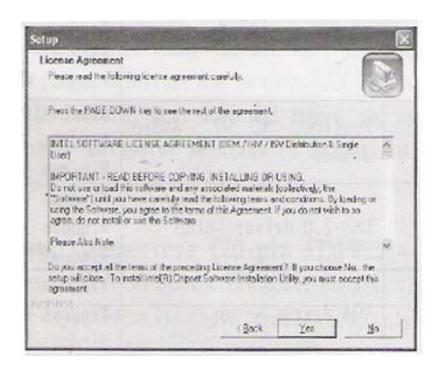| Directory	Driver	OS
INTEL\INF\XXX	Intel chipset software	Windows 9x Windows 2000/XP Windows NT4.0
INTEL\IAA\845\XXX	Intel IAA setup	Windows 9X/SE/XP Windows 2000/XP
SOUND\REALTEK\XXX	Realtek AC' 97 Audio driver	Windows 9x Windows 2000/XP Windows NT4.0
INTEL\USB2.0\845	USB 2.0 driver setup	Windows 9x Windows 2000/XP Windows NT4.0
INTEL\VGA\845	VGA driver setup	Windows 9x Windows 2000/XP Windows NT4.0

Before installing audio driver, you must identify the mode of AC' 97 codec.
For example: If you use realtek serial codec, you need to enter into the realtek directory installing.
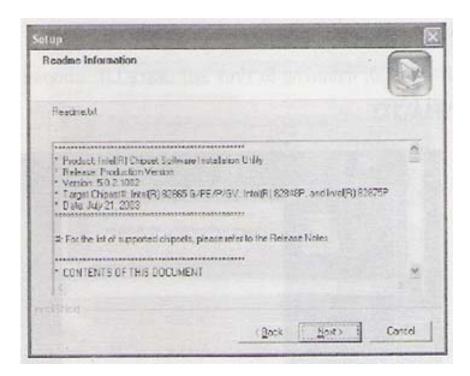
5.2 Intel Chipset Software Setup
Insert the driver CD, running driver software CD, choose the directory: \CD-ROM:\INTEL\INF\XXX
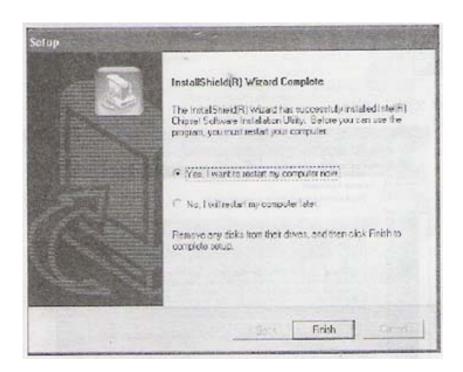
Click "NEXT" to continue

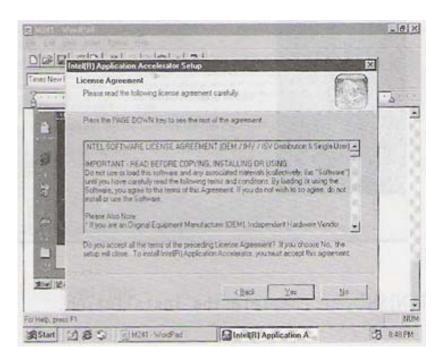Select "YES" to continue

Select "NEXT" to continue

Select "FINISH" completing the installation.
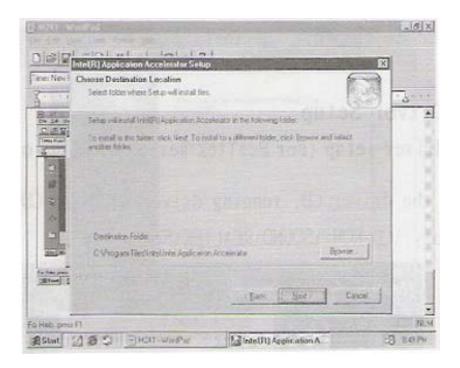
5.3 IAA (Intel Application Accelerator) Setup
        Insert the driver CD, running driver software CD, choose the directory:
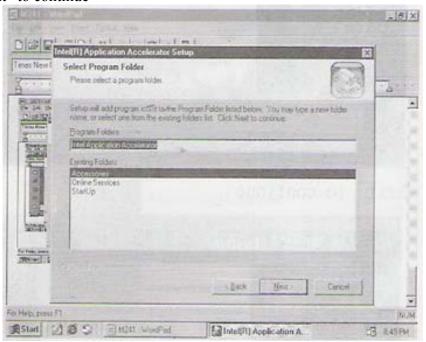\CD-ROM:\INTEL\IAA\XXX
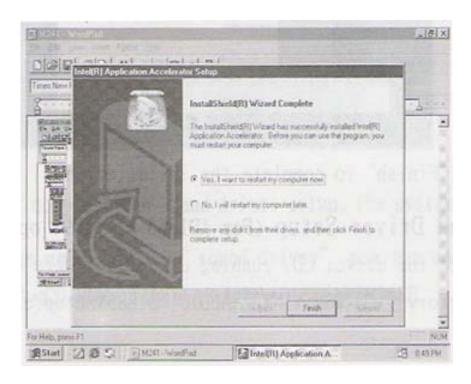

Click "Next" to continue

Select "Yes" to continue

Select "Next" to continue
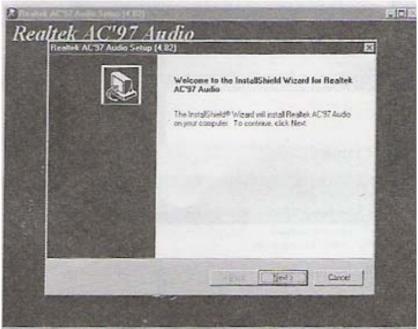

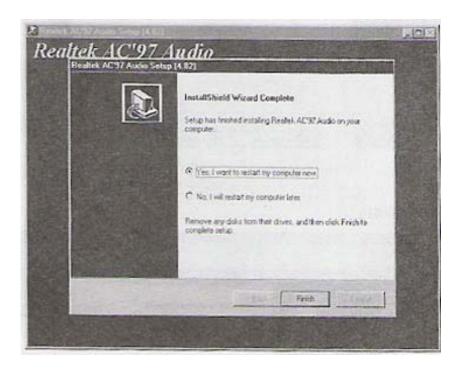Select "Next" to Continue

Select "Finish" to complete the installation

5.4 Sound Driver Setup
5.4.1 Sound driver setup (For Realtek series of WIN98 operation system)

Insert the driver CD, running driver software CD, choose the
Directory:\CD-ROM:\SOUND\REALTEK\SETUP.EXE

Select "Next" to continue

Select "Finish" to complete the installation

Channel Sound Output Support
Please follow the steps below for operation (optional):
1. After install sound driver' click "Sound effect", "AC97 audio configuration" options;
2. Click "Sound configuration" select "6 Channel mode for 5.1 speakers output" options.
3. Click "Sound effect" menu "Environment" you must choose one Sound effect realization 6-Channel sound output.

5.4.3   Uninstallation Sound Driver (For Realtek of WIN98 operation system)
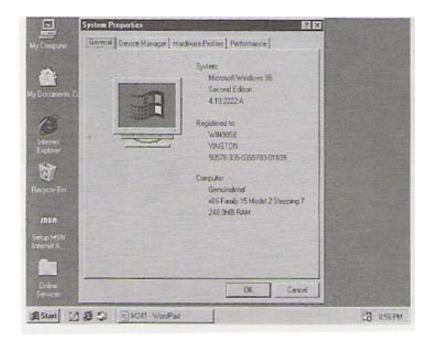Startup to WINDOWS desktop' select "SETUP"/ "Control Panel", select "Add/Delete" menu select "Advance AC' 97 Audio Driver and Applications", click "Add/Delete", select "language", "confirm" "GO", select, "Complete", restart and program auto delete.

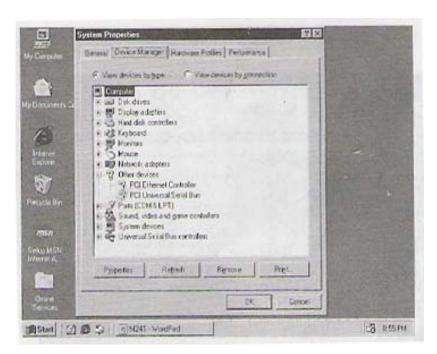### 5.5 USB 2.0 driver Setup
USB (Universal Serial Bus), the main board implements the new Universal Serial Bus (USB) 2.0 specification, extending the connection speed from 12Mbps on USB1.1 to a fast 480Mbps on USB2.0

5.5.1 Windows 98se driver setup

Click "My computer", Click right key of mouse
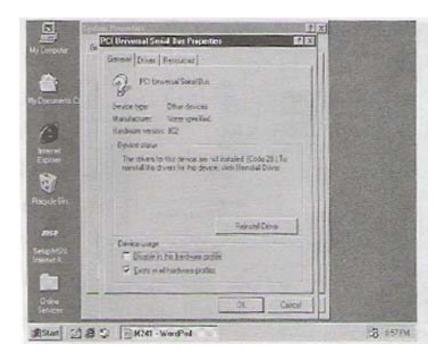
Select "Device manager" to continue

Select "PCI Universal Serial Bus" and double click to continue

Select "Reinstall Driver" to continue

Select "Next" to continue

Select "Next" to continue

Select "Specify a location" and type "F:\INTEL\USB20\845\WIN98_ME" that

Select "Next" to continue

Select "Next" to Continue

Select "Next" to Continue

Select "Next" to Continue

Select "OK" to Continue

Type "F:\INTEL\USB20\845\WIN98_ME" that Select "OK" to continue

Select "Finish" continuing

5.5.2 Windows 2000/XP driver setup, new may run windows update to setup by internet.

Chapter 6 BIOS Setup

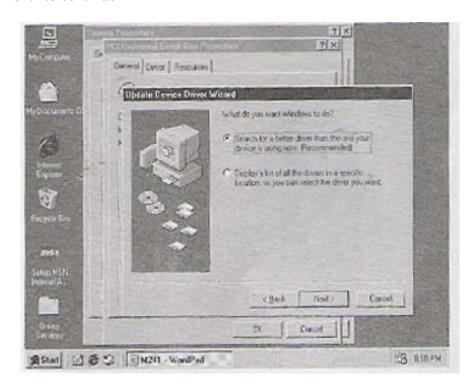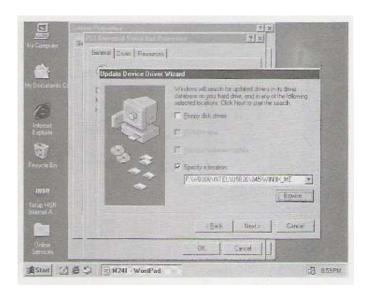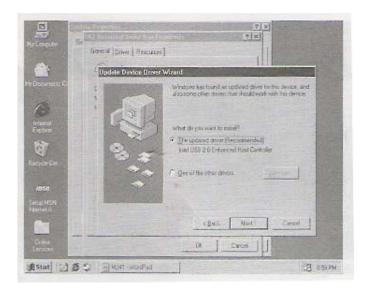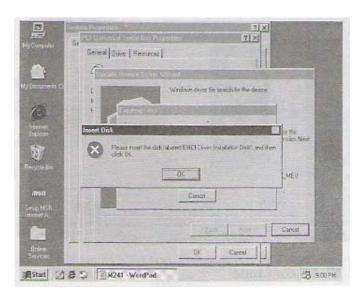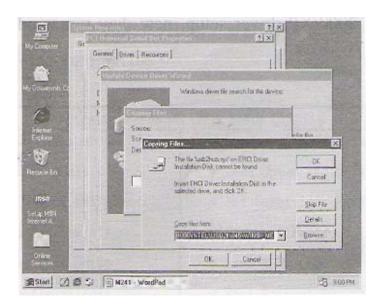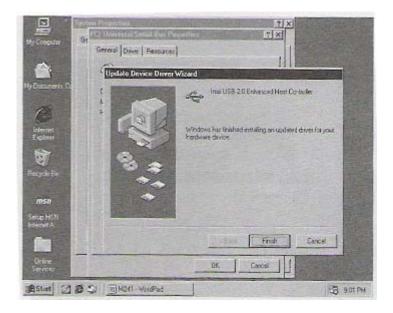The BIOS Setup Utility record settings and information of your computer, such as date and time, the type of hardware installed, and various configuration settings. Your computers applies those information to initialize all the component's when booting up and basic function of coordination between system components.
If the Setup Utility configuration is incorrect, it may cause the system to malfunction. It can even stop you computer booting properly. If it happens, you can use the clear CMOS jumper to clear the CMOS memory which has stored the configuration information; or you can hold down the page up key while rebooting your computer. Holding down the Page Up key also clears the setup information

6.1 Main menu

Phoenix AwardBIOS CMOS Setup Utility	
▼Standard CMOS Feature ▼Advanced BIOS Feature ▼Advanced Chipset Feature ▼Integrated Peripherals ▼Power Management Setup ▼Power Management Setup ▼PnP/PCI Configurations ▼Frequency/Voltage Control	▼Load Fail-Safe Defaults ▼Load Optimized Defaults ▼Set Supervisor Password ▼Set User Password ▼Save & Exit Setup ▼Exit Without Saving
Esc : Quit F9 :Menu in BIOS F10 : Save & Exit Setup	↑↓↔ :Select item
Time, Date, Hard Disk Type…..	

You can use cursor arrow keys to highlight anyone of options on the main menu page. Press Enter to select the highlighted option.
Press the Escape key to leave the setup utility. Press the F9 key to go back to menu in BIOS.
Some options on the main menu page led to tables of items with installed
Value that you can use cursor arrow keys to highlight on item, and press PgUp and PgDn keys to cycle through alternative values of that item. The other answer Yes or No by hitting the Y or N keys.
If you have already changed the setup utility, press F10 to save those changes and exit the utility.
  ➢ Standard CMOS Features
     Setup date, time, floppy type
  ➢ Advanced BIOS Features

Setup BIOS provides function, for example virus, boot-strap induct
- ➢ Advanced Chipset Features
  Setup main board chipset parameter' for example DRAM Timing
- ➢ Integrated Peripherals
  Setup include main board all peripherals drive
- ➢ Power Management Setup
  Setup CPU, Hard disk, Monitor drive power save mode
- ➢ PnP/PCI Configurations
  Setup PnP and PCI interface parameter
- ➢ PC Health Status
  Setup CPU/System temperature and FANs/Voltage Measurements
- ➢ Frequency/Voltage Control
  Setup CPU frequency/Voltage in system
- ➢ Load Fail-Safe Defaults
  Setup the best performance values in system
- ➢ Set Supervisor Password
  Setup supervisor password in system
- ➢ Set User Password
  Setup user password in system
- ➢ Save & Exit Setup
  Setup save and exit, press Y to save and exit
- ➢ Exit Without Save Setup
  Setup without save and exit, press N to without save and exit

6.2 Standard CMOS Features

- ➢ Date (mm:dd:yyyy)
  These items set up system date
- ➢ Time (hh:mm:ss)
  These items set up system time
- ➢ Pri/Sec Master/Slave

  These items configure device connected to the Primary and Secondary IDE channels. To configure an IDE hard disk drive, choose Auto. If the Auto setting fails to find a hard disk drive, set it to User, and then fill in the hard disk characteristics manually. If you have a CD-ROM drive, select the setting CD-ROM. If you have an ATAPI device with removable media, select Fl optical.

6.3 Advanced BIOS Features

- ➢ CPU L1&L2 Cache
  Leave these items enabled since all the processors that can be installed on this board have internal L2 cache memory.
- ➢ First Boot Device
  When system boot-strap first time detect device.
- ➢ Second/Third Boot Device
  When system boot-strap first time detect device.

➢ Boot Other Device
If you enable this item, the system will also search for other boot devices if it fails to find an operating system from the first two locations.
➢ Swap Floppy Drive
If you have two diskette drives installed and you enable this item, drive A becomes drive B and drive B becomes drive A.

6.4 Advanced Chipset Features

➢ DRAM Timing Selectable
BIOS auto detect by SPD   Default: Manual
➢ CAS Latency Time
Set up memory read order wait time   Default: 2.5
➢ Active to Precharge Delay
Control DRAM running precharge delay time option

Default: 6

➢ DRAM RAS-to-CAS Delay
Control DRAM startup read and write order Default: 3
➢ Memory Frequency For
Memory frequency enabled select DDR200/DDR266

Default: AUTO

➢ System BIOS Cacheable
If enable system BIOS read cache   Default: Disabled
➢ Video BIOS Cacheable
If enable Video BIOS read cache   Default: Disabled
➢ Delayed Transaction
Enable ICH2 will be delayed   Default: Disabled
➢ Delayed Prior to Thermal
Enable system detect DRAM temperature time Default: 16min.
➢ AGP Aperture Size (MB)
Select AGP capability   Default: 64MB

6.5 Integrated Peripherals

➢ On-Chip Primary/ Secondary PCI IDE
Chipset inside the first/second channel of PCI IDE interface

Default: Enabled

➢ IDE Primary/Secondary Master/Slave PIO
The first/second IDE primary master/primary slave control PIO mode

Default: Auto

➢ USB Controller
Setup USB controller   Default: Enabled
➢ USB Keyboard Support
Setup support USB keyboard   Default: Disabled
➢ AC97 Audio
If use AC97 sound chipset   Default: Auto

- ➢ Init Display First
  When boot-start the first time detect device

  Default: PCI slot

- ➢ Onboard FDC Controller
  Setup onboard FDC controller   Default: Enabled
- ➢ Onboard Serial Port ½
  Setup onboard serial Port ½   Default: 3F8/IRQ4
- ➢ UART Mode Select
  Setup UART mode select   Default: Normal
- ➢ Onboard Parallel port
  Setup select parallel port   Default: 378/IRQ7
- ➢ Parallel Port Mode
  Setup parallel port mode   Default: SPP
- ➢ Game/Midi Port Address
  Setup game/MIDI port address   Default: 201/330
- ➢ Midi Port IRQ
  Setup MIDI port IRQ   Default: 10

6.6 Power Management Setup

- ➢ ACPI Function
  Setup if use ACPI function   Default: Enabled
- ➢ Video off Method
  Setup video off method   Default: DPMS
- ➢ Video off in Suspend
  Setup when video off in suspend   Default: Yes
- ➢ Suspend Type
  Setup suspend type   Default: Stop Grant
- ➢ MODEM Use type
  Setup modem use IRQ   Default: 3
- ➢ Soft-Off by PWR-BTTN
  Setup soft-off type   Default: Instant-Off
- ➢ Power On by Ring
  Setup if use mode wake up   Default: Enabled
- ➢ USB KB Wake-Up From S3
  Setup if use USB keyboard wake-up from S3 Default: Enabled

6.7 PnP/PCI Configurations

- ➢ Reset Configuration Data
  When select Enabled the BIOS restart write system configuration data
  Default: Disabled
- ➢ Resources Controlled By
  System resources parameter setup   Default: Auto (ESCD)
- ➢ PCI/VGA Palette Snoop
  PCI/VGA card color setup   Default: Disabled

6.8 Frequency/Voltage Control
- ➢ Auto Detect PCI CIK
  Setup auto detect PCI clock   Default: Enabled
- ➢ CPU Clock
  Setup CPU BUS frequency

Note: The main board auto detect CPU frequency 'so you needn't setup CPU frequency by yourself the CPU can display normal.

6.9 Load Fail-Safe Defaults
        If you select this item and press enter a dialog box appears. If you press Y, and then Enter, the setup utility loads a set of fail-safe default values. These default values are not very demanding and they should allow your system to function with most kinds of hardware and memory chips.
Note: It is highly recommended that uses enter this Option to load optimal values for accessing the best performance.

6.10 Load Optimized Defaults
        If you select this item and press enter a dialog box appears. If you press, Y, and then Enter, the setup utility loads a set of best performance default values. These default values are quite demanding and your system might not function properly if you are using slower memory chips or other low-performance components.

6.11 Change Password
        If you highlight this item and press Enter, a dialog box appears that you can enter a supervisor password. You can enter no more than six letters or numbers. Press enter after you have typed in the password. There will be the second dialog box asking you to retype the password for confirmation. Press Enter after you have retyped it correctly. Then the password is required for the access to the setup utility or for it at start-up, depending on the setting of the password check item in advanced setup.

6.12 Save Exit & Without Save Exit Setup
        Highlight this item and press enter to save the changes that you have made in the setup utility configuration and exit the program. When the save and exit dialog box appears, press Y to save and exit, or press N to exit without saving.