945GCF Mainboard

User’s Manual

Rev：1.1

Date：2010.12

CONTENTS

Chapter 1 Package Contents

Your mainboard package contains the following items:

1 One Intel 945 serial mainboard

2 One 80-Pin Ultra DMA 66/100 IDE drive ribbon cable

3 Software install CD

4 One user’ s manual

5 SATA cable (optional)

6 SATA Power cable (optional)

7 One I/O Backboard

Chapter 2 Introduction

2.1 Specification

INTEL 945

- Intel 945+ICH6
- Supports SOCKET 478 Pentium 4 ,Celeron D CPU
- Supports 533/800MHz HOST BUS Frequency
- Intel Graphics Media Accelerator 950 VGA
- Dual channel Mode DDR2 533/667
- Provides TWO channel connecting two SATA drives, With speed up to 300MB/S
- Supports One PCIEx16 Slot ; one PCI Slots
- Supports Six channel sound input
- Supports Six USB2.0 ports

Key Features:

-Chipset:

MCH: Intel 945; ICH: Intel 82801FB

-CPU:

Supports Intel Pentium HT (Hyper Threading Technology) CPU

Supports Intel SOCKET 478 CPU

Supports Intel Pentium 4 SOCKET 478 CPU

Supports Intel Celeron D SOCKET 478 CPU

-Supports 533/800MHz HOST BUS Frequency

-Memory:

Supports DDR2 533/667 Memory

Provides TWO 240 pin DDR2 slots

-I/O :

One IDE Port

Two serial port

One LPT port

One parallel port, supports EPP/ECP/SPP transfers

Six USB ports

One PS/2 Keyboard port

One PS/2 Mouse port

One VGA Port

Two SATA port

-Onboard HD AUDIO specification compliant

Supports six channel sound input (example Realtek ALC662)

Supports 16 bit ADC (Analog Digital Converter)

Supports multiple stereo input mixer

Provides Mic In、Line In、Line Out jack

-Onboard LAN Card

Onboard RTL8103EL LAN Card

-Expansion slot:

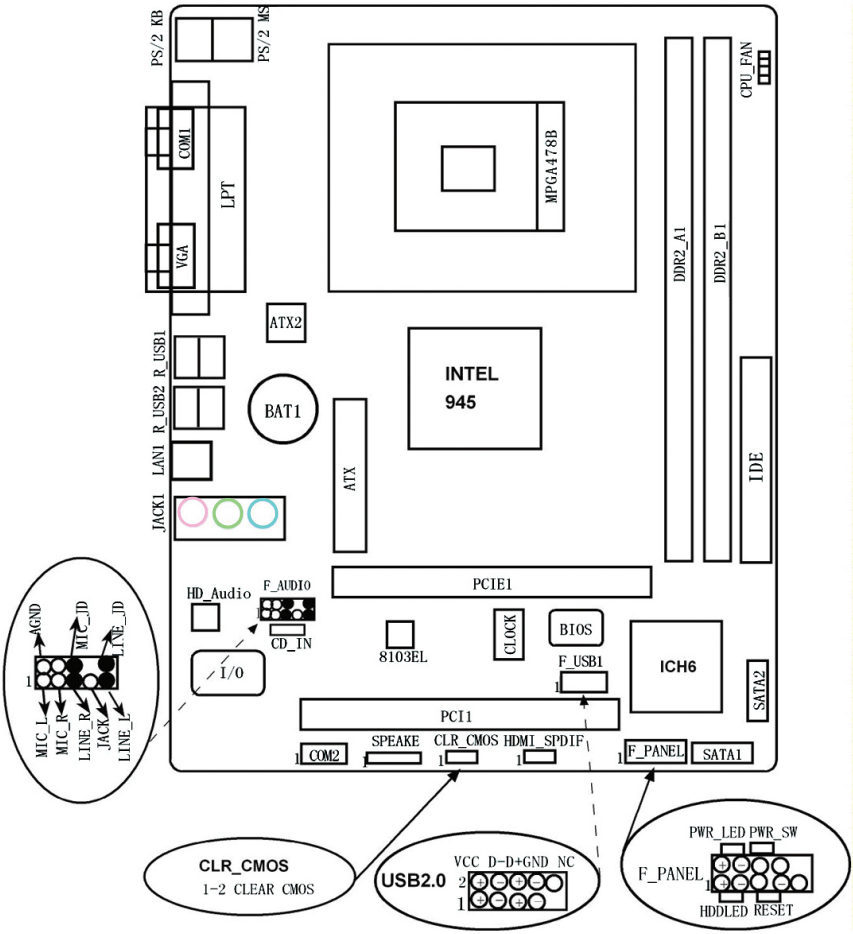
One PCIE_16 slot

One 32-bit PCI slots 2.3 specification compliant

-Dimension

MicroATX form factor

Chapter 3 Mainboard Locations



Chapter 4 Installation

4.1 Jumper Setting and Slot

CLR_CMOS：Clear CMOS Jumper setting

1-2	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	R_Out Back
7	N.C.	8	Key
9	AuD_L_Out	10	L_Out Back

USB: Expansion Connector

PIN	Function	PIN	Function
1	VCC：Power	2	VCC：Power
3	D-：Data - Signal	4	D-：Data - Signal
5	D+：Data + Signal	6	D+：Data + Signal
7	GND：Ground	8	GND：Ground
9	Key	10	N.C.

F_PANEL Port

Power Supply LED	Pin2 ： Power Supply Anode ； Pin4：Ground
HDD LED	Pin1 ： Power Supply Anode ； Pin3：LED Signal
Power Supply Switch	Pin6、8：Switch Signal
Reset Switch	Pin5、7：Reset Switch

Expansion slot

DDR2A1/B1	240 PIN DDR MEMORY SLOT
PCI1	32 bit PCI BUS expansion slots
PCIE1	PCI Express X16 expansion slots

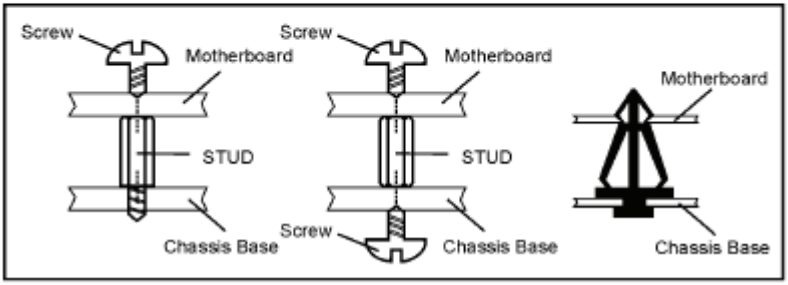
Connectors

PS/2 (Bottom)	PS/2 Keyboard (Purple)
PS/2 (Top)	PS/2 Mouse Header(Green)
LAN	LAN Connector Port
R_USB1/2	USB Connector Port
F_USB1	USB1 Connector Port
LPT	Printer Connector Port
COM1/2	Serial Port COM1 Connector Port
VGA	Onboard VGA port
LINE OUT/LINE IN/MIC	Audio Output/Audio Input/Microphone
CD_IN	CDROM Audio Input Port
IDE	IDE Port
SATA1/SATA2	SATA Port
ATX/ATX2	ATX Power Supply Connector Port
CPU FAN	CPU FAN Port

4.2 CPU Installation

The system board is equipped with a surface mount MPGA 478 socket. This socket is exclusively designed for installing a MPGA 478 packaged Prescott CPU.

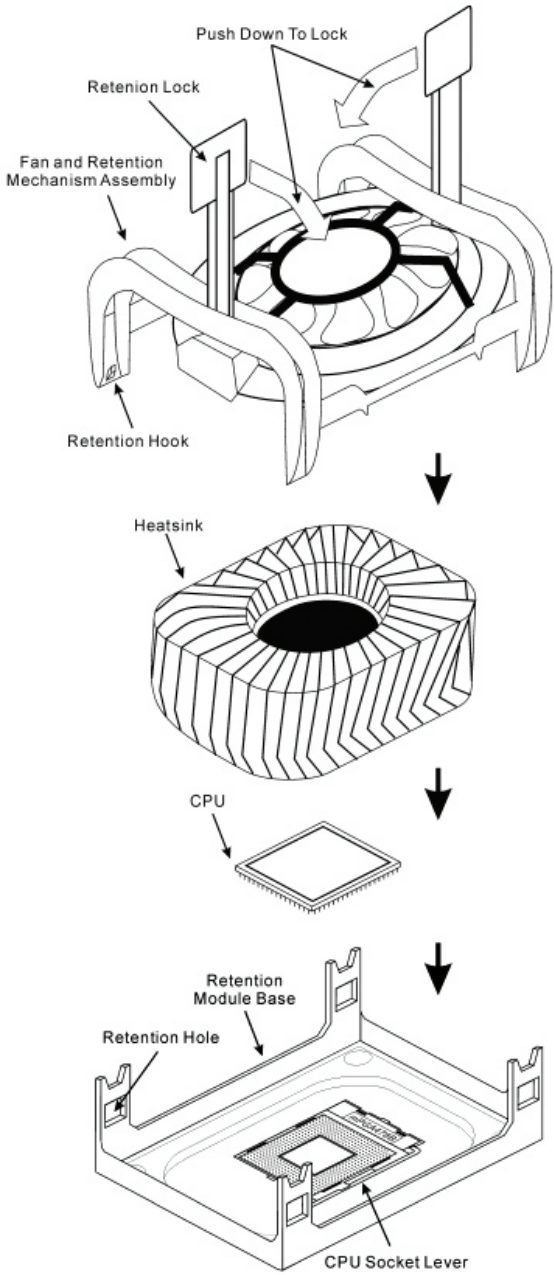
1. Make sure the PC and all other peripheral devices connected to it has been powered down.
2. Disconnect all power cords and cables.



3. Locate the MPGA 478 CPU socket on the system board.
4. The CPU socket comes with a cover that is attached with a removable protective cap. The cap is used to protect the CPU socket against dust and harmful particles. Remove the protective cap only when you are about to install the CPU.
5. Lift the protective cap from the location pointed below to detach the cap from the cover.
6. Unlock the socket by pushing the lever down, moving it away from the side tab of the socket, then lifting it up.
7. Now lift the cover.
8. Position the CPU above the socket. The gold mark on the CPU must align with pin 1 of the CPU socket.
9. Insert the CPU into the socket until it is seated in place. The CPU will fit in only one orientation and can easily be inserted without exerting any force.
10. Once the CPU is in place, move the cover down.
11. Push the lever down to lock the socket. The lever should hook onto the side tab to indicate that the CPU is completely

secured in the socket.

12. Before you install the fan / heat sink, you must apply a thermal paste onto the top of the CPU. The thermal paste is usually supplied when you purchase the CPU or fan heat sink assembly.
    Do not spread the paste all over the surface. When you later place the heat sink on top of the CPU, the compound will disperse evenly.
    Do not apply the paste if the fan / heat sink already has a patch of thermal paste on its underside. Peel the strip that covers the Paste before you place the fan / heat sink on top of the CPU.
13. Place the heat sink on top of the CPU. The 4 studs around the heat sink which are used to secure the heat sink onto the system board must match the 4 mounting holes around the socket.
    Position each stud so that the groove faces the heat sink then push it down firmly until it clicks into place.
14. Connect the CPU fan’s cable connector to the CPU fan connector on the system board.

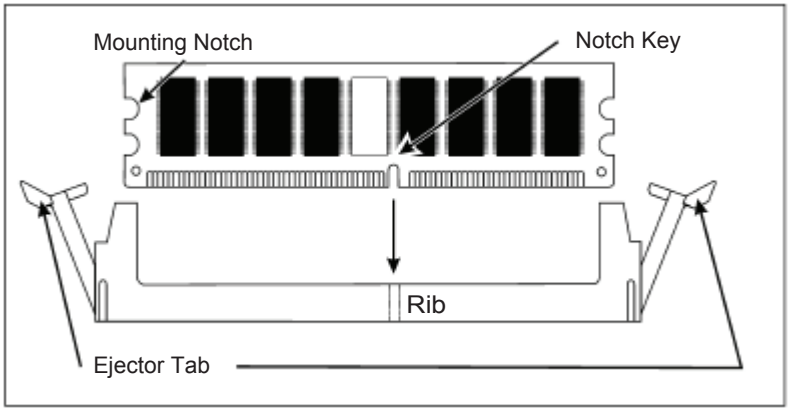

Push Down To Lock
Retenion Lock
Fan and Retention
Mechanism Assembly
Retention Hook
Heatsink
CPU
Retention
Module Base
Retention Hole
CPU Socket Lever

4.3 Memory installation

This mainboard supports DDR2 533/667memory, you may install 240 pin DDR2 memory。DDR2 uses additional power and ground lines and requires 240-pin 1.8V 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 DIMM 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 othes.

The mainboard ships with and 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.

4.5 Other Device Installation

4.5.1 Serial ATA Installation (7-Pin SATA1/SATA2)

The motherboard bundles the new Serial ATA technology through the SATA interfaces onboard. The SATA specification allows for thinner, more flexible cables with lower pin count, reduced voltage requirement. These connectors support Serial ATA HDDs and allow up to 150MB/s data transfer rate using thin 4-conductor SATA cables. faster than the standard parallel ATA with 133MB/s(Ultra ATA/133)

Note1: The Serial ATA cable is smaller and more flexible allowing easier routing inside the chassis. The lower pin count of the Serial ATA cable eliminates the problem caused by the wide, flat ribbon cables of the Parallel ATA interface.

Hot plug support for Serial ATA drive and connections are not available in this motherboard.

4.5.2 Sound Connector Port Installation

This mainboard has three audio ports connect audio device.

The left side jack(green) is for a stereo line-out signal. The middle jack (blue)is for a stereo line-in signal. The right side jack (red)is for a microphone.

4.5.3 Clear CMOS (Clear RTC RAM) (CLR_CMOS)

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、 place a jumper cap on the two pins to temporarily short the two pins or use a metal object like a screwdriver to touch the two pins for a few seconds.

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 overclocking. For system failure due to overclocking, use the C.P.R. (CPU Parameter Recall) feature. Shut down and reboot the system so BIOS can automatically reset parameter settings to default values.

4.5.4 ATX Power connectors (24-pin ATX, 4-pin ATX2)

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 ATX connector, connect the 4-pin ATX2 +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 ATX and 4-pin ATX2 power plugs. Failure to do so may cause severe damage to the CPU or motherboard!

Chapter 5 Driver Installation

5.1 Installation Directory

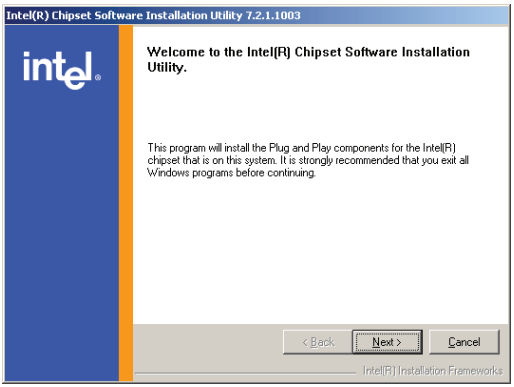
The utility CD is supplied with that mainboard the connects contained in it are showed as below:

Directory	Driver	OS
INTEL\INF\945	Intel chipset software	Windows 2000 Windows XP Windows vista
TOOLS\DirectX 9.0C	DirectX 9.0C setup	Windows 2000 Windows XP Windows vista
Realtek (ALC662) HD Audio	Related HD AUDIO Audio driver	Windows 2000 Windows XP Windows vista
INTEL\VGA\945_G31	VGA driver setup	Windows 2000 Windows XP Windows vista
LAN\Realtek 8102_8103	onboard LAN driver	Windows 2000 Windows XP Windows vista

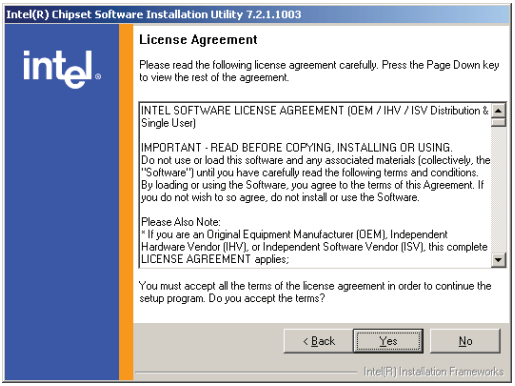
Before installing audio driver, you must identify the mode of AC' 97 codec. Fox example: If you use Realtek serial codec, you need to enter into the Realtek directory installing.

5.2 Intel Chipset Software Setup

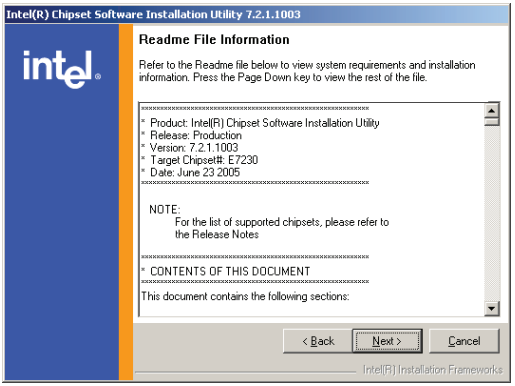
Insert the driver CD, running driver software CD, choose the directory :\ CD-ROM:\INTEL\INF\945



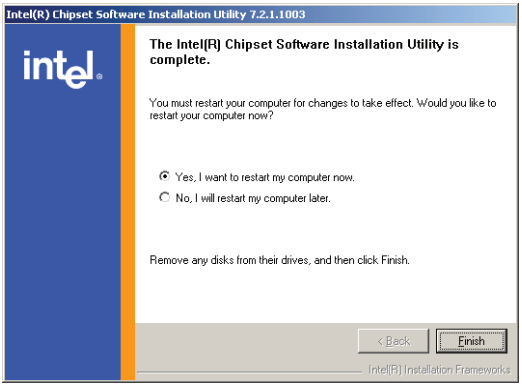
Click “NEXT” to continue



Select “YES” to continue



Select “NEXT” to continue

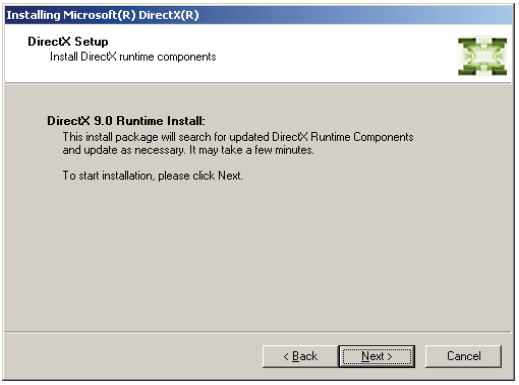


Select “FINISH” to complete the installation.

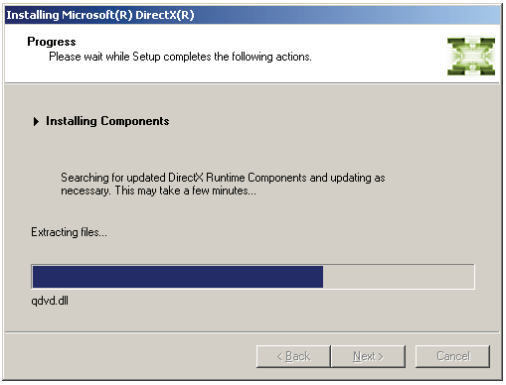
5.3 DirectX9.0C Setup

CD-ROM:\TOOLS\DirectX 9.0C\

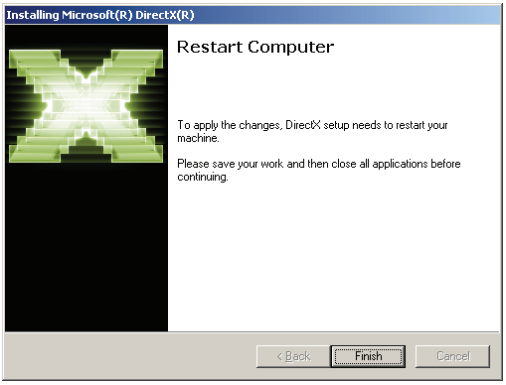
Select “I agree” to continue



Select “NEXT” to continue



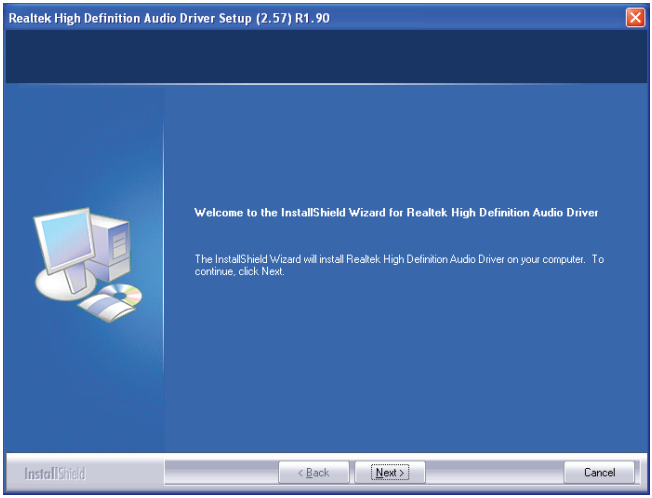
Continue



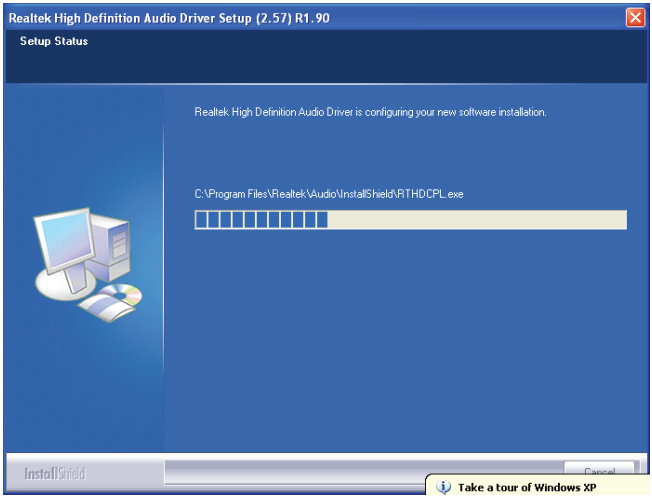
Select “FINISH” to complete the installation.

5.4 Sound Driver Setup

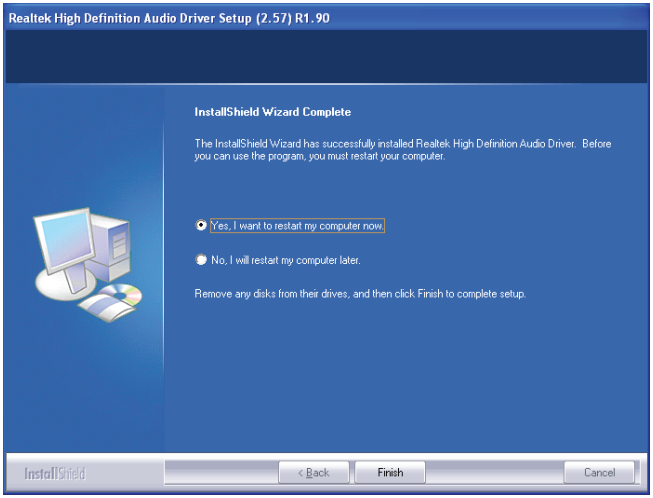
Insert the driver CD, running driver software CD, choose the directory:\CD-ROM:\SOUND\ Realtek (ALC662) HD Audio\



Select “Next” to continue



continue



Select "Finish" to complete the installation

6-Channel Sound Output Support

Please follow the steps below for operation (optional):

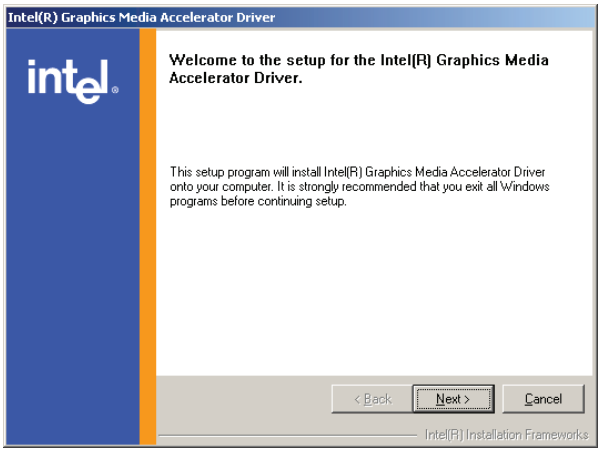
1. After install sound driver, click "Sound effect", "HD Audio Configuration" options;

2. Click "Sound configuration", select "6 Channel mode for 5.1 speakers output" options。

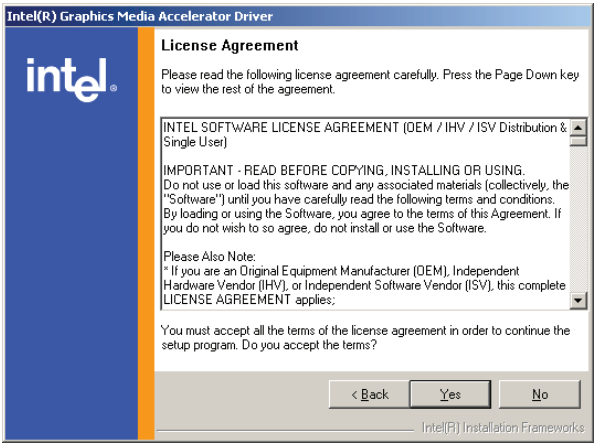
3. Click "Sound effect" menu "Environment", you must choose one Sound effect realization 6-Channel sound output。

5.5 VGA Driver Setup

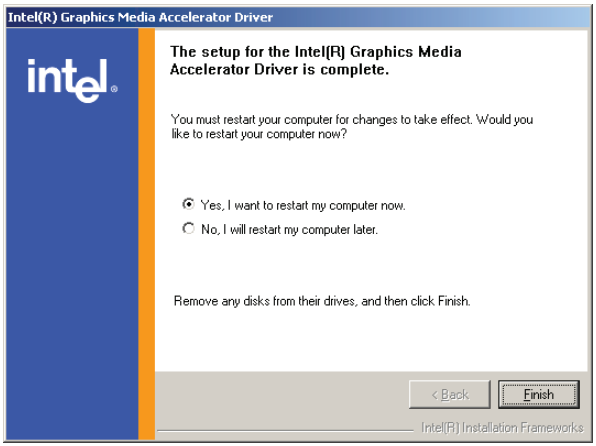
Insert the driver CD, running driver software CD, choose the directory: \CD-ROM:\INTEL\VGA\945_G31\



Select “Next” to continue



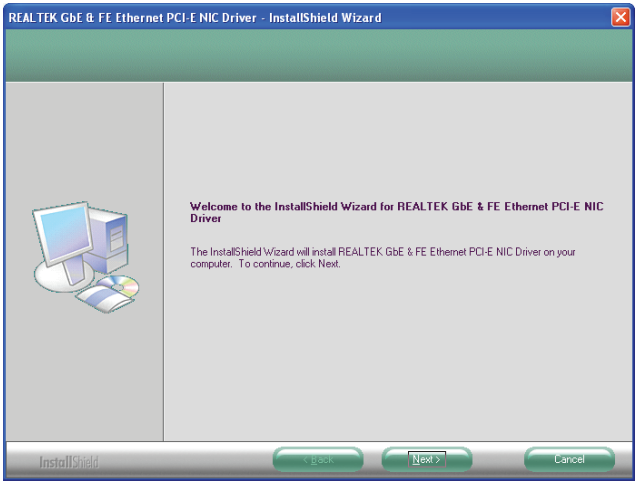
Select “Yes” to continue



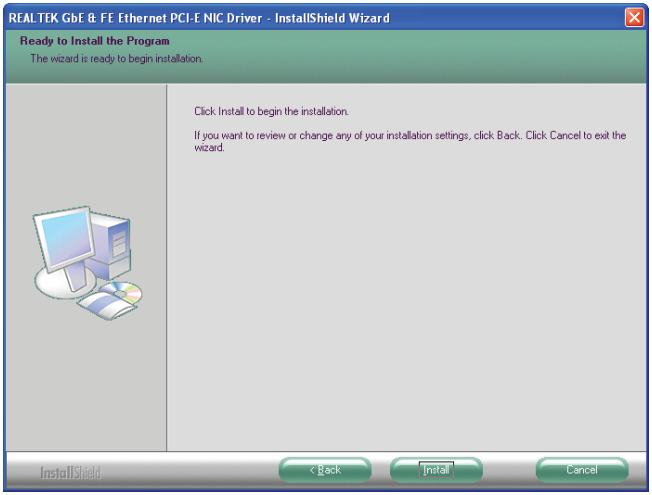
Select “Finish” to continue

5.6LAN Driver Setup

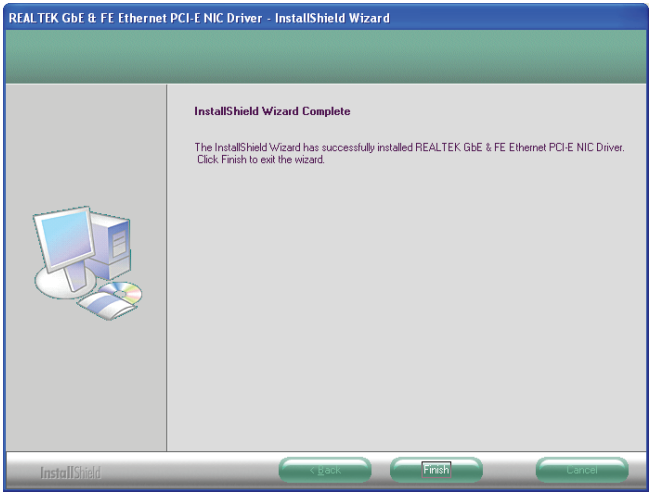
Insert the driver DVD, running driver software DVD, choose the directory: \DVD-ROM:\LAN\ Realtek 8102_8103



Select “Next” to continue



Select “Install” to continue



Select “Finish” to continue

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 computer applies those information to initialize all the components 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-Award BIOS CMOS Setup Utility	
▶ Standard CMOS Features	Load Fail-Safe Defaults
▶ Advanced BIOS Features	Load Optimized Defaults
▶ Advanced Chipset Features	Set Supervisor Password
▶ Integrated Peripherals	Set User Password
▶ Power Management Setup	Save & Exit Setup
▶ PnP/PCI Configurations	Exit Without Saving
Esc : Quit	↑↓→← : Select Item
F10 : Save & Exit Setup	
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 lead to tables of

items with installed value that you can use cursor arrow keys to highlight on item, and press **Page Up** and **Page Down** keys to cycle through alternative values of that item. The other options on the main menu page lead to dialog boxes that require your 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 mainboard chipset parameter, for example DRAM Timing
- ✧ Integrated Peripherals

  Setup include mainboard all peripherals drive
- ✧ Power Management Setup

  Setup CPU、Hard disk、Monitor drive power save mode
- ✧ PnP/PCI Configurations

  Setup PnP and PCI interface parameter
- ✧ Load Fail-Safe Defaults

  Setup the default values in system
- ✧ Load Optimized 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
- ✧ IDE Channel 0 Master — Default:None
- ✧ IDE Channel 0 Slave — Default:None
- ✧ SATA Channel 1 Master — Default:None
- ✧ SATA Channel 1 Slave — Default:None
- ✧ Video — Default: EGA/VGA
- ✧ Halt On — Default: ALL Errors
- ✧ Base Memory — Default: 640K
- ✧ Expanded Memory — Default: XXXXXXK
- ✧ Total Memory — Default: XXXXXXK

6.3 Advanced BIOS Features

- ✧ CPU Feature — Default: Press Enter

  Delay Prior to Thermal — Default: 16Min

  Thermal Management — Default: Thermal Monitor 1

  Execute Disabled Bit — Default: Enabled

  Virtualization Technology — Default: Enabled
- ✧ Hard Disk Boot Priority — Default: Press Enter
- ✧ Virus Warning — Default: Disabled
- ✧ CPU L1&L2 Cache — Default: Enabled

  Leave these items enabled since all the processors that can be installed on this board have internal L2 cache memory.
- ✧ Quick Power On Self Test — Default: Enabled
- ✧ USB Flash Disk Type — Default: Floppy
- ✧ First Boot Device — Default: Hard Disk

When system boot-strap first time detect device.

✧ Second Boot Device Default：CDROM

When system boot-strap first time detect device.

✧ Third Boot Device Default：Removable

When system boot-strap first time detect device.

✧ Boot Other Device Default：Enabled

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.

✧ Boot Up Floppy Seek Default：Disabled

✧ Boot Up NumLock Status Default：On

✧ Gate A20 Option Default：Fast

✧ Typematic Rate Setting Default：Disabled

X Typematic Rate (chars/sec) Default：6

X Typematic Delay(Msec) Default：250

✧ Security Option Default：Setup

ACPI Mode Default：Enabled

✧ MPS Version Control For OS Default:1.4

✧ OS Select For DRAM > 64MB Default：Non-OS2

✧ Report No FDD For WIN 95 Default：No

✧ Delay For HDD (Secs) Default：2

✧ Full screen Logo show Default：Enabled

✧ Small Logo (EPA) show Default：Enabled

6.4 Advanced Chipset Features

✧ DRAM Timing Selectable Default: By SPD

X CAS Latency Time Default：Auto

X DRAM RAS# to CAS# Delay Default：Auto

X DRAM RAS# Precharge Default：Auto

X Precharge dealy (TRAS) Default: Auto

X System Memory Frequency Default：Auto

✧ SLP-S4# Assertion Width 缺省值：4 to 5 sec

✧ System BIOS Cacheable Default：Enabled

✧ Video BIOS Cacheable Default：Disabled

✧ Memory Hole At 15M-16M Default：Disabled

✧ PCI Express Root port Function Default: Press Enter

PCI Express port 1 Default: Auto

PCI Express port 2 Default: Auto

PCI Express port 3 Default: Auto

PCI Express port 4 Default: Auto

PCI-E Compliancy Mode Default: v1.0a

**VGA Setting **

✧ PEG/Onchip VGA Control Default：Auto

✧ On-Chip Frame Buffer Size Default：8MB

✧ DVMT Mode Default：DVMT

✧ DVMT/FIXED Memory Size Default：128MB

✧ Boot Display Default：Auto

6.5 Integrated Peripherals

✧ OnChip IDE Device Default: Press Enter

✧ IDE HDD Block Mode Default：Enabled

✧ IDE DMA Transfer access Default：Enabled

✧ 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

✧ IDE Primary/ Secondary Master/Slave UDMA Default：Auto

*** On-Chip Serial ATA Setting ***

✧ On-chip serial ATA Default: Enhanced Mode

✧ X PATA IDE Mode Default: Primary

✧ SATA Port Default: p1,p3 is Secondary

✧ Onboard Device Default: Press Enter

✧ Onboard LAN controller Default: Enabled

✧ Onboard LAN Boot ROM Default：Disabled

✧ HD Audio Default：Enabled

✧ System BIOS Protect Default：Enabled

✧ USB 1.1 Controller Default：Enabled

✧ USB 2.0 Controller Default：Enabled

✧ USB Operation Mode Default：High Speed

✧ USB Keyboard Function Default：Enabled

✧ USB Mouse Function Default：Disabled

✧ USB Storage Function Default:Enabled

*** USB Mass Storage Device Boot Setting ***

✧ Super IO Device Default: Press Enter

✧ KBC input clock Default:12MHZ

✧ Onboard Serial Port 1

Setup onboard serial port1 Default：3F8/IRQ4

✧ Onboard Serial Port2

Setup onboard serial port2 Default:2F8/IRQ3

UART Mode Select(Setup UART mode select) Default：Normal

X RxD,TxD Active Default:Hi,Lo

X IR Transmission Delay Default:Enabled

X UR2 Duplex Mode Default：Half

X Use IR Pins Default:IR-Rx2Tx2

✧ Onboard Parallel Port

Setup select parallel port Default：378/IRQ7

✧ Parallel Port Mode

Setup parallel port mode Default：SPP

X EPP Mode Select Default：EPP1.7

X ECP Mode USe DMA Default:3

✧ PWRON After PWR-Fail Default: off

6.6 Power Management Setup

✧ ACPI Function

Setup if use ACPI function	Default：Enabled
✧ Power Management	Default ：User Define
✧ Video off Method	Default：DPMS
✧ Video off In Suspend	Default：Yes
✧ Suspend Type	Default：Stop Grant
✧ MODEM Use IRQ	Default：3
✧ Suspend Mode	Default：Disabled
✧ HDD Power Down	Default：Disabled
✧ Soft-Off by PWR-BTTN	Default：Instant-Off
✧ Wake-up by PCI card	Default：Disabled
✧ Wake-up by PCIE card	Default：Disabled
✧ Resume by Alarm	Default：Disabled
X Date (of Month) Alarm	Default：0
X Time (hh:mm:ss) Alarm	Default：0:0:0
** Reload Global Timer Events **	
✧ Primary/ Secondary IDE 0/1	Default：Disabled
✧ FDD,COM,LPT Port	Default：Disabled
✧ PCI PIRQ [A-D]#	Default: Disabled

6.7 PnP/PCI Configurations

✧ Init Display First	Default：PCI Slot
✧ Reset Configuration Data	Default：Disabled
✧ Resources Controlled By	Default：Auto(ESCD)
X IRQ Resources	Default：Press Enter
✧ PCI/VGA Palette Snoop	Default：Disabled
✧ PCI Latency Timer(CLK)	Default：16
✧ INT Pin 1 Assignment	Default：Auto
✧ INT Pin 2 Assignment	Default：Auto
✧ INT Pin 3 Assignment	Default：Auto
✧ INT Pin 4 Assignment	Default：Auto
✧ INT Pin 5 Assignment	Default：Auto

✧ INT Pin 6 Assignment Default：Auto

✧ INT Pin 7 Assignment Default：Auto

✧ INT Pin 8 Assignment Default：Auto

** PCI Express relative items**

✧ Maximum Payload Size Default：4096

6.8 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.

6.9 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.

6.10 Set Supervisor & User 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.

6.11 Save Exit & Without 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.