

ZOTAC[®]

INTEL SERIES MOTHERBOARD

Designed for Intel[®] Core[™] Duo, Core[™] Quad,
Pentium[®], and Celeron[®] Processors



G31-Value SERIES

USER'S MANUAL



Electronic Emission Notices

Federal Communications Commission (FCC) Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with instructions contained in this manual, may cause harmful interference to radio and television communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- REORIENT OR RELOCATE THE RECEIVING ANTENNA
- INCREASE THE SEPARATION BETWEEN THE EQUIPMENT AND THE RECEIVER
- CONNECT THE EQUIPMENT INTO AN OUTLET ON A CIRCUIT DIFFERENT FROM THAT OF THE RECEIVER
- CONSULT THE DEALER OR AN EXPERIENCED AUDIO/TELEVISION TECHNICIAN

NOTE:

Connecting this device to peripheral devices that do not comply with Class B requirements, or using an unshielded peripheral data cable, could also result in harmful interference to radio or television reception.

The user is cautioned that any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

To ensure that the use of this product does not contribute to interference, it is necessary to use shielded I/O cables.

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Motherboard Specifications

Chipset

- ❖ Intel G31

Size

- ❖ Micro ATX form factor of 8.66 inch x 7.5 inch

Microprocessor support

- ❖ Supports the Core(TM) 2 Series processor
- ❖ Supports Front Side Bus (FSB) at the following Frequency Ranges:800, 1066, 1333 MT/s.

VRD 11 On board

- ❖ Flexible motherboard design with on board VRD 11.

Operating systems:

- ❖ Supports Windows XP 32bit/64bit and Windows Vista 32bit/64bit

System Memory support

- ❖ Supports dual-channels (128 bits wide) DDRII memory interface.
- ❖ Supports DDRII667/DDRII800
- ❖ Maximum memory size: 4GB

USB 2.0 Ports

- ❖ Supports hot plug and play
- ❖ Eight USB 2.0 ports (four rear panel ports, four from onboard USB headers)
- ❖ Supports USB 2.0 protocol up to 480Mbps transmission rate

Onboard Serial ATA II

- ❖ Independent DMA operation on two or four ports.(Optional)
- ❖ Data transfer rates of 3GB/S.

On board PCI Express Lan (RTL8102E/RTL8111C)

- ❖ PCI Express base specification1.0a compliant
- ❖ Compliant to 802.3x flow control support
- ❖ 10/100 IEEE 802.3 compliant
- ❖ Wake On LAN (WOL) power management support
- ❖ RTL8111C is Gigabit Ethernet controller

Onboard High Definition Audio

- ❖ Supports 6-channel
- ❖ Supports Jack-Sensing function
- ❖ One SPDIF-Out header on board

Green Function

- ❖ Support SMM, APM, ACPI
- ❖ Suspend to DRAM supported (Optional)
- ❖ RTC timer to power-on the system
- ❖ AC power failure recovery

❑ Onboard Graphics Features

- ❖ DX9 and OpenGL 1.4 are supported
- ❖ 3D Graphics Rendering Enhancements
- ❖ Up to 2048x1536@75 Hz refresh
- ❖ VGA port output support

❑ PCI Express Interface

- ❖ PCI Express Generation 1.1 compatible
- ❖ Support frequency of 1.25 GHZ resulting in 2.5GB/S each direction per lane.
- ❖ Wake# function is supported

❑ Expansion Slots

- ❖ One PCI Express X16 slot
- ❖ One PCI Express X1 slot(Optional)
- ❖ One PCI bus master slot - ver 2.1compliant

Motherboard Layout

Figure 1 shows the motherboard and Figure 2 shows the back panel connectors.

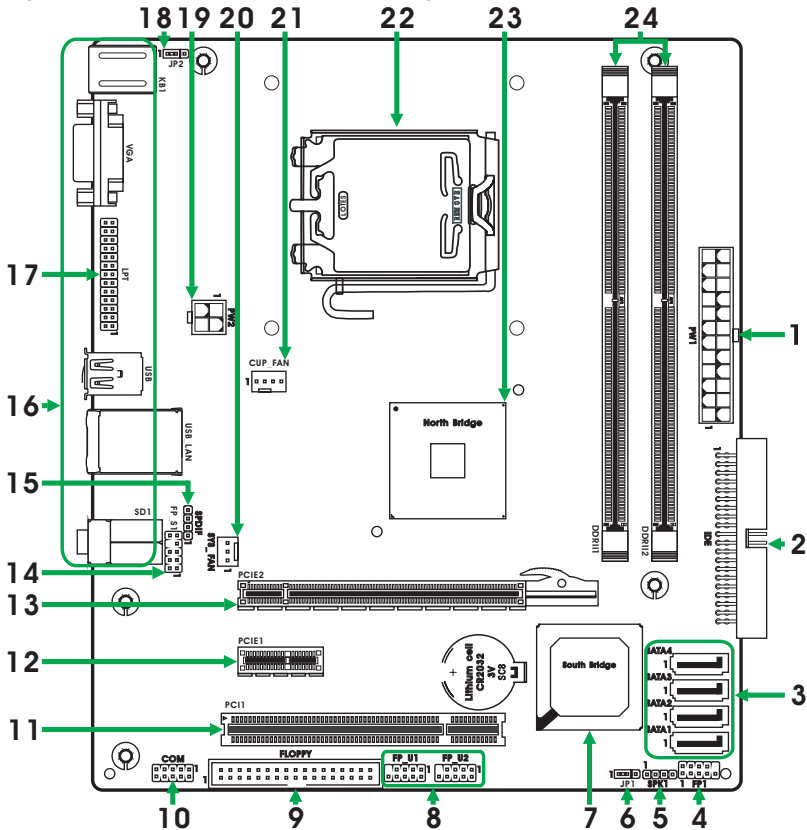
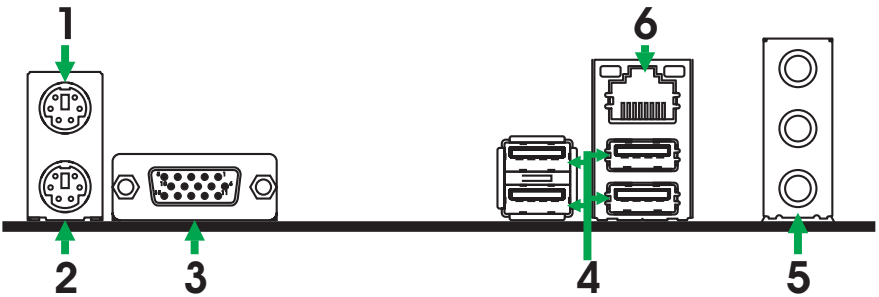


Figure 1. Board Layout

- | | |
|--|--|
| 1. 24-pin ATX Power Connector | 13. PCI Express x16 Slot |
| 2. IDE Connector | 14. Front Audio Header |
| 3. Serial-ATA (SATA) Connectors (Optional) | 15. SPDIF-Out Header |
| 4. Front Panel Header | 16. Backpanel Connectors |
| 5. Speaker Header | 17. LPT Header (Optional) |
| 6. Clear CMOS Jumper | 18. Rear PS/2 Power Select Jumper (Optional) |
| 7. South Bridge | 19. 4-pin ATX_12V Power Connector |
| 8. USB Headers | 20. System Fan Connector (Optional) |
| 9. Floppy Disk Drive Connector (Optional) | 21. CPU Fan Connector |
| 10. COM Port Header (Optional) | 22. CPU Socket |
| 11. PCI Slots | 23. North Bridge |
| 12. PCIe x1 Slot (Optional) | 24. DDRII DIMM Sockets |

Figure 2: Backpanel connectors



1. PS/2 Mouse Port
2. PS/2 Keyboard Port
3. VGA Connector
4. USB Port

5. Port	2-Channel	4-Channel	6-Channel
Blue	Line-In	Rear Speaker Out	Rear Speaker Out
Green	Line-Out	Front Speaker Out	Front Speaker Out
Pink	Mic In	Mic In	Center/Subwoofer

7. LAN Connector

Lan Port with LEDs to indicate status.

- Yellow/Light Up/Blink = 10 Mbps/Link/Activity
- Yellow and Green/Light Up/Blink = 100 Mbps/link/Activity

Hardware Installation

This section will guide you through the installation of the motherboard. The topics covered in this section are:

Preparing the motherboard

- ❖ Installing the CPU
- ❖ Installing the CPU fan
- ❖ Installing the memory

Installing the motherboard

Connecting cables and setting switches

Safety Instructions

To reduce the risk of fire, electric shock, and injury, always follow basic safety precautions.

Remember to remove power from your computer by disconnecting the AC main source before removing or installing any equipment from/to the computer chassis.

Preparing the Motherboard

The motherboard shipped in the box does not contain a CPU and memory. You need to purchase these to complete this installation.

Installing the CPU

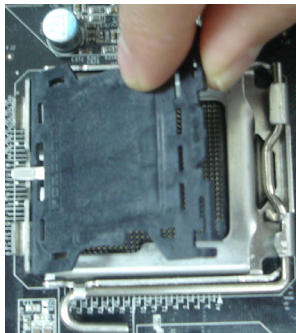
Be very careful when handling the CPU. Make sure not to bend or break any pins on the back. Hold the processor only by the edges and do not touch the bottom of the processor.

Use the following procedure to install the CPU onto the motherboard.

1. Unhook the socket lever by pushing down and away from the socket.
2. Lift the load plate. There is a protective socket cover on the load plate to protect the socket when there is no CPU installed.
3. Remove the protective socket cover from the load plate.
4. Remove the processor from its protective cover, making sure you hold it only by the edges. It is a good idea to save the cover so that whenever you remove the CPU, you have a safe place to store it.
5. Align the notches in the processor with the notches on the socket.
6. Lower the processor straight down into the socket with out tilting or sliding it into the socket.

Note: *Make sure the CPU is fully seated and level in the socket.*

7. Close the load plate over the CPU and press down while you close and engage the socket lever.



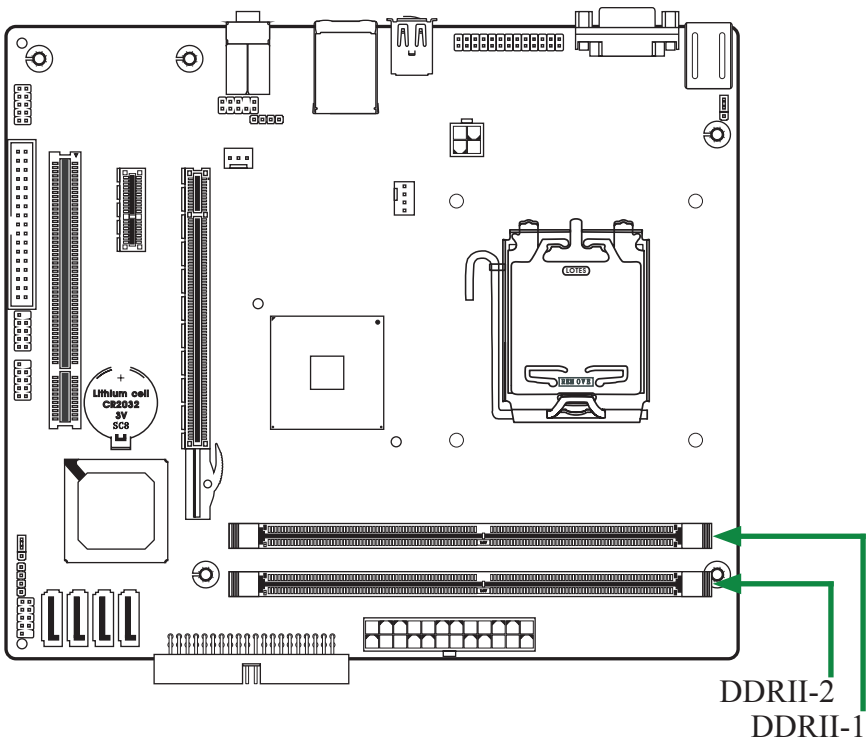
Installing the CPU Fan

There are many different fan types that can be used with this motherboard. Follow the instruction that came with your fan assembly. Be sure that the fan orientation is correct for your chassis type and your fan assembly.

Installing Memory DIMMs

Your new motherboard has two 1.8V 240-pin slots for DDR2 memory. These slots support 256 MB / 512 MB / 1GB / 2GB / 4GB DDR2 technologies. There must be at least one memory bank populated to ensure normal operation. Use the following the recommendations for installing memory. (See Figure1 for the location of the memory slots.)

- One DIMM:** You can install the DIMM into any slot, however, slot 1 is preferred.
- Two DIMMs:** Install into slots 1 and 2, The idea is to run on dual channel mode.



Use the following procedure to install memory DIMMs into the slots on the motherboard. Note that there is only one gap near the center of the DIMM slot. This slot matches the slot on the memory DIMM to ensure the component is installed properly.

1. Unlock a DIMM slot by pressing the module clips outward.
2. Align the memory module to the DIMM slot, and insert the module vertically into the DIMM slot. The plastic clips at both sides of the DIMM slot automatically lock the DIMM into the connector.

Installing the Motherboard

The sequence of installing the motherboard into the chassis depends on the chassis you are using and if you are replacing an existing motherboard or working with an empty chassis. Determine if it would be easier to make all the connections prior to this step or to secure the motherboard and then make all the connections. It is normally easier to secure the motherboard first.

Use the following procedure to install the I/O shield and secure the motherboard into the chassis.

Note: *Be sure that the CPU fan assembly has enough clearance for the chassis covers to lock into place and for the expansion cards. Also make sure the CPU Fan assembly is aligned with the vents on the covers.*

Installing the I/O Shield

The motherboard kit comes with an I/O shield that is used to block radio frequency transmissions, protects internal components from dust and foreign objects, and promotes correct airflow within the chassis.

Before installing the motherboard, install the I/O shield from the **inside** of the chassis. Press the I/O shield into place and make sure it fits securely. If the I/O shield does not fit into the chassis, you would need to obtain the proper size from the chassis supplier.

Connecting Cables and Setting Switches

This section takes you through all the connections and switch settings necessary on the motherboard. This will include:

- Power Connections
 - ❖ 24-pin ATX power (**PW1**)
 - ❖ 4-pin ATX 12V power (**PW2**)

- Connecting Internal Headers
 - ❖ Hard Disk Connector - IDE
 - ❖ SPK Header
 - ❖ Serial Port Header - COM(Optional)
 - ❖ Front panel header-FP1
 - ❖ USB Headers(FP_U1~FP_U2)
 - ❖ LPT Header(Optional)
 - ❖ Floppy Disk Drive Connector(Optional)
 - ❖ F_Audio Header
 - ❖ SPDIF-Out Header

- Serial ATA II(Optional)

- Chassis Fans

- Expansion slots

- Jumper settings

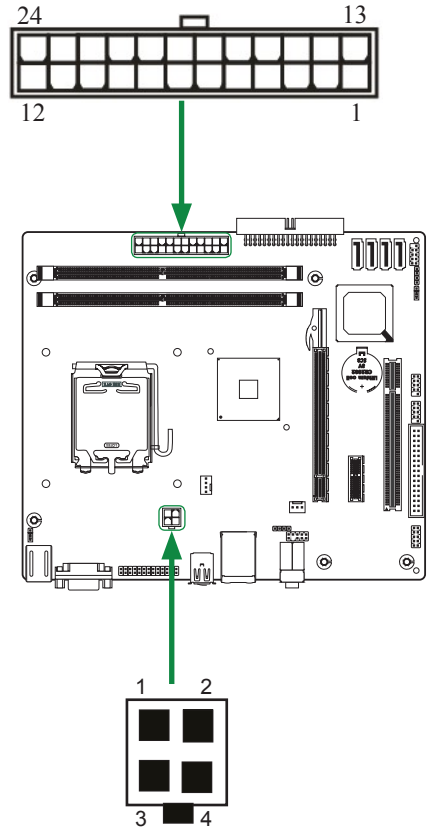
See Figure 1 to locate the connectors and jumpers referenced in the following procedure.

24-pin ATX Power (PW1)

PW1 is the main power supply connector located along the edge of the board next to the DIMM slots. Make sure that the power supply cable and pins are properly aligned with the connector on the motherboard. Firmly plug the power supply cable into the connector and make sure it is secure.

PW1-Pin Definition

Pin	Signal	Pin	Signal
1	+3.3V	13	+3.3V
2	+3.3V	14	-12V
3	GND	15	GND
4	+5V	16	PS_ON
5	GND	17	GND
6	+5V	18	GND
7	GND	19	GND
8	PWROK	20	-5V
9	+5V_AUX	21	+5V
10	+12V	22	+5V
11	+12V	23	+5V
12	+3.3V	24	GND



4-pin ATX 12V Power (PW2)

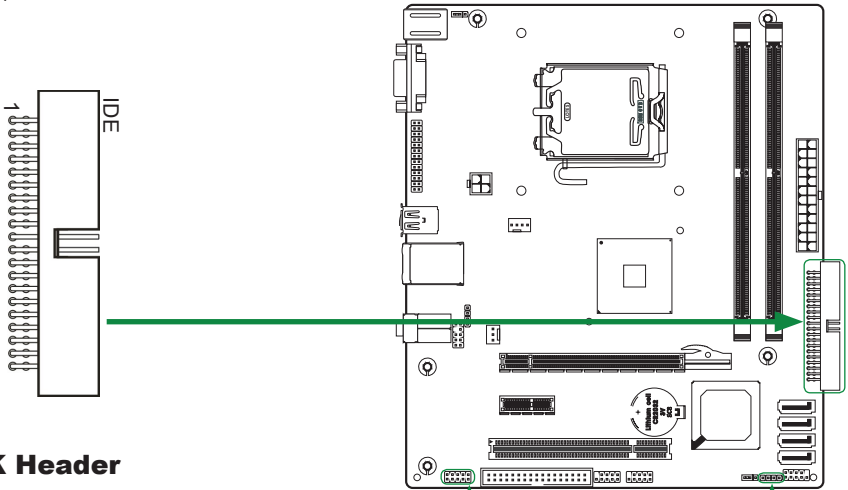
PW2, the 4-pin ATX 12V power connection, is used to provide power to the CPU. Align the pins to the connector and press firmly until seated.

PW2-Pin Definition

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

Hard Disk Connector - IDE

The motherboard has a 32-bit Enhanced PCI IDE and Ultra DMA 66/100/133 controller that provides PIO mode 0~4, Bus Master, and Ultra DMA 66/100/133 function. You can connect up to two hard disk drives, CD-ROM, 120MB Floppy (reserved for future BIOS) and other devices.



SPK Header

SPK-Pin Definition

Pin	Signal
1	VCC
2	NC
3	NC
4	SPK-



Serial Port Header - COM(Optional)

COM-Pin Definition

Pin	Signal	Pin	Signal
1	DCD	6	DSR
2	RXD	7	RTS
3	TXD	8	CTS
4	DTR	9	RI
5	GND	10	NC



Front panel header - FP1

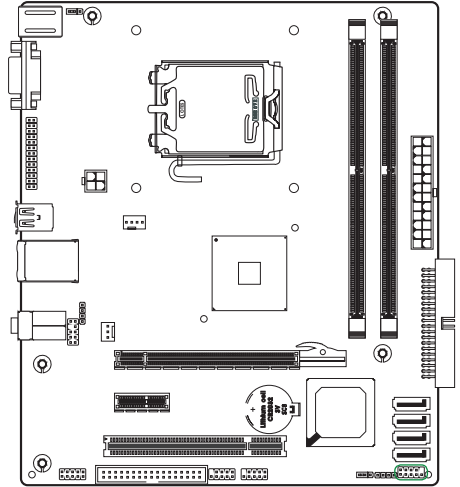
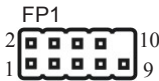
The front panel header on this motherboard is one connector used to connect the following four cables :

PWRLED

Attach the front panel power LED cable to these two pins of the connector. The Power LED indicates the system's status.

FP1-Pin Definition

Pin	Signal	Pin	Signal
1	HDD_LED+	6	PWR_SW
2	PW_LED+	7	RESET
3	HDD_LED-	8	GND
4	PW_LED-	9	NC
5	GND	10	KEY



Note: Some chassis do not have all four cables. Be sure to match the name on the connectors to the corresponding pins.

PWR SW

Attach the power button cable from the case to these two pins. Pressing the power button on the front panel turns the system on and off rather than using the power supply button.

HDD LED

Attach the hard disk drive indicator **LED** cable to these two pins. The HDD indicator **LED** indicates the activity status of the hard disks.

RST SW

Attach the Reset switch cable from the front panel of the case to these two pins. The system restarts when the **RESET** switch is pressed.

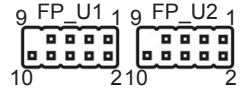
USB Headers(FP_U1~FP_U2)

This motherboard contains four USB 2.0 ports that are exposed on the rear panel of the chassis(Figure 2). The motherboard also contains two 10-pin internal header connectors onboard.

1. Secure the bracket to either the front or rear panel of your chassis (not all chassis are equipped with the front panel option).

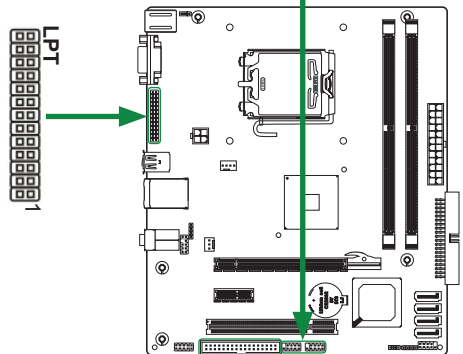
USB-Pin Definition

Pin	Signal	Pin	Signal
1	VCC	6	USBP1+
2	VCC	7	GND
3	USBP0-	8	GND
4	USBP1-	9	KEY
5	USBP0+	10	OC#



LPT Header(Optional)

LPT - Pin Definition		
1 STROBE	10 GND	19 ACK*
2 ALF*	11 PD4	20 GND
3 PD0	12 GND	21 BUSY
4 ERR*	13 PD5	22 GND
5 PD1	14 GND	23 PE
6 INIT*	15 PD6	24 GND
7 PD2	16 GND	25 SLCT
8 SCLTIN*	17 PD7	26 NC
9 PD3	18 GND	



Floppy Disk Drive Connector(Optional)

The motherboard provides a standard floppy disk drive connector that supports 360K, 720K, 1.2M, 1.44M and 2.88M floppy disk types.



F_Audio Header

The audio connector supports HD audio standard and provides two kinds of audio output choices: the Front Audio, the Rear Audio. The front Audio supports re-tasking function.

F_Audio-Pin Definition

Pin	Signal	Pin	Signal
1	MIC(L)	6	Reserved
2	GND	7	FAVDIO-JD
3	MIC(R)	8	Key(No pin)
4	-ACZ-DET	9	Front Audio(L)
5	Front Audio(R)	10	Reserved

Note:

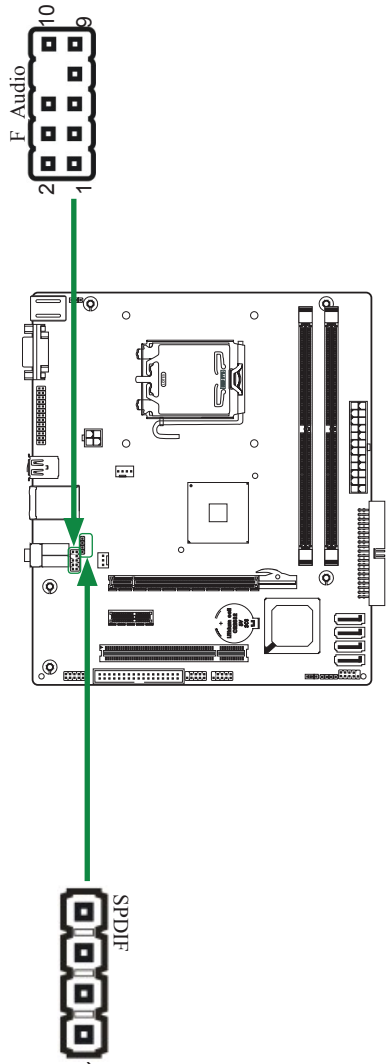
In order to utilize the front audio header, your chassis must have front audio connector. Also please make sure the pin assignment on the cable is the same as the pin assignment on the mainboard header. To find out if the chassis you are buying supports a front audio connector, please contract your dealer.

SPDIF-Out Header

This header provides a SPDIF (Sony/Philips Digital Interface)output to digital multimedia device through coaxial connector.

SPDIF-Pin Definition

Pin	Signal
1	SPDIF OUTX
2	VCC
3	NC
4	GND



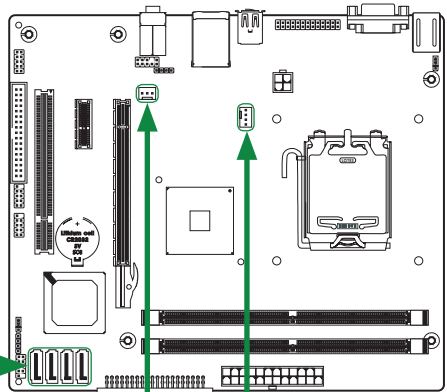
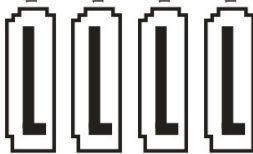
Connecting Serial ATA Cables(Optional)

The Serial ATA II connector(Two or Four ports) are used to connect the Serial ATA II device to the motherboard. These connectors support the thin Serial ATA II cables for primary storage devices. The current Serial ATA II interface allows up to 3GB/S data transfer rate.

SATA-Pin Definition

Pin	Signal
1	GND
2	TXP
3	TXN
4	GND
5	RXN
6	RXP
7	GND

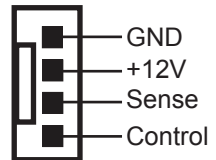
SATA-1 SATA-2 SATA-3 SATA-4



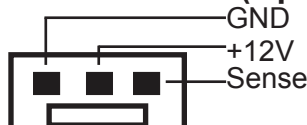
Fan Connections

There is one or two fan connections on the motherboard because SYS fan connector is optional. The fan speed can be detected and viewed in the PC Health Status section of the CMOS Setup.

CPU FAN Connector

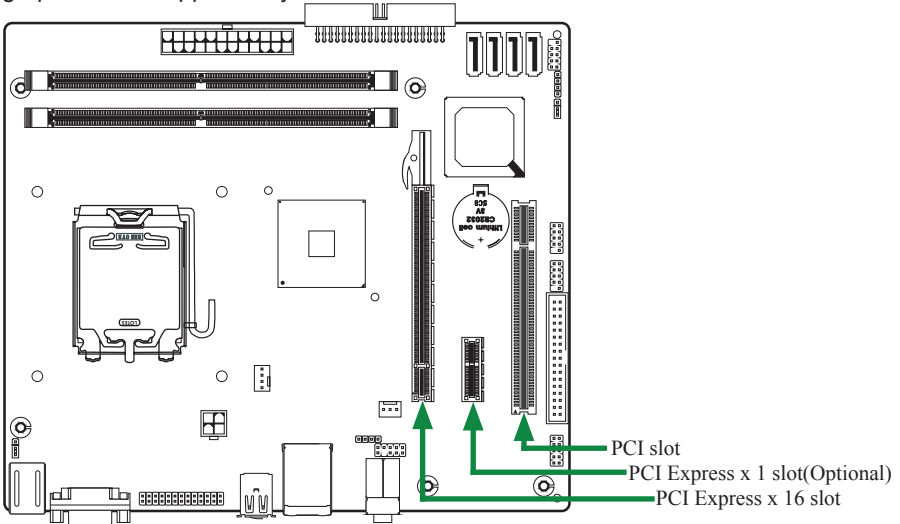


SYS FAN Connector(Optional)



Expansion Slots

The Intel G31 motherboard contains three expansion slots, one PCI Express X16 slot ,one PCI Express X1 slot (Optional) and one PCI slot. For a full list of PCI Express x16 graphics card supported by this motherboard.



PCI Slots

The one PCI slot support many expansion cards such as a LAN card, USB card, SCSI card and other cards that comply with PCI specifications. When installing a card into the PCI slot, be sure that it is fully seated. Secure the card's metal bracket to the chassis back panel with the screw used to hold the blank cover.

PCI Express x16 Slots

There is one PCI Express x16 slot reserved for graphics or video cards. The bandwidth of the x16 slot is up to 4GB/Sec complying with PCIE 1.1 specification. When installing a PCI Express x16 card, be sure the retention clip snaps and locks the card into place. If the card is not seated properly, it could cause a short across the pins. Secure the card's metal bracket to the chassis back panel with the screw used to hold the blank cover.



PCI Express x1 Slots(optional)

There is one PCI Express x1 slot that is designed to accommodate less bandwidth-intensive cards, such as a modem or LAN card. The x1 slot provides 500 MB/sec bandwidth.



Jumper Settings


This chapter explains how to configure the motherboard's hardware. Before using your computer, make sure all jumpers and DRAM modules are set correctly. Refer to this chapter whenever in doubt.

JP1-CMOS Clear Jumper

JP1	Selection
1  1-2*	Normal*
1  2-3	CMOS Clear

JP2-P/S Port 5V Standby Power Selection(Optional)

JP2	Selection
1  1-2	5V power input
1  2-3*	5V standby power input*

 Close  Open * = Default setting.

If you want to clear the system configuration, use the JP1(Clear CMOS Jumper) to clear date

Notice:

1. Be sure to save the CMOS setting when exit the CMOS.
2. If the CPU is frequency multiplier locked, no CPU speed change will be seen even if the frequency multiplier setting in CMOS setup is changed.

Configuring the BIOS

This section discusses how to change the system settings through the BIOS Setup menu. Detailed descriptions of the BIOS parameters are also provided.

Enter BIOS Setup

The BIOS is the communication bridge between hardware and software. Correctly setting the BIOS parameters is critical to maintain optimal system performance.

Use the following procedure to verify/change BIOS settings.

1. Power on the computer.,
2. Press the **Del** key when the following message briefly displays at the bottom of the screen during the Power On Self Test (POST).

Press F1 to continue, DEL to enter Setup.

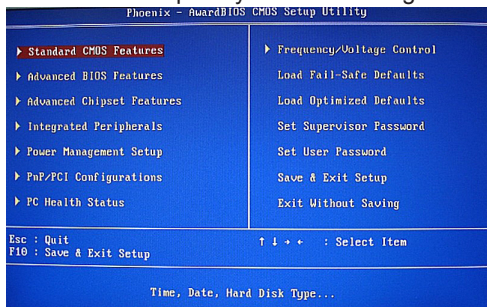
Pressing **Del** takes you to the Phoenix-Award BIOS CMOS Setup Utility.

Note: It is strongly recommended that you do not change the default BIOS settings. Changing some settings could damage your computer.

If you do not find the setting you want in the Main Menu or a submenu, Press <Ctrl>+<F1> to access more advanced options.

Main Menu

The main menu allows you to select from the list of setup functions and two exit choices. Use the **Page Up** and **Page Down** keys to scroll through the options or press **Enter** to display the associated submenu. Use the **↑ ↓** arrow keys to position the selector in the option you choose. To go back to the previous menu, press **Esc**.



Note:

that on the BIOS screens all data in white is for information only, data in yellow is changeable, data in blue is non-changeable, and data in a red box is highlighted for selection.

- Standard CMOS Features**
Use this menu to set up the basic system configuration.
- Advanced BIOS Features**
Use this menu to set up the advanced system features and boot sequence.
- Advanced Chipset Features**
Use this menu to optimize system performance.
- Integrated Peripherals**
Use this menu to set up onboard peripherals such as IDE, RAID, USB and LAN control.
- Power Management Setup**
Use this menu to configure power management, power on, and sleep features.
- PnP/PCI Configurations**
Use this menu to modify the system's Plug-and-Play and PCI configurations.
- Pc health status**
Use this menu to monitor the real-time system status of your PC.
- Frequency/Voltage control**
Use this menu to adjust frequency/Voltage.

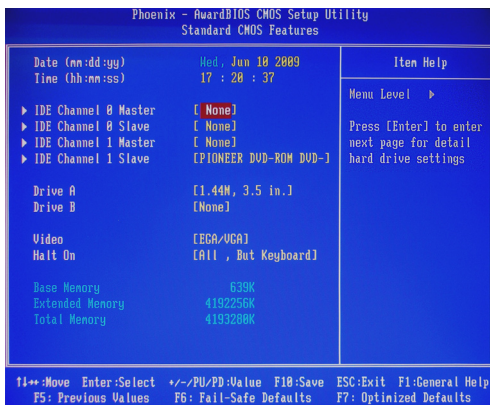
The following items on the CMOS Setup Utility main menu are commands rather than submenus:

- Load Fail-Safe/Optimized Defaults**
Load standard/optimized default system settings.
- Set Supervisor and User Password**
Use this command to set, change, and disable the password used to access the system and the BIOS menu.
- Save & Exit Setup**
Use this command to save settings to CMOS and exit setup.
- Exit Without Saving**
Use this command to abandon all setting changes and exit setup.

Standard CMOS Features Menu

The Standard CMOS Features menu is used to configure the standard CMOS information, such as the date, time, HDD model, and so on. Use the **Page Up** and **Page Down** keys to scroll through the options or press **Enter** to display the sub-menu. Use the **↑ ↓** arrow keys to position the selector in the option you choose. To go back to the previous menu, press **Esc**.

The information shown in **Item Help** corresponds to the option highlighted.



Note:

that all data in white is for information only, data in yellow is changeable, data in blue is non-changeable, and data in a red box is highlighted for selection.

Date and Time

Using the arrow keys, position the cursor over the month, day, and year. Use the Page Up and Page Down keys to scroll through dates and times. Note that the weekday (Sun through Sat) cannot be changed. This field changes to correspond to the date you enter. Note that the hour value is shown in a 24-hour clock format. Time is represented as **hour : minute : second**.

IDE Channel

Use these functions to detect and configure the individual IDE channels. Select a channel and press Enter to display the IDE sub-menu.

Press **Enter** to auto-detect IDE channels in the system. Once the channel is detected, the values for Capacity, Cylinder, Head, Precomp, Landing Zone, and Sector are automatically filled in.

None

There is no HDD installed or set.

Auto

The system can auto-detect the hard disk when booting up.

Video

Use this option to choose the mode of Video, as EGA/VGA, CGA 40, CGA 80, MONO.

Drive A

The **Drive A** option allows you to select the kind of FDD to install.

Halt On

Halt On determines whether or not the computer stops if an error is detected during power on. Use the **Page Up** and **Page Down** keys to scroll through the options or press **Enter** to display the **Halt On** sub-menu. Use the **↑ ↓** arrow keys to position the selector in the option you choose. Press **Enter** to accept the changes and return to the Standard CMOS Features menu.

All Errors

Whenever the BIOS detects a nonfatal error, the system stops and prompts you.

No Errors

System boot does not stop for any detected errors.

All, But Keyboard

System boot does not stop for keyboard errors, but does stop for all other errors.

All, But Diskette

The system boot does not stop for a diskette error but will stop for all other errors.

All, But Disk/Key

These field are read-only and are determined by the BIOS POST.

Memory

These settings are *display-only values* that are determined by the BIOS POST (Power-On Self Test).

Base Memory

BIOS POST determines the amount of base (or conventional) memory installed in the system.

Extended Memory

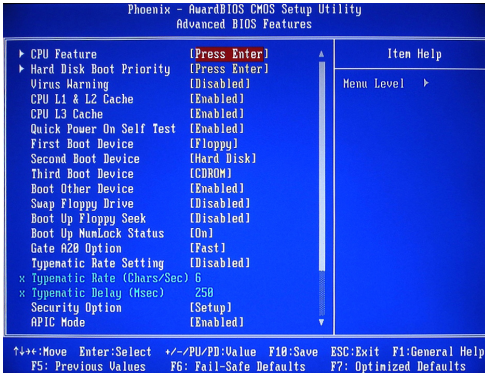
BIOS determines how much extended memory is present during the POST.

Total Memory

This value represents the total memory of the system.

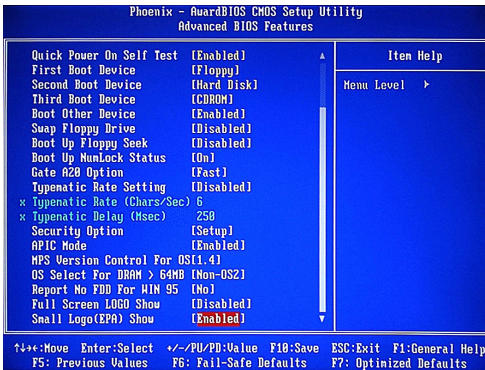
Advanced BIOS Features

Access the Advanced BIOS Features menu from the CMOS Utility Setup screen. Use the **Page Up** and **Page Down** keys to scroll through the options or press **Enter** to display the sub-menu. Use the **↑ ↓** arrow keys to position the selector in the option you choose. To go back to the previous menu, press **Esc**.



Note:

The options that have associated sub-menus are designated by a ►, which precedes the option. Press **Enter** to display the sub-menus.



Note:

that all data in white is for information only, data in yellow is changeable, data in a blue is non-changeable, and data in a red box is highlighted for selection.

CPU Feature

Press **Enter** to display CPU Feature menu, then the following items will be displayed:

PPM Mode

Use this option to choose the mode of PPM.

Limit CPUID MaxVal

Use this option to enable or disable the function of Limiting CPUID MaxVal

C1E Function

Select CPU C1E function.

Execute Disable Bit

When disabled forces the XD feature flag to always return 0, defaults choose Enable.

 Virtualization Technology

Use this option to enable or disable CPU Virtualization Technology.

 Core Multi-Processing

Use this option to enable or disable Core Multi-Processing.

Hard Disk Boot Priority

Press Enter to display Hard Disk Boot Priority menu,then the following items will be displayed:

 Bootable Add-in Cards

Use this option to bootable add-in cards.

 Virus Warning

Allow you to choose the Virus Warning feature for IDE Hard Disk boot sector protection.

 CPU L1,L2 & L3 Cache

Use these options to disable or enable L1/L2/L3 cache.

 Quick Power On Self Test

Enabling this option allows the system to skip certain test while booting, which reduces the time needed to boot the system.

 First/Second/Third Boot Device

Use this option to set the priority sequence of the devices booted at power on.

Use the **Page Up** and **Page Down** keys to scroll through the options or press **Enter** to display the sub-menu. Use the **↑ ↓** arrow keys to position the selector in the option you choose.

 Boot Other Device

With the option set to **Enable**, the system boots from some other device if the first/second/third boot devices fail.

 Swap Floppy Drive

if system have two floppy,you can enable the physical driver B for the logic driver A.

 Boot Up Floppy Seek

Enabled tests floppy drives to determine whether they have 40 or 80 tracks.

 Boot Up NumLock Status

This option allows you to select the power-on state of **NumLock**. Select **On** to activate the keyboard **NumLock** when the system is started. Select **Off** to disable the **NumLock** key.

 Gate A20 Option

Use this option to choose Gate A20 menu.

 Typematic Rate Setting

Use this option to set keystrokes repeat. if Enabled, display options as follows:

❖ Typematic Rate

❖ Typematic delay

Security Option

The Security Options allows you to require a password every time the system boots or only when you enter setup. Select **Setup** to require a password to gain access to the CMOS Setup screen. Select **System** to require a password to access the CMOS Setup screen and when the system boots.

 APIC Mode

Use this function to enable or disable the Advanced Programmable Interrupt Controller (APIC). If you disable this option, you also disable the MPS Version Control for OS option.

 MPS Version Control For OS

Use this function to select the Multi-Processor Specification (MPS) version that BIOS passes to the operating system. Use the **Page Up** and **Page Down** keys to scroll through the options.

 OS Select For DRAM >64MB

DRAM for loading OS need more than 64MB

 Report No FDD For WIN 95

OS need to report when you didn't connect FDD in WIN 95 OS

 Full Screen LOGO Show

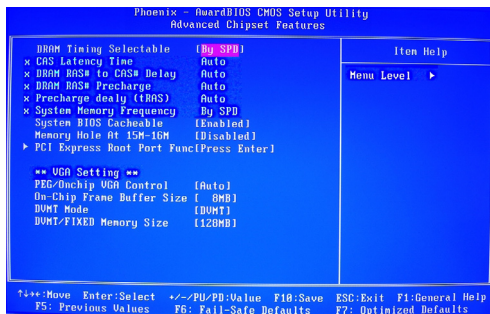
This option allows you to enable or disable the display of the full-screen logo when the system boots. Use the **Page Up** and **Page Down** keys to toggle between **Enable** and **Disable**.

 Small LoGo (EPA) Show

This option allows you to enable or disable the display of the Small LoGo when the system boots.

Advanced Chipset Features

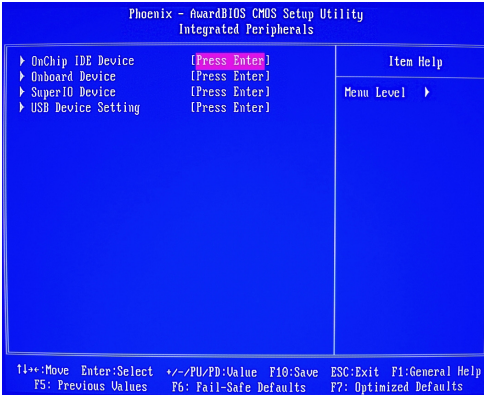
Select Advanced Chipset Features from the CMOS Setup Utility menu and press Enter to display the functions of the Advanced Chipset Functions menu.



- DRAM Timing Selectable**
Use this option to select the model how to set DRAM timing
- System BIOS Cacheable**
Use this option to enable or disable the System BIOS Cacheable
- Memory Hole At 15M-16M**
Use this option to enable or disable memory hole at 15M-16M function
- PCI Express Root Port**
Use this option to define PCI Express root port
- PEG/Onchip VGA Control**
Use this option to choose PEG control or onchip VGA control
- On-Chip Frame Buffer Size**
Use this option to set the frame buffer size
- DVMT Mode**
Use this option to choose the DVMT or FIXED mode
- DVMT/FIXED Memory Size**
Use this option to set the DVMT/FIXED memory size.

Integrated Peripherals Menu

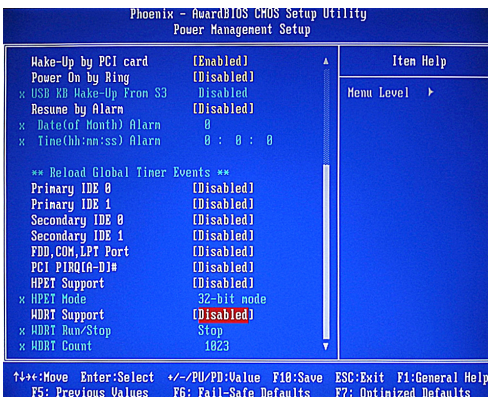
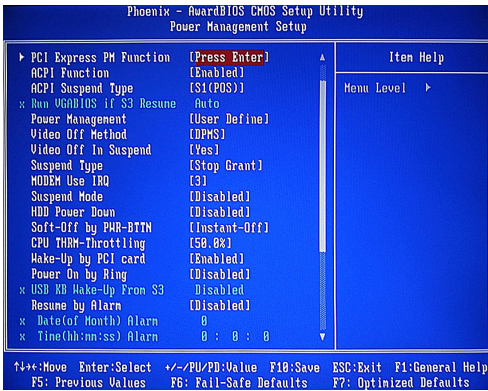
Select **Integrated Peripherals** from the CMOS Setup Utility menu and press **Enter** to display the Integrated Peripherals menu.



- OnChip IDE Device**
Use this option to set on chip IDE function
- Onboard Device**
Use this option to enable or disable Azalia/AC97 Audio Select
- Super IO Device**
Use this option to set power on function ,onboard serial port and onboard parallel port,and so on.
- USB Device Setting**
Use this option to set USB device

Power Management Setup Menu

Select **Power Management Setup** from the CMOS Setup Utility menu and press Enter to display the Power Management Setup menu.



PCI Express PM Function

Use this option to enable or disable Root port ASPM ,DMI port ASPM,and so on.

ACPI Function

This function on the Power Management Setup menu allows you to enable or disable the ACPI function.

ACPI Suspend Type

Use this option to choose ACPI suspend type

Run VGABIOS if S3 Resume

Use this option to set the type of running VGABIOS

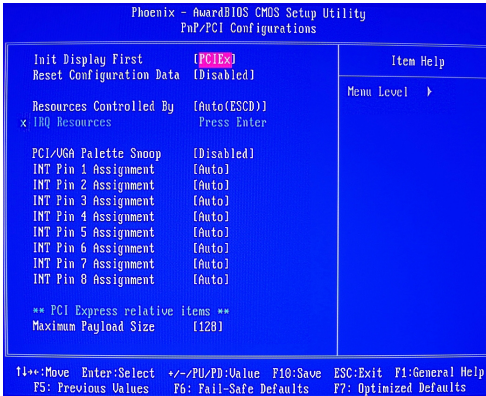
Power Management

Use this option to set the mode for Power Management.

- Video Off Method**
Use this option to set a Method for Video off.
- Video Off In Suspend**
Use this option to set the type of video off in suspend.
- Suspend Type**
Use this option to choose suspend type.
- MODEM Use IRQ**
Use this option to set the mode of using IRQ.
- Suspend Mode**
Use this option to set suspend mode.
- HDD Power Down**
Use this option to enable or disable a mode of HDD Power down.
- Soft-Off by PWR-BTTN**
This function on the Power Management Setup menu allows you to set Soft-Off by PWR-BTTN to **[Instant-Off]** or **[Delay 4 Sec]**.
- CPU THRM-Throttling**
Use this option to set rate of CPU THRM-Throttling.
- Wake-Up By PCI card**
Use this option to enable or disable wake-up by PCI card.
- Power On by Ring**
Use this option to enable or disable power on by ring.
- USB KB Wake-Up From S3**
Use this option to enable or disable USB KB Wake-up from S3.
- Resume by Alarm**
Determines whether to power on the system at a desired time. If enable set the date and time as following:
 - ❖ **Date(of Month) Alarm:** Turn on the system at a specific time on each day or on a specific day in a month.
 - ❖ **Time(hh:mm:ss) Alarm:** Set the time at which the system will be Powered on automatically.
- Reload global timer events**
Use this option to enable or disable remember the timer event of reloading Primary/Secondary IDE 0/1, FDD,COM , and so on.
- HPET Support**
Use this option to enable or disable HPET Support; if enable, HPET Mode display. We can select.
- WDRT Mode**
Use this option to enable or disable WDRT support.

PnP/PCI Configurations

Select **PnP/PCI Configuration** from the CMOS Setup Utility menu and press **Enter** to display the PnP/PCI Configuration menu.



Init Display First

This function on the PnP/PCI Configuration menu allows you to define if the initial display is in the PCI slot, onboard or PCI Express slot. Options are **[PCI Slot]**, **[Onboard]** and **[PCIEx]**.

Reset Configuration Data

This function on the PnP/PCI Configuration menu allows you to enable or disable the resetting of Extended System Configuration Data (ESCD) when you exit Setup. Set this to **[Enabled]** if you have installed a new add-on and the system reconfiguration has caused a serious conflict that prevents the OS from booting. The default setting is **[Disabled]**.

Resources Controlled By

This function on the PnP/PCI Configuration menu allows you to define if the BIOS can automatically configure all the boot and plug-and-play compatible devices or if you can manually select IRQ, DMA, and memory base address fields. Select **[Auto(ESCD)]** if you want the BIOS to automatically populate these fields. If you select **[Manual]** so you can assign the resources, **IRQ Resources** is enabled for input.

IRQ Resources

To enable this field for input, set **Resources Controlled By to [Manual]**. With this field enabled, press **Enter** to see options.

Use Legacy ISA for devices compliant with the original PC AT Bus specification.
Use PCI/ISA PnP for devices compliant with the plug-and-play standard, whether designed for PCI or ISA Bus architecture.

PCI/VGA Palette Snoop

This function on the PnP/PCI Configuration menu allows you to enable or disable the Palette Snoop function.

INT pin 1/2/3/4/5/6/7/8 Assignment

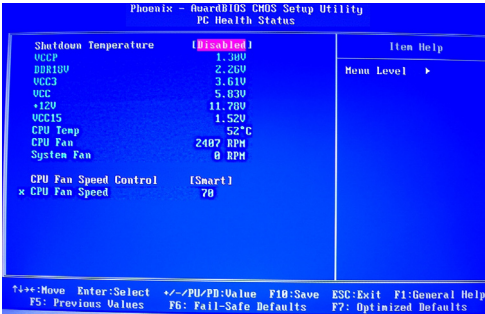
Use these options to set the mode of INT pin 1/2/3/4/5/6/7/8 Assignment

Maximum Payload Size

This function on the PnP/PCI Configuration menu allows you to set the maximum TLP payload size (in bytes) for the PCI Express devices. Use the **Page Up** and **Page Down** keys to scroll through sizes or enter the number using the keyboard numbers or use the + and – keys to go up and down the list of sizes.

PC health Status

Select **PC health Status** from the CMOS Setup Utility menu and press **Enter** to display the System Monitor menu.



All of the values shown in are dynamic and change as the speed and voltages of the various components change with system usage.

Shutdown Temperature

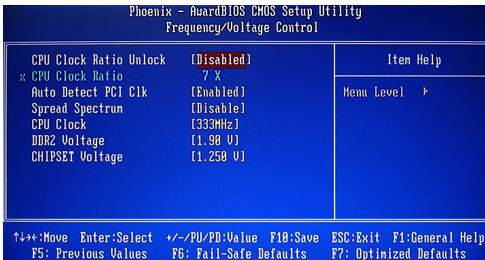
Use this option to set shutdown temperature

CPU Fan Speed Control

Use this option to control the CPU fan speed

Frequency/Voltage Control

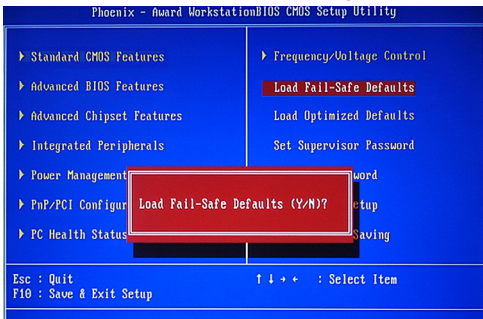
Select Frequency/Voltage Control from the CMOS Setup Utility menu and press Enter to display the system Monitor menu.

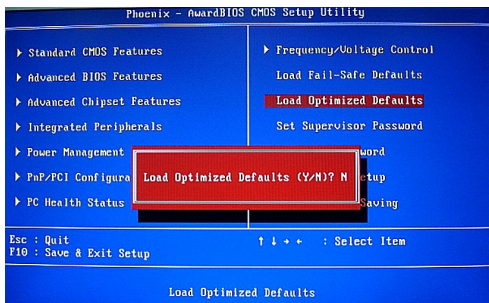


- CPU Clock Ratio Unlock**
Use this option to set the ratio of CPU clock
- Auto detect PCI Clk**
Use this option to Enabled or Disable Auto detect PCI Clock
- Spread Spectrum**
Use this option to Enabled or Disable Spread Spectrum
- CPU Clock**
Use this option to set CPU clock
- DDR2 Voltage**
Use this option to set DDR2 Memory voltage
- CHIPSET Voltage**
Use this option to set chipset voltage

Load Fail-Safe/Optimized Defaults

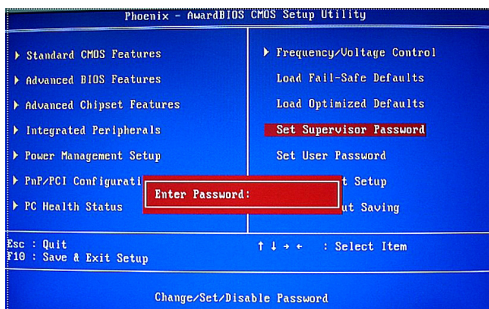
Press <Enter> on the item “Load Fail-Safe Defaults” or “Load Optimized Defaults” and then press the <Y> key to load the optimal BIOS default settings. The BIOS defaults settings helps the system to operate in optimum state. Always load the standard or Optimized defaults after updating the BIOS or after clearing the CMOS values.





Set Supervisor/User Password

Press <Enter> on this item and type the password with up to 8 characters and then press <Enter>. You will be requested to confirm the password. Type the password again and press <Enter>.



The BIOS Setup program allows you to specify two separate passwords:

❖ Supervisor Password

When a system password is set and the **Password Check** item in **Advanced BIOS Features** is set to **Setup**, you must enter the supervisor password for entering BIOS Setup and making BIOS changes.

When the **Password Check** item is set to **System**, you must enter the supervisor password (or user password) at system startup and when entering BIOS Setup.

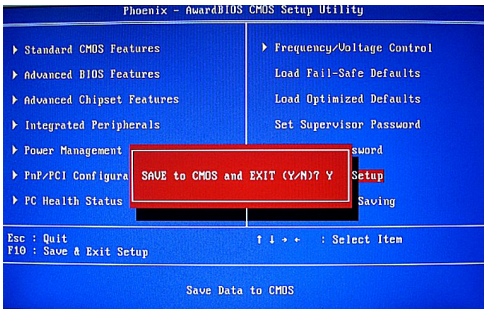
❖ User Password

When the **Password Check** item is set to **System**, you must enter the supervisor password (or user password) at system startup to continue system boot. In BIOS Setup, you must enter the supervisor password if you wish to make changes to BIOS settings. The user password only allows you to view the BIOS settings but not to make changes.

To clear the password, press <Enter> on the password item and when requested for the password, press <Enter> again. The message “PASSWORD DISABLED” will appear, indicating the password has been cancelled.

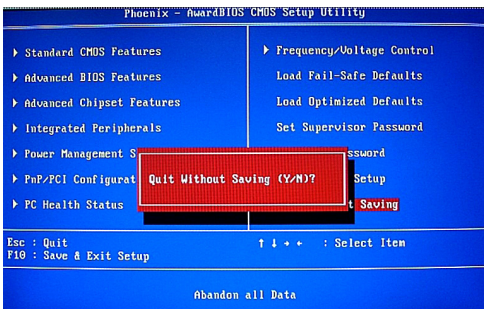
Save & Exit Setup

Press <Enter> on this item and press the <Y> key. This saves the changes to the CMOS and exits the BIOS Setup program. Press <N> or <Esc> to return to the BIOS Setup Main Menu.



Exit Without Saving

Press <Enter> on this item and press the <Y> key. This exits the BIOS Setup without saving the changes made in BIOS Setup to the CMOS. Press <N> or <Esc> to return to the BIOS Setup Main Menu.



FLASH Update Procedure

The program AWDFLASH.EXE is included on the driver CD (D:\Utility\AWDFLASH.EXE). Please follow the recommended procedure to update the flash BIOS, as listed below.

1. Create a DOS-bootable floppy diskette. Copy the new BIOS file (just obtained or downloaded) and the utility program AWDFLASH.EXE to the diskette.
2. Allow the PC system to boot from the DOS diskette.
3. At the DOS prompt, type

AWDFLASH<ENTER>

4. Enter the file name of the new BIOS.
5. The question: "Do you want to save BIOS (Y/N)?" is displayed.

**Press "N" if there is no need to save the existing BIOS.
Press "Y" if a backup copy of the existing BIOS is needed.
(A file name has to be assigned to the existing BIOS binary file.)**

6. The message : "Press "Y" to program or "N" to exit" is displayed. Type "Y"<ENTER>
7. Wait until the flash-update is completed.
8. Restart the PC.

Warning :

- Do not turn off or RESET the computer during the flash process.
- If you are not sure how to upgrade the BIOS, please take your computer to an Authorized Service Center and have a trained technician do the work for you.

Installing Drivers and Software

Note: *It is important to remember that before installing the driver CD that is shipped in the kit, you need to load your operating system. The motherboard supports Windows XP 32bit and 64bit and is Vista-capable.*

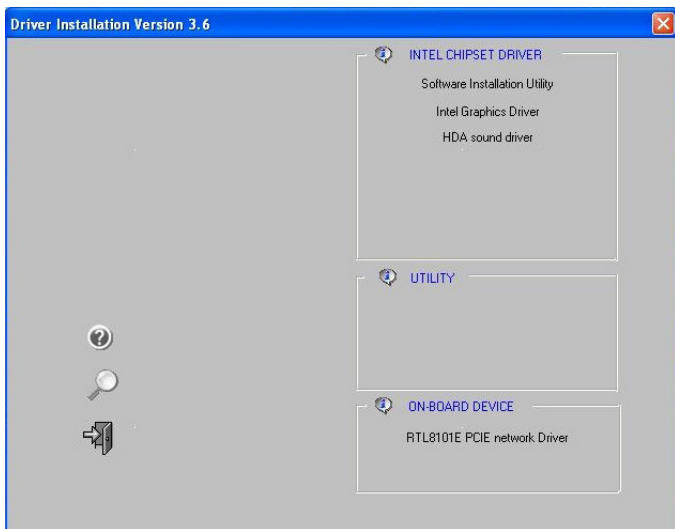
The kit comes with a CD that contains utility drivers and additional software.

The CD that has been shipped with your Intel G31 motherboard contains the following software and drivers:

- Software Installation Utility**
- Intel Graphics Driver**
- HDA sound Driver**
- RTL8101E PCIE network Driver**

Drivers Installation

1. Insert the Intel G31 driver CD after loading your operating system.
Waiting for one minute you can see below interface.

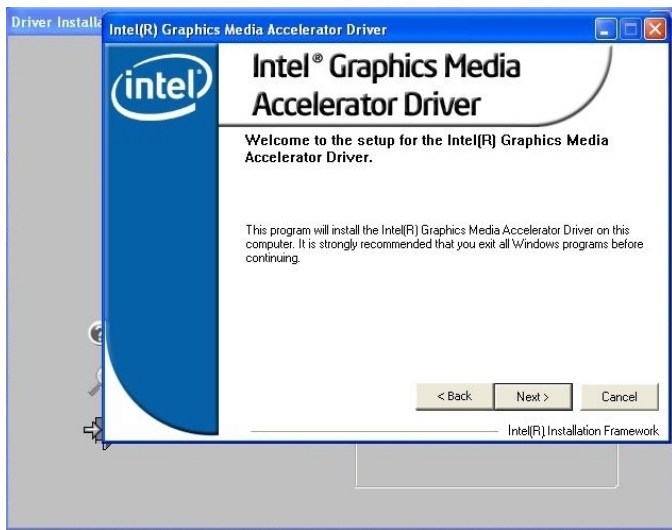


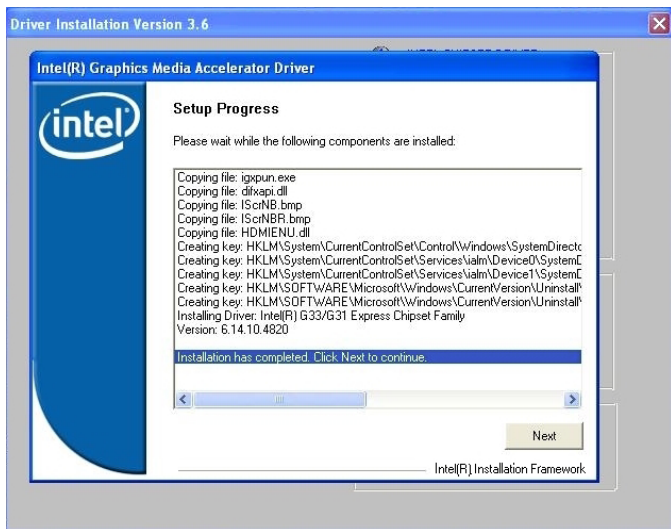
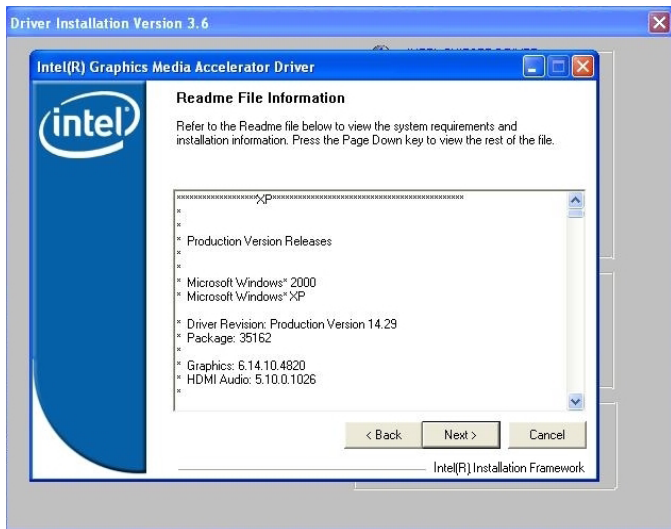
2. Follow the below for Software Installation Utility Installing.





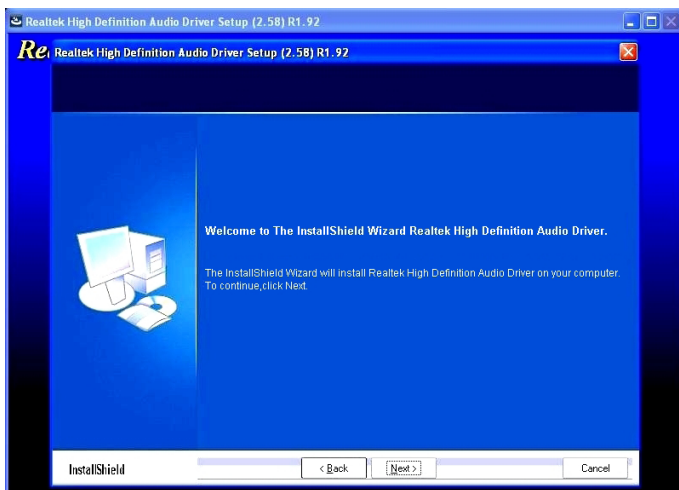
3. Follow the below for Intel graphics drive Installing.

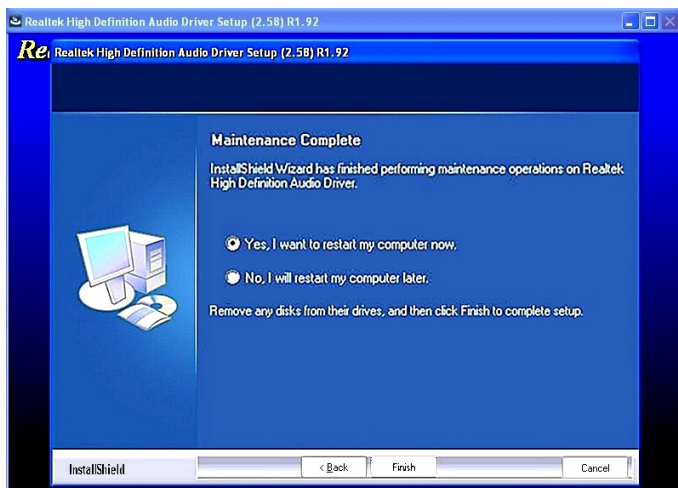




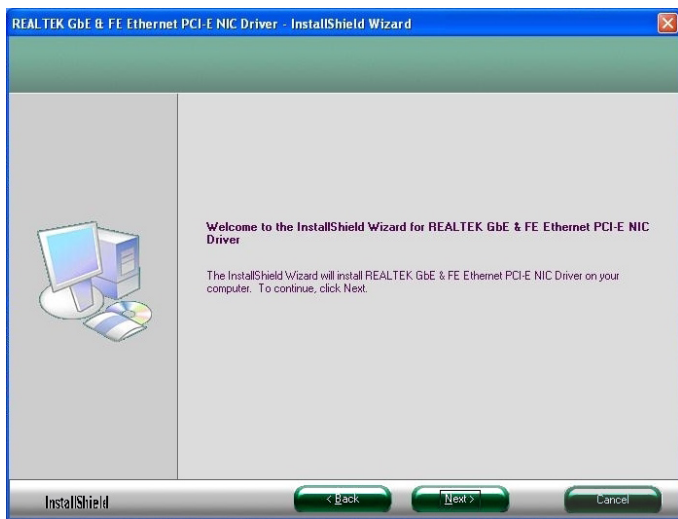


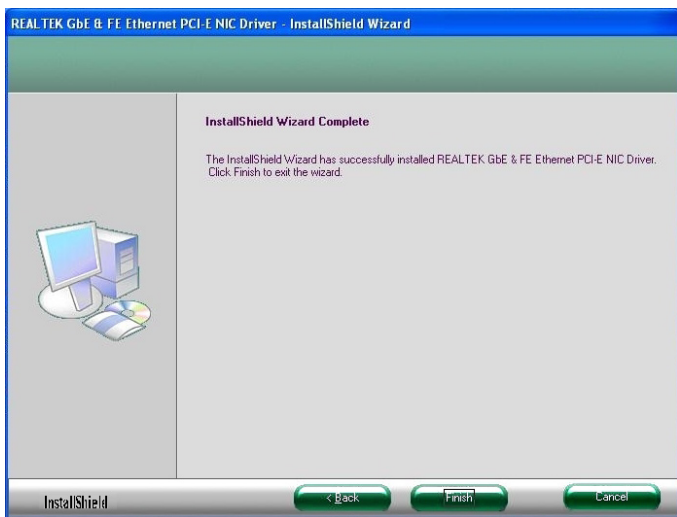
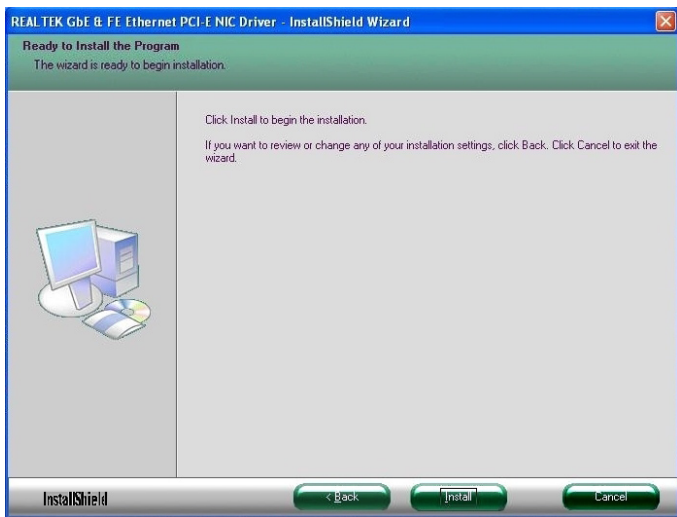
4. Follow the below for HDA sound driver installing.



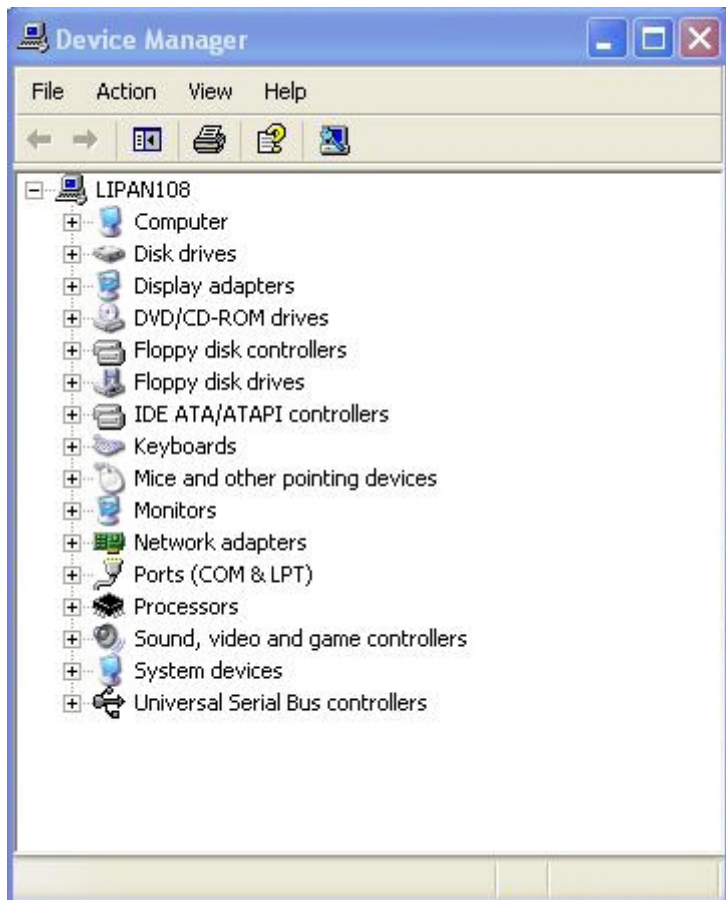


5. Follow the below for RTL8101E PCIE network driver installing.





At last, you can open below page that provides information about the hardware devices on this motherboard, and check whether finish your installation.



Realtek HD Audio Driver Setup

Getting Started

After Realtek HD Audio Driver being installed (insert the driverCD and follow the on-screen instructions), “Realtek HD Audio Manager” icon will show in System tray as below. Double click the icon and the control panel will appear:



Sound Effect

After clicking on the “Sound Effect” tab, 3 sections “Environment”, “Equalizer” and “Karaoke” are available for selection.



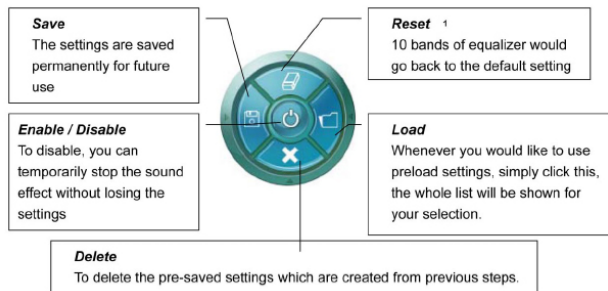
Environment Simulation

You will be able to enjoy different sound experience by pulling down the arrow, totally 23 kinds of sound effect will be shown for selection. Realtek HD Audio Sound Manager also provides five popular settings “Stone Corridor”, “Bathroom”, “Sewer pipe”, “Arena” and “Audio Corridor” for quick enjoyment.

Equalizer Selection

The Equalizer section allows you to create your own preferred settings by utilizing this tool.

In standard 10 bands of equalizer, ranging from 100Hz to 16KHz are available:



Frequently Used Equalizer Setting

Realtek recognizes the needs that you might have. By leveraging our long experience at audio field, Realtek HD Audio Sound Manager provides you certain optimized equalizer settings that are frequently used for your quick enjoyment.

How to Use

Other than the buttons “Pop” “Live” “Club” & “Rock” shown on the page, to pull down the arrow in “Others” , you will find more optimized settings available to you.

Karaoke Mode

Karaoke mode brings Karaoke fun back home by simply using the music you usually play, Karaoke mode can help you eliminate the vocal of the song or adjust the key to accommodate your range.

Vocal Cancellation: Single click on “Voice Cancellation”, the vocals of the songs will be erased, while the background music is still playing which lets you take over the vocal part.

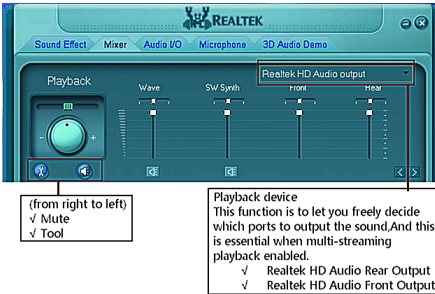
Key Adjustment: Using “Up / Down Arrow” to find a key which better fits your vocal range.

Mixer

Realtek HD Audio Sound Manager integrates Microsoft's "Volume Control" functions into the Mixer page. This gives you the advantage to you to create your favorite sound effect in one single tool.



Playback control



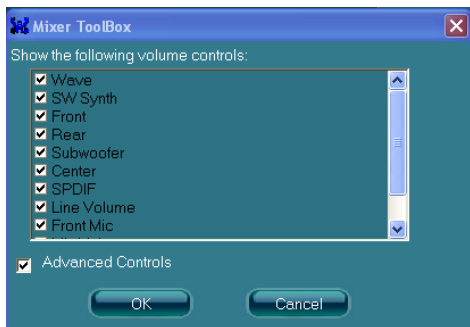
Mute

You may choose to mute single or multiple volume controls or to completely mute sound output.

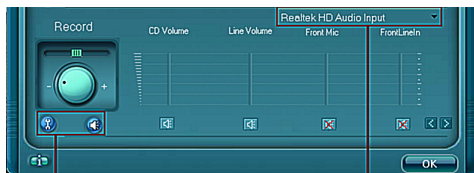
Tool

- ✓ **Show the following volume control**
This is to let you freely decide which volume control items to be displayed, total 13 items to be chosen.
- ✓ **Advanced controls**
- ✓ **Enable playback multi-streaming**

With this function, you will be able to have an audio chat with your friends via headphone (stream 1 from front panel) while still have music (stream 2 from back panel) playing. At any given period, you can have maximum 2 streams operating simultaneously.



Recording control



Mute

You may choose to mute single or multiple volume controls or to completely mute sound input.

Tool

✓ Show the following volume controls

This is to let you freely decide which volume control items to be displayed.

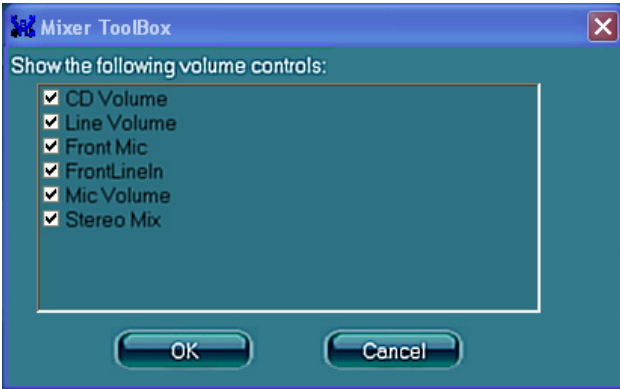
✓ Advanced controls.

Advanced control is a “Microphone Boost” icon.

Once this item is checked, you will find “advanced” icon beside “Front Pink In” & “Mic Volume”. With this, the input signal into “Front Pink In” & “Mic Volume” will be strengthen.

✓ Enable recording multi-streaming

At any given period, you can have maximum 2 streams operating simultaneously.



Audio I/O

Realtek HD Audio Manager frees you from default speaker settings. Different from before, for each jack, they are not limited to perform certain functions. Instead, now each jack is able to be chosen to perform either output (i.e. playback) function or input (i.e. Recording) function, we call this “Retasking”.

Audio I/O aims to help you setting jacks as you wish. Moreover, other than blue to blue, pink to pink, the way that you used to do, Audio I/O would guide you to other right jacks that can also serve as microphone / speaker / headphone.



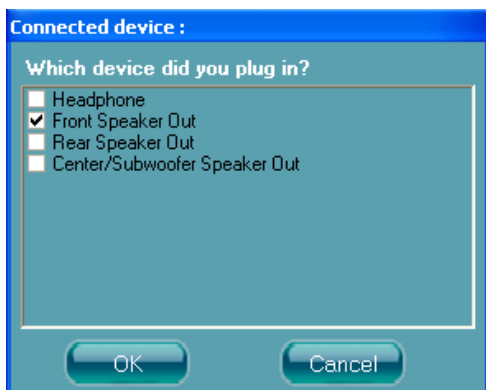
Speaker Configuration

Step 1: Plug in the device in any available jack.


Step 2: Dialogue "connected device" will pop up for your selection. Please select the device you are trying to plug in.

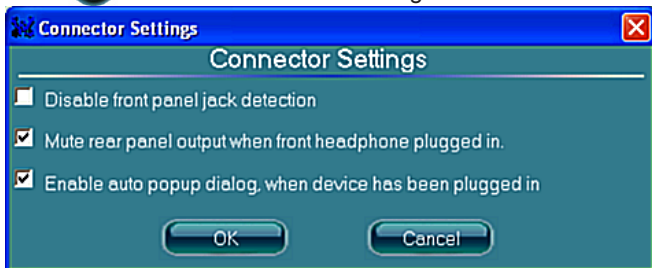
* If the device is being plugged into the correct jack, you will be able to find the icon beside the jack changed to the one that is same as your device.

* If not correct, Realtek HD Audio Manager will guide you to plug the device into the correct jack.



Connector Settings

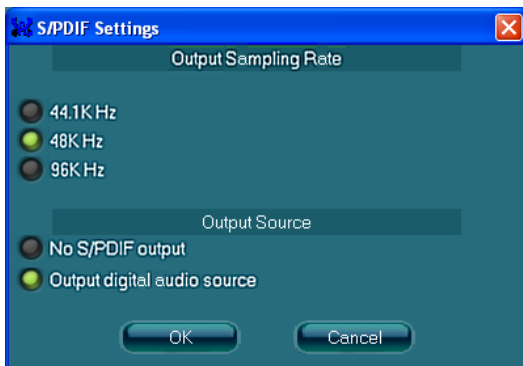
Click  to access connector settings



- ✓ **Mute rear panel when front headphone plugged in**
Once this option is checked, whenever front headphone is plugged, the music that is playing from the back panel, will be stopped.
- ✓ **Disable front panel jack detection (option)**
Did not find any function on front panel jacks?
Please check if front jacks on your system are so-called AC'97 jacks. If so, please check this item to disable front panel jack detection.
- ✓ **Enable auto popup dialogue, when device has been plugged in.**
Once this item checked, the dialog "Connected device", would not automatically pop up when device plugged in.

S/PDIF

Short for **S**ony/**P**hilips **D**igital **I**nterface, a standard audio file transfer format. S/PDIF allows the transfer of digital audio signals from one device to another without having to be converted first to an analog format. Maintaining the viability of a digital signal prevents the quality of the signal from degrading when it is converted to analog.



√ Output Sampling Rate

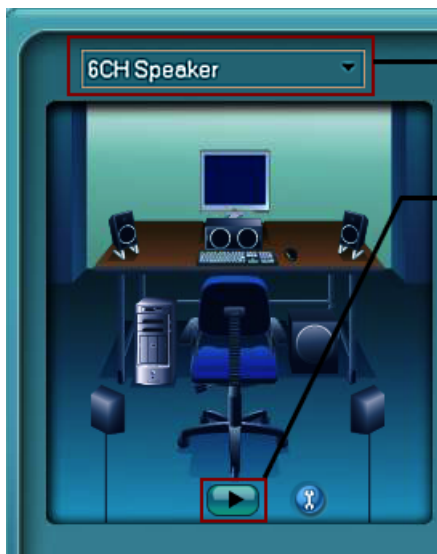
- 44.1KHz: This is recommended while playing CD
- 48KHz: This is recommended while playing DVD or Dolby.
- 96KHz: This is recommended while playing DVD-Audio.

√ Output Source

- Output digital audio source: The digital audio format (such as .wav, .mp3, .midi etc) will come out through S/PDIF-Out.

Speaker Calibration

After you have successfully plugged in speakers and assigned to the right jacks, you are only one more step to go to enjoy the intended sound. We provide "Speaker Calibration" to help you check if the speakers are located in the correct position.



Step1

Select the channel output(headphone / 2 / 4 / 6 channel)

Step2

Click "play" icon

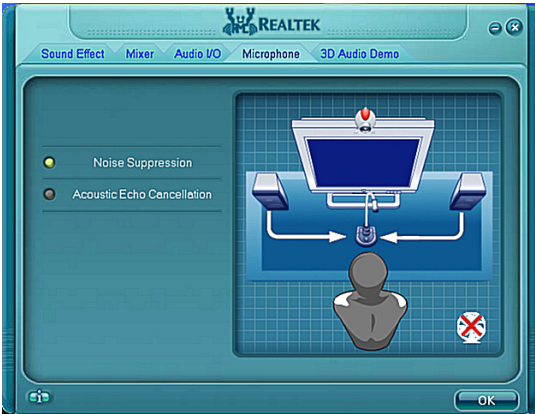
Step3

Look at the scene;while the speaker appears flashing,you should be able to hear the sound exactly from that direction.

Microphone

This page is designed to provide you better microphone / recording quality.

Below picture indicates both “Noise Suppression” & “Acoustic Echo Cancellation” are both enabled.



Noise Suppression

If you feel that the background noise, especially the sound generated from the fan inside PC, is too loud? Try “Noise Suppression”, which allows you to cut off and suppress disturbing noise.

Beam Forming

Also known as “directional recording”, this option lets you do the following: Once beam forming is enabled; only the sound from certain direction will be recorded. You will get the best quality if you chose 90° position, which we recommend you to use, this effectively means that you speak right into the microphone.

Note: A Stereo Microphone is required when using Beam Forming function.

Acoustic Echo Cancellation

This function prevents playback sound from being recorded by microphone together with your sound. For example, you might have chance to use VOIP function through Internet with your friends. The voice of your friend will come out from speakers (playback). However, the voice of your friend might also be recorded into your microphone then go back to your friend through Internet. In that case, your friend will hear his/her own voice again. With AEC (Acoustic Echo Cancellation) enabled at your side, your friend can enjoy the benefit with less echo.

Audio Demo

The section “3D Audio Demo” grants you another possibility to enjoy your sound. The Audio Demo allows you to listen to sound in an extraordinary way.



Information

Information

information

Audio Driver Version : 5.10.0.5643

DirectX Version : DirectX 9.0

Audio Controller : HD Audio

Audio Codec : ALC662

Language : Auto

Show icon in system tray

OK

Hardware / Software information of your audio system

Language setting
When "Auto" is chosen, this language setting would accommodate to OS language on your systems

Quick launch button at system tray

This section provides information about your current system audio device.



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