ZOTAC®

INTEL SERIES MOTHERBOARD

Designed for Intel® Core™ 2 Extreme, Core™ 2 Duo, Core™ 2 Quad, Pentium®, and Celeron® Processors

G43/G45-ITX SERIES MOTHERBOARD

USER'S MANUAL

WARNING!

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.

Table of Contents

Motherboard Specifications

❑ **Chipset**

❖ Intel® G43+ICH10/G45+ICH10R

❑ **Size**

❖ MINI ITX form factor of 6.7 X 6.7 inch

❑ **Microprocessor support**

❖ Supports Intel® Core™ 2 Extreme/Core™ 2 Quad/Core™ 2 Duo/Pentium®/Celeron® processors

❖ Supports Front Side Bus (FSB) Frequency of 1333/1066/800 MHz

❑ **VRD 11 On board**

❖ Flexible motherboard design with onboard VRD 11

❑ **Operating systems**

❖ Supports Windows XP 32 bit/64 bit, Windows Vista 32 bit/64 bit and Windows 7 32bit/64bit

❑ **System Memory**

❖ Supports dual-channel (128 bits wide) DDRII memory interface

❖ Supports DDRII 800/667

❖ Maximum memory size: 8 GB

❑ **USB 2.0 ports**

❖ Supports hot plug and play

❖ Ten USB 2.0 ports (six rear panel ports, four from onboard USB headers)

❖ Supports USB 2.0 protocol up to 480 Mbps transmission rate

❑ **Onboard Serial ATA II**

❖ Independent DMA operation on five ports (Optional)

❖ Data transfer rates of 3.0 Gb/s

❑ **Onboard eSATA**

❖ One port on board

❖ Supports hot plug and play

❖ Provide a link for 3.0 Gb/s data speed

❑ **On board Lan (RTL8103E/RTL8111D)**

❖ PCI Express base specification 1.0a compliant

❖ Compliant to 802.3x flow control support

❖ 10/100 IEEE 802.3 compliant

❖ Wake On LAN (WOL) power management support

❖ RTL8111D is Gigabit Ethernet controller

- **Onboard High Definition Audio**
  - ❖ Supports 6-channel and 8-channel (Optional)
  - ❖ Supports Jack-Sensing function
  - ❖ One SPDIF-out header on board
- **Green Function**
  - ❖ Support SMM, APM, ACPI
  - ❖ Suspend to DRAM supported (STR)
  - ❖ RTC timer to power-on the system
  - ❖ AC power failure recovery
- **Onboard Graphics Features**
  - ❖ DX10 and OpenGL 2.0 are supported
  - ❖ 3D Graphics Rendering Enhancements
  - ❖ Up to 2048x1536@75 Hz refresh
  - ❖ HDMI/DVI port output support (DVI-VGA adaptor bundled in some model)
- **PCI Express Interface**
  - ❖ Support PCI Express 2.0
  - ❖ Provide 16 GB/s bandwidth for platform graphics
  - ❖ Wake up function is supported
  - ❖ Clock spread spectrum capability
- **Expansion slots**
  - ❖ One PCI express X16 slot
  - ❖ One MINI PCI express slot (half-height)

Motherboard Layout

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

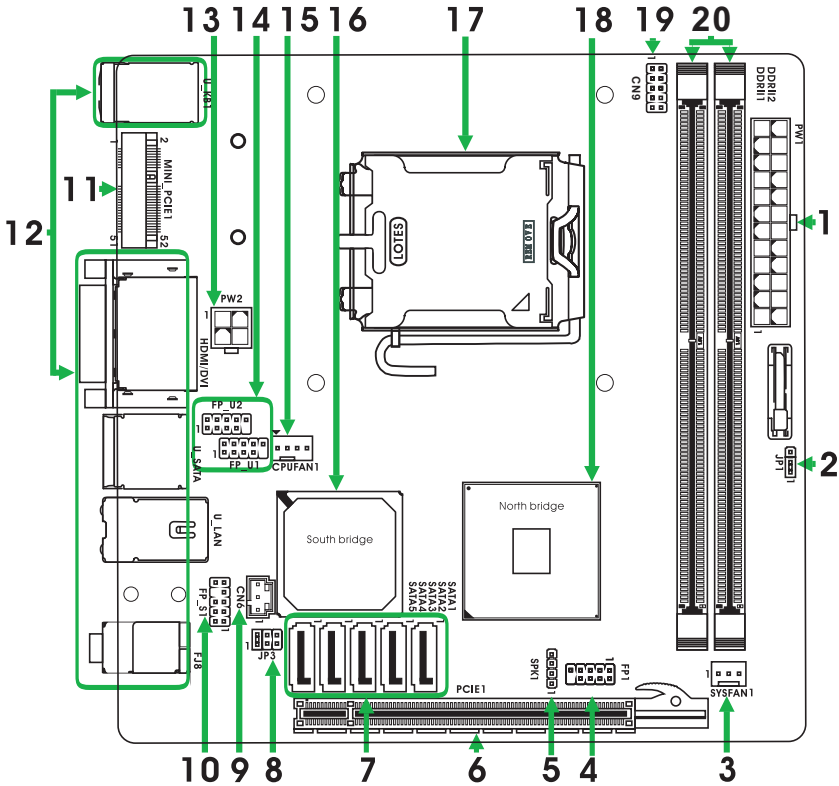
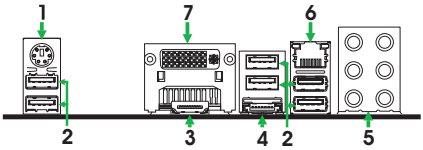


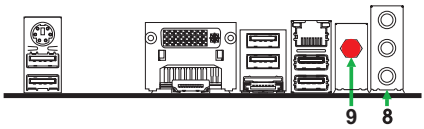
Figure 1

Figure 1. Board Layout

1. 24-pin ATX Power Connector-PW1
2. Clear CMOS Jumper-JP1
3. SYS Fan Connector-SYSFAN1
4. Front Panel Header-FP1
5. Speaker Header-SPK1
6. PCI Express x 16 Slot-PCIE1
7. Serial-ATA (SATA) Connectors (SATA1~5)
8. BIOS selection Jumper-JP3 (Optional)
9. SPDIF-Out Header-CN6
10. Front pannel audio Header-FP_S1
11. Mini PCIE Slot-MINI_PCIE1
12. Backpanel connectors
13. 4-pin ATX_12V power connector-PW2
14. USB Headers(FP_U1~FP_U2)
15. CPU Fan Connector_CPUFAN1
16. South Bridge
17. CPU Socket
18. North Bridge
19. COM Header_CN9 (Optional)
20. DDRII DIMM Sockets-DDRII1~DDRII2

Figure 2





1. PS/2 Keyboard Port
2. USB Connectors
3. HDMI Port
4. eSATA Connector
5.

Port	*2-Channel*	*4-Channel*	*6-Channel*	*8-Channel*
Blue	Line-In	Line-In	Line-In	Line-In
Green	Line-Out	Front Speaker Out	Front Speaker Out	Front Speaker Out
Pink	Mic In	Mic In	Mic In	Mic In
Orange	–	–	Center/Subwoofer	Center/Subwoofer
Black	–	Rear Speaker Out	Rear Speaker Out	Rear Speaker Out
Grey	–	–	–	Side Speaker Out

6. 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

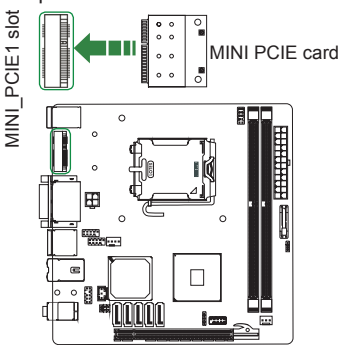
   · Yellow and Orange/Light Up/Blink = 1000 Mbps/link/Activity
7. DVI Port
8.

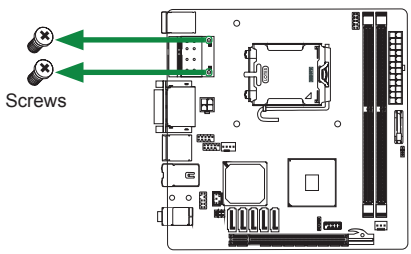
Port	*2-Channel*	*4-Channel*	*6-Channel*
Blue	Line-In	Rear Speaker Out	Rear Speaker Out
Green	Line-Out	Front Speaker Out	Front Speaker Out
Pink	Mic In	Mic In	Center/Subwoofer

9. WiFi antenna connector (Optional)

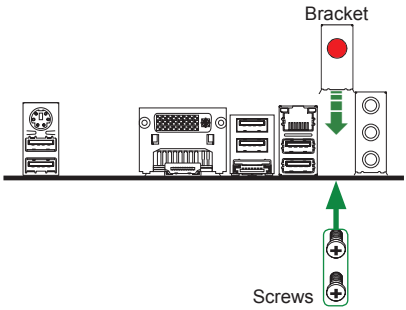
   Refer to the following to install the WiFi antenna modules.

   Step 1. Secure the MINI PCIE card into the MINI_PCIE1 slot with screws.

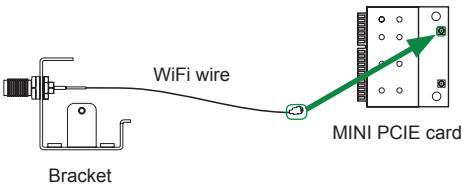


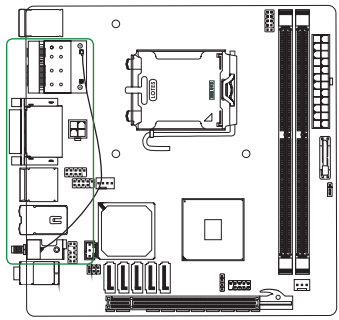


Step 2. Secure the bracket to the motherboard with screws according to the picture below.

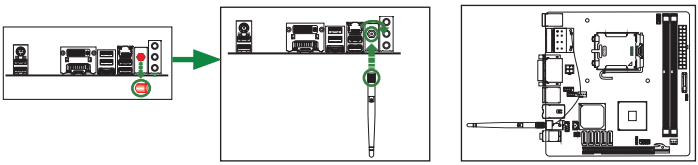


Step 3. Connect the WiFi wire to the MINI PCIE card as the following picture shows.

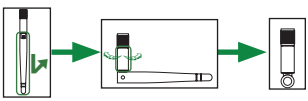




Step 4. Remove the red cap from the WiFi antenna connector.
Install the WiFi antenna to the WiFi antenna connector, and make sure the screw is rotated in clockwise direction.



Note: Users can bend or rotate the WiFi antenna to the best receiving direction according to the picture below.



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 Memory DIMMs
- ❑ 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.

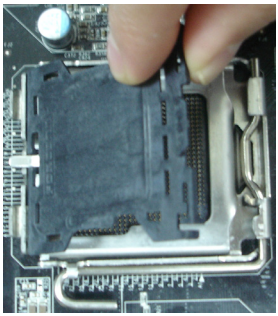
Preparing the Motherboard

The motherboard shipped in the box does not contain a CPU or 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.

The following illustration shows CPU installtaion components



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 without 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.

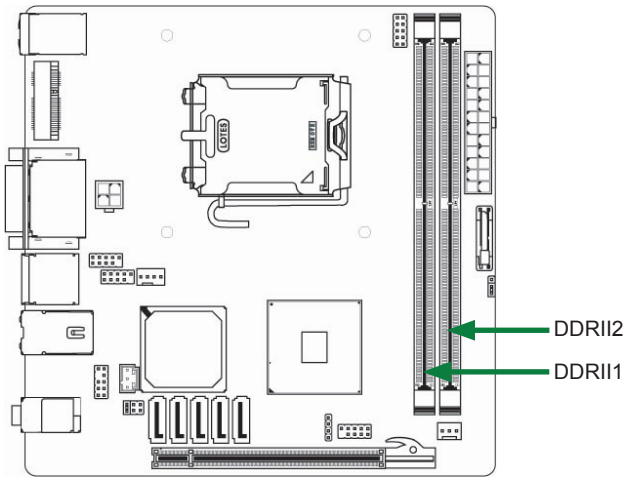
Installing the CPU Fan

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 modules. These slots support 256 MB/512 MB/1 GB/2 GB/4 GB DDR2 technologies. They also support dual channel DDR2 memory technology up to 10.7 GB/s. There must be at least one memory bank populated to ensure normal operation. Refer to the following recommendations to install memory DIMMs.

- **One DIMM**: Install it into slot 1 or 2. You can install the DIMM into any slot, however, slot 1 is preferred.
- **Two DIMMs**: Install them into slot 1 and slot 2



Refer to 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.
Refer to 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 assem -bly 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.

Securing the Motherboard into the Chassis

Most computer chassis have a base with mounting studs or spacers to allow the motherboard to be secured to the chassis and help to prevent short circuits. If there are studs that do not align with a mounting hole on the motherboard, it is recommended that you remove that stud to prevent the possibility of a short circuit. In most cases, it is recommended to secure the motherboard with spacers.

1. Carefully place the motherboard onto the studs/spacers located inside the chassis.
2. Align the mounting holes with the studs/spacers.
3. Align the connectors to the I/O shield.
4. Ensure that the fan assembly is aligned with the chassis vents according to the fan assembly instruction.
5. Secure the motherboard with screws.

Connecting Cables and Setting Switches

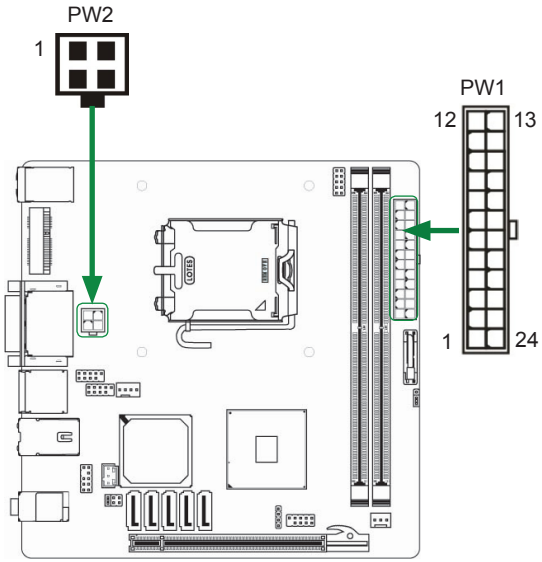
This section takes you through all the connectors and switch settings necessary on the motherboard. This will include:

- ❑ Power Connectors
  - ❖ 24-pin ATX Power Connector-PW1
  - ❖ 4-pin ATX_12V Power Connector-PW2
- ❑ Internal Headers/Connectors
  - ❖ SPDIF-Out Header-CN6
  - ❖ COM Header-CN9 (Optional)
  - ❖ Front Panel Header-FP1
  - ❖ USB Headers (FP_U1~FP_U2)
  - ❖ Front Pannel Audio Header-FP_S1
  - ❖ Speaker Header-SPK1
- ❑ Serial-ATA (SATA) Connectors (SATA1~5)
- ❑ Chassis Fan Connectors
- ❑ Expansion Slots
- ❑ CMOS Jumper Settings

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

24-pin ATX Power Connector-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 connector-PW2

PW2, the 4-pin ATX 12V power connector, 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

SPDIF-Out Header-CN6

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

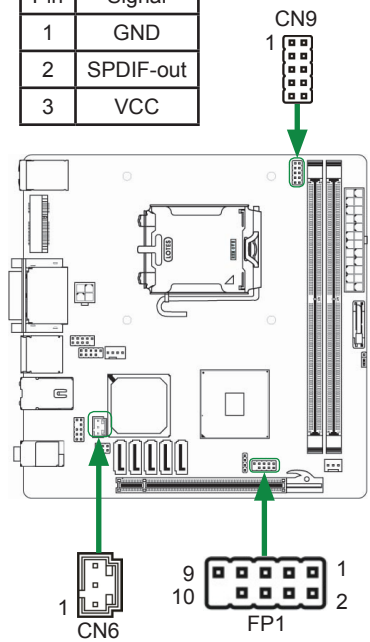
CN6 - Pin Definition

Pin	Signal
1	GND
2	SPDIF-out
3	VCC

COM Header-CN9 (Optional)

CN9 - 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 :

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

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

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

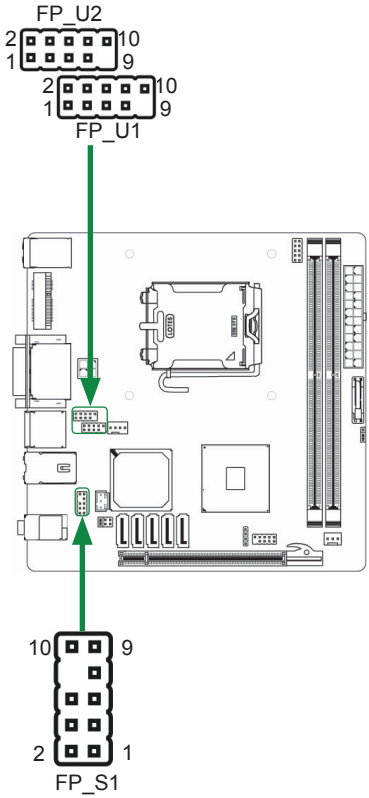
USB Headers (FP_U1~FP_U2)

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

Note: 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	Assignment	PIN	Assignment
1	VCC	6	USBP1+
2	VCC	7	GND
3	USBP0-	8	GND
4	USBP1-	9	KEY
5	USBP0+	10	OC#



Front Panel Audio Header-FP_S1

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.

FP_S1-Pin Definition

PIN	Assignment	PIN	Assignment
1	MIC2(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.

Speaker Header-SPK1

SPK1-Pin Definition

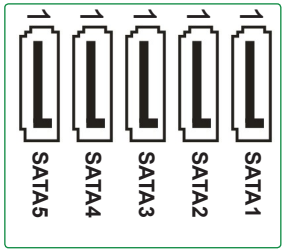
PIN	Assignment
1	VCC
2	NC
3	NC
4	SPK-

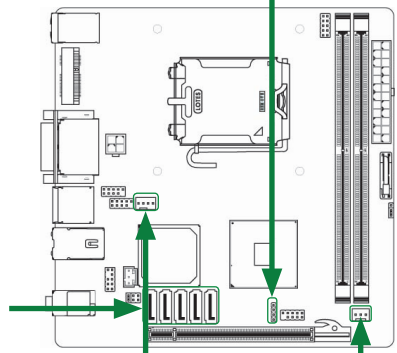
Serial-ATA (SATA) Connectors (SATA1~5)

The Serial ATA II connector is 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 300 MB/s data transfer rate. There are five serial ATA connectors on the motherboard that support AHCI and RAID configurations.

SATA-Pin Definition

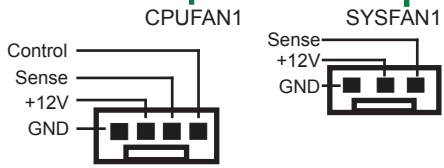
Pin	Signal
1	GND
2	TXP
3	TXN
4	GND
5	RXN
6	RXP
7	GND





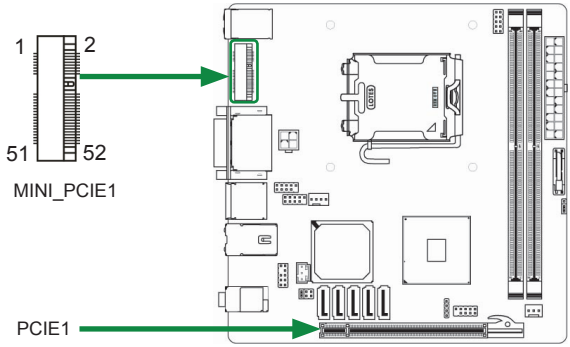
Fan Connectors

There are two fan connectors on the motherboard. The fan speed can be detected and viewed in the PC Health Status section of the CMOS Setup.



Expansion slots

The motherboard contains two expansion slots, one Mini PCIE slot and one PCIE x16 slot.



Mini PCIE slot-MINI_PCIE1

There is one Mini PCIE slot, reserved for WiFi Module.

PCIE x16 Slot-PCIE1

There is one PCIE x16 slot reserved for graphics or video cards. The bandwidth of the PCIE x16 slot is up to 8 GB/sec complianting with PCIE 2.0 specification.

Note: The PCIE x16 slot supports PCIE graphics cards, but does not support any PCIE x1 device.

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.

CMOS Clear Jumper-JP1

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

BIOS Selection Jumper-JP3 (Optional)

JP3	Selection
2 6 1 5 1-2*	Master*
2 6 1 5 3-4	backup
2 6 1 5 5-6	factory

Close Open * = Default setting.

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

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 menus. 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).

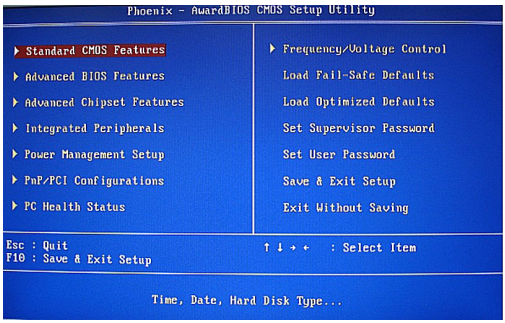
   Press F1 to continue, DEL to enter Setup.

   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.

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:
Please 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 set the clock speed and system bus for your system.

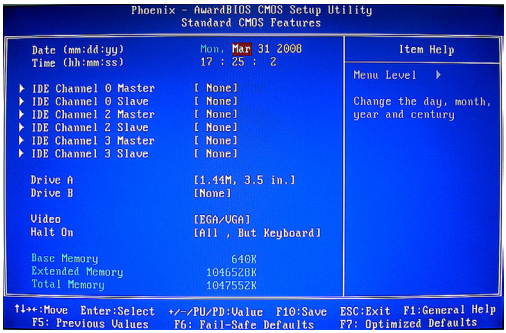
The following items on the CMOS Setup Utility main menu are commands rather than submenus:

- **Load Optimized Defaults**
  Load 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:
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.
- **Manual**
  When you set the channel to **[Manual]** and change **Access Mode** to **[CHS]**, you can then enter the number of cylinders, heads, Precomp, landing zone, and sector.

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**
  The system boot does not stop for diskette or keyboard error but will stop for all other errors.

Memory

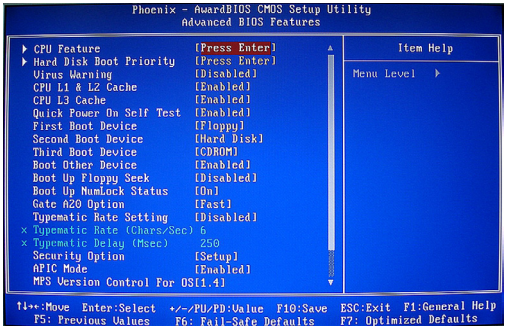
These settings are ***display-only values*** that are determined by the BIOS POST (Power-On Self Test).

- **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.

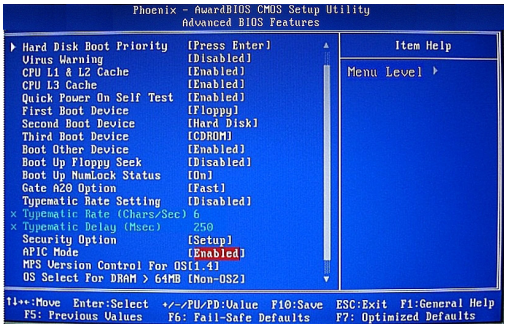
❑ **Total Memory**
This value represents the total memory of the system.

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:
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.

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.

❑ **CPU C State Capability**
Use this option to enable or disable CPU C State Capability.

❑ **Execute Disable Bit**
When disabled forces the XD feature flag to always return 0,defaults choose Enable.

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

Hard Disk Boot Priority

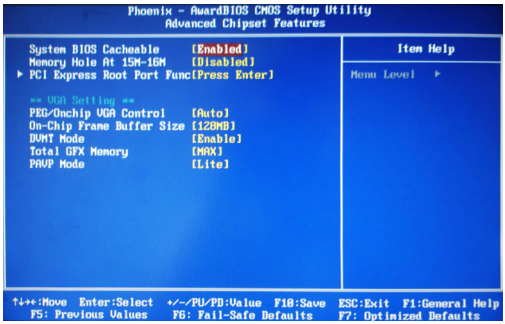
Press Enter to disply the Hard Disk Boot Priority,then then some of the peripheral equipment pluged will be displayed.

- **Virus Warning**
  Allow you to choose the Virus Warning feature for Hard Disk boot sector protection.
- **CPU L1&L2 Cache/CPU 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.
- **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.
- **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

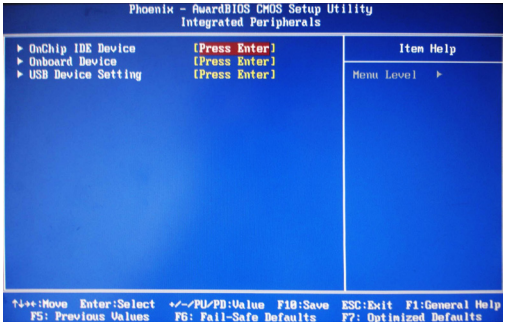
Select Advanced Chipset Features from the CMOS Setup Utility menu and press Enter to display the functions of the Advanced Chipset Functions menu.



- **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 Func**
  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 enable or disable DVMT mode.
- **Total GFX Memory**
  Use this option to set total GFX memory size.
- **PAVP Mode**
  Use this option to set PAVP mode.

Integrated Peripherals Menu

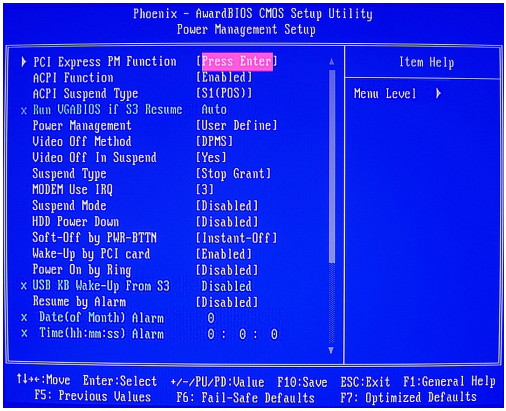
Select **Integrated Peripherals** from the CMOS Setup Utility menu and press **Enter** to display the Integrated Peripherals menu.



- **OnChip IDE Device**
  Use this option to set on chip IDE function.
- **Onboard Device**
  Use this option to enable or disable onboard IEEE1394 and GIGA BIT PCIE LAN.
- **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.

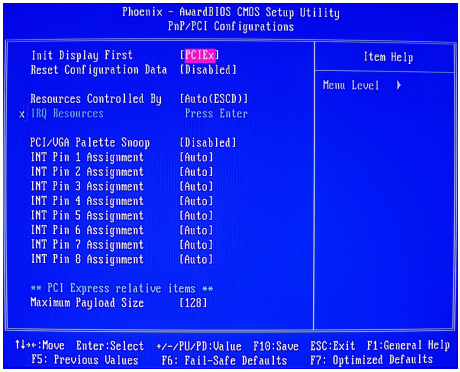


- **PCI Express PM Function**
  Use this option to enable or disable Root port ASPM, DMI port and ASPM.
- **ACPI Function**
  This function on the Power Management Setup menu allows you to enable or disable the ACPI function.

- **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]**.
- **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.
- **HPET Support**
  Use this option to enable or disable HPET Support; if enable, HPET Mode displays.
- **HPET Mode**
  Use this option to set HPET mode.

PnP/PCI Configurations

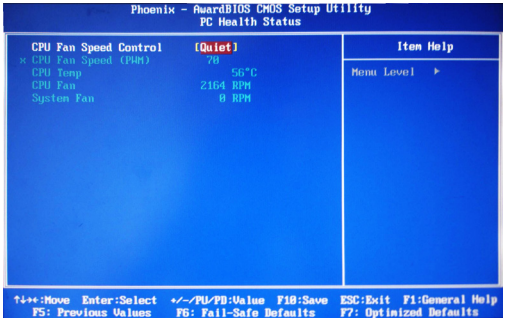
Select **PnP/PCI Configuration** from the CMOS Setup Utility menu and press **Enter** to display the PnP/PCI Configuration menu.



- **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.

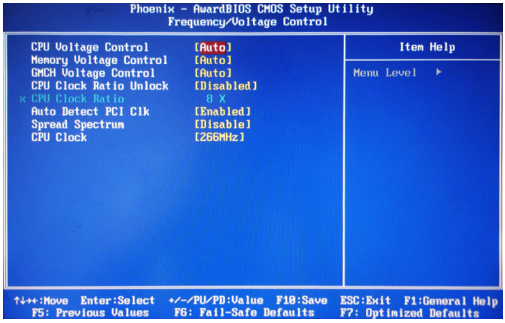


All of the values shown on the menu are dynamic, including CPU fan speed, CPU temperature, and so on.

- ❑ **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.

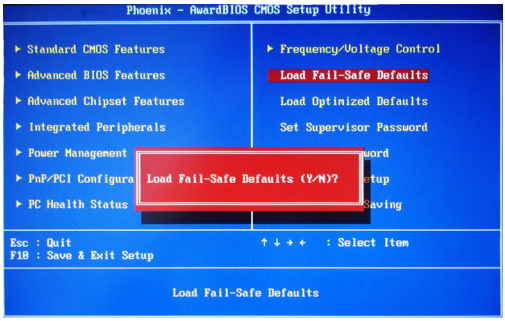


- ❑ **CPU Voltage Control**
  Use this option to set the CPU voltage. The default setting is **Auto**.
- ❑ **Memory Voltage Control**
  Use this option to set the memory voltage .
- ❑ **GMCH Voltage Control**
  Use this option to set the voltage of GMCH (Graphics & Memory controller hub)
- ❑ **CPU Clock Ratio Unlock**
  Use this option to set the ratio of CPU clock.
- ❑ **Auto Detect PCI CLK**
  Use this option to enable or disable Auto detect PCI CLK.

- **Spread Spectrum**
  Use this option to enable or disable spread spectrum.
- **CPU Clock**
  Use this option to set CPU clock.

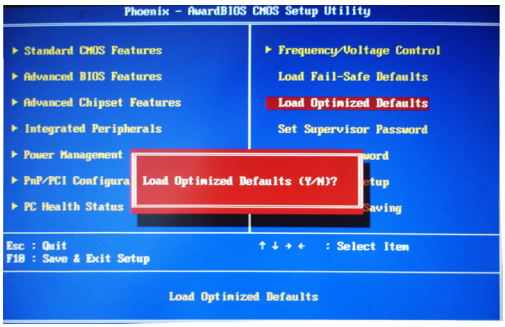
Load Fail-safe Defaults

Press <Enter> on this item and then press the <Y> key to load the Fail-Safe BIOS default settings. You can try to Load Fail-Safe Default when the system is abnormality.



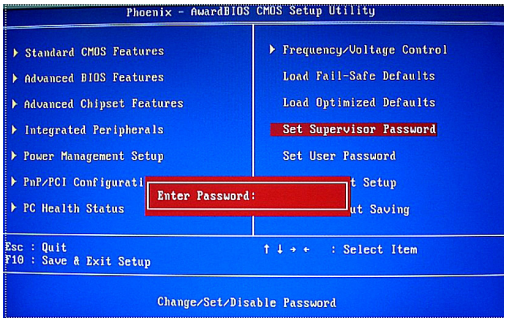
Load Optimized Defaults

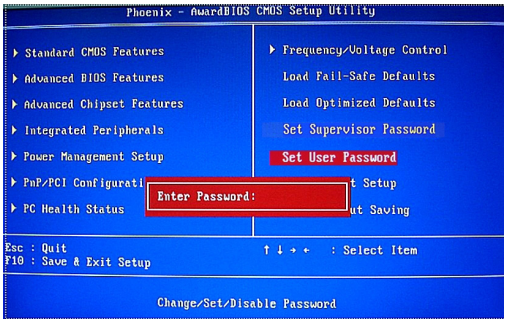
Press <Enter> on this item and then press the <Y> key to load the optimal BIOS default settings. The BIOS optimized defaults settings helps the system to operate in optimum state. Always load the Optimized defaults after updating the BIOS or after clearing the CMOS values.



Set Supervisor/User Password

Press <Enter> on the item “Set Supervisor Password” or “Set User Password” and type the password with up to eight 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.

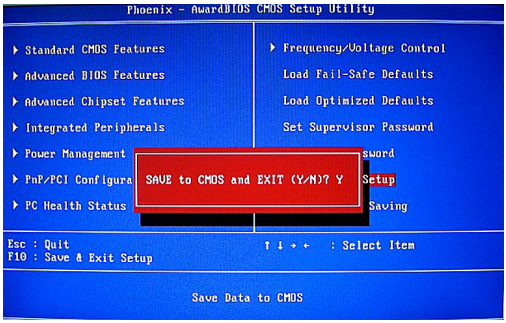
- **User Password**

  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.

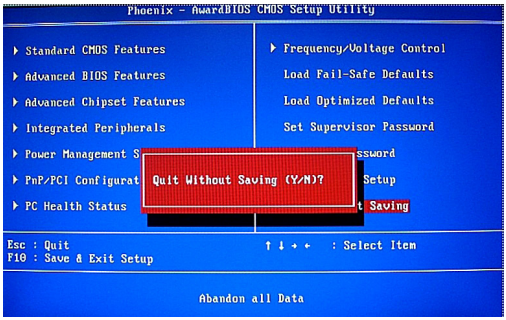
Save & Exit Setup

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 note that before installing the driver CD that is shipped in the kit, you need to load your operating system. The motherboard supports Windows XP 32 bit/64 bit, Windows Vista 32 bit/64 bit and Windows 7 32bit/64bit.

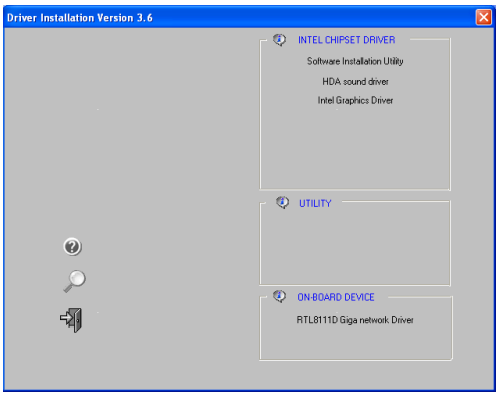
The kit comes with a CD that contains utility drivers and additional INTEL software.

The CD that has been shipped with your Intel G45 (G43) motherboard contains the following software and drivers:

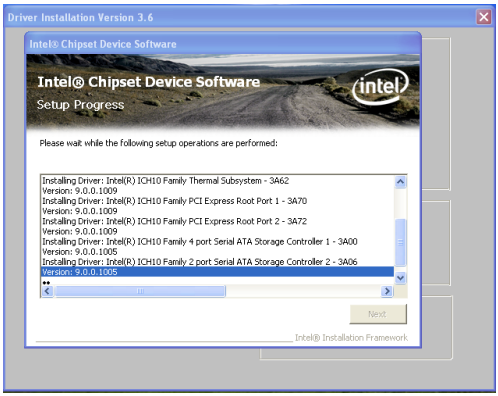
- ❑ **Software Installation Utility**
- ❑ **HDA Sound driver**
- ❑ **Intel Graphics Driver**
- ❑ **RTL8111D Giga network Driver**

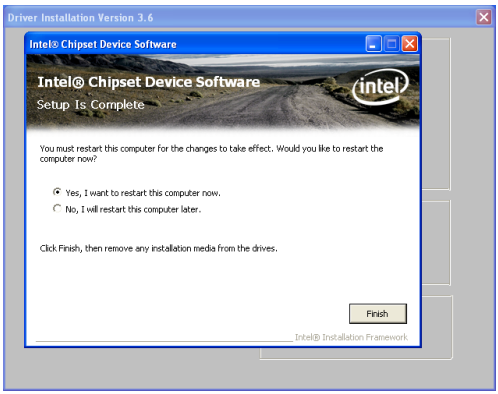
Drivers Installation

1. Insert the Intel G45 (G43) driver CD after loading your operating system. Waiting for one minute you can see below interface.

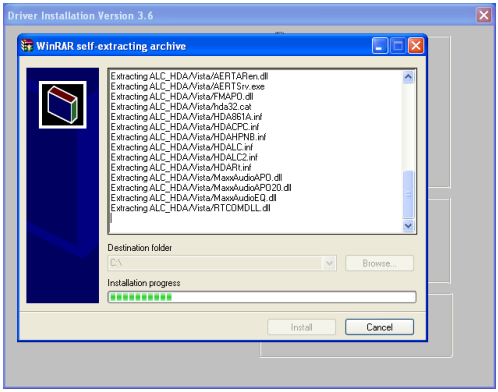


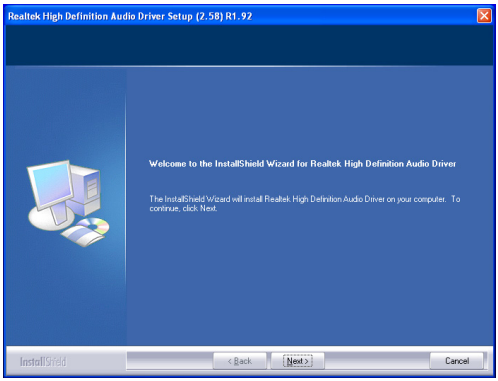
2. Left-click software installation utility, begin loading

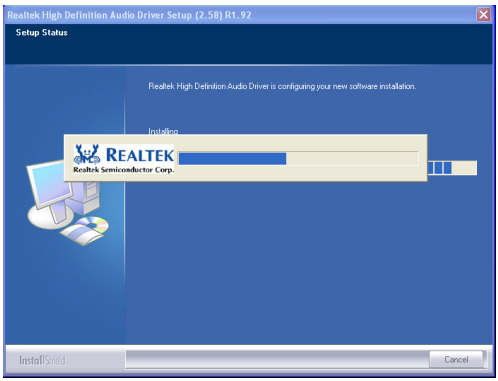


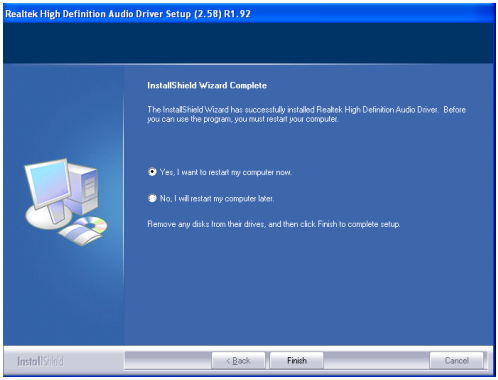


3. Left-click HDA Sound driver, begin loading

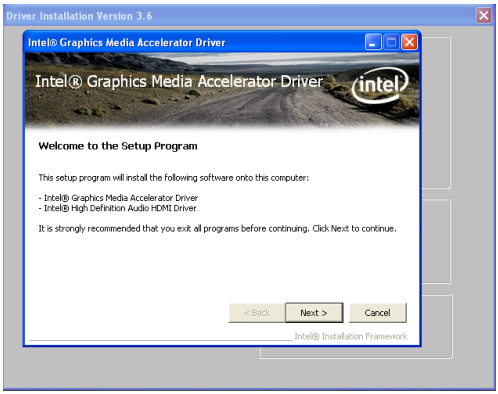


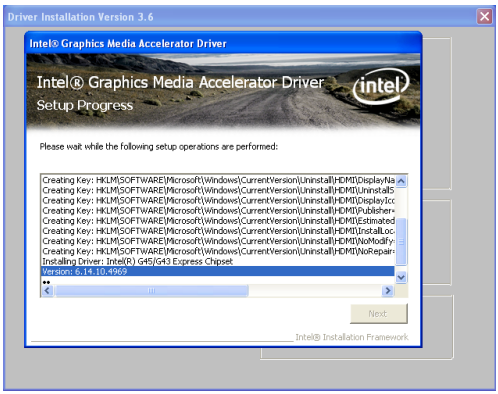


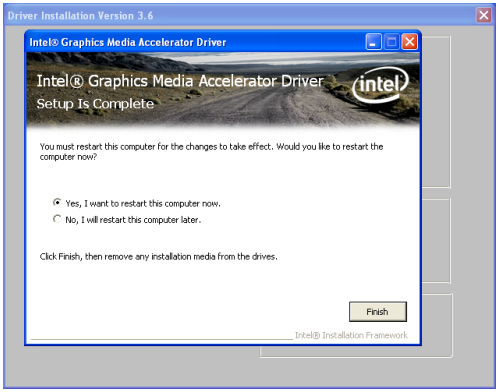




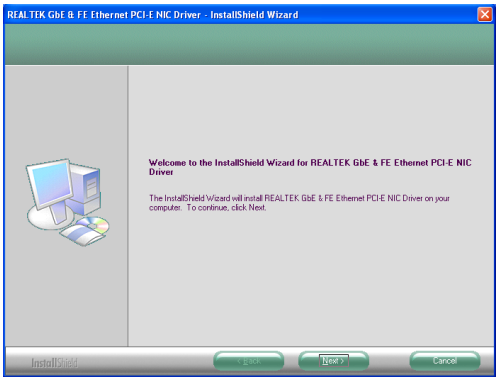
4. Left-click Intel Graphics Driver, begin loading

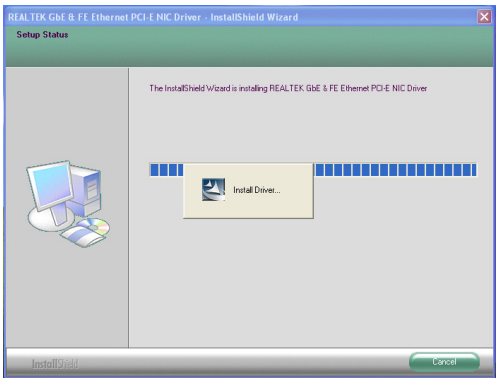


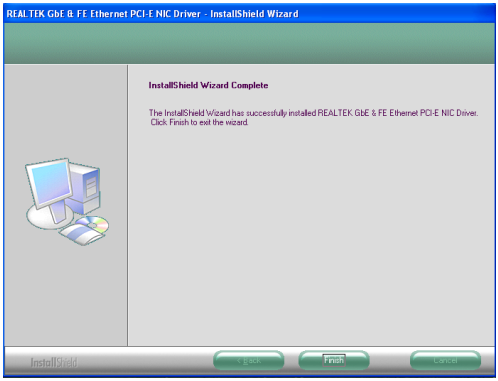




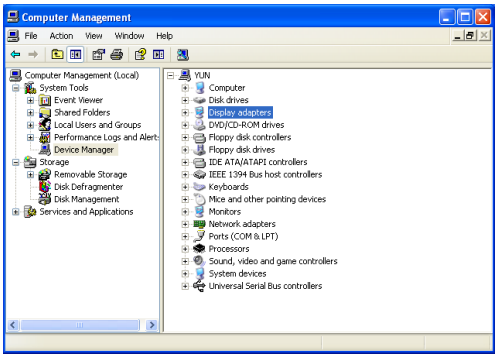
5. Left-click RTL8111D Giga network Driver, begin loading







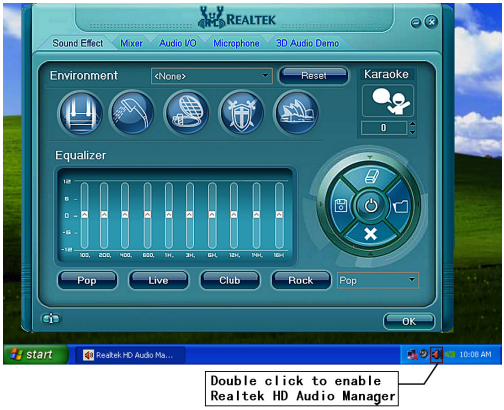
At last, you can open below page that provides information about the hardware devices on this motherboard, and check whether finish your installation.



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.

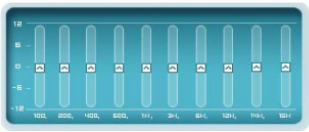
Environment Simulation

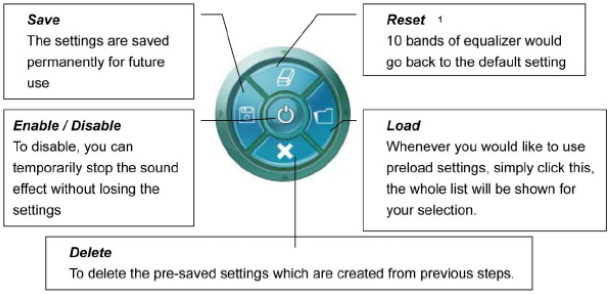
You will be able to enjoy different sound experience by pulling down the arrow, totally 23 kinds of sound effect will be shown for selection. Realtek HD Audio Sound Manager also provides five popular settings “Stone Corridor”, “Bathroom”, “Sewer pipe”, “Arena” and “Audio Corridor” for quick enjoyment.

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.

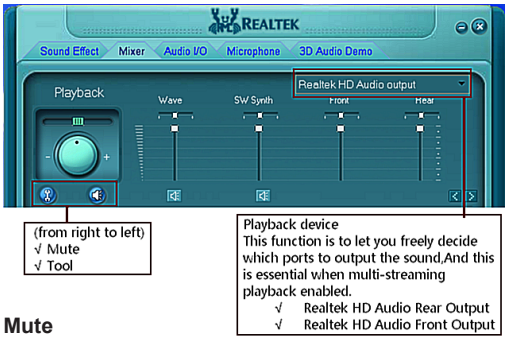
Vocal Cancellation: Single click on “Voice Cancellation”, the vocals of the songs will be erased, while the background music is still playing which lets you take over the vocal part.

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.

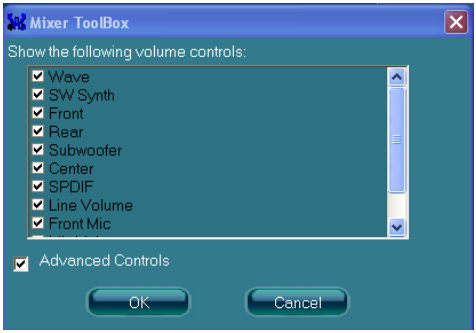
Tool

√ **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.

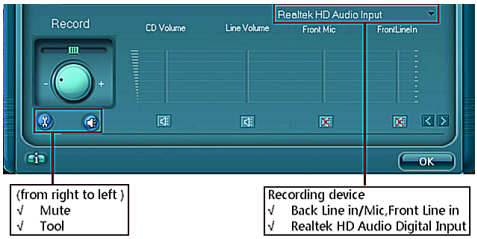
√ **Advanced controls**

√ **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**

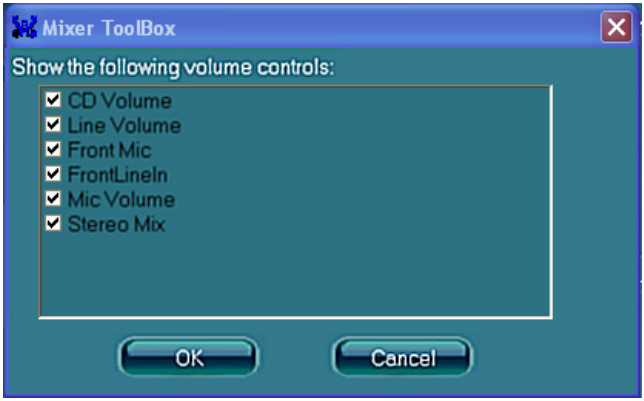
This is to let you freely decide which volume control items to be displayed.

√ **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 strengthened.

√ **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.

6-Channel or 8-Channel

Speaker Configuration

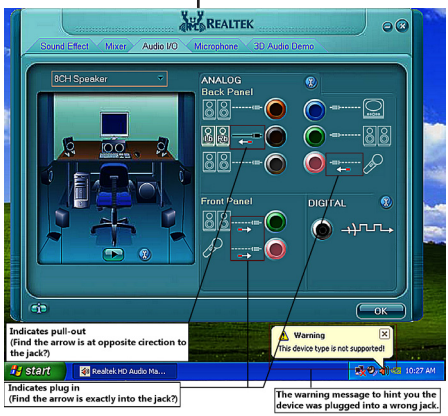
Step 1: Plug in the device in any available jack.

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.

6-Channel or 8-Channel



Connector Settings

Click to access connector settings

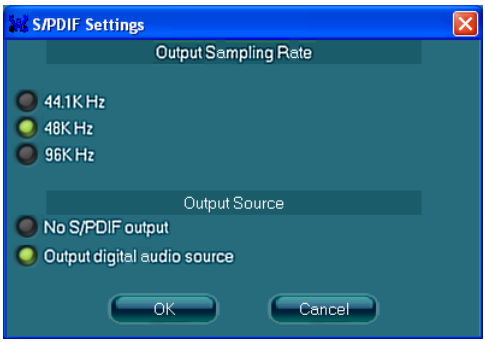
√ **Mute rear panel when front headphone plugged in**
Once this option is checked, when front headphone is plugged, the music that is playing from the back panel, will be stopped.

√ **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 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**

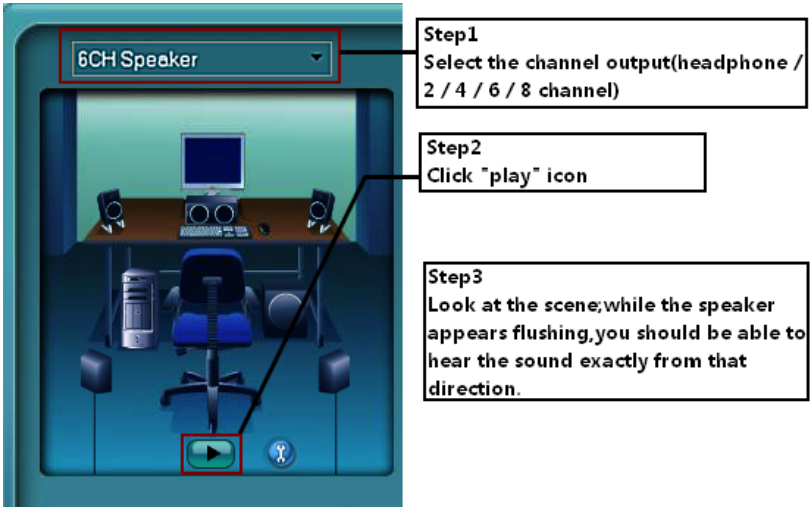
- 44.1KHz: This is recommended while playing CD
- 48KHz: This is recommended while playing DVD or Dolby.
- 96KHz: This is recommended while playing DVD-Audio.

√ **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.



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.

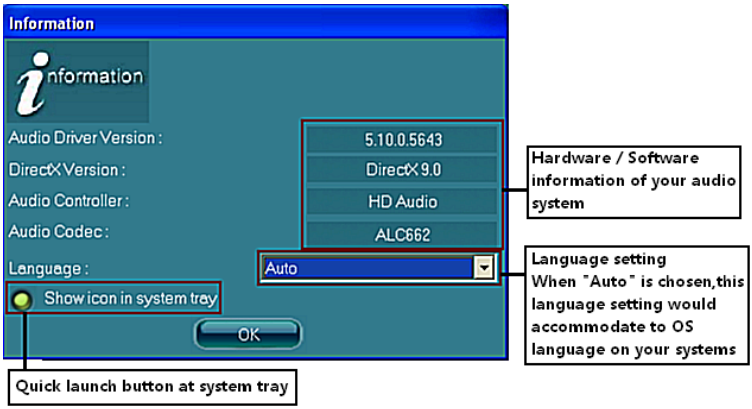
Acoustic Echo Cancellation

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

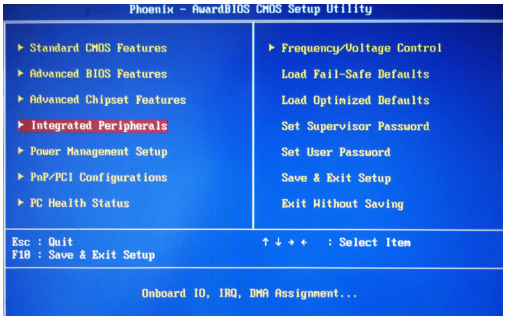


This section provides information about your current system audio device.

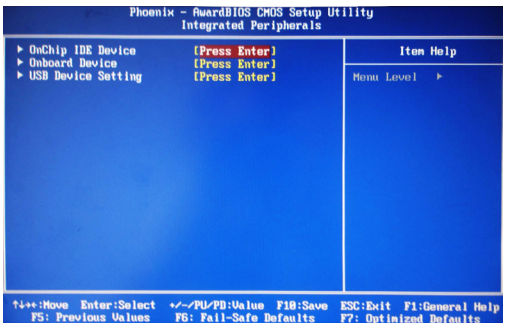
SATA RAID User Manual

Setting up the BIOS

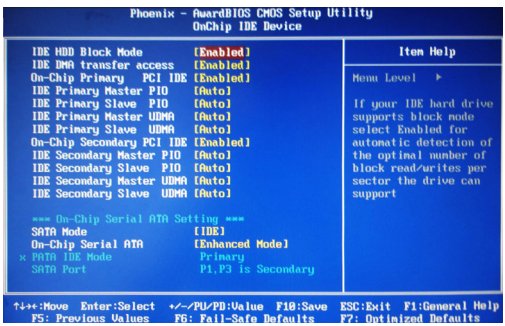
1. Setting your computer, then press Delete to enter the BIOS setup. The BIOS CMOS Setup Utility window appears.



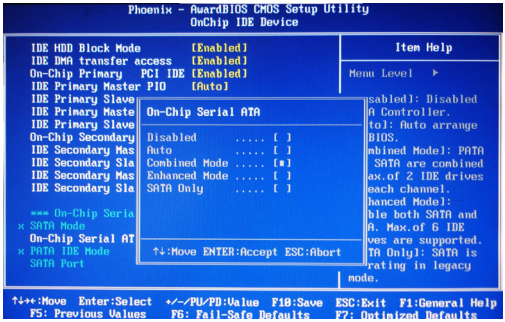
2. Use the arrow keys to select **Integrated Peripherals**, then press Enter. The **Integrated Peripherals** window appears.



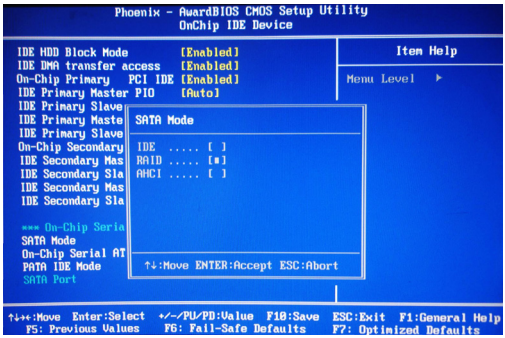
3. Use the arrow keys to select the item **OnChip IDE Device**, then press Enter. The **OnChip IDE Device** window appears.

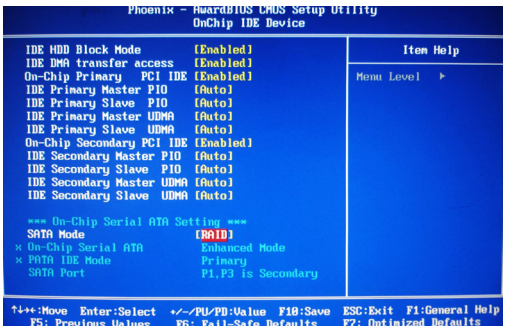


4. Enter the item **On-Chip Serial ATA**, and select any item below:
   a. Combined Mode
   b. Enhanced Mode
   c. SATA Only



5. Enter the item **SATA Mode**, and select RAID in the submenu.



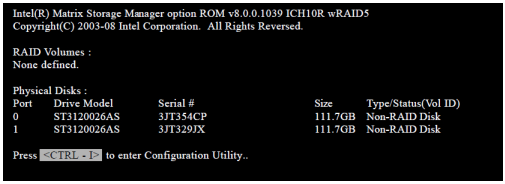


6. Enable the disks that you want to use as RAID disks.

7. Press F10 to save the configuration and exit. The PC reboots.

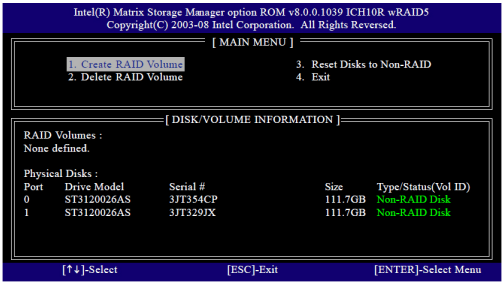
Entering the RAID BIOS utility

1. During POST, press <Ctrl-I> to enter the Intel® Matrix Storage Manager RAID BIOS menu.



2. The main Intel® Matrix Storage Manager RAID BIOS menu appears.

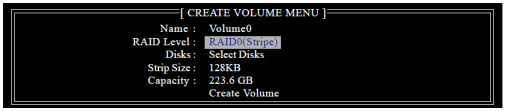
3. Use the arrow keys to move the color bar and navigate through the items.



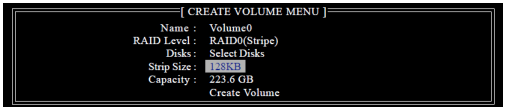
Creating a RAID set

1. In the main Intel® Matrix Storage Manager RAID BIOS menu, highlight **Create RAID Volume** using the ↑ ↓ arrow key then press <Enter>.

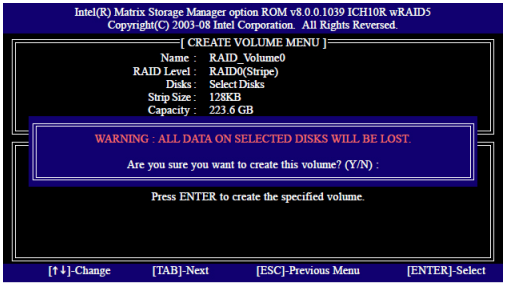
2. When the item **RAID Level** is highlighted, use the ↑ ↓ arrow key to select the RAID set that you want to create.



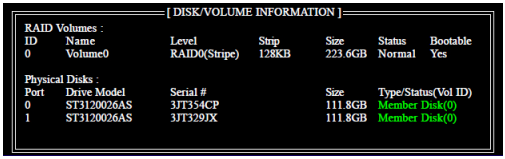
Note:
When more than two HDDs are installed in your computer, the* Disks *item will be selectable. Then users can select the HDD that you want to belong to the RAID set. Please be noticed that selecting a wrong disk will result in losing the original data of the HDD.



3. Press <Enter> to confirm the creation of the RAID set. A dialogue box appears to confirm the action. Press <Y> to confirm; otherwise, press <N>.

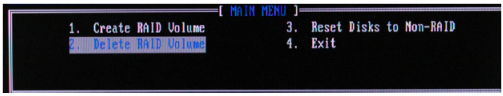


4. The following screen appears, displaying the relevant information about the RAID set you created.



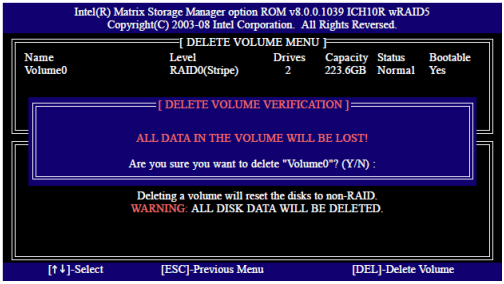
Deleting a RAID set

1. In the main Intel® Matrix Storage Manager RAID BIOS menu, highlight **Delete RAID Volume** using the ↑ ↓ arrow key then press <Enter>.



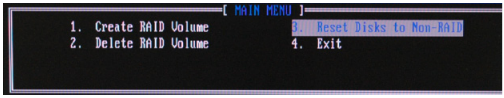
2. Use the space bar to select the RAID set you want to delete. Press the <Del> key to delete the set.

3. A dialogue box appears to confirm the action. Press <Y> to confirm; otherwise, press <N>.



Resetting disks to Non-RAID

1. In the main Intel® Matrix Storage Manager RAID BIOS menu, highlight **Reset Disks to Non-RAID** using the ↑ ↓ arrow key then press <Enter>.



2. Use the space bar to select the HDD to reset to Non-RAID.

3. A dialogue box appears to confirm the action. Press <Y> to confirm; otherwise, press <Y>.

Exiting Setup

When you have finished, highlight **Exit** using the ↑ ↓ arrow key then press <Enter> to exit the Intel® Matrix Storage Manager RAID BIOS utility.

A dialogue box appears to confirm the action. Press <Y> to confirm; otherwise, press <N> to return to the Intel® Matrix Storage Manager RAID BIOS menu.

Making a SATA RAID/AHCI Driver Disk (For RAID and AHCI Mode)

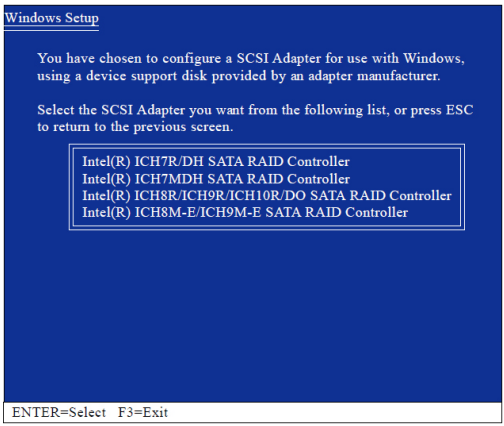
To successfully install operating system onto SATA hard drive(s) that is/are configured to RAID/AHCI mode, you need to install the SATA controller driver during the OS installation. First, copy the driver for the SATA controller from the motherboard driver disk to a floppy disk. For Windows Vista installation, you can also copy the SATA controller driver from the motherboard driver disk to a USB flash drive.

Installing the RAID Drivers and Operating System

A. Installing Windows XP

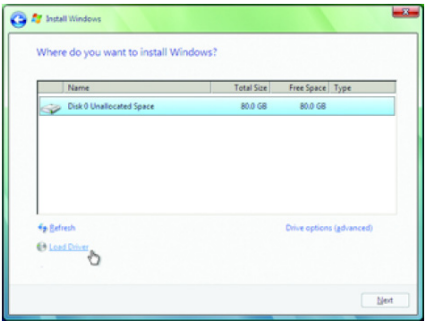
1. After you complete the RAID BIOS setup, boot from the windowsXP CD. Press <F6> as soon as you see the screen below. A screen will then appear asking you to specify additional device. Insert the floppy disk containing the SATA RAID/AHCI driver and press <S>.

2. Then a controller menu as the screen below will appear. Select **Intel(R) ICH8R/ICH9R/ICH10R/DO SATA RAID Controller** and press <Enter>. On the next screen, press <Enter> to continue the driver installation. After the driver installation, you can proceed with the Windows XP installation.



B. Installing Windows Vista

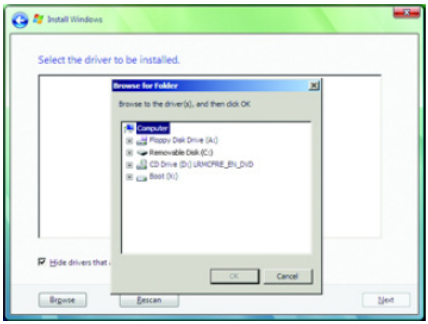
1. Restart your system to boot from the Windows Vista setup disk and perform standard OS installation steps. When a screen as below appears, select **Load Driver**.



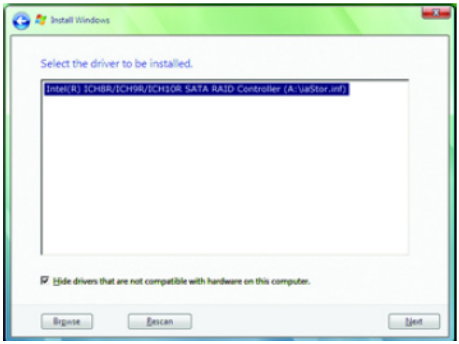
2. Specify the location where the driver is saved, such as your floppy disk or USB flash drive. For users using a SATA optical drive, be sure to copy the driver files from the motherboard driver disk to a USB flash drive before installing Windows Vista (go to the **BootDrv** folder and save the whole **iMSM** folder to the USB flash drive). Then use Method B to load the driver.

Method A:
Insert the motherboard driver disk into your system and browse to the following directoy:\ **BootDrv\iMSM\32Bit**
For Windows Vista 64-bit, browse to the **64Bit** folder.

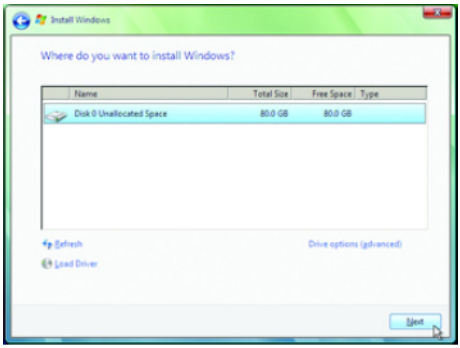
Method B:
Insert the USB flash drive containing the driver files and browse to the **32Bit** (for Windows Vista 32-bit) or **64Bit** (for Windows Vista 64-bit) folder.



3. When a screen as below appears, select **Intel(R) ICH8R/ICH9R/ICH10R/DO SATA RAID Controller** and click **Next**.



4. After the driver is loaded, select the RAID/AHCI drive(s) where you want to install the operating system and then click **Next** to continue the OS installation.



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