

# ZOTAC<sup>®</sup>

## 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



## 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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### **Trademarks**

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## Table of Contents

<b>Motherboard Specifications</b> .....	<b>4</b>
<b>Motherboard Layout</b> .....	<b>6</b>
<b>Hardware Installation</b> .....	<b>9</b>
Safety Instructions .....	9
<b>Preparing the Motherboard</b> .....	<b>10</b>
Installing the CPU .....	10
Installing the CPU Fan .....	11
Installing Memory Modules .....	11
Installing the Motherboard .....	12
Installing the I/O Shield .....	12
Securing the Motherboard into the Chassis .....	12
<b>Connecting Cables and Setting Switches</b> .....	<b>13</b>
24-pin ATX Power Connector-PW1 .....	14
4-pin ATX_12V power connector-PW2 .....	14
SPDIF-Out Header-CN6 .....	15
COM Header-CN9 (Optional) .....	15
Front panel header-FP1 .....	15
USB Headers (FP_U1~FP_U2) .....	16
Front Panel Audio Header-FP_S1 .....	16
Speaker Header-SPK1 .....	17
Serial-ATA (SATA) Connectors (SATA1~SATA5) .....	17
Fan Connectors .....	17
Expansion Slots .....	18
Mini PCIE Slot .....	18
PCIE x16 Slot .....	18
Jumper Settings .....	18
<b>Configuring the BIOS</b> .....	<b>19</b>
Enter BIOS Setup .....	19
Main Menu .....	19
Advanced Menu .....	20
CPU Configuration .....	20
IDE Configuration .....	21
SuperIO Configuration .....	21
Hardware Health Configuration .....	21
ACPI Configuration .....	21
MPS Configuration .....	21
PCI Express Configuration .....	21
Smbios Configuration .....	21
Remote Access Configuration .....	22
Trusted Computing .....	22

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USB Configuration	22
PCI/PnP Menu	23
Boot Menu	24
Security Menu	25
Chipset Menu	26
Exit Menu	26
Flash Update Procedure	27
<b>Installing Drivers and Software</b>	<b>28</b>
<b>Drivers Installation</b>	<b>28</b>
<b>Realtek HD Audio Driver Setup</b>	<b>34</b>
Getting Started	34
Sound Effect	34
Environment Simulation	34
Equalizer Selection	35
Frequently Used Equalizer Setting	35
Karaoke Mode	35
Mixer	36
Playback control	36
Recording control	37
Audio I/O	38
Speaker Configuration	39
Connector Settings	40
S/PDIF	40
Speaker Calibration	41
Microphone	42
Noise Suppression	42
Beam Forming	42
Acoustic Echo Cancellation	42
Audio Demo	43
Information	43
<b>SATA RAID User Manual</b>	<b>44</b>
Setting up the BIOS	44
Entering the RAID BIOS Setup	45
Creating a RAID set	45
Deleting a RAID set	46
Resetting disks to Non-RAID	47
Making a SATA RAID/AHCI Driver Disk (For RAID and AHCI Mode)	48
Installing the RAID Drives and Operating System	48

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## 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) DDRIII memory interface
- ❖ Supports DDRIII 1333/1066/800
- ❖ 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

- ❖ Independent DMA operation on five ports (Optional)
- ❖ Data transfer rates of 3.0 Gb/s
- ❖ Supports SATA RAID configuration (For ICH10R chipset❖)

### Onboard eSATA

- ❖ One port on board
- ❖ Supports hot plug and play
- ❖ Provide a link for 3.0 Gb/s data speed

### On board Lan

- ❖ Compliant to 802.3x flow control support
- ❖ 10/100/1000 IEEE 802.3 compliant
- ❖ Wake On LAN (WOL) power management support

**❑ 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
- ❖ 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.

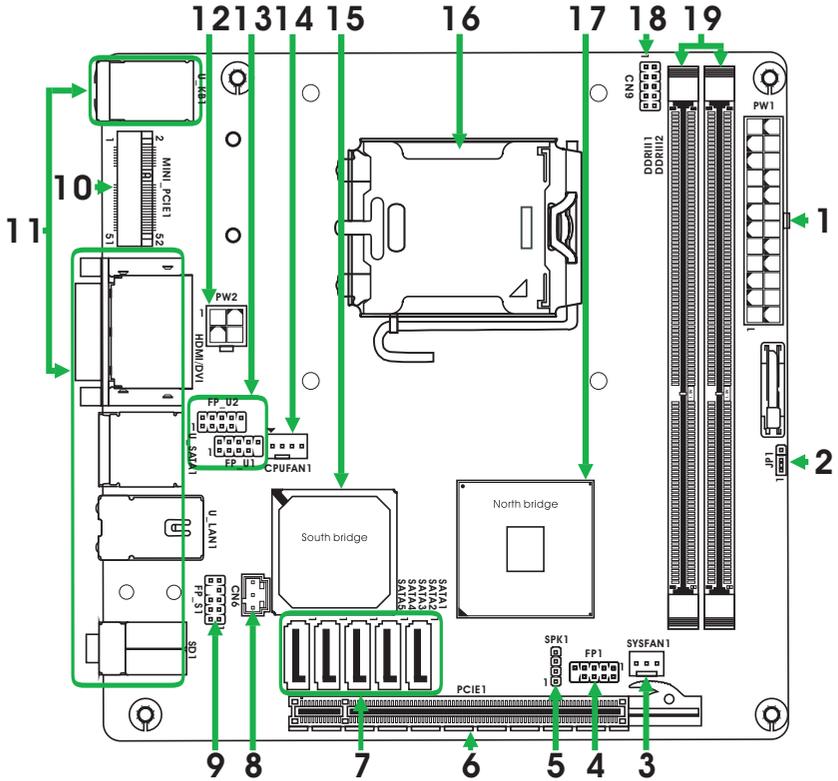
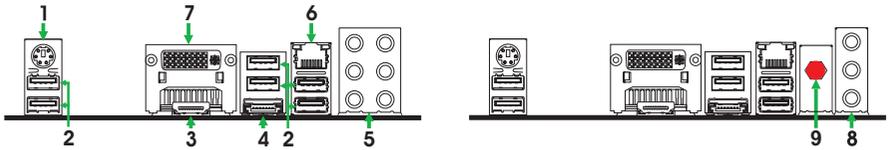


Figure 1

Figure 1. Board Layout

- |   |   |
|---|---|
| 1. 24-pin ATX Power Connector-PW1           | 11. Backpanel connectors                |
| 2. Clear CMOS Jumper-JP1                    | 12. 4-pin ATX_12V power connector-PW2   |
| 3. SYS Fan Connector-SYSFAN1                | 13. USB Headers-FP_U1~FP_U2             |
| 4. Front Panel Header-FP1                   | 14. CPU Fan Connector-CPUFAN1           |
| 5. Speaker Header-SPK1                      | 15. South Bridge                        |
| 6. PCI Express x 16 Slot-PCIE1              | 16. CPU Socket                          |
| 7. Serial-ATA (SATA) Connectors-SATA1~SATA5 | 17. North Bridge                        |
| 8. SPDIF-Out Header-CN6                     | 18. COM Header_CN9 (Optional)           |
| 9. Front pannel audio Header-FP_S1          | 19. DDRIII DIMM Sockets-DDRIII1~DDRIII2 |
| 10. Mini PCIE Slot-MINI_PCIE1               |   |

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

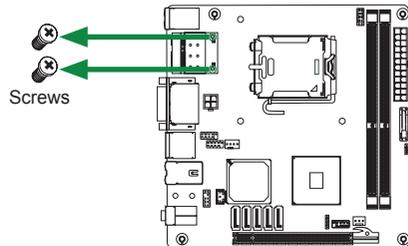
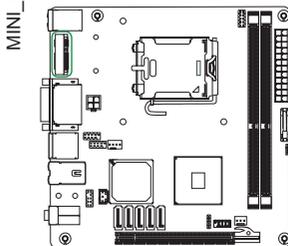
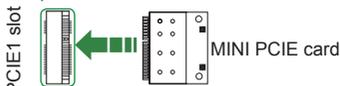
7. DVI Port

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

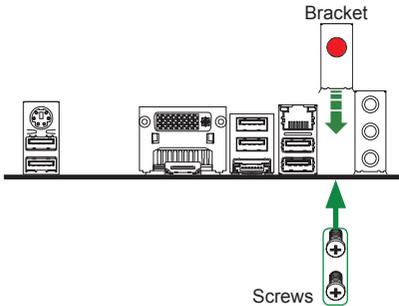
9. WiFi antenna connector (Optional)

Refer to the following to install the WiFi antenna modules.

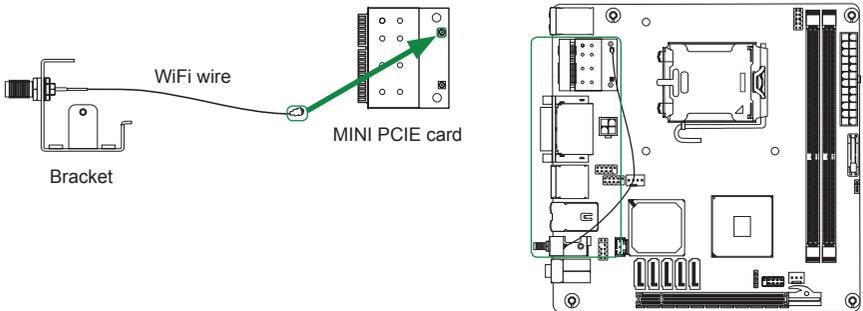
Step 1. Secure the MINI PCIE card into the MINI\_PCIE1 slot with screws.



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

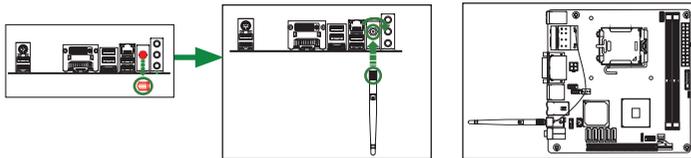


Step 3. Connect the WiFi wire to the MINI PCIE card as the following picture shows.

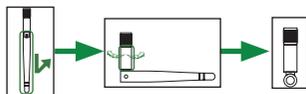


Step 4. Remove the red cap from the WiFi antenna connector.

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 Modules
- 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 installation 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.



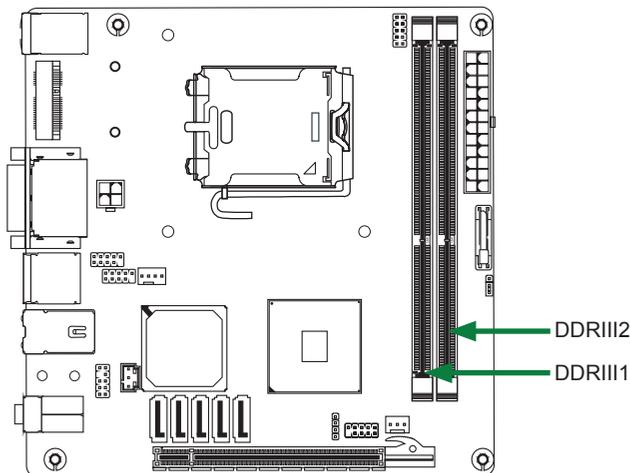
## Installing the CPU Fan

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 Modules

This motherboard accommodates two memory modules. It can support two 240-pin DDR3 1333/1066/800. The total memory capacity is 8 GB. You must install at least one module in any of the two slots. Refer to the following recommendations to install the memory modules.

- 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



Note that a memory module has a notch, so it can only fit in one direction. Refer to the following procedure to install memory modules into the slots on the motherboard.

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 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.

## 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.

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## Connecting Cables and Setting Switches

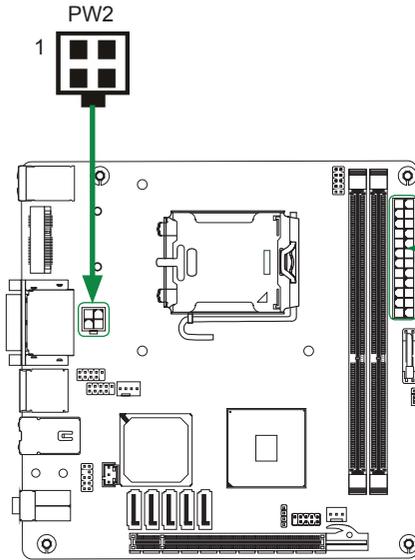
This section takes you through all the connectors and switch settings necessary on the motherboard. This will include:

- 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)
- Fan Connectors
- Expansion Slots
- 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.

## COM Header-CN9 (Optional)

CN9 - Pin Definition

Pin	Signal	Pin	Signal
1	DCD	2	RXD
3	TXD	4	DTR
5	GND	6	DSR
7	RTS	8	CTS
9	RI	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+	2	PW_LED+
3	HDD_LED-	4	PW_LED-
5	GND	6	PWR_SW
7	RESET	8	GND
9	NC	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.

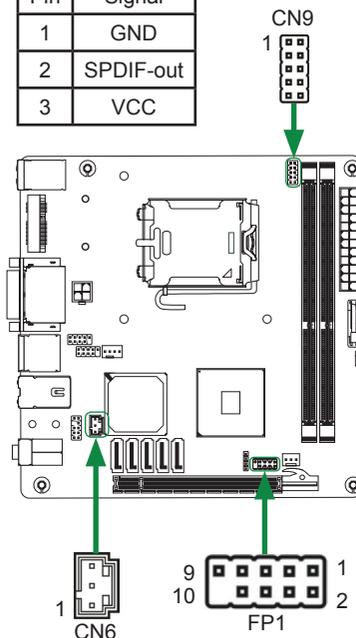
### ❑ RST SW

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.

CN6 - Pin Definition

Pin	Signal
1	GND
2	SPDIF-out
3	VCC



## 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).*

FP\_U1~FP\_U2-Pin Definition

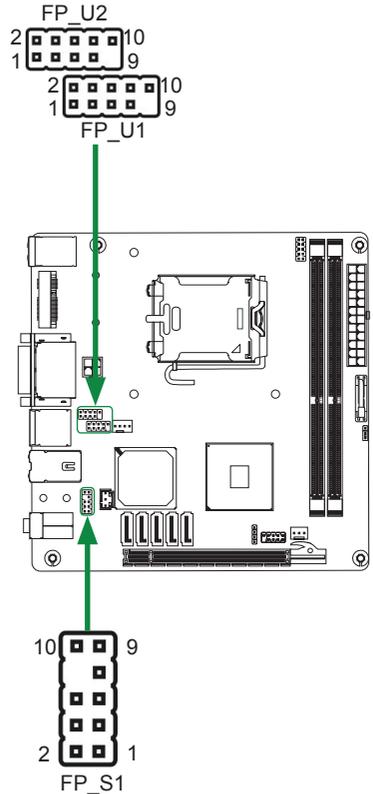
PIN	Assignment	PIN	Assignment
1	VCC	2	VCC
3	USBP0-	4	USBP1-
5	USBP0+	6	USBP1+
7	GND	8	GND
9	KEY	10	NC

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

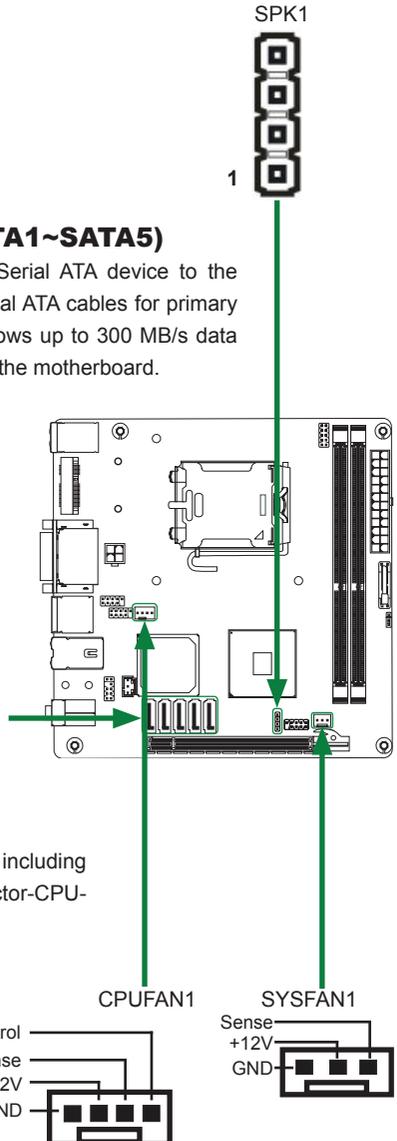
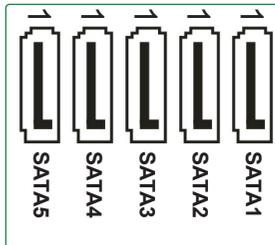
PIN	Assignment
1	VCC
2	NC
3	NC
4	SPK-

## Serial-ATA (SATA) Connectors (SATA1~SATA5)

The Serial ATA connector is used to connect the Serial ATA device to the motherboard. These connectors support the thin Serial ATA cables for primary storage devices. The current Serial ATA interface allows up to 300 MB/s data transfer rate. There are five serial ATA connectors on the motherboard.

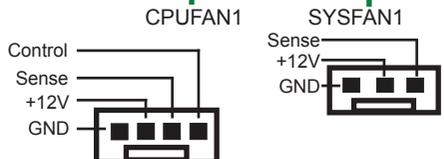
### SATA-Pin Definition

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



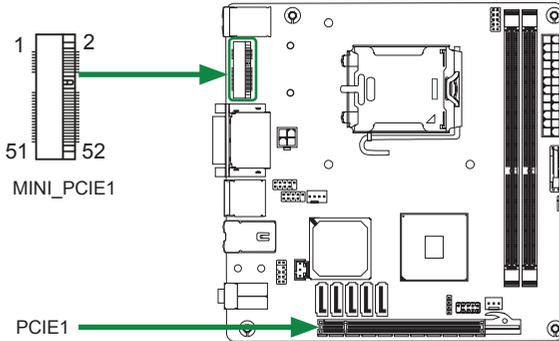
## Fan Connectors

There are two fan connectors on the motherboard, including system fan connector-SYSFAN1 and CPU fan connector-CPU-FAN1.



## 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 complying 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

 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.

Refer to the following procedure to verify/change BIOS settings.

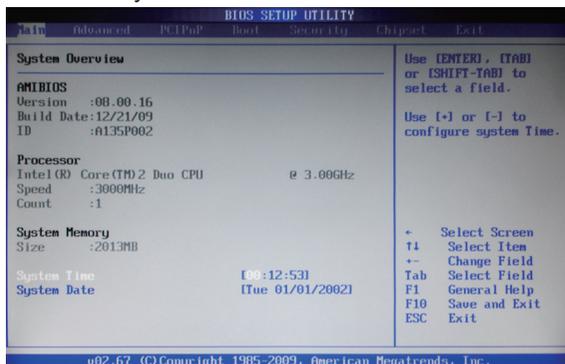
1. Power on the computer.,
2. Press the **Del** key when the following message briefly displays at the bottom of the screen during the Power On Self Test (POST).

Pressing **Del** takes you to the BIOS Setup Utility.

**Note: 1. We reserve the right to update the BIOS version presented in the manual. The BIOS pictures shown in this section are for reference only.**  
**2. It is strongly recommended that you do not change the default BIOS settings. Changing some settings could damage your system.**

## Main Menu

This menu gives you an overview of the general system specifications. The BIOS automatically detects the items in this menu.

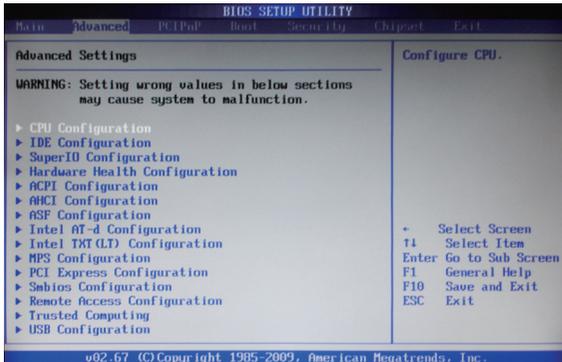


**Note: Users please note that the data in gray is non-changeable, and the others are for selection.**

- AMI BIOS**  
Displays the auto-detected BIOS information.
- Processor**  
Displays the auto-detected CPU specification.
- System Memory**  
Displays the auto-detected system memory.
- System time**  
Allows you to set the system time.

## Advanced Menu

The Advanced menu items allow you to change the setting for the CPU and other system devices. Press <enter> to display the configuration options:



## CPU Configuration

The items in this menu show the CPU-related information that the BIOS automatically detects. Press <enter> to display the configuration options:

- Configure advanced CPU settings**  
Displays the auto-detected CPU information.
- Hardware Prefetcher**  
Use this item to enable or disable hardware prefetcher (hardware prefetch mechanism).
- Adjacent Cache Line Prefetch**  
Use this item to enable or disable the adjacent cache line prefetch mode. If you disable this item, only one 64-bit line will be prefetched from the 128-bit section (including the required data). If you enable this item, two lines will be prefetched whether there is required data or not.
- Max CPUID Value Limit**  
Allows you to determine whether to limit CPUID maximum value. Set this item to [Disable] Windows XP operating system; set this item to [Enable] for legacy operating system such as Windows NT4.0..
- Intel(R) Virtualization Tech**  
Hardware Virtualization Technology enables processor feature for running multiple simultaneous virtual machines allowing specialized software applications to run in full isolation of each other.
- Execute-Disable Bit Capability**  
This function enhances protection of your computer, reducing exposure to viruses and malicious buffer overflow attacks when working with its supporting software and system.
- Core Multi-Processing**  
Use this option to enable or disable Core Multi-Processing.
- PECI**  
Use this option to enable or disable PECI (Platform Environment Control Interface).
- Intel(R) SpeedStep(tm) tech**  
Use this option to enable or disable Intel® SpeedStep™ Technology.
- Intel(R) C-STATE tech**  
Use this option to enable or disable Intel® C-STATE Technology.

## IDE Configuration

The items in this menu allow you to set or change the configurations for the IDE devices installed in the system. Press <enter> to display the configuration options:

**SATA#1/2 IDE Configuration**

The items allow you to configure SATA#1/2.

**Configure SATA#1 as**

This item allows you to set the SATA#1 to IDE/RAID/AHCI mode.

**Primary, Secondary, Third and Fourth IDE Master/Slave**

This displays the status of auto detection of IDE devices.

**Hard Disk Write Protect**

This item will be effective only if device is accessed through BIOS.

**IDE Detect Time Out (Sec)**

The item allows you to select the time out value for detecting ATA/ATAPI devices.

**ATA(PI) 80pin cable detection**

The item allows you to select the mechanism for detecting 80pin ATA(PI) cable.

## SuperIO Configuration

The items in this menu allow you to configure F71862 Super IO Chipset.

## Hardware Health Configuration

This menu gives you an overview of the Hardware Health Configuration.

## ACPI Configuration

The items in this menu allow you to set General ACPI Configuration, Advanced ACPI Configuration and Chipset ACPI Configuration.

## AHCI Configuration

The items in this menu allow you to set general AHCI configuration.

## ASF Configuration

The items in this menu allow you to set Alert Standard Format Support.

## Intel AT-d Configuration

The menu allows you to enable or disable Intel AT-d technology.

## Intel TXT(LT) Configuration

The menu allows you to configure Intel TXT(LT) Parameters.

## MPS Configuration

The item in this menu allows you to select MPS revision. The default setting is 1.1.

## PCI Express Configuration

The item in this menu allows you to enable or disable PCI Express L0s and L1 link power states.

## Smbios Configuration

The item in this menu allows you to enable or disable Smbios Smi Support.

## **Remote Access Configuration**

The item in this menu allows you to configure Remote Access type and parameters.

## **Trusted Computing**

The item in this menu allows you to enable or disable TCG/TPM support in BIOS.

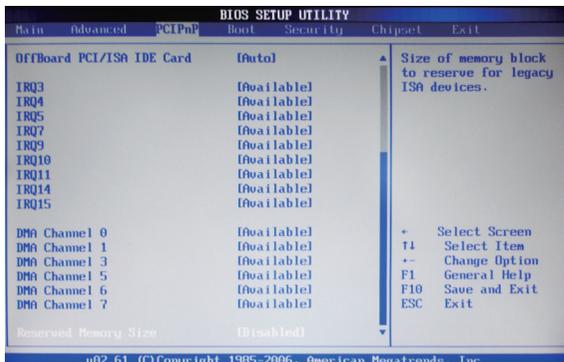
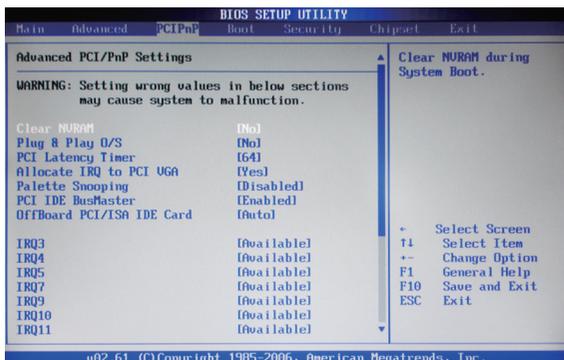
## **USB Configuration**

The items in this menu allow you to change the USB-related features. Press <enter> to display the configuration options:

- Legacy USB Support**  
Allows you to enable or disable support for USB devices on legacy operating systems.
- USB 2.0 Controller Mode**  
Allows you to configure the USB 2.0 controller in HiSpeed or Full Speed.
- BIOS EHCI Hand-Off**  
Allows you to enable support for operating systems without an EHCI hand-off feature.
- Legacy USB1.1 HC Support**  
Allows you to enable or disable Legacy USB1.1 HC support.

## PCI/PnP Menu

The PCI PnP menu items allow you to change the advanced settings for PCI/PnP devices. The menu includes setting IRQ and DMA channel resources for either PCI/PnP or legacy ISA devices, and setting the memory size block for legacy ISA devices. Press <enter> to display the configuration options:



### Clear NVRAM

The items allow you to select whether clear NVRAM during system boot.

### Plug and Play O/S

When set to [No], BIOS configure all the devices in the system. When set to [YES] and if you install a Plug and Play operating system, the operating system configures the Plug and Play devices not required for boot.

### PCI Latency Timer

Allows you to select the value in units of PCI clocks for PCI device latency timer register.

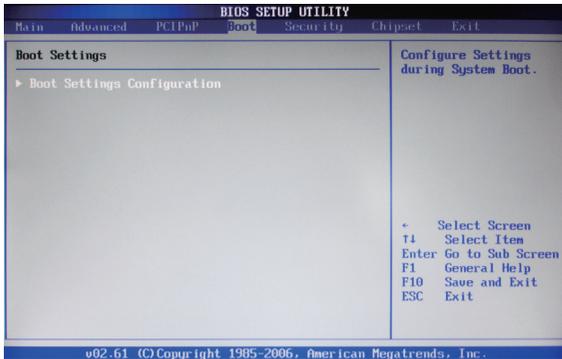
### Allocate IRQ to PCI VGA

When set to [YES], BIOS assigns an IRQ to PCI VGA card if the requests for an IRQ. When set to [No], BIOS does not assign an IRQ to the PCI VGA card even if requested .

- Palette Snooping**  
When set to [Enabled], the palette snooping feature informs the PCI devices that an ISA graphics device is installed in the system so that the latter can function correctly.
- PCI IDE BusMaster**  
When set to [Enabled], BIOS use PCI busmastering for reading/writing to IDE drives.
- OffBoard PCI/ISA IDE Card**  
Use this option to set the PCI slot number for some PCI IDE Cards holding.
- IRQ3/4/5/7/9/10/11/14/15**  
These items allow you to set the Interrupt Request.
- DMA Channel 0/1/3/5/6/7**  
Use these items to set the Direct Memory Access Channel.
- Reserved Memory Size**  
This item allows you to set the size of memory block to reserve for legacy ISA devices.

## Boot Menu

The Boot menu items allow you to change the system boot options. Press <enter> to display the configuration options:



## Boot settings configuration

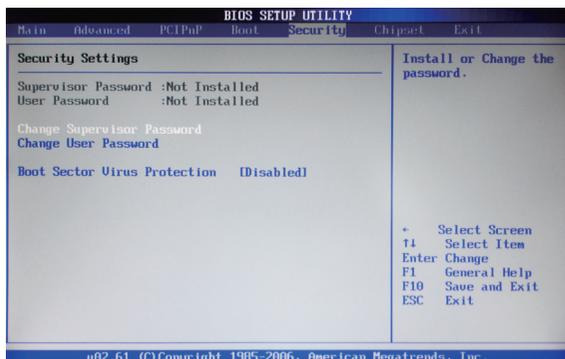
The items allow you to configure Boot settings. Press <enter> To display the configuration options:

- Quick Boot**  
Enabling this item allows the BIOS to skip some power on self tests while booting to decrease the time needed to boot the system. When set to [Disabled], BIOS performs all the POST items.
- Quiet Boot**  
When set to [Disabled], displays normal POST message. When set to [Enabled], displays OEM Logo instead of POST messages.
- AddOn ROM Display Mode**  
Sets the display mode for option ROM.
- Bootup Num-Lock**  
Allows you to select the power-on state for the NumLock.

- PS/2 Mouse Support**  
Allows you to enable or disable support for PS/2 mouse.
- Wait for 'F1' If Error**  
When set to [Enabled], the system waits for the F1 key to be pressed when error occurs.
- Hit 'DEL' Message Display**  
When set to [Enabled], the system displays the message "press DEL to run setup" during POST.
- Interrupt 19 Capture**  
When set to [Enabled], this function allows the option ROMs to trap interrupt 19.

## Security Menu

The security menu items allow you to change the system security settings. Press <enter> to display the configuration options:



### Change Supervisor/User Password

Select this item to set or change the supervisor/user password. The Supervisor/User Password item on top of the screen shows the default setting: [Not Installed]. After you set a password, this item shows [Installed].

To set a Supervisor/User Password:

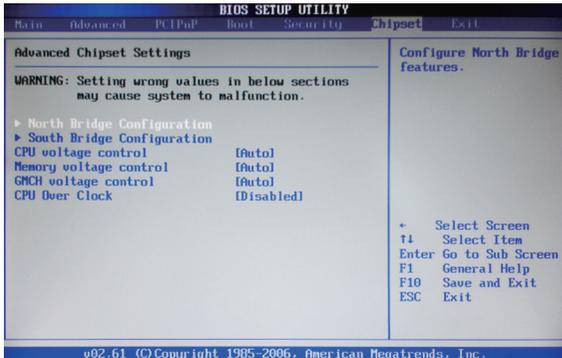
1. Select the item [Change Supervisor/User Password] and press <Enter>.
2. From the password box, type a password composed of at least six letters and/or numbers, then press <Enter>.
3. Confirm the password when prompted:  
The message "Password Installed" appears after you successfully set your password.  
To change the supervisor/user password, follow the same steps as setting a user password.  
To clear the supervisor/user password, select the item [Change Supervisor/User password], then press <enter>. The message "Password Uninstalled" appears.

### Boot Sector Virus Protection

The item allows you to enable or disable boot sector virus protection.

## Chipset Menu

The chipset menu items allow you to change the advanced chipset settings. Press <enter> to display the sub-menu:



### North bridge Configuration

The item allows you to configure north bridge features, including Memory, Graphics, PEG Port and so on.

### South bridge Configuration

The item allows you to configure south bridge features, including USB, HDA, SMBUS, and so on.

### CPU/Memory/GMCH voltage control

The items allow you to configure the CPU/memory/GMCH voltage.

### CPU Over Clock

The item allows you to enable or disable CPU overclocking technology.

## Exit Menu

The exit menu items allow you to load the option or failsafe default values for the BIOS items, and save or discard your changes to the BIOS items. Press <enter> to display the sub-menu:



## Save Changes and Exit

Select this item and press <Enter> to save the changes that you have made in the BIOS Setup and exit the BIOS Setup. When the dialog box [Save configuration changes and exit setup?] appears, select [OK] to save and exit, or select [Cancel] to return to the main menu.

## Discard Changes and Exit

Select this option only if you do not want to save the changes that you have made to the setup program. If you made changes to fields other than system date, system time, and password, the BIOS asks for a confirmation before exiting.

## Discard Changes

This option allows you to discard the selections you have made and restore the previously saved values. After selecting this option, a confirmation window appears. Select [Ok] to discard any change and load the previously saved values.

## Load Optimal Defaults

This option allows you to load the default values for each of the parameters on the setup menus. When you select this option, a confirmation window appears. Select [Ok] to load default values. Select [Cancel] to make other changes before saving the values to the non-volatile RAM.

## Load Failsafe Defaults

This option has been set by the manufacturer and represents settings which provide the minimum requirements for your system to operate.

## FLASH Update Procedure

The program AFUDOS XX.ROM is included on the driver CD (D:\Utility\AFUDOS XX.ROM). 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 AFUDOS XX.ROM to the diskette.
2. Allow the PC system to boot from the DOS diskette.
3. At the DOS prompt, type

**AFUDOS XX.ROM /P /C /B /N /X <ENTER>**

**Note: XX (the BIOS file name) can be defined by users.**

4. Wait until the flash-update is complete.
5. 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.**

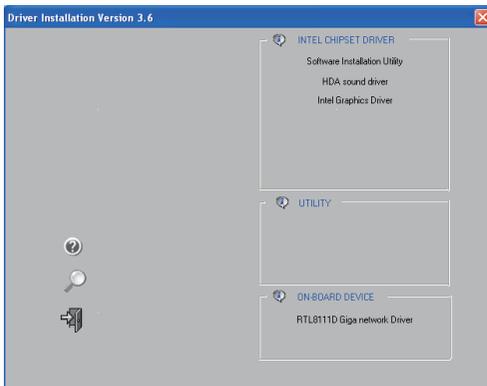
The kit comes with a CD that contains utility drivers and additional INTEL software.

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

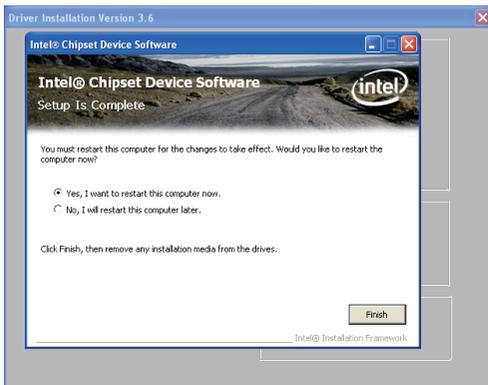
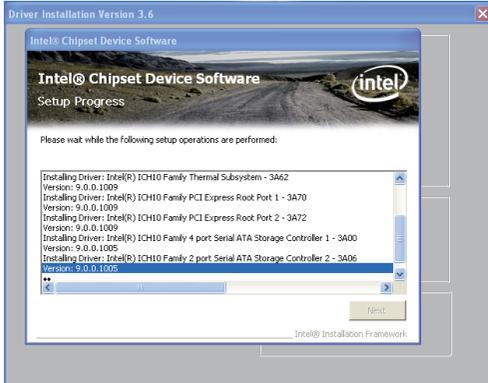
- Software Installation Utility
- HDA Sound driver
- Intel Graphics Driver
- RTL8111D Giga network Driver

## Drivers Installation

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



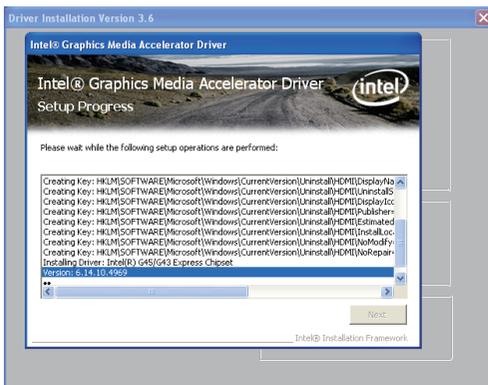
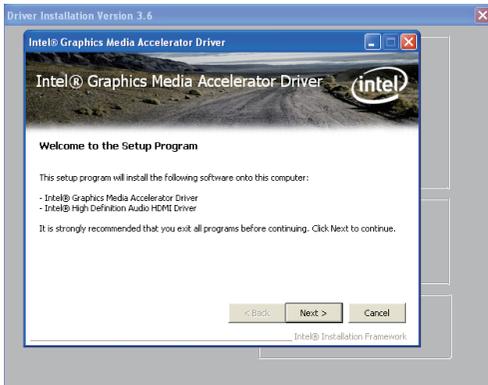
## 2. Left-click software installation utility, begin loading

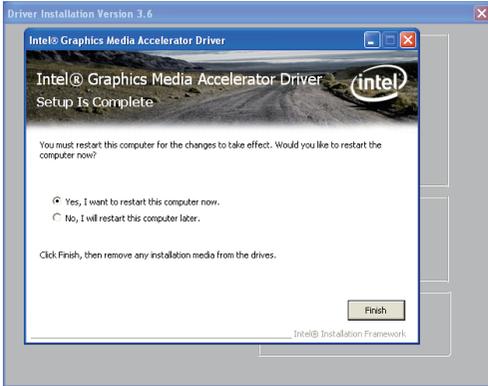




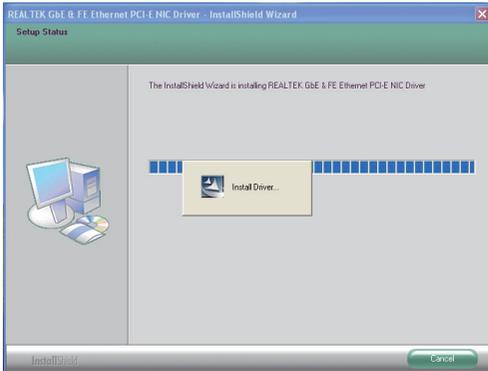
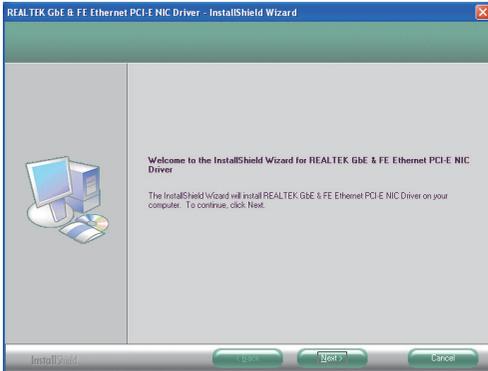


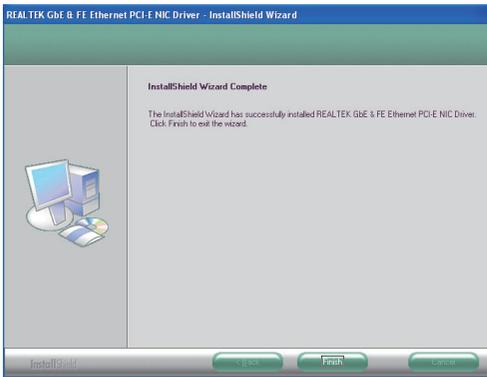
#### 4. Left-click Intel Graphics Driver, begin loading



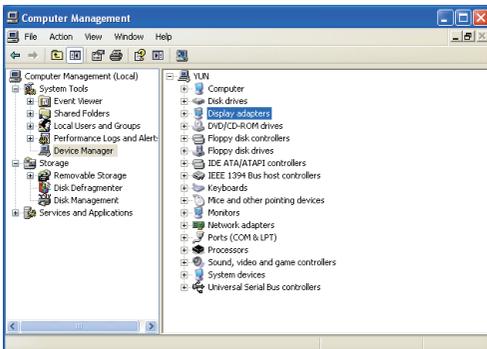


5. Left-click RTL8111D Giga network Driver, begin loading





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.



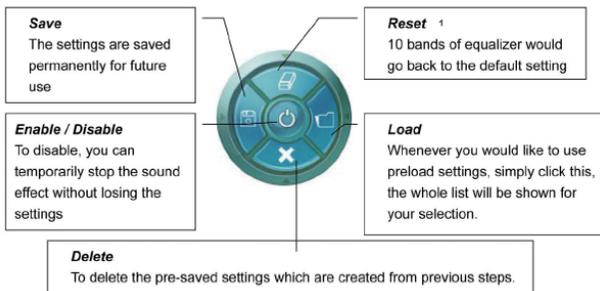
### Environment Simulation

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.

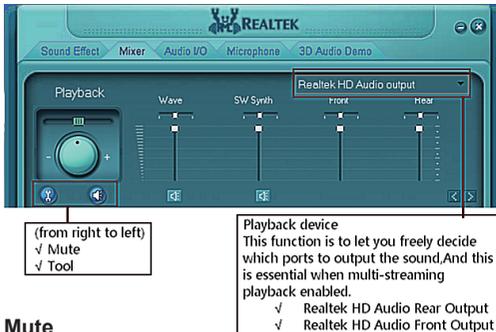
**Key Adjustment:** Using “Up/Down Arrow” to find a key which better fits your vocal range.

## 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.

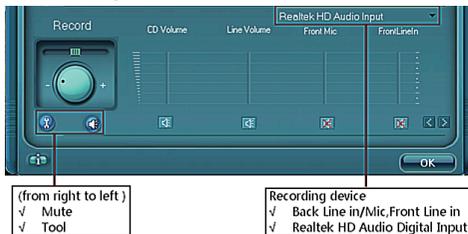
#### ✓ Advanced controls

#### ✓ 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.

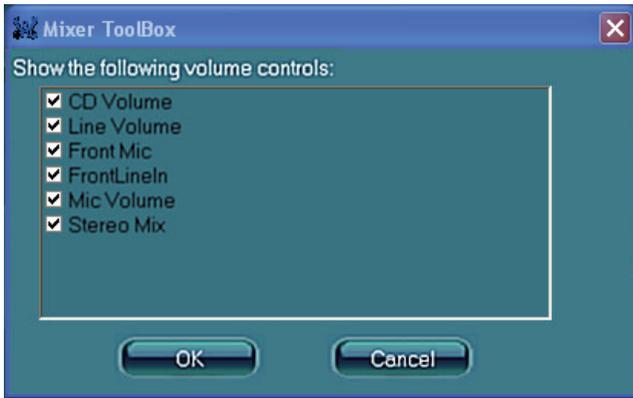
#### ✓ Advanced controls.

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

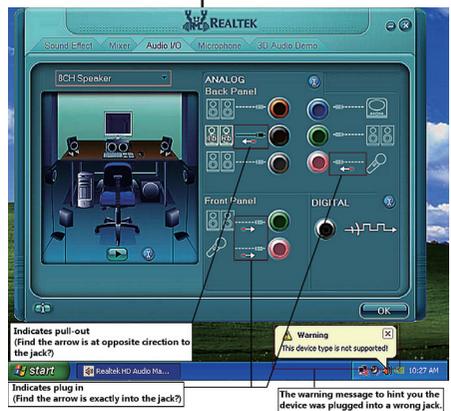
**Step 1:** Plug in the device in any available jack.

**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

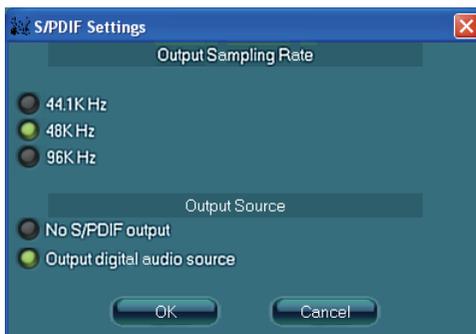
Click  to access connector settings



- ✓ **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 **Sony/Philips Digital Interface**, 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

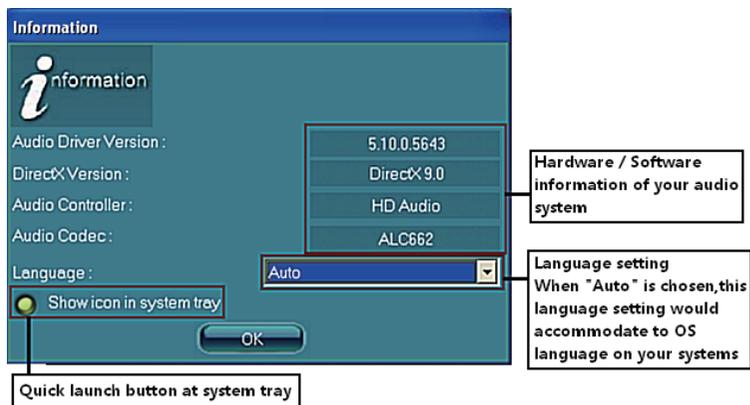
This function prevents playback sound from being recorded by microphone together with your sound. For example, you might have chance to use VOIP function through Internet with your friends. The voice of your friend will come out from speakers (playback). However, the voice of your friend might also be 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

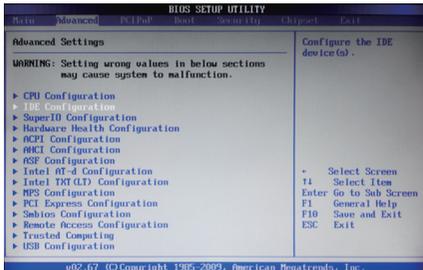


This section provides information about your current system audio device.

## SATA RAID User Manual

### Setting up the BIOS

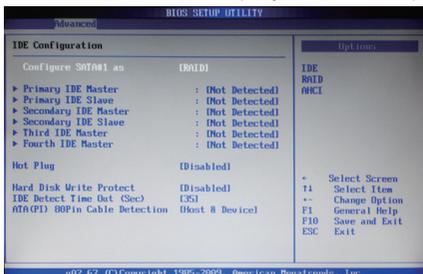
1. Setting your computer, then press <Delete> to enter BIOS SETUP UTILITY.
2. Use the arrow key to select Advanced menu. When enter the Advanced menu, select the Item "IDE Configuration".



3. Press <Enter> to display the IDE Configuration, then select the item "SATA mode select" and set it to [RAID].



4. Press enter to display "RAID Setup".



5. From the Raid Setup window, enable RAID, then enable the disks that you want to use as RAID disks.
6. 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.

```
Intel(R) Matrix Storage Manager option ROM v8.0.0.1039 ICH10R wRAID5
Copyright(C) 2003-08 Intel Corporation. All Rights Reserved.

RAID Volumes :
None defined.

Physical Disks :
Port   Drive Model   Serial #           Size   Type/Status(Vol ID)
0      ST3120026AS   3JT354CP          111.7GB Non-RAID Disk
1      ST3120026AS   3JT329JX          111.7GB Non-RAID Disk

Press [Ctrl-I] to enter Configuration Utility...
```

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.

```
Intel(R) Matrix Storage Manager option ROM v8.0.0.1039 ICH10R wRAID5
Copyright(C) 2003-08 Intel Corporation. All Rights Reserved.

[ MAIN MENU ]
1. Create RAID Volume
2. Delete RAID Volume
3. Reset Disks to Non-RAID
4. Exit

[ DISK/VOLUME INFORMATION ]
RAID Volumes :
None defined.

Physical Disks :
Port   Drive Model   Serial #           Size   Type/Status(Vol ID)
0      ST3120026AS   3JT354CP          111.7GB Non-RAID Disk
1      ST3120026AS   3JT329JX          111.7GB Non-RAID Disk

[↑]-Select      [ESC]-Exit      [ENTER]-Select Menu
```

## 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>.

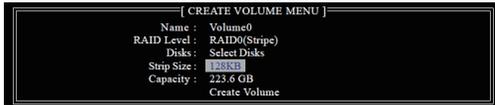
```
[ MAIN MENU ]
1. Create RAID Volume
2. Delete RAID Volume
3. Reset Disks to Non-RAID
4. Exit
```

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

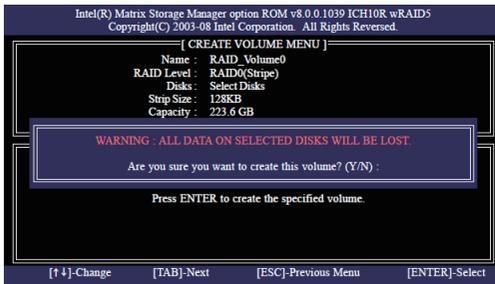
```
[ CREATE VOLUME MENU ]
Name : Volume0
RAID Level : RAID0(Stripe)
Disks : Select Disks
Strip Size : 128KB
Capacity : 223.6 GB
Create Volume
```

**Note:**

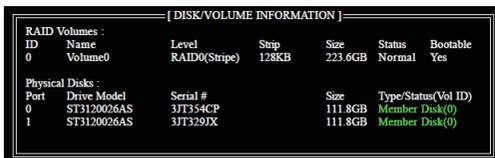
*When more than two HDDs are installed in your computer, the Disks item will be selectable. Then users can select the HDD that you want to belong to the RAID set. Please be noticed that selecting a wrong disk will result in losing the original data of the HDD.*



- 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>.



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



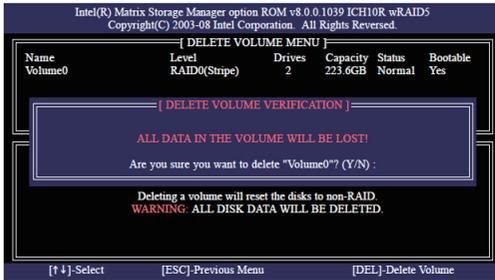
**Deleting a RAID set**

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



- 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.

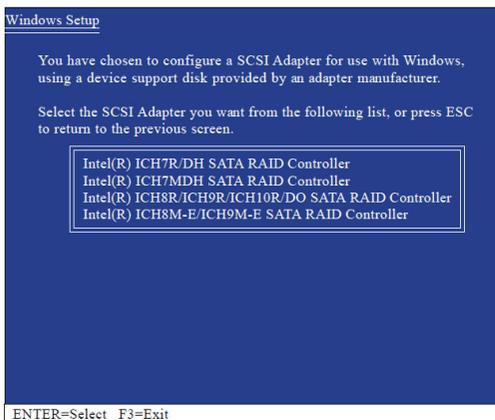
## Installing the RAID Drivers and Operating System

### 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>.

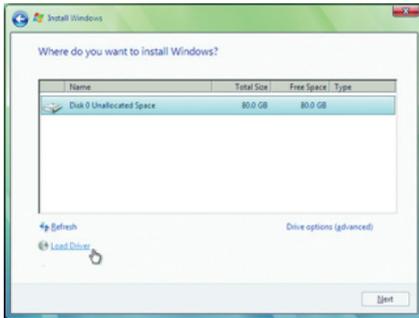


2. Then a controller menu as the screen below will appear. Select **Intel(R) ICH8R/ICH9R/ICH10R/DO SATA RAID Controller** and press <Enter>. On the next screen, press <Enter> to continue the driver installation. After the driver installation, you can proceed with the Windows XP installation.



## B. Installing Windows Vista

- 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**.



- 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:

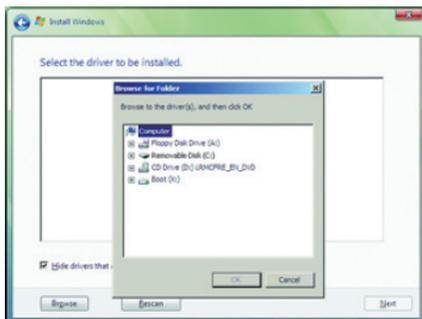
Insert the motherboard driver disk into your system and browse to the following directory:\

**BootDrv\iMSM\32Bit**

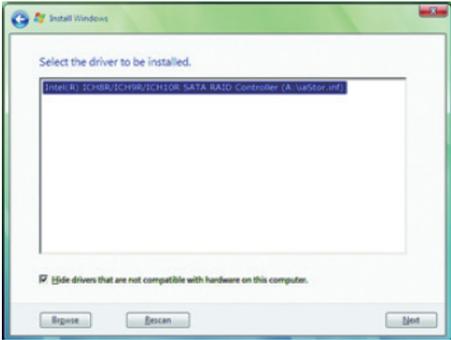
For Windows Vista 64-bit, browse to the **64Bit** folder.

Method B:

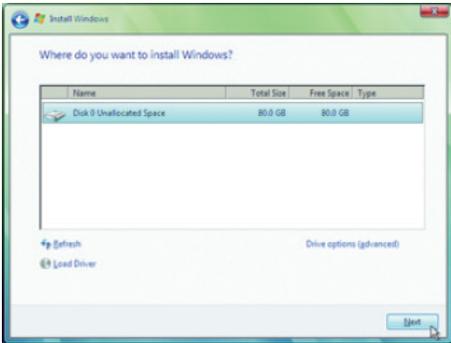
Insert the USB flash drive containing the driver files and browse to the **32Bit** (for Windows Vista 32-bit) or **64Bit** (for Windows Vista 64-bit) folder.



- When a screen as below appears, select **Intel(R) ICH8R/ICH9R/ICH10R/DO SATA RAID Controller (A\_Vista01.inf)** and click **Next**.



- 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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