

ZOTAC[®] Motherboard



User's Manual



X58

INTEL SOCKET 1366 - PCI EXPRESS

MOTHERBOARD



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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Before You Begin...

Parts NOT in the Kit

This kit contains all the hardware necessary to install and connect your new Intel® X58 motherboard. However, it does not contain the following items that must be purchased separately to make the motherboard functional.

- Intel® Core i7 Series CPU
- Cooling fan for the microprocessor
- System memory
- Graphics Card

These instructions tell you how to install each of the parts listed so you can have a functioning motherboard. As you go through the installation instructions, we are assuming you have purchased the necessary parts.

Intentions of the Kit

This kit provides you with the motherboard and all connecting cables necessary to install the motherboard into a PC cabinet. If you are building a PC, you will use most of the cables provided in the kit. If however, you are replacing a motherboard, you will not need many of the cables.

When replacing a motherboard in a PC cabinet, you will need to reinstall an operating system even though the current drives have an operating system.

Motherboard Specifications

❑ Size

- ❖ ATX form factor of 12x9.6 inch

❑ Microprocessor support

- ❖ Supports Intel® Core i7 Series CPU
- ❖ Supports Intel® Quick Path Interconnect (Intel® QPI) at the following Frequency Ranges:4.8 and 6.4GT/s.

❑ VRD 11.1 On board

- ❖ Flexible motherboard design with on board VRD 11.1.

❑ Operating systems

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

❑ System Memory

- ❖ Supports triple-channel (192 bits wide) DDRIII memory interface.
- ❖ Supports DDRIII 800/1066/1333
- ❖ Maximum memory size: 24GB

❑ USB 2.0 ports

- ❖ Supports hot plug and play
- ❖ Twelve USB 2.0 ports (four rear panel ports, eight from onboard USB headers)
- ❖ Supports wake-up from S1, S3
- ❖ Supports USB 2.0 protocol up to 480Mbps transmission rate

❑ Onboard Serial ATAII

- ❖ Independent DMA operation on six ports
- ❖ Data transfer rates of 3 Gb/s

❑ On board PCI Express Lan (RTL8111C)

- ❖ PCI Express base specification1.0a compliant
- ❖ Compliant to 802.3x flow control support
- ❖ 10/100/1000 IEEE 802.3 compliant
- ❖ Wake On LAN (WOL) power management support

❑ Onboard IEEE1394

- ❖ One 1394 header and one 1394 port onboard
- ❖ Compliant with IEEE1394 OHCI specifications V1.0 and V1.1
- ❖ Compliant with PCI specifications
- ❖ High performance bus mastering support

Onboard High Definition Audio

- ❖ Supports 8-channel and 6-channel
- ❖ Supports Jack-Sensing function
- ❖ One SPDIF out port on board

Green Function

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

PCI Express Interface

- ❖ PCI Express Generation 2.0 compatible
- ❖ 5 GHZ support, for a total bandwidth of 5Gbps per direction per lane
- ❖ Wake# function is supported
- ❖ Clock spread spectrum capability

Expansion slots

- ❖ 2 PCI express X16 slot
- ❖ 1 PCI Express X4 slot
- ❖ 1 PCI Express X1 slot
- ❖ 2 PCI bus master slots - ver 2.2 compliant

Onboard PCIE to IDE Controller

- ❖ JMB368 PCIE to IDE Controller
- ❖ Supports all IDE device

Onboard Debug display

- ❖ Display BIOS post code for advance user

Onboard power and reset button

Unpacking and Parts Descriptions

Unpacking

The Intel® X58 motherboard comes with all the necessary cables for adding a motherboard to a new chassis. If you are replacing a motherboard, you may not need many of these cables.

Be sure to inspect each piece of equipment shipped in the packing box. If anything is missing or damaged, contact your reseller.

All parts shipped in this kit are RoHS-compliant (lead-free) parts.

Motherboard Layout

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

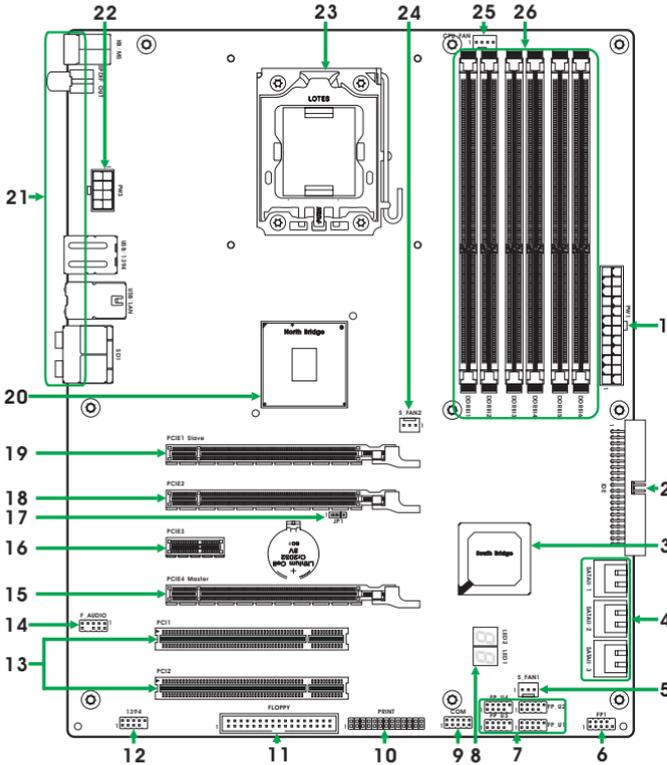
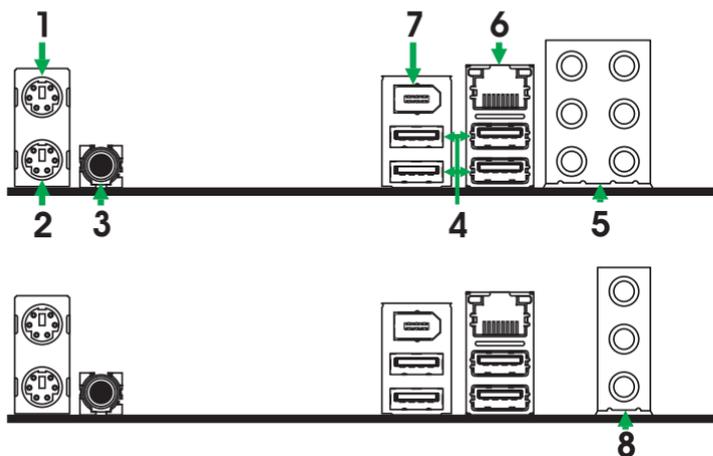


Figure 1. Board Layout

- | | |
|------------------------------------|-----------------------------------|
| 1. 24-pin ATX Power Connector | 14. Front Panel Audio Header |
| 2. IDE Connector | 15. PCI Express x16 Slots(Master) |
| 3. South Bridge | 16. PCI Express x1 Slot |
| 4. Serial-ATAII(SATAII) Connectors | 17. Clear CMOS Header |
| 5. SYS Fan1 Connector | 18. PCI Express x4 Slot |
| 6. Front Panel Header | 19. PCI Express x16 Slots(Slave) |
| 7. USB Headers | 20. North Bridge |
| 8. Debug Display | 21. Rear Panel Connectors |
| 9. COM Header(Optional) | 22. 8 Pin 12V Power Connector |
| 10. LPT Header | 23. CPU Socket |
| 11. Floppy Disk Drive Connector | 24. SYS Fan2 Connector |
| 12. IEEE1394 Headers(Optional) | 25. CPU Fan Connector |
| 13. PCI Slots | 26. DDRIII DIMM Sockets |



1. PS/2 Mouse Port
 2. PS/2 Keyboard Port
 3. SPDIF-Out Port
 4. USB Connectors

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. IEEE 1394 Connector

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

Hardware Installation

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

Preparing the motherboard

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

Installing the motherboard

Connecting cables and setting switches

Safety Instructions

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

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

Preparing the Motherboard

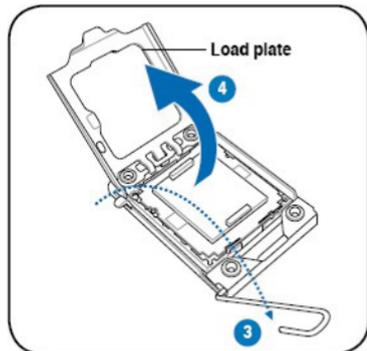
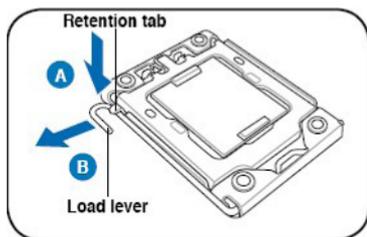
The motherboard shipped in the box does not contain a CPU or memory. You need to purchase these to complete this installation.

Installing the CPU

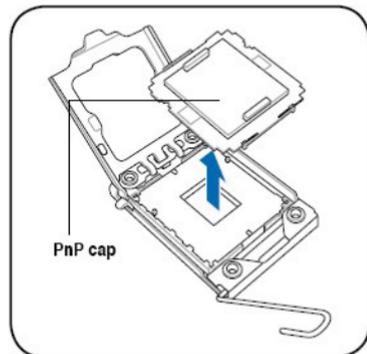
- ❖ Be very careful when handling the CPU. Make sure not to bend or break any pins on the back. Hold the processor only by the edges and do not touch the bottom of the processor.
- ❖ Use the following procedure to install the CPU onto the motherboard:
 1. Before installing the CPU, make sure that the cam box is facing towards you and the load lever is on your left.
 2. Press the load lever with your thumb (A), then move it to the left (B) until it is released from the retention tab.

Note:

To prevent damage to the socket pins, do not remove the PnP cap unless you are installing a CPU.



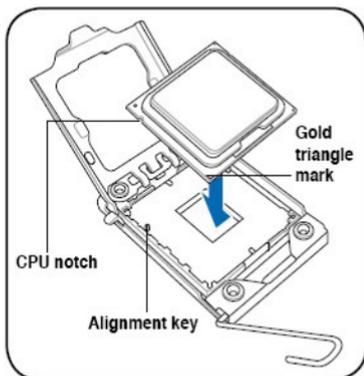
3. Lift the load lever in the direction of the arrow to a 135° angle.
4. Lift the load plate with your thumb and forefinger to a 100° angle.
5. Remove the PnP cap from the CPU socket.



6. Position the CPU over the socket, making sure that the gold triangle is on the bottom-left corner of the socket, and then it the socket alignment key into the CPU notch.

Note:

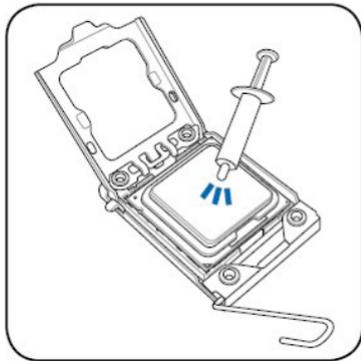
The CPU fits in only one correct orientation. DO NOT force the CPU into the socket to prevent bending the connectors on the socket and damaging the CPU!



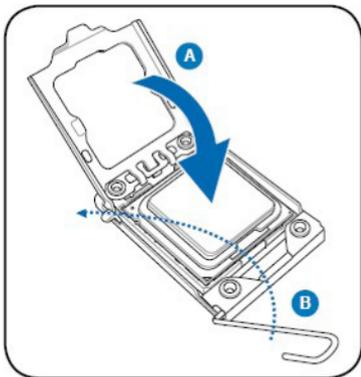
7. Apply several drops of thermal paste to the exposed area of the CPU that the heatsink will be in contact with, ensuring that it is spread in an even thin layer.

Note:

- *Some heatsinks come with pre-applied thermal paste. If so, skip this step.*
- *The thermal paste is toxic and inedible. If it gets into your eyes or touches your skin, ensure to wash it off immediately and seek professional medical help.*
- *To prevent contaminating the paste, DO NOT spread the paste with your finger directly.*



8. Close the load plate (A), and then push the load lever (B) until it snaps into the retention tab.



Installing the CPU Fan

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

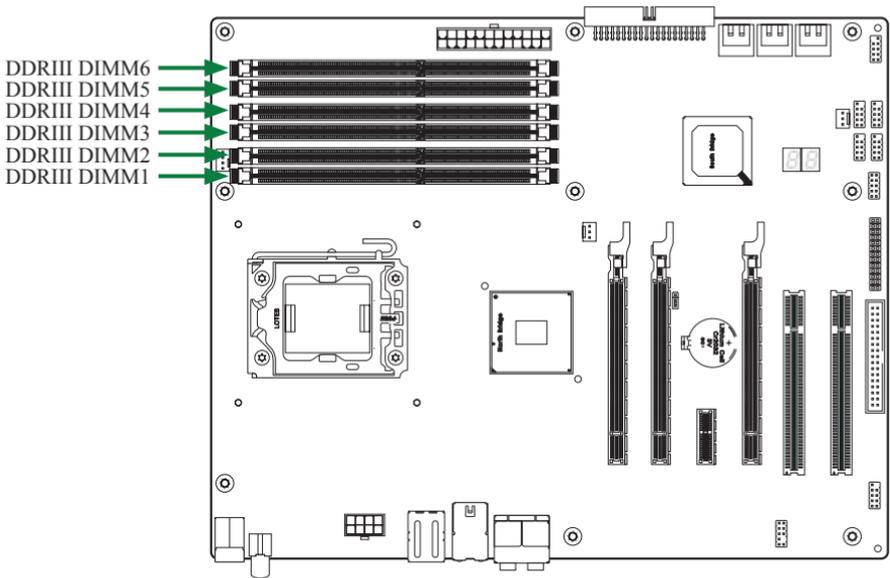
Installing Memory DIMMs

Your new motherboard has six 1.5V slots for DDRIII memory. These slots support 256 MB, 512 MB / 1GB / 2GB / 4GB DDRIII technologies. They also support three channel DDRIII memory technology 31.8GB/s. There must be at least one memory bank populated to ensure normal operation. Use the following the recommendations for installing memory.

- One DIMMs:** Supports one modules inserted into 2 or 4 or 6 DIMM slot.
- Two DIMMs:** Supports two modules inserted into slot 2,4 or 2,6 or 4,6 as one pair of Dual-channel memory configuration.
- Three DIMMs:** Supports three modules inserted into the slots 2,4,6 as one set of Triple-channel memory configuration.
- Four DIMMs:** Supports four modules inserted into the slots 1,2,4,6 as one set of Triple-channel memory configuration.
- Six DIMMs:** Supports six modules inserted into 1,2,3,4,5,6 as two set of Triple-channel memory configuration.

Attention:

any way you inset DIMM into slot ,you must inset one into slot2,4or6.If not,you can't boot-strap normally.



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

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

Installing the Motherboard

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

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

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

Installing the I/O Shield

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

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

Securing the Motherboard into the Chassis

Most computer chassis have a base with mounting studs or spacers to allow the mother board 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 using a minimum of nine(9) 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 a minimum of eight-to-ten screws.

Connecting Cables and Setting Switches

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

- Power Connections
 - ❖ 24-pin ATX power (**PW1**)
 - ❖ 8-pin ATX 12V power (**PW3**)
- Internal Headers / Connectors
 - ❖ Serial Port Header - COM
 - ❖ Front Panel Header
 - ❖ USB Headers
 - ❖ IEEE 1394 Headers
 - ❖ FP Audio Header
 - ❖ LPT Header
 - ❖ Floppy Disk Drive Connector - FDD
 - ❖ Hard Disk Connector - IDE
- Connecting Serial ATAII Cables
- Chassis Fans
- Expansion slots
- CMOS jumper settings

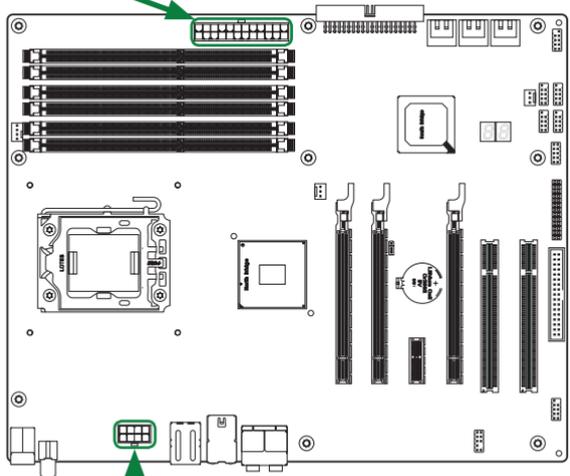
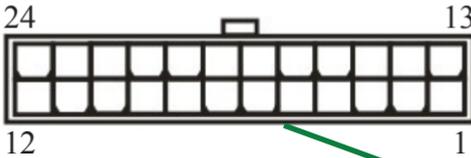
See Figure 1 to locate the connectors and jumpers referenced in the following procedure.

24-pin ATX Power (PW1)

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

Table 1. PW1 Pin Assignments
Connector

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	RSVD
9	+5V_AUX	21	+5V
10	+12V	22	+5V
11	+12V	23	+5V
12	+3.3V	24	GND



8-pin ATX 12V Power (PW3)

PW3, the 8-pin ATX 12V power connection, is used to provide power to the CPU. Align the pins to the connector and press firmly until seated.



PW3 - Pin Definition

PIN	Assignment
1	GND
2	GND
3	GND
4	GND
5	+12V
6	+12V
7	+12V
8	+12V

Front Panel Header

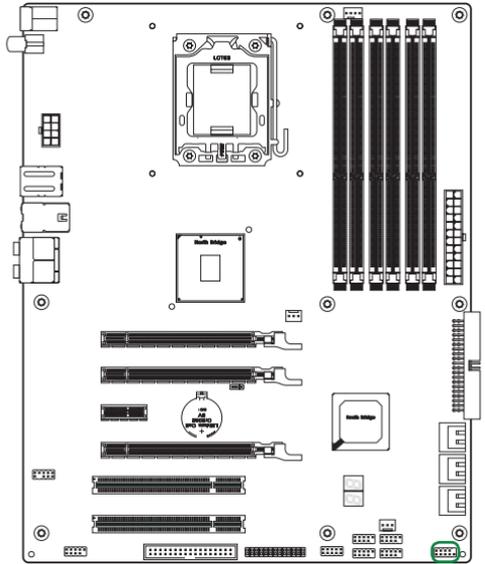
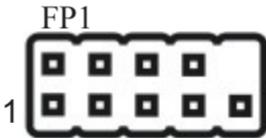
The front panel header on this motherboard is one connector used to connect the following four cables

PWRLED

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

FP1 Pin Definition

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



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

PWRSW

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.

HD_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.

RESET

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

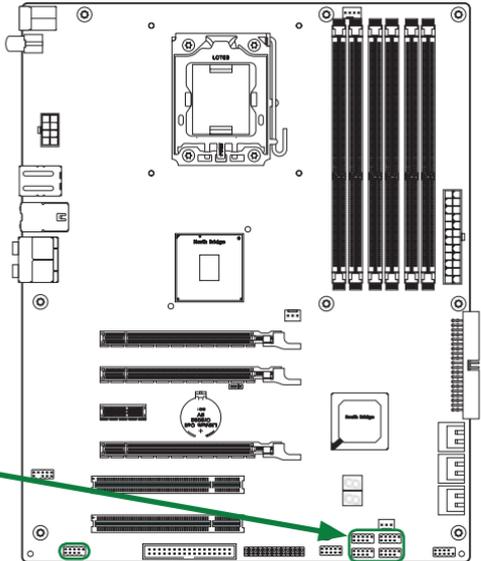
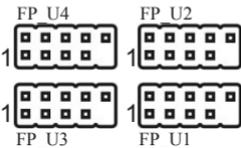
USB Headers(FP_U1~FP_U4)

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

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

USB Pin Definition

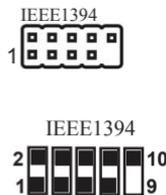
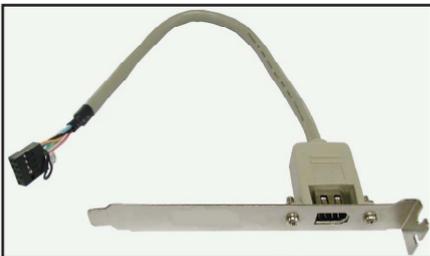
PIN	Assignment
1	VCC
2	VCC
3	USBP0-
4	USBP1-
5	USBP0+
6	USBP1+
7	GND
8	GND
9	KEY
10	OC#



IEEE 1394 Header

The motherboard provides one 1394 pin headers that allow you to connect IEEE 1394 ports. Certainly, you can connect to real panel directly.

IEEE 1394 Cable (Optional)



IEEE 1394 Pin Definition

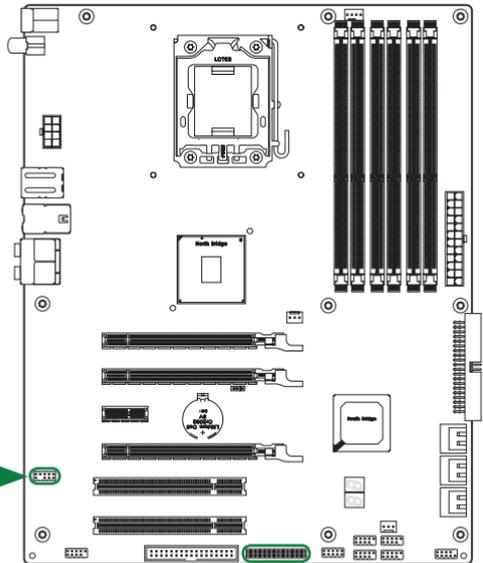
PIN	Assignment
1	TPA+
2	TPA-
3	Ground
4	Ground
5	TPB+
6	TPB-
7	Cable power
8	Cable power
9	Key (no pin)
10	Ground

FP Audio Header

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

FP - Audio Pin Definition

PIN	Assignment
1	MIC2(L)
2	GND
3	MIC2(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.

LPT Header

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



Serial Port Header - COM

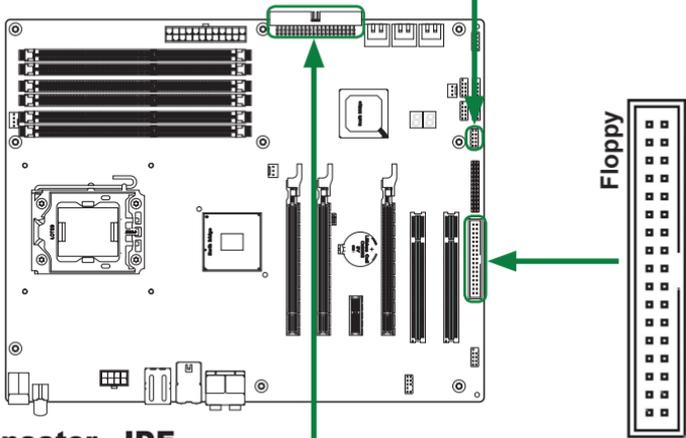
COM - Pin Definition

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



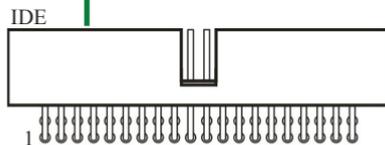
Floppy Disk Drive Connector - FDD

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



Hard Disk Connector - IDE

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

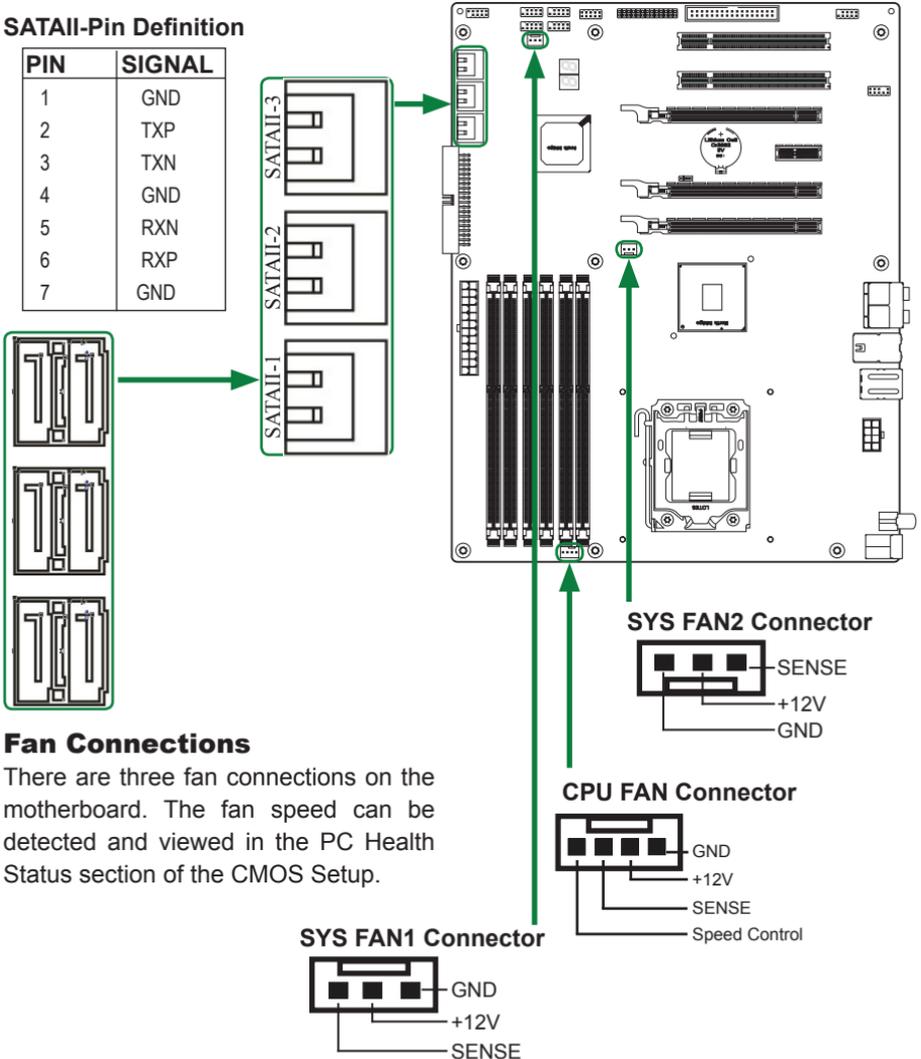


Connecting Serial ATAII Cables

The Serial ATAII connector is used to connect the Serial ATAII device to the motherboard. These connectors support the thin Serial ATAII cables for primary storage devices. The current Serial ATAII interface allows up to 300MB/s data transfer rate. There are six Serial ATAII connectors on the motherboard that support AHCI and RAID configurations.

SATAII-Pin Definition

PIN	SIGNAL
1	GND
2	TXP
3	TXN
4	GND
5	RXN
6	RXP
7	GND

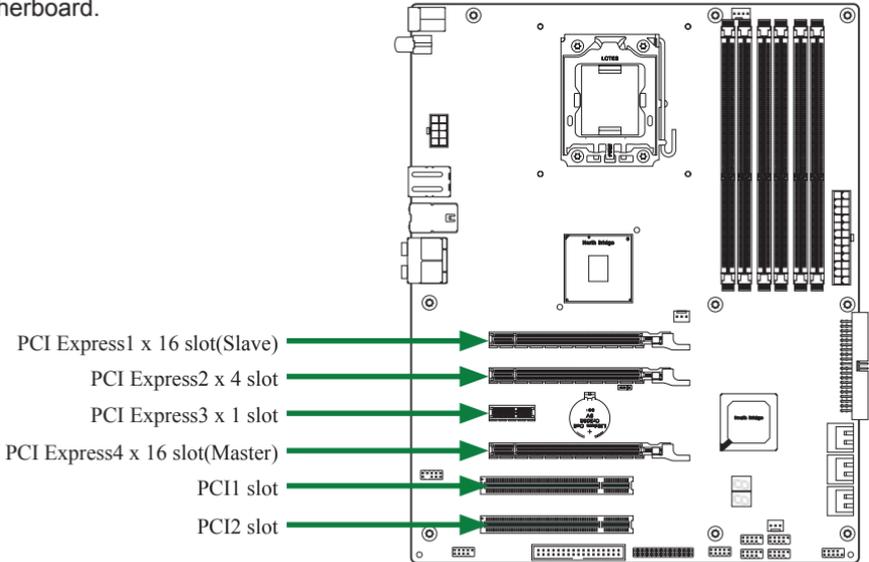


Fan Connections

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

Expansion Slots

The Intel® X58 motherboard contains six expansion slots, Four PCI Express slots and Two PCI slots. For a full list of PCI Express x16 graphics card supported by this motherboard.



PCI Slots

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

PCI Express x16 Slots

There are two PCI Express x16 slot reserved for graphics or video cards. The bandwidth of the x16 slot is up to 8GB/sec complying with PCIe 2.0 specification.

PCI Express x1 Slot(Optional)

There is one PCI Express x1 slot that is designed to accommodate less bandwidth-intensive cards, such as a modem or LAN card. The x1 slot provides 250 MB/sec bandwidth.

PCI Express x4 slot

This motherboard supports PCI Express x4 network cards, SCSI cards and other cards that comply with the PCI Express specifications.

Jumper Settings

The motherboard contains a 3-pin BIOS configuration jumper that enables all board configurations to be done in the BIOS Setup program.

Clear CMOS Jumper: JP1

The motherboard uses the CMOS RAM to store all the set parameters. The CMOS can be cleared by removing the CMOS jumper.

Use the following procedure to clear CMOS:

1. Turn off the AC power supply and connect pins 2 and 3 together using the jumper cap.
2. Return the jumper setting to normal (pins 1 and 2 together with the jumper cap).
3. Turn the AC power supply back on.

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.

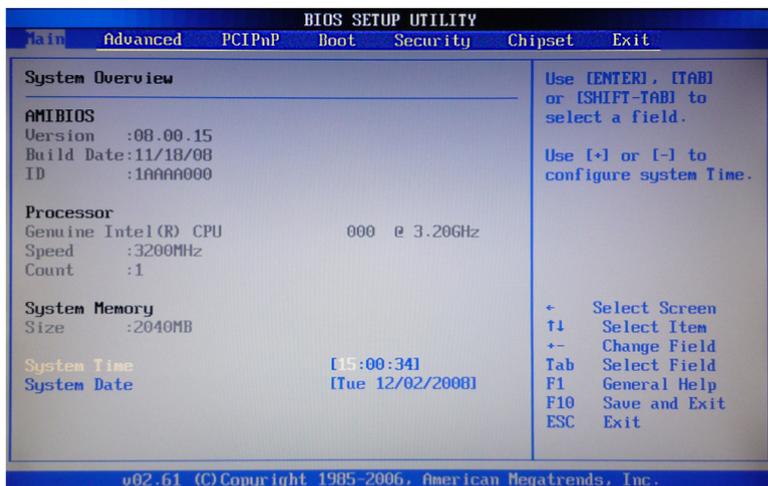
1. Power on the computer.,
2. Press the **Del** key when the following message briefly displays at the bottom of the screen during the Power On Self Test (POST).

Pressing **Del** takes you to the BIOS 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

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

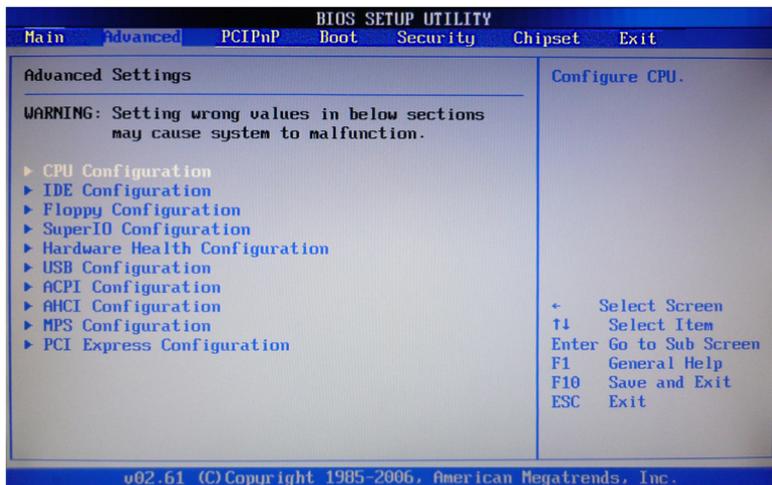


Note: Note that the data in gray is non-changeable, and the others are for selection.

- AMI BIOS**
Displays the auto-detected BIOS information
- Processor**
Display 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
- Ratio CMOS Setting**
Use this option to set CMOS ratio
- Hardware prefetcher**
This option should be enabled, in order to enable the hardware prefetcher feature.
- Adjacent Cache Line Prefetch**
This option should be enabled, in order to enable adjacent cache line prefetch feature.
- 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® Virtualization Tech**
When enable, avMM can utilize the additional HW caps, provided by Intel® Virtualization Tech.
- 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.
- Simultaneous Multi-Threading**
When disabled only one thread per enabled core is enabled.

- Active Core Count**
Use this option to active CPU core.

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 Configuration**
The items allow you to configure SATA#1.
- Configuration SATA#1 as**
The items allow you to set a type of SATA#1.
- SATA#2 Configuration**
The items allow you to configure SATA#2.
- Primary, Second, Third and Fourth IDE Master/Slave**
This displays the status of auto detection of IDE devices.
- Hard Disk Write Protect**
This will be effective only if device is accessed through BIOS.
- IDE Detect Time Out**
The items allow you to select the time out value for detecting ATA/ATAPI devices.
- ATA(PI) 80pin cable detection**
The items allow you to select the mechanism for detecting 80pin ATA(PI) cable.

Floppy Configuration

The items in this menu allow you to set or change the configurations for the floppy devices installed in the system.

Super IO Configuration

The items in this menu allow you to configure Win627DHG Super IO Chipset.

Hardware Health Configuration

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

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.
- Hotplug USB FDD Support**
This option to support hot plug USB FDD.

ACPI Configuration

The items in this menu allow you to setting general ACPI configuration.

AHCI Configuration

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

MPS Configuration

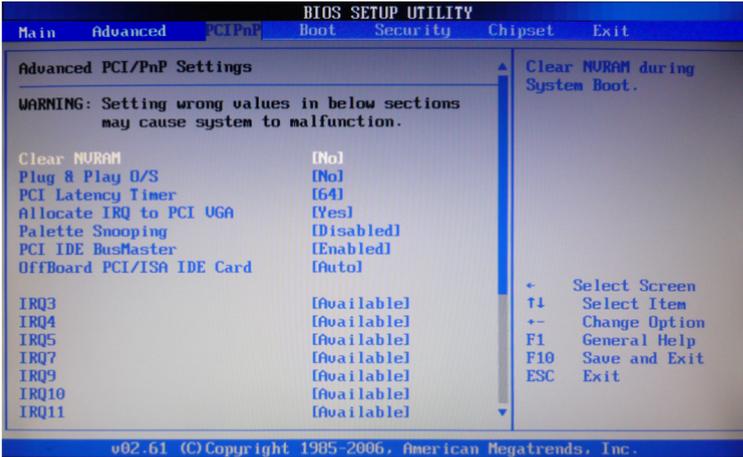
The items in this menu allow you to configure MPS.

PCI Express Configuration

The items in this menu allow you to enable or disable PCI Express L0S and L1 link power states.

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 [enable], 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 [enable], BIOS use PCI busmastering for reading /writing to IDE drives.

OffBoard PCI/ISA IDE Card

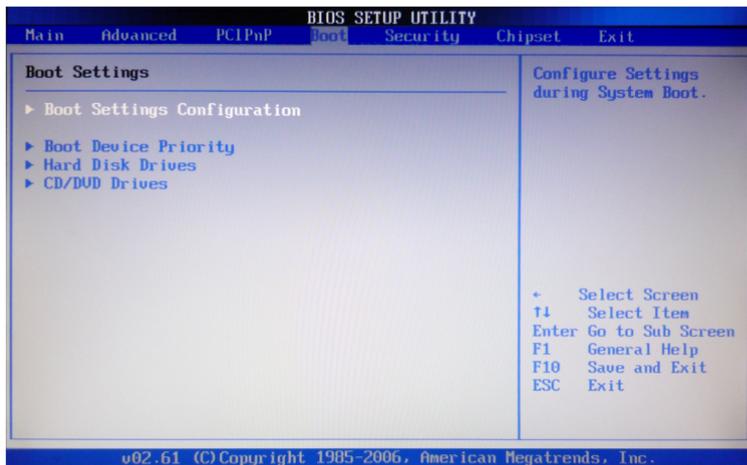
Use this option to set the PCI slot number for some PCI IDE Cards holding.

IRQ-xx assigned to

When set to [PCI Device], the specific IRQ is free for use of PCI/PnP devices. When set to [Reserved], the IRQ is reserved 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.

Add On 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 DELL to run setup" during POST.

Interrupt 19 Capture

When set to [Enabled], this function allows the option ROMs to trap interrupt 19.

Boot Graphic Adapter Priority

Use this option to select which graphics controller to use as the primary boot device.

Onboard VGA device

Use this option to enable or disable onboard VGA chip.

Boot Device Priority

The items allow you to specify the boot device priority sequence.

Hard Disk Drivers

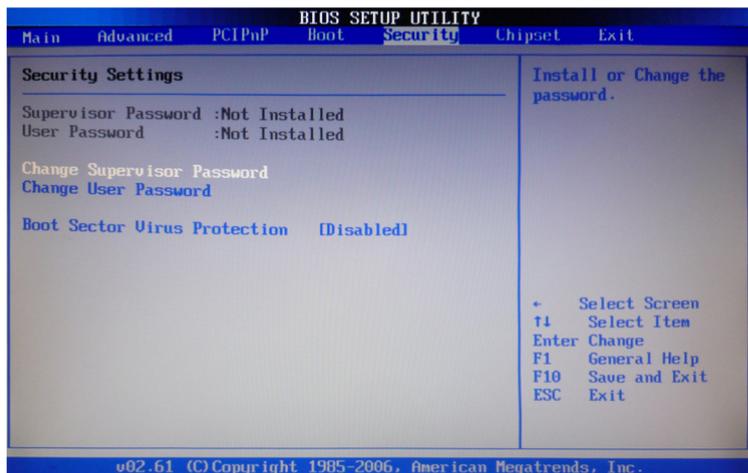
This option allows you to specify the boot device from hard disk drivers.

CD/DVD Drivers

This option allows you to specify the boot device from CD/DVD drivers.

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 not installed. After you set a password, this item shows installed.

To set a Supervisor/user Password:

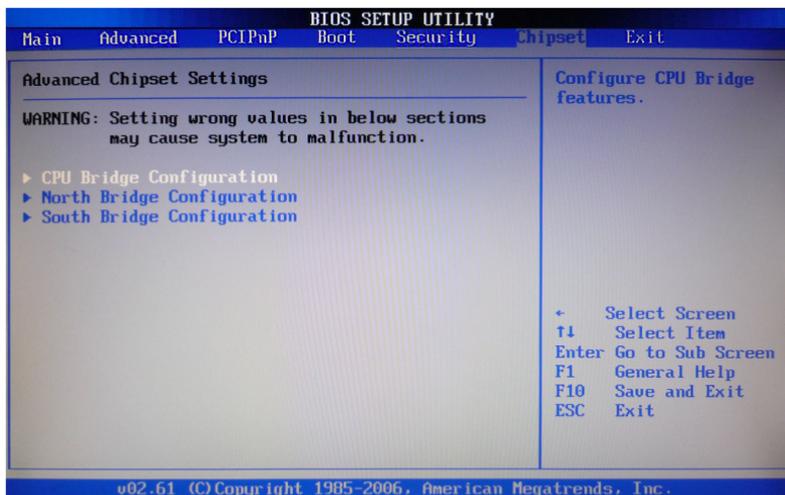
1. Select the change supervisor/user password item and press <Enter>.
2. From the password box, type a password compose of at least six letters and/or number, the press <Enter>.
3. Confirm the password when prompted:
 The message "Password installed" appears after you successfully set your password.
 To change the supervisor/user password, follow the same steps as in setting a use password.
 To clear the supervisor/user password, select the change supervisor/user password then press <enter>. The message "password uninstalled" appears.

Boot Sector Virus Protection

The items allow you to enable or disable booting sector virus protection.

Chipset Menu

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



CPU Bridge Configuration

This option allows you to configure CPU bridge chipset configuration, include CSI links speed, CSI Frequency, Memory Frequency, and so on.

North bridge configuration

The items allow you to configure north bridge features, include Memory, Graphic, Video, and so on.

South bridge configuration

The items allow you to configure south bridge features, include USB, HAD, PCIE Port, Onboard Lan/1394, CPU GTL REF, and so on.

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 Change and Exit

Once you are finished making your selections, choose this option from the Exit menu to ensure the values you selected are saved to the CMOS RAM. An onboard backup battery sustains the CMOS RAM so it stays on even when the PC is turned off. When you select this option, a confirmation window appears. Select OK to save change and exit.

Discard Changes and Exit

Select this option only if you do not want to save the changes that you 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 made and restore the previously saved values. After selecting this option, a confirmation 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 Exit and Save Change or 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 sys to operate.

Installing Drivers and Software

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

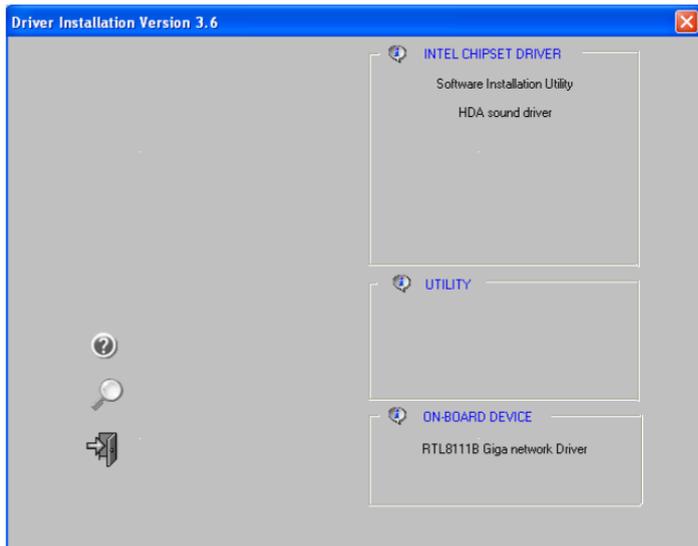
The kit comes with a CD that contains utility drivers and additional INTEL software.

The CD that has been shipped with your Intel® X58 motherboard contains the following software and drivers:

- Software Installation Utility**
- HDA Sound driver**
- RTL8111B Giga network Driver**

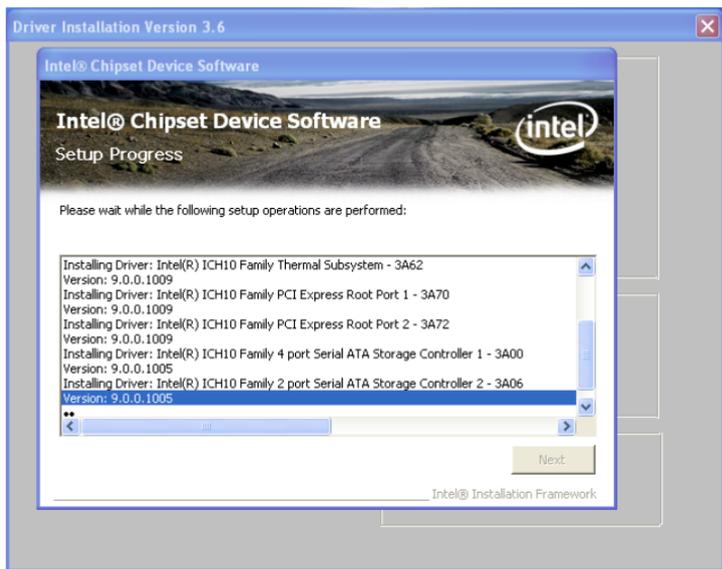
Drivers Installation

1. Insert the Intel® X58 driver CD after loading your operating system.

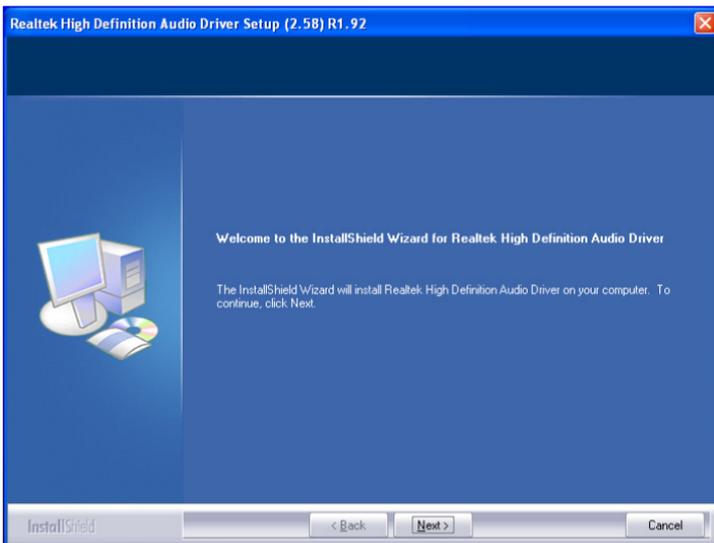
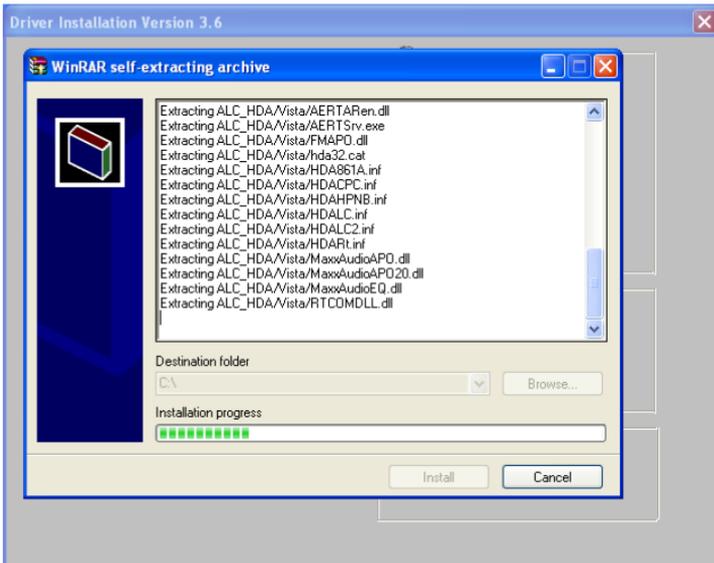


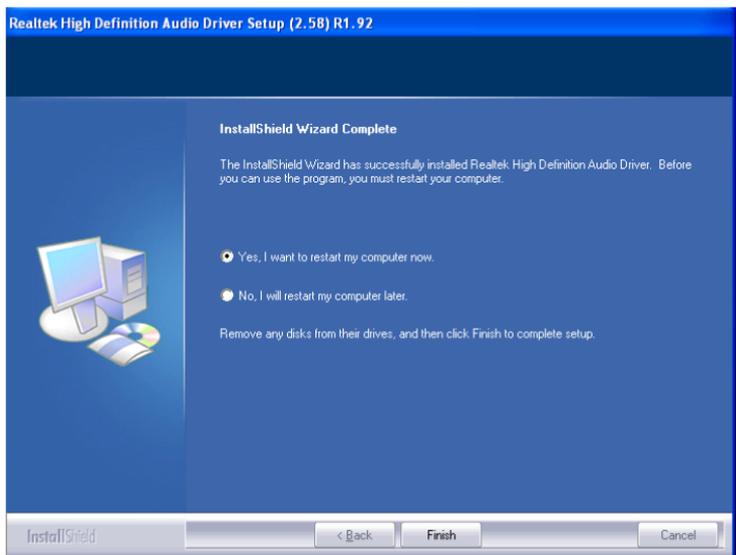
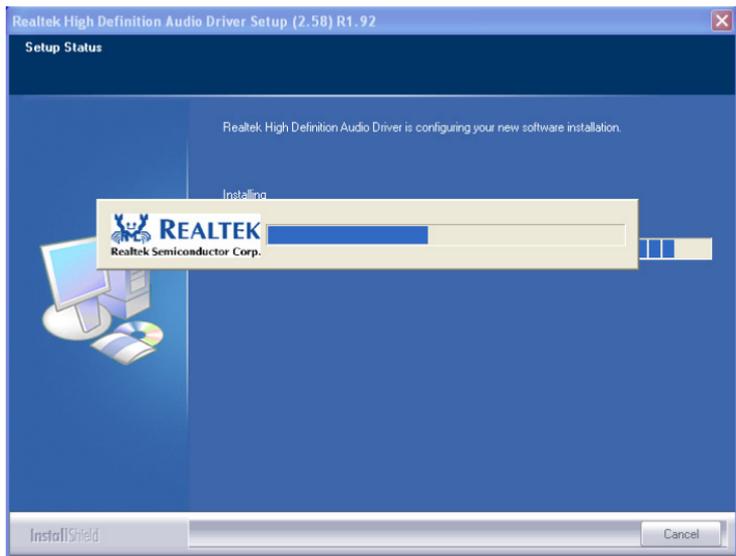
2. Left-click software Installation utility began Loading



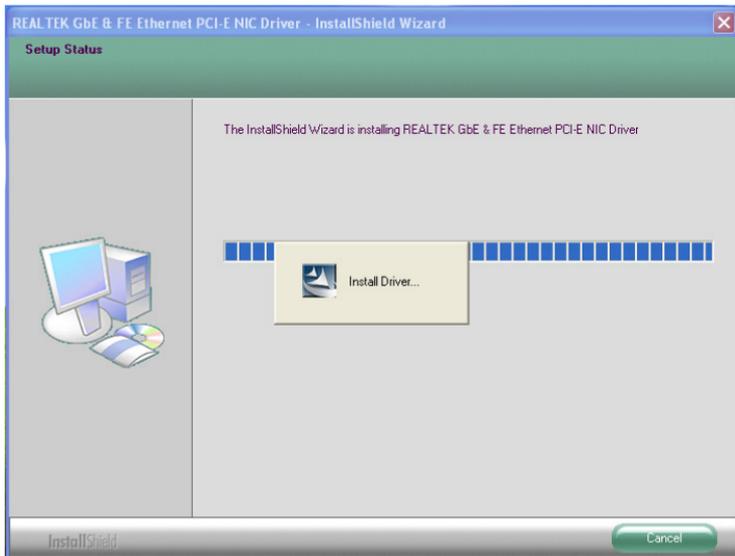
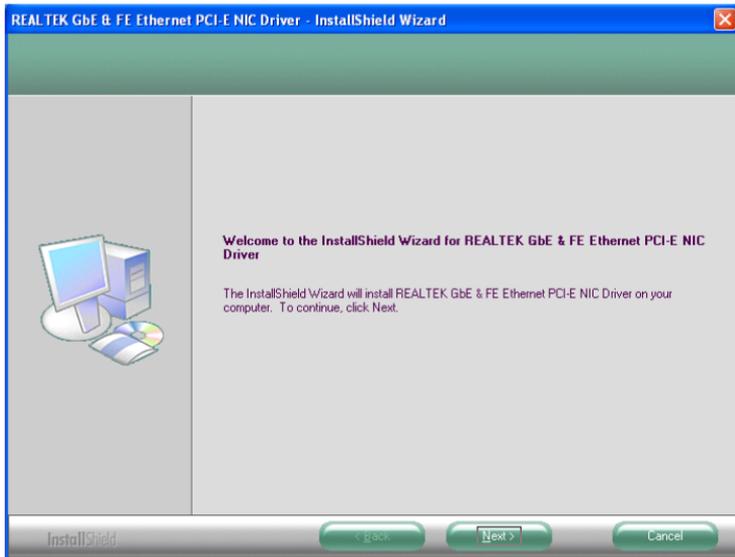


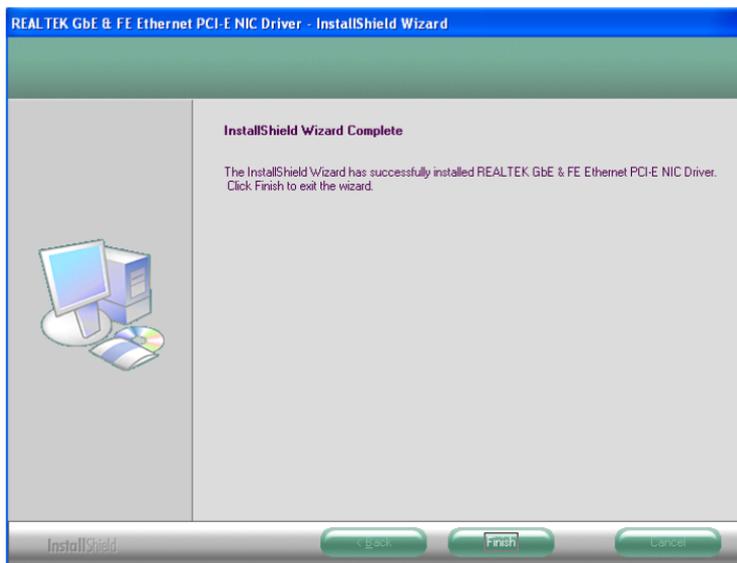
3. Left-click HDA Sound driver,begin loading



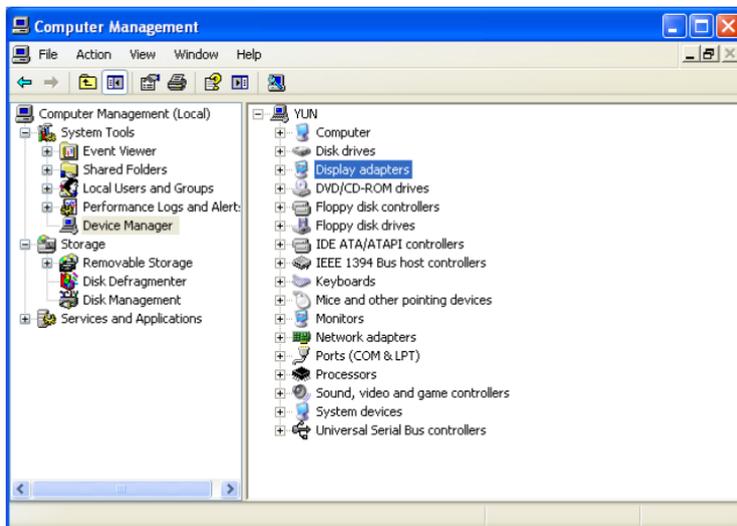


4. Left-click RTL8111B Giga network Driver began loading





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.



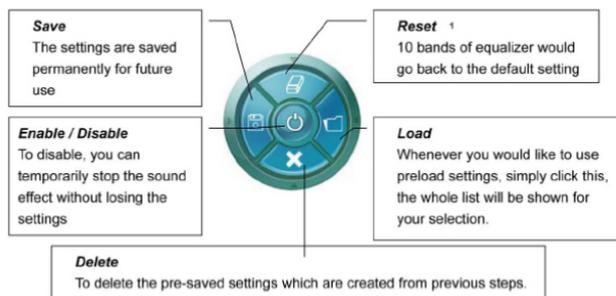
Environment Simulation

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.

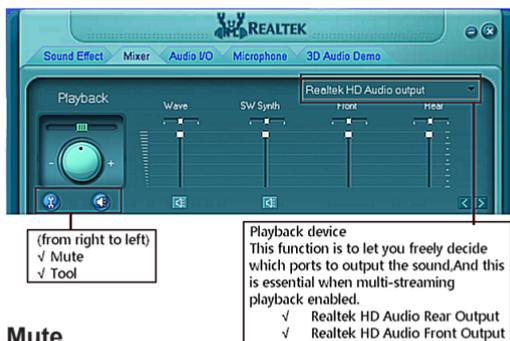
Key Adjustment: Using “Up / Down Arrow” to find a key which better fits your vocal range.

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.

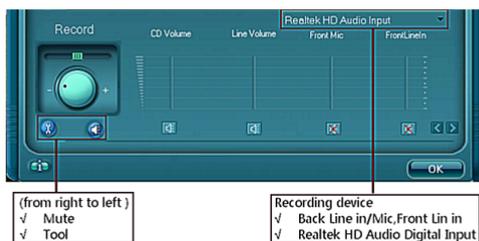
Tool

- ✓ **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.

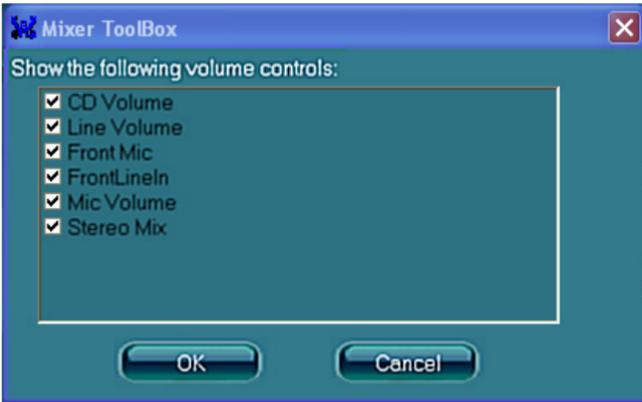
✓ Advanced controls.

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 strengthen.

✓ Enable recording multi-streaming

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



Audio I/O

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

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



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

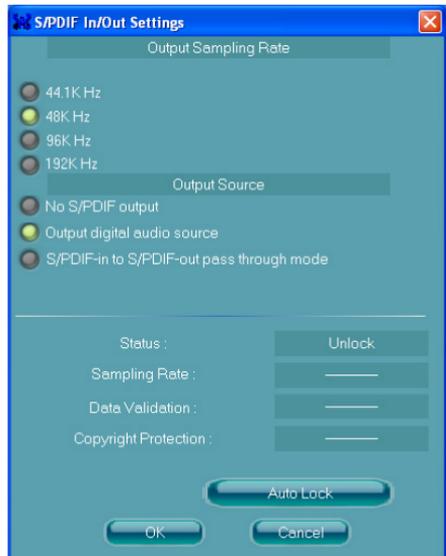
Click  to access connector settings



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

S/PDIF

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



√ Output Sampling Rate

- 44.1KHz: This is recommend 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



Hardware / Software
information of your audio
system

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

Quick launch button at system tray

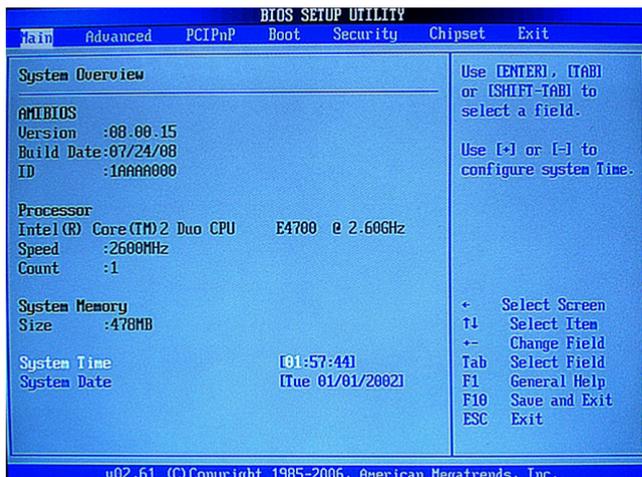
This section provides information about your current system audio device.

SATA RAID User Manual

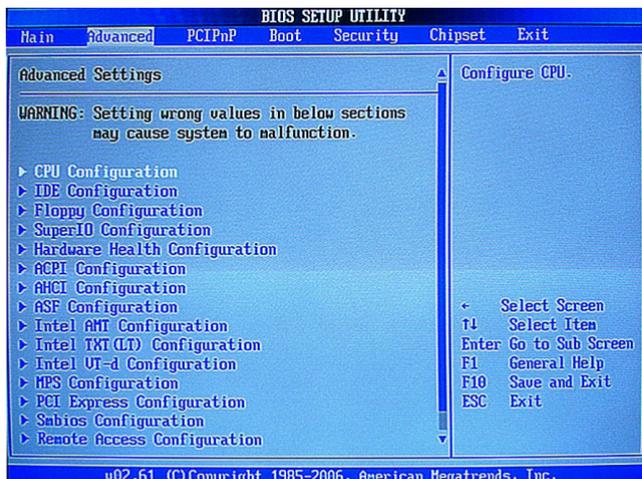
The system board supports RAID 0, RAID 1 and RAID 10 (depends on how many SATA disks are connected) for SATA 1, 2, 3, 4, 5, 6 ports

Setting up the BIOS

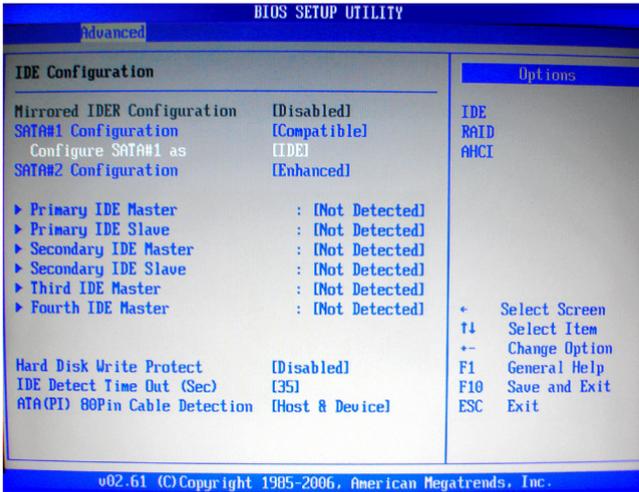
1. Setting your computer, then press Delete to enter the Bios setup. The BIOS CMOS Setup Utility window appears.



2. Use the arrow keys to select Advanced. Advanced window appears.



- Use the arrow keys to select the IDE Configuration, then press Enter. the IDE Configuration window appears.



- From the IDE Configuration window to select the Configure SATA#1 AS RAID , then enable the disks that you want to use as RAID disks.



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

NVIDIA® SLI® Technology

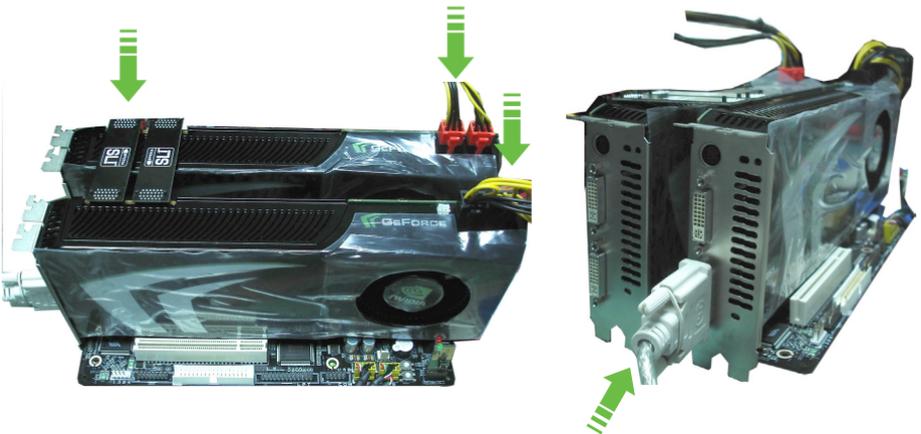
The motherboard supports the NVIDIA® SLI® (Scalable Link Interface) technology that allows you to install up to two identical PCI Express® x16 graphics cards. Follow the installation procedures in this section.

Requirements

- In SLI mode, you should have two identical SLI-ready graphics cards that are NVIDIA® certified.
- Ensure that your graphics card driver supports the NVIDIA SLI technology. Download the latest driver from the NVIDIA website (www.nvidia.com).
- Ensure that your power supply unit (PSU) can provide at least the minimum power required by your system.

Installing SLI® graphics cards

1. Insert one graphics card into the PCIEX16_1 slot (master) and the other into the PCIEX16_2 slot (slave). Ensure that the cards are properly seated on the slots.
2. Align and insert the SLI connector to the goldfingers on each graphic card. Ensure that the connector is firmly in place.
3. Connect auxiliary power source from the power supply to the two graphics cards separately.
4. Connect a VGA or a DVI-I cable to the graphics card/s.



Installing the device drivers

Refer to the documentation that came with your graphics card package to install the device drivers.

Note:

Ensure that your PCI Express graphics card driver supports the NVIDIA® SLI® technology. Download the latest driver from the NVIDIA website (www.nvidia.com).

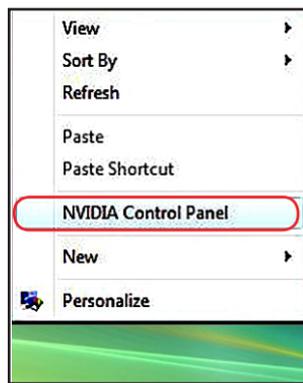
Enabling the NVIDIA® SLI® technology in Windows®

After installing your graphics cards and the device drivers, enable the SLI feature in NVIDIA® Control Panel under the Windows® Vista® operating system.

Launching the NVIDIA Control Panel

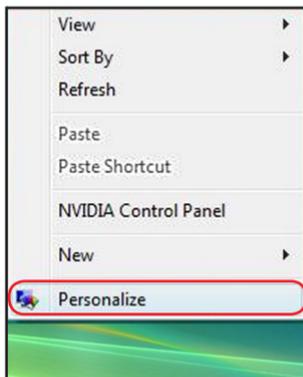
You can launch the NVIDIA Control Panel by the following two methods.

- (A) Right click on the empty space of the Windows® desktop and select **NVIDIA Control Panel**. The NVIDIA Control Panel window appears (See Step 6 on page 56).

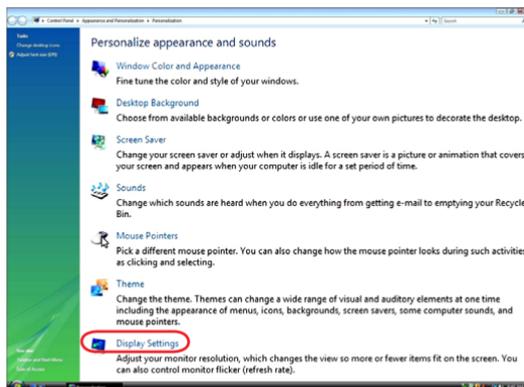


- (B) If you cannot see the NVIDIA Control Panel item in step(A), you can according to the following step:

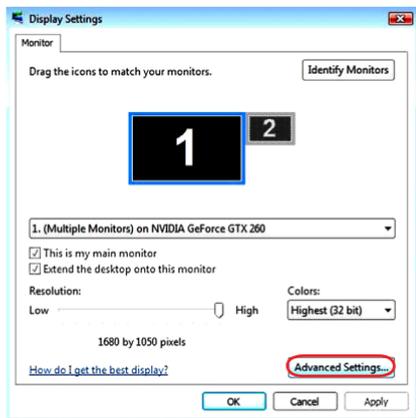
1. Right click on the empty space of the Windows® desktop and select Personalize.



2. From the **Personalization** window, select **Display Settings**.



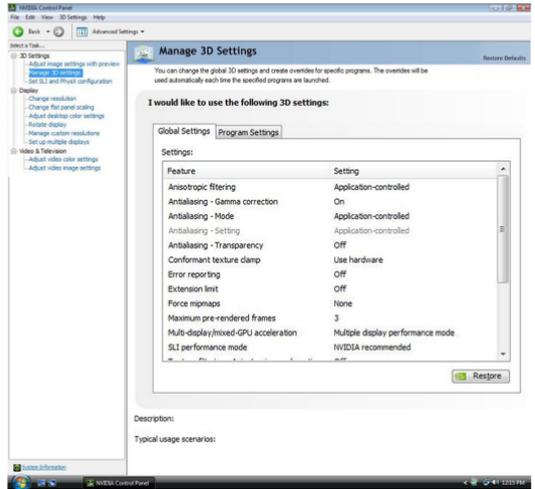
3. From the Display Settings dialogbox, click **Advanced Settings**.



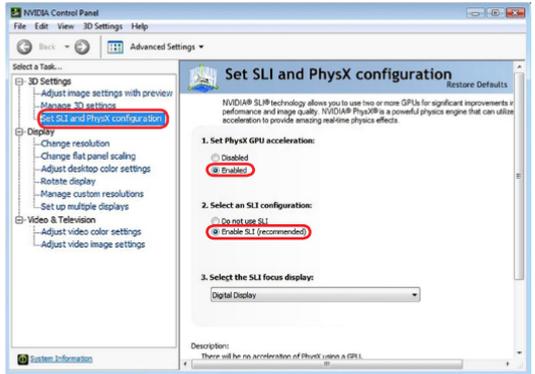
4. Select the **NVIDIA GeForce** tab, and then click **Start the NVIDIA Control Panel**.



5. The NVIDIA Control Panel window appears.



6. Enabling SLI configuration
From the NVIDIA Control Panel window, select **Set SLI Configuration**. Click **Enable SLI** and set the display for viewing SLI rendered content. When done, click Apply



ATI® CrossFireX® technology

The motherboard supports the ATI® CrossFireX® technology that allows you to install multi-graphics processing units (GPU) graphics cards. Follow the installation procedures in this section.

Requirements

- In Dual CrossFireX mode, you should have two identical CrossFireX-ready graphics cards or one CrossFireX-ready dual-GPU graphics card that are ATI® certified.
- In Triple CrossFireX mode, you should have three identical CrossFireX-ready graphics cards that are ATI® certified.
- Ensure that your graphics card driver supports the ATI CrossFireX technology. Download the latest driver from the AMD website (www.amd.com).
- Ensure that your power supply unit (PSU) can provide at least the minimum power required by your system.

Note:

The ATI Triple CrossFireX technology is currently supported by Windows Vista operating system only.

Visit the ATI Game website (<http://game.amd.com>) for the latest certified graphics card and the supported 3D application list.

Before you begin

For ATI CrossFireX to work properly, you have to uninstall all existing graphics card drivers before installing ATI CrossFireX graphics cards to your system.

To uninstall existing graphics card drivers

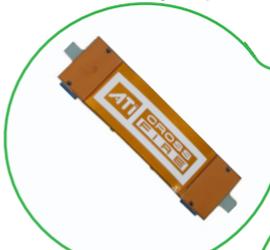
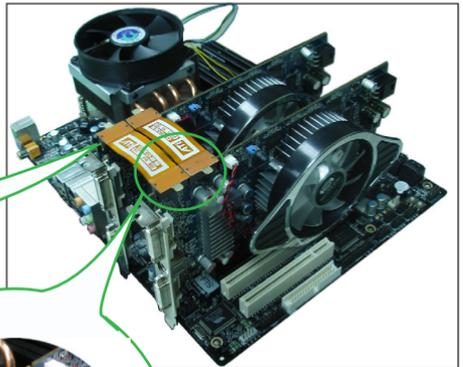
1. Close all current applications.
2. For Windows XP, go to **Control Panel > Add/Remove Programs**
For Windows Vista, go to **Control Panel > Programs and Features**
3. Select your current graphics card drivers.
4. For Windows XP, select **Add/Remove**
For Windows Vista, select **Uninstall**
5. Turn off your computer.

Installing CrossFireX® graphics cards

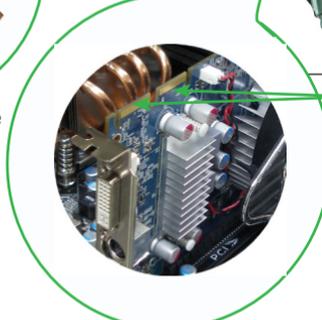
- Ensure that your power supply unit (PSU) can provide at least the minimum power required by your system.
- We recommend that you install additional chassis fans for better thermal environment.
- Install only the identical CrossFireX-ready graphics cards that are ATI® certified. Different types of graphics cards will not work together properly.
- The motherboard layout of this chapter is for reference purpose only and may not exactly match with your motherboard.

Dual CrossFireX installation

1. Prepare two CrossFireX-ready graphics cards.
2. Insert the two graphics card into the PCIE X16 slots. If your motherboard has more than two PCIE X16 slots, refer to its user manual for the locations of the PCIE X16 slots recommended for multi-graphics card installation.
3. Ensure that the cards are properly seated on the slots.
4. Align and firmly insert the CrossFireX bridge connector to the goldfingers on each graphics card. Ensure that the connector is firmly in place.



CrossFireX Bridge



CrossFireX Goldfingers

5. Connect two independent auxiliary power sources from the power supply to the two graphics cards separately.
6. Connect a VGA or a DVI cable to the graphics card.



Software information

Installing the device drivers

Refer to the documentation that came with your graphics card package to install the device drivers.

- Ensure that your PCI Express graphics card driver supports the ATI® CrossFireX® technology. Download the latest driver from the AMD website(www.amd.com).
- If you are using a Triple or Quad CrossFireX system, ensure to install the ATI Catalyst® driver under Windows® Vista® OS. The ATI Triple or Quad CrossFireX technology is currently supported by Windows® Vista® only.

Enabling the ATI® CrossFireX® technology

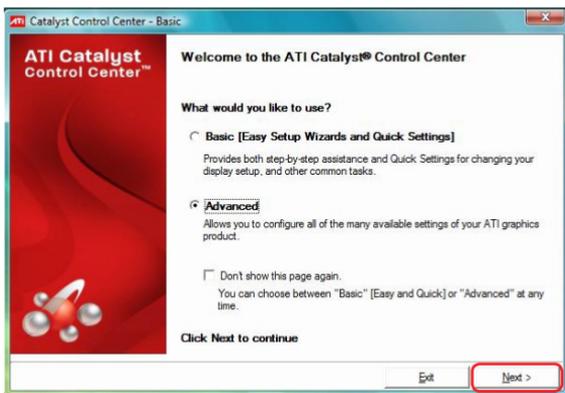
After installing your graphics cards and the device drivers, enable the CrossFireX® feature through the ATI Catalyst® Control Center in Windows environment.

- Launching the ATI Catalyst Control Center

1. To launch the ATI Catalyst Control Center, Right-click on the Windows® desktop and select **Catalyst(TM) Control Center**. You can also right-click the ATI icon in the Windows notification area and select **Catalyst Control Center**.



- The **Catalyst Control Center Setup Basic** appears when the system detects the existence of multi-graphics cards. Click **Go** to continue to the **Catalyst Control Center** window.



□ Enabling Dual CrossFireX technology

- In the Catalyst Control Center window, click Graphics Settings > CrossFireX > Configure
- From the Graphics Adapter list, select the graphics card to act as the display GPU.
- Select Enable CrossFireX
- Click Apply, and then click OK to exit the window.



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