

ZOTAC®

ION SERIES MOTHERBOARD

Integrated Intel® CULV Processor



ION

IONITX-P SERIES
IONITX-O SERIES
IONITX-N SERIES

USER'S MANUAL



Electronic Emission Notices

Federal Communications Commission (FCC) Statement

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

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

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

NOTE:

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

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

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

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Motherboard Specifications

Chipset

- ❖ NVIDIA® MCP7A-LP

Size

- ❖ Mini-ITX form factor of 6.69 inch x 6.69 inch (171mm x 171mm)

Microprocessor support

- ❖ Intel® CULV CPU
- ❖ Support for 800 MHz FSB

Operating systems:

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

System Memory support

- ❖ Supports dual-channel (128 bits wide) DDRIII memory interface
- ❖ Supports DDRIII 1066/800
- ❖ Maximum memory size: 8 GB

USB 2.0 Ports

- ❖ Supports hot plug and play
- ❖ Ten USB 2.0 ports (six on the back panel, four via the USB brackets connected to the internal USB headers)
- ❖ Supports USB 2.0 protocol up to 480 Mbps transmission rate

Onboard Serial ATA

- ❖ Independent DMA operation on four ports (three onboard SATA headers, one rear panel e-SATA).
- ❖ Data transfer rates of 3 Gb/s.

On board RTL8211CL Gigabit LAN (Optional)

- ❖ Supports 10/100/1000 Mbps operation

On board RTL8201EL Fast Ethernet (Optional)

- ❖ Supports 10/100 Mbps operation
- ❖ Supports half/full duplex operation

Onboard Audio(Optional)

- ❖ Azalia High-Definition audio
- ❖ Supports 6-channel
- ❖ Supports Jack-Sensing function

Green Function

- ❖ Supports ACPI (Advanced Configuration and Power Interface)
- ❖ RTC timer to power-on the system
- ❖ AC power failure recovery

PCIE x16 Interface

- ❖ PCIE x16 Generation 2.0 compatible

- ❖ Wake up function is supported
- ❖ Clock spread spectrum capability.
- ❑ **Onboard Graphics support**
 - ❖ Integrated 300 MHz DAC for analog displays with resolutions up to 1920x1440 at 75 Hz.
 - ❖ Integrated GeForce 9xxx Series GPU, Supports DX10
 - ❖ VGA/DVI/HDMI output support (optional)
- ❑ **Integrated HDMI Interface with HDCP**
 - ❖ Support Dual link DVI, resolutions up to 2560x1600
 - ❖ Supports DVI or HDMI 1.3 interfaces
 - ❖ Secure digital audio merged from integrated HDA codec with no external audio signals required
 - ❖ Support for HDCP 1.3 using soft or hard HDCP keys
 - ❖ HDCP encryption support when configured as DVI or HDMI link without the need for external HDCP key crypto ROM
- ❑ **Dual Head Display Controller**
 - ❖ Full NVIDIA nView™ multi-display technology capability, with independent display controllers for the CRT, TMDS, DisplayPort, and HDMI interface
 - ❖ Each controller can drive same or different display contents to different resolutions and refresh rates
- ❑ **Expansion Slots**
 - ❖ One Mini PCI Express slot
 - ❖ One PCI Express x16 slot

Motherboard Layout

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

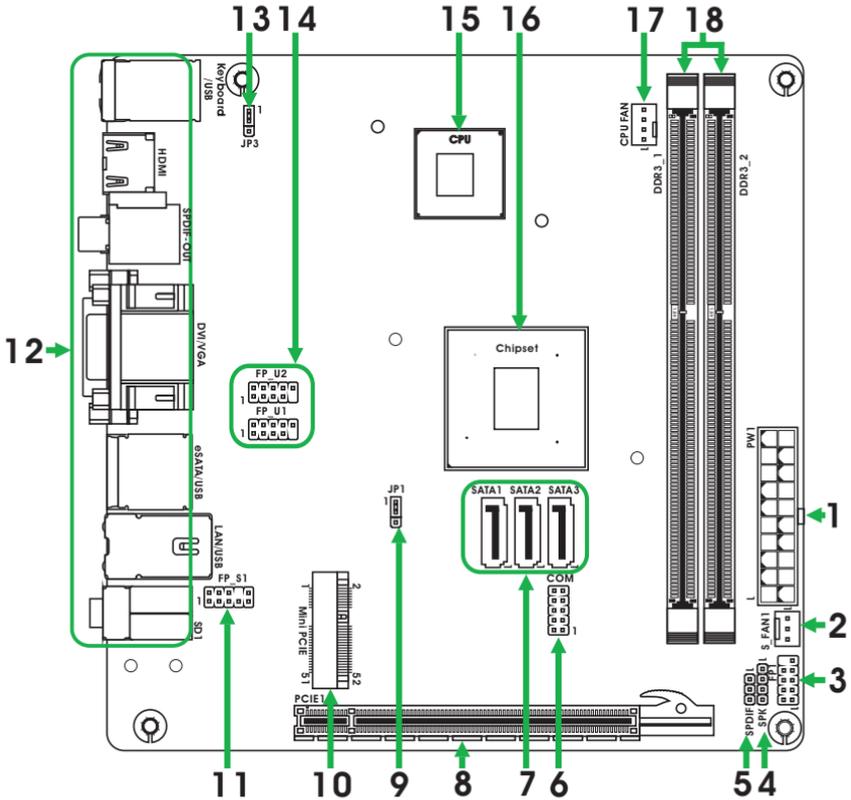
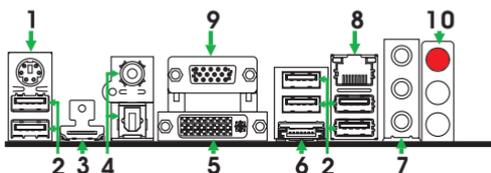


Figure 1

Figure 1. Board Layout

- | | |
|---|---|
| <ol style="list-style-type: none"> 1. 20-pin ATX Power Connector-PW1 2. System Fan Connector-S_FAN1 3. Front Panel Header-FP1 4. Speaker Header-SPK 5. SPDIF-out Header-SPDIF 6. COM Header-COM 7. Serial-ATA (SATA) Connectors-SATA1~SATA3 8. PCI Express x16 Slot-PCIE1 9. Clear CMOS Jumper-JP1 | <ol style="list-style-type: none"> 10. Mini PCIE Slot 11. Front Audio Header-FP_S1 12. Backpanel Connectors 13. USB power Jumper-JP3 14. USB Headers-FP_U1~FP_U2 15. CPU 16. Chipset 17. CPU Fan Connector-CPU FAN 18. DDR3 DIMM Sockets-DDR3_1~DDR3_2 |
|---|---|

Figure 2: Backpanel connectors



- | | | | |
|----------------------------|--------------------|--------------|----------------------------------|
| 1. PS/2 keyboard connector | 2. USB Connectors | 3. HDMI Port | 4. SPDIF Out (Coaxial / Optical) |
| 5. DVI Connector | 6. eSATA Connector | 7. Port | 2-Channel |
| | | 4-Channel | 6-Channel |
| | | Blue | Line-In |
| | | Green | Line-Out |
| | | Pink | Mic In |
| | | | Rear Speaker Out |
| | | | Front Speaker Out |
| | | | Center/Subwoofer |

8. LAN Connector

Lan Port with LEDs to indicate status.

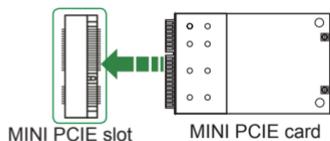
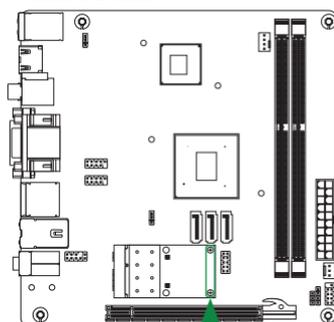
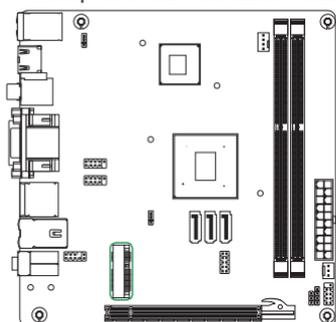
- Yellow/Light Up/Blink = 10 Mbps/link/Activity
- Yellow and Orange/Light Up/Blink = 100 Mbps/link/Activity
- Yellow and Orange/Light Up/Blink = 1000 Mbps/link/Activity

9. VGA Port

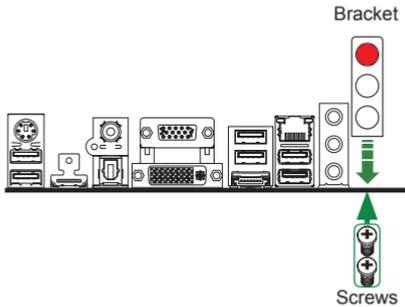
10. WiFi antenna connector (Optional)

Refer to the following to install the WiFi antenna modules.

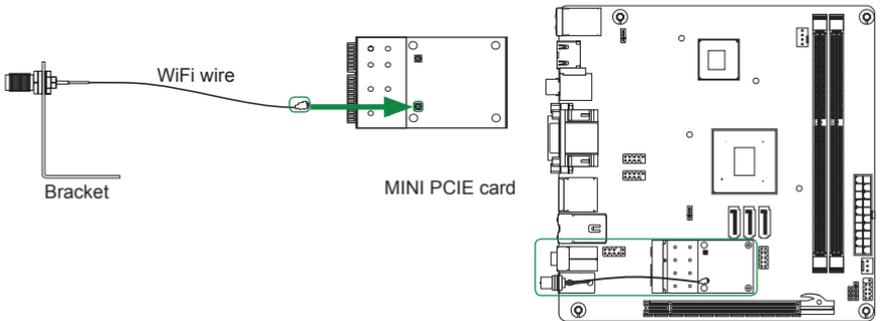
Step 1. Secure the MINI PCIE card into the MINI PCIE slot with screws.



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

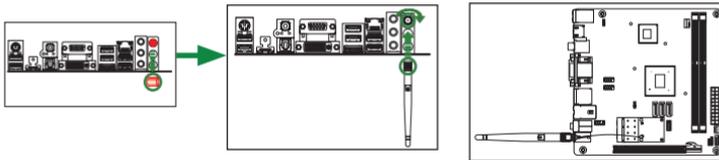


Step 3. Connect the WiFi wire to the MINI PCIE card as the following picture shows.



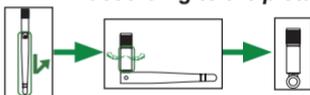
Step 4. Remove the red cap from the WiFi antenna connector.

Install the WiFi antenna to the WiFi antenna connector, and make sure the screws are rotated in clockwise direction.



Note: 1. Users please note that the appearance of your WiFi antenna modules may not be exactly the same as those shown in this manual.

2. Users can bend or rotate the WiFi antennas 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 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

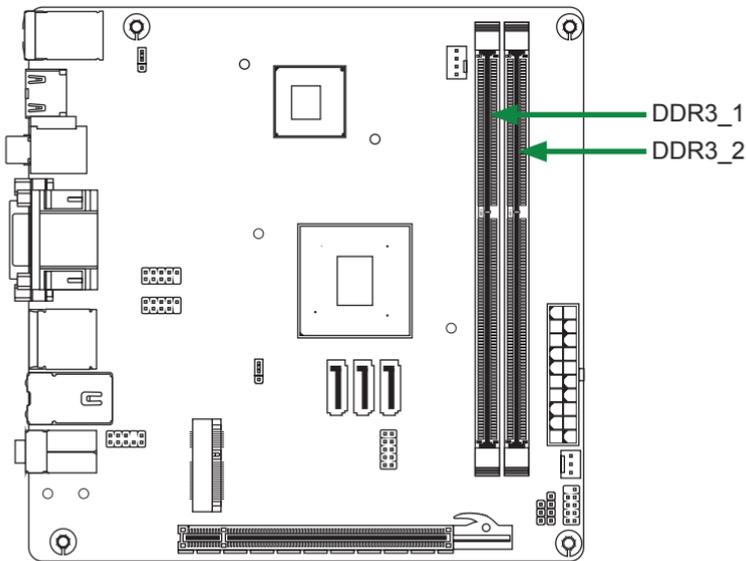
Preparing the Motherboard

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

Installing Memory Modules

Your new motherboard has two 1.5 V 240-pin slots for DDR3 memory DIMMs. These slots support 1 GB/2 GB/4 GB DDR3 technologies. There must be at least one memory bank populated to ensure normal operation. Use the following the recommendations for installing memory. (See Figure 1 for the location of the memory slots.)

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



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

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

Installing the Motherboard

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

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

Installing the I/O Shield

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

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

Securing the Motherboard into the Chassis

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

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

Connecting Cables and Setting Switches

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

- Power Connectors
 - ❖ 20-pin ATX power-PW1
 - ❖ Front Audio Header-FP_S1
- Internal Headers
 - ❖ COM Header-COM
 - ❖ Speaker Header-SPK
 - ❖ USB Headers-FP_U1~FP_U2
 - ❖ SPDIF-out Header-SPDIF
 - ❖ Front panel header-FP1

- Serial ATA

- Fan Connectors

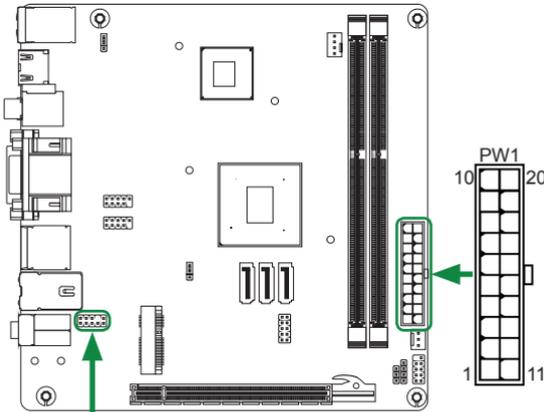
- Expansion slots

- Jumper settings

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

20-pin ATX Power-PW1

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

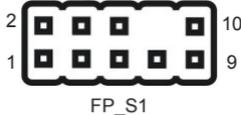


PW1-Pin Assignments

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

Front 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 retasking 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.

COM Header-CN2

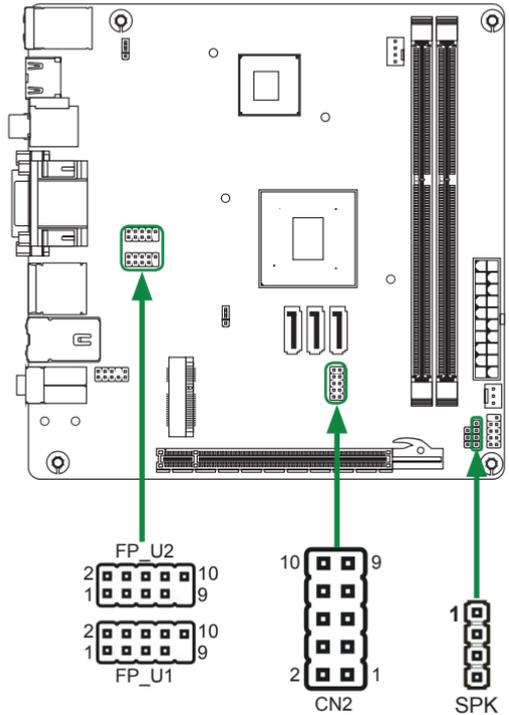
CN2 - Pin Definition

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

SPK Header

SPK-Pin Definition

PIN	Assignment
1	VCC
2	NC
3	NC
4	SPK-



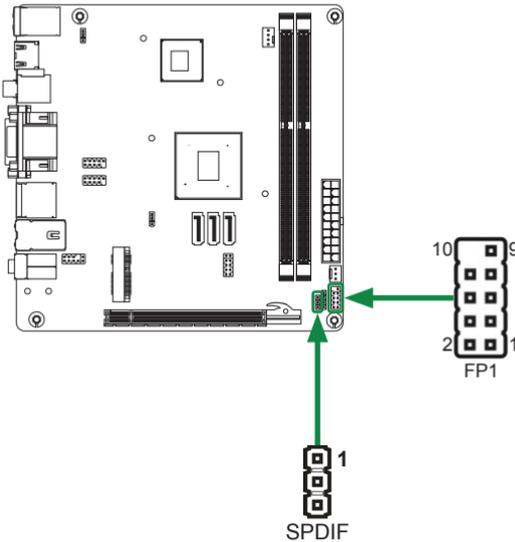
USB Headers-FP_U1~FP_U2

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

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



SPDIF-out Header

SPDIF-Pin Definition

PIN	Assignment
1	GND
2	SPDIF-out
3	VCC

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.

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.

FP1-Pin Definition

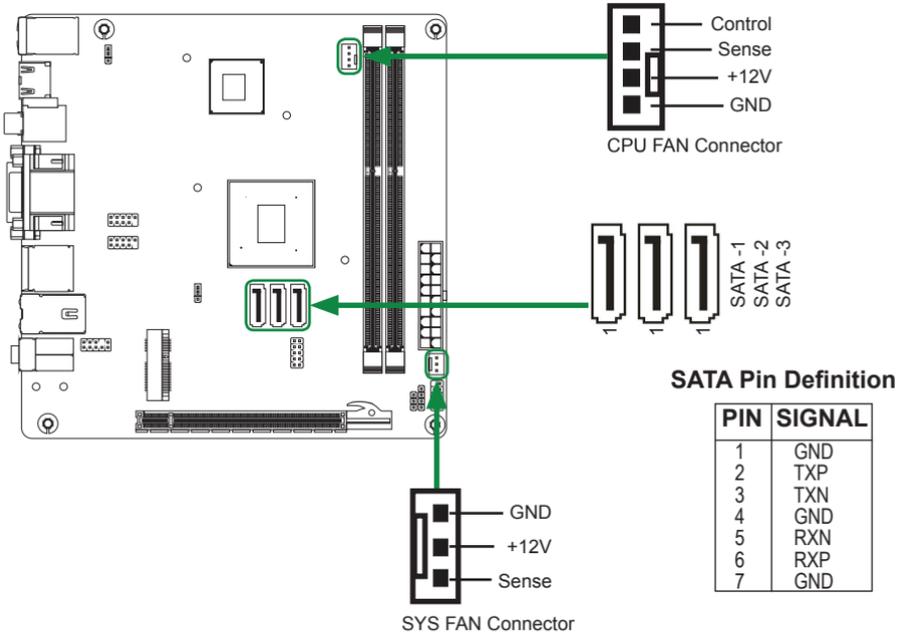
Pin	Signal	Pin	Signal
1	HDD_LED+	2	PW_LED+
3	HDD_LED-	4	PW_LED-
5	GND	6	PWR_SW
7	RESET	8	GND
9	NC	10	KEY

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

Connecting Serial ATA Cables

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 3 Gb/s data transfer rate.

There are four serial ATA connectors (including one eSATA on real panel) on the motherboard that support AHCI and RAID configurations.

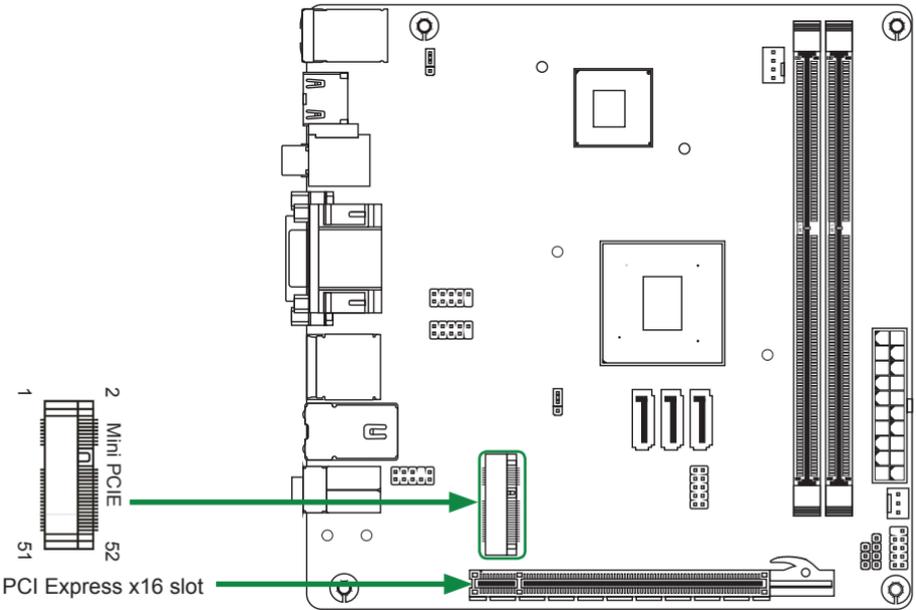


Fan Connectors

There are three fan connectors on the motherboard. The fan speed can be detected and viewed in the Chipset Menu of the CMOS Setup.

Expansion slots

This motherboard contains two expansion slots: one PCI Express x16 slot and one Mini PCIE slot.



Mini PCIE Slot-Mini PCIE

There is one Mini PCI Express slot, reserved for WiFi Module.

PCI Express x16 Slot-PCIE1

There is one PCI Express x16 slot reserved for graphics or video cards. It is compliant with PCIE 2.0 specification.

Jumper Settings

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

JP1-CMOS Clear Jumper

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

JP3-USB power Jumper

JP3	Selection
1  1-2*	5Vdual (for USB wake up support)*
1  2-3	5V

 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 menu. Detailed descriptions of the BIOS parameters are also provided.

Enter BIOS Setup

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

Use the following procedure to verify/change BIOS settings.

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

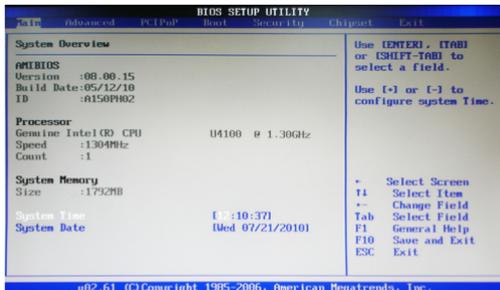
Pressing **Del** takes you to the BIOS Setup Utility.

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.

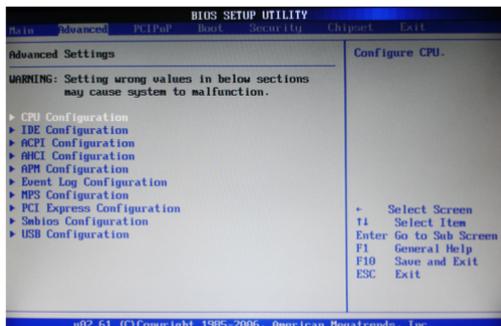


Note: Note that the data in gray is non-changeable, and the others are for selection.

- 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/Date**
Allows you to set the system time/date.

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..

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.

Intel(R) SpeedStep(tm) tech

Use this option to enable or disable Intel® SpeedStep™ 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:

OnChip S-ATA Controller

This item allows you to enable or disable the SATA controller.

SATA Mode select

This item allows you to set the SATA mode.

nVidia RAID Setup

This item allows you to set the nVidia RAID mode.

 Serial-ATA Pri/Sec Master/Slave Channel

This displays the status of auto detection of SATA channel.

 Hard Disk Write Protect

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

 IDE Detect Time Out

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.

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.

APM Configuration

These items allow you to configure Advanced Power Management.

Event Log Configuration

Make as read,clear,or view Event log statistics.

MPS Configuration

The items in this menu allow you to select MPS revision.

PCI Express Configuration

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

Smbios Configuration

SMBIOS SMI wrapper support for PnP Function 50h-54h.

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

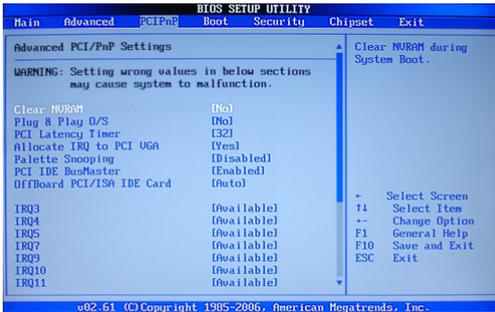
Allows you to configure the USB 2.0 controller in HiSpeed or Full Speed .

 BIOS EHCI Hand-Off

Allows you to enable support for operating systems without an EHCI hand-off feature.

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.

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

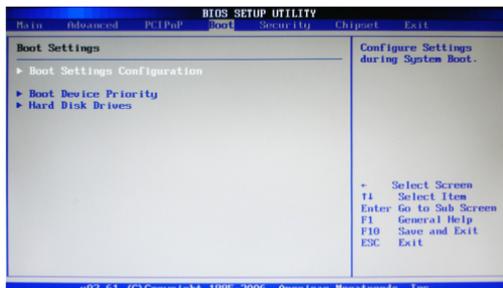
Use these items to set the Direct Memory Access Channel.

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.

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.

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 Device Priority

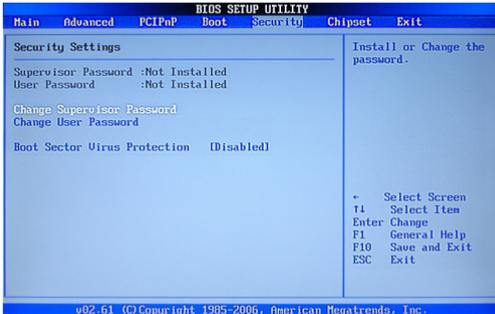
The items allow you to specify the boot device priority sequence.

Hard Disk Drivers

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

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:

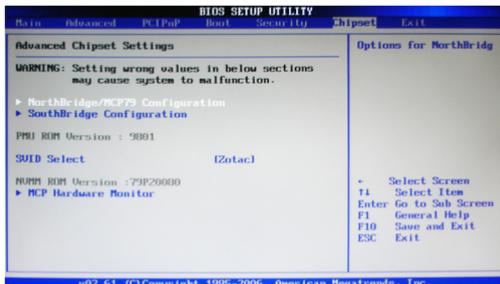
1. Select the change supervisor/user password item and press <Enter>.
2. From the password box, type a password compose of at least six letters and/or number, the press <Enter>.
3. Confirm the password when prompted:
The message "Password installed" appears after you successfully set your password.
To 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:



NorthBridge/MCP79 Configuration

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

SouthBridge Configuration

The items allow you to configure south bridge features, including USB, HAD, PCIE Port and so on.

MCP Hardware Monitor

The items allow you to configure CPU/Chipset fan control.

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 menu. 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 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 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 software.

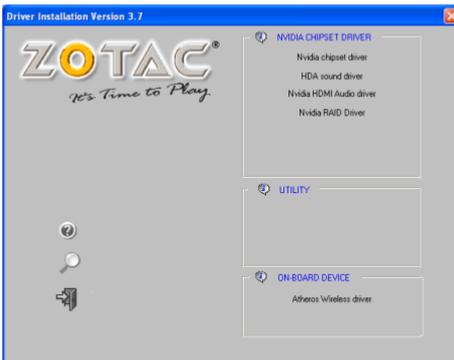
The CD that has been shipped with your NVIDIA MCP7A motherboard contains the following software and drivers:

- Nvidia chipset driver
- HDA sound driver
- Nvidia HDMI Audio driver
- Nvidia RAID Driver
- Atheros Wireless driver

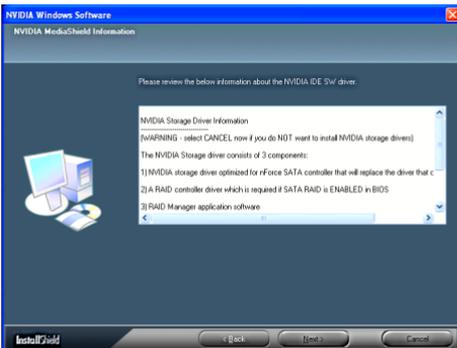
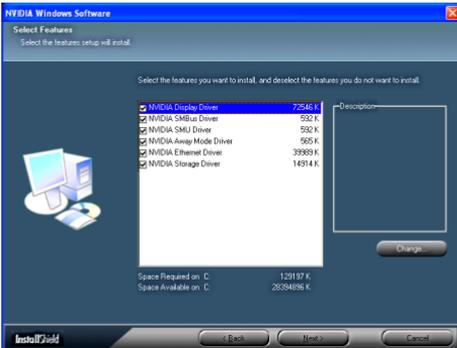
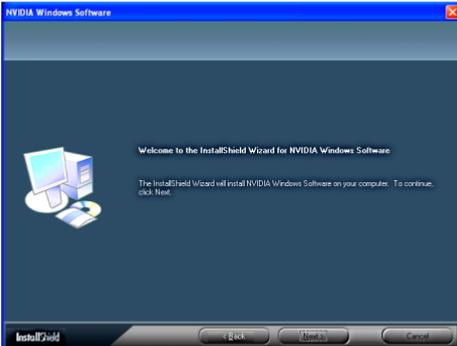
Note. *We reserve the right to update the driver version presented in the manual. The driver installation pictures shown in this section are for reference only.*

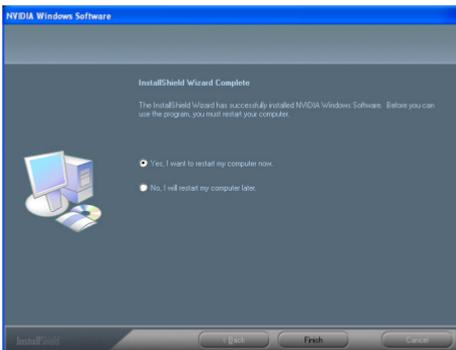
Drivers Installation

1. Insert the driver CD into the drive after loading your operating system, and then you can see the interface below.



2. Follow the steps below to install Nvidia chipset driver.

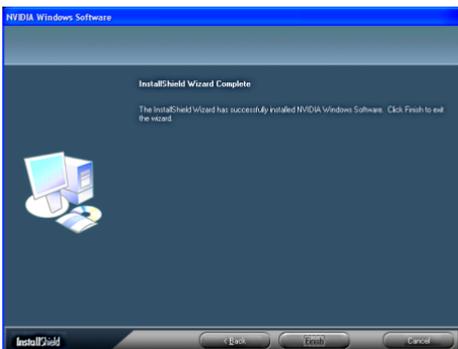
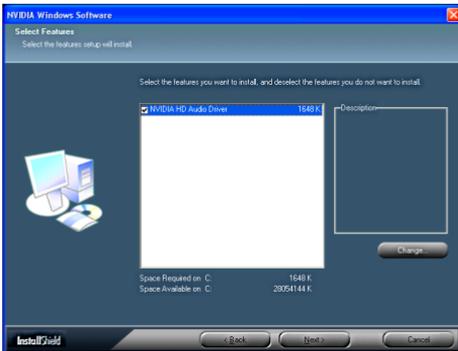
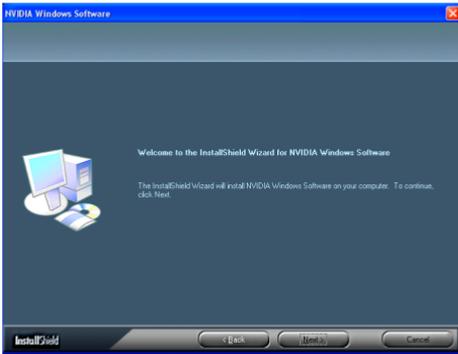




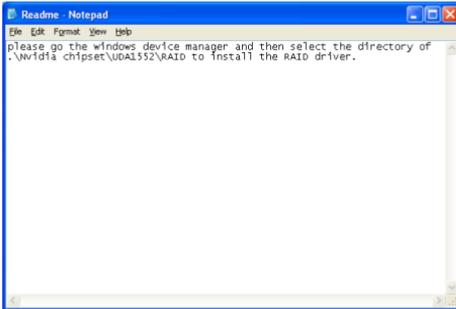
3. Follow the below for **HDA sound driver** installing.



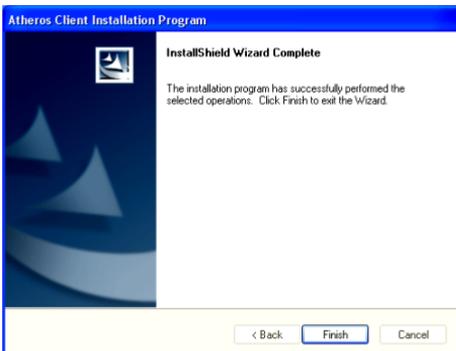
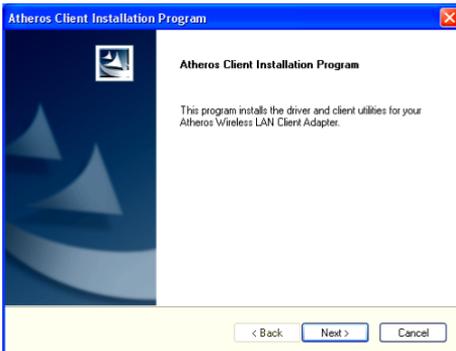
4. Follow the below for **Nvidia HDMI Audio driver** installing.



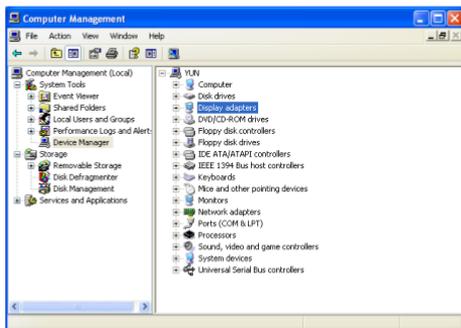
5. Left-click the item **Nvidia RAID Driver**, the notepad below will guide users to select the directory to install the RAID driver.



6. Follow the below for **Atheros Wireless driver** installing.



At last, you can enter Device Manager that provides information about the hardware devices on this motherboard to check if the driver installation is complete.



HDMI SETUP

1. You can connect HDMI device to the HDMI port directly, or connect to DVI port by a DVI - HDMI dongle.
2. Enter Control Panel, double click “Sounds and Auddio Devices”, select “NVIDIA HDMI Audio” as default play back device, then click ok.



Realtek HD Audio Driver Setup Getting Started

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



Sound Effect

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



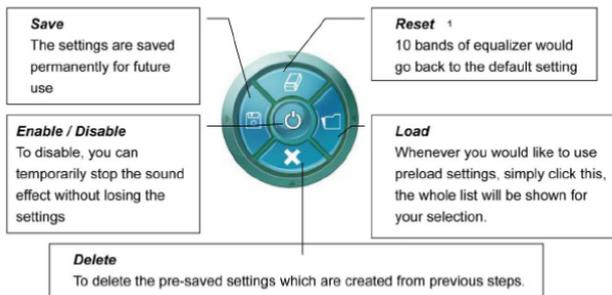
Environment Simulation

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

Equalizer Selection

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

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



Frequently Used Equalizer Setting

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

How to Use

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

Karaoke Mode

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

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

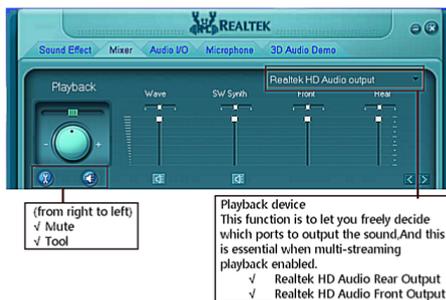
Key Adjustment: Using “Up / Down Arrow” to find a key which better fits your vocal range.

Mixer

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



Playback control



Mute

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

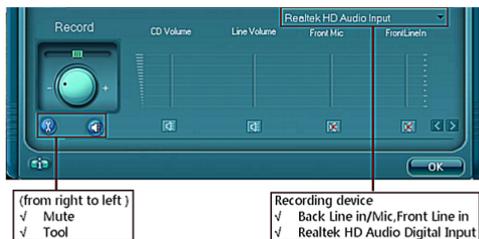
Tool

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

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



Recording control



Mute

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

Tool

✓ Show the following volume controls

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

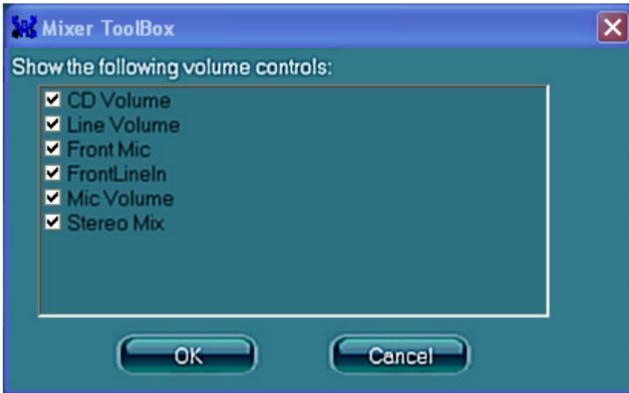
✓ Advanced controls.

Advanced control is a “Microphone Boost” icon.

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

✓ Enable recording multi-streaming

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



Audio I/O

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

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



Speaker Configuration

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

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

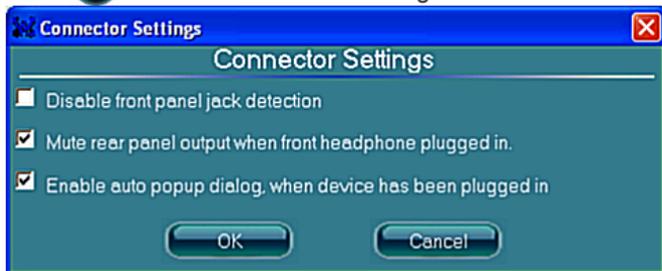
* If the device is being plugged into the correct jack, you will be able to find the icon beside the jack changed to the one that is same as your device.

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



Connector Settings

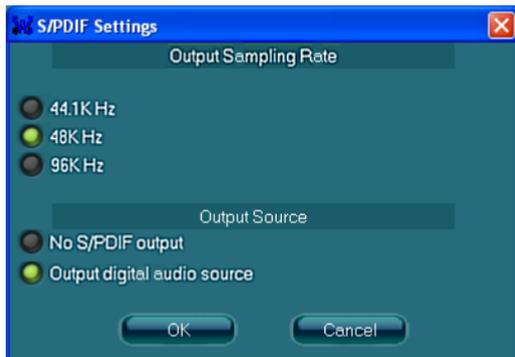
Click  to access connector settings



- ✓ **Mute rear panel when front headphone plugged in**
Once this option is checked, 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

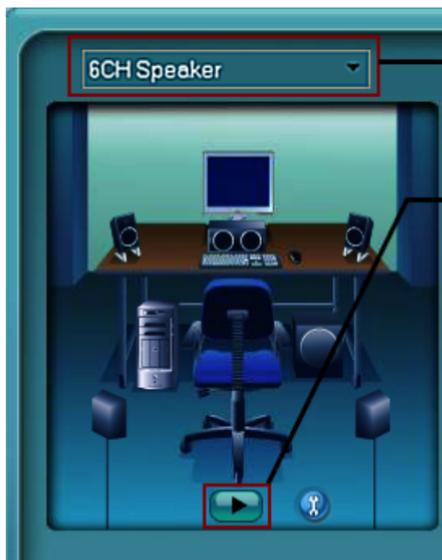
- 44.1KHz: This is recommended while playing CD
- 48KHz: This is recommended while playing DVD or Dolby.
- 96KHz: This is recommended while playing DVD-Audio.

√ 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.



The screenshot shows a software window for speaker calibration. At the top, there is a dropdown menu labeled "6CH Speaker". Below it is a 3D scene of a desk with a computer monitor, keyboard, mouse, and two speakers. A blue office chair is in front of the desk. At the bottom of the scene, there is a green play button icon. To the right of the scene are three text boxes providing instructions.

Step1
Select the channel output(headphone / 2 / 4 / 6 channel)

Step2
Click "play" icon

Step3
Look at the scene;while the speaker appears flushing,you should be able to hear the sound exactly from that direction.

Microphone

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

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



Noise Suppression

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

Beam Forming

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

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

Acoustic Echo Cancellation

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

3D Audio Demo

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



Information

Information

information

Audio Driver Version : 5.10.0.5643

DirectX Version : DirectX 9.0

Audio Controller : HD Audio

Audio Codec : ALC662

Language : Auto

Show icon in system tray

OK

Hardware / Software information of your audio system

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

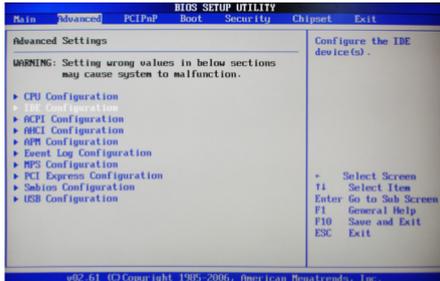
Quick launch button at system tray

This section provides information about your current system audio device.

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 Mode].



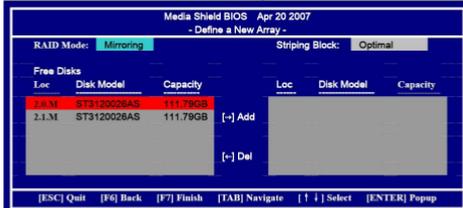
4. Use the arrow key to select the item "nVidia RAID Setup".
5. Press enter to display "RAID Setup".



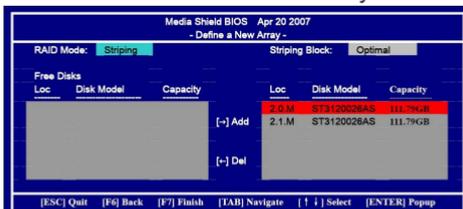
6. From the Raid Setup window, enable RAID, then enable the disks that you want to use as RAID disks.
7. Press F10 to save the configuration and exit. The PC reboots.
8. Enter the RAID BIOS Setup by pressing F10 when prompted, and proceed to set up the NVRAID BIOS as described in the next Section.

Entering the RAID BIOS Setup

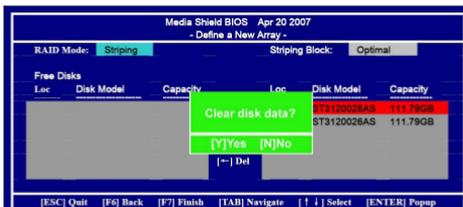
1. After rebooting your computer, wait until you see the RAID software prompt
you to press F10.
2. The NVIDIA RAID Utility –Define a New Array window appears



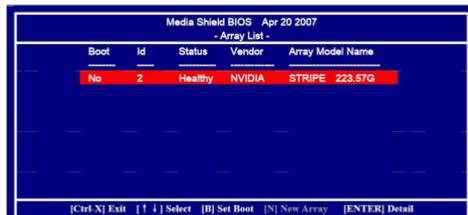
3. In the RAID Mode field, use the UP or Down ARROW key to select a RAID Mode. The supported RAID modes include Mirroring (RAID 1), Striping (RAID 0) and Stripe Mirroring (RAID 0+1), Spanning(JBOD) and RAID 5. The following is an example of RAID 0 array creation.
4. If RAID 0(Striping) is selected, you can manually set the striping block size. in the Stripping Block field, use the UP or DOWN ARROW ey to set the Stripping Block size. The KB is standard unit of Stripping Block size. We recommend you leaving it to the default setting-Optimal(64k). The size range is from 4k to 128k.
5. Select the hard drivers which you wish to be included in the disk array. The Free Disks section displays the information about the currently installed SATA hard drives. Press the TAB key to move to the Free Disks section. Select the target hard drives using the UP or DOWN ARROW key and use the RIGHT ARROW key to add the hard drives to the Array Disks section.



6. Press F7 after selecting the target hard disks. A message which says "Clear disk data?" will appear. If you are sure to clear the data in the selected hard drives, press Y. (If the hard drives contain previously created RAID array, you need to press Y to clear the data from the hard drives.)



7. After that, then Array List screen displaying the RAID array you created will appear. If you want to set the disk array as boot device, use the UP or DOWN ARROW key to select the array and press B. The Boot section will show Yes.



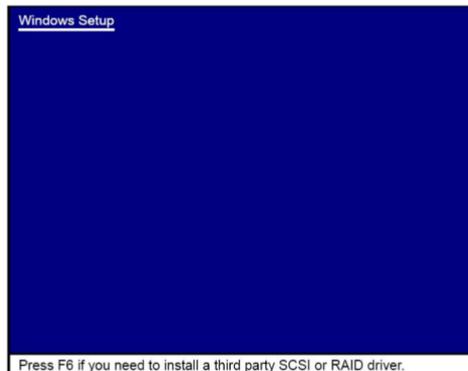
8. To read more information about the RAID array, press ENTER to enter the Array Detail screen, where you should see detailed information about RAID mode, disk block size, disk model name, and disk capacity, etc.



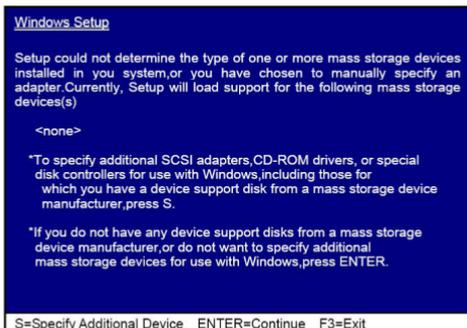
9. To delete the array, press D in the Array Detail screen. When the “Delete this array?” message appears, press Y to confirm or N to cancel. Press ENTER to return to the Array List screen. To exit the Nvidia RAID utility, press ESC in the main menu or Ctrl+X in the Array List screen. Now, you can proceed to install the SATA controller driver and operating system.

Installing the RAID Drivers

1. After you complete the RAID BIOS setup, boot from the windowsXP CD. The Windows Setup program starts.

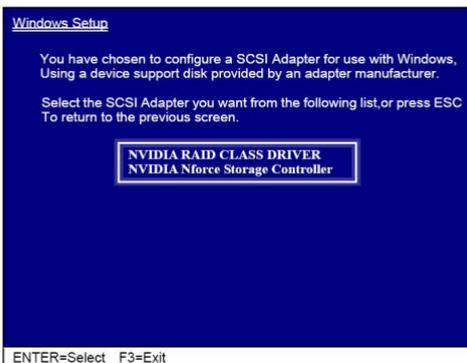


2. Press F6 and wait a few moments for the Windows Setup screen to appear.

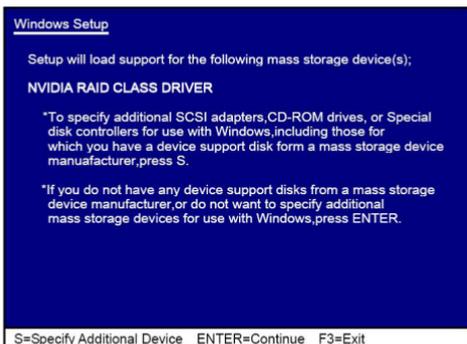


3. Specify the NVIDIA drivers.

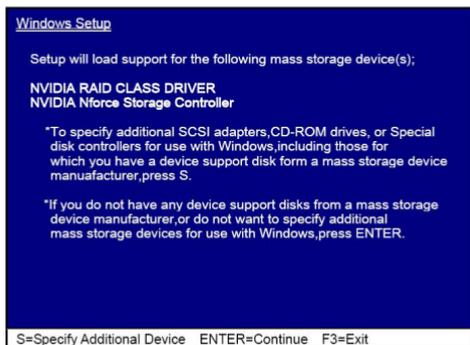
- (1). Insert the floppy that has the RAID driver, press S, then press Enter.



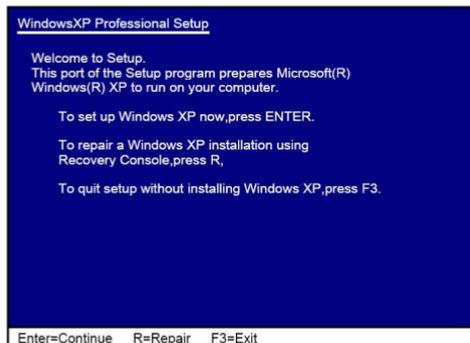
- (2). Select "NVIDIA RAID CLASS DRIVER" and then press Enter.



- (3). Press S again at the Specify Devices screen, then press Enter.
- (4). Select "NVIDIA Nforce Storage Controller" and then press Enter.



4. Press Enter to continue with Windows XP Installation. Be sure to leave the floppy disk inserted in the floppy drive until the blue screen portion of Windows XP installation is completed, then take out the floppy.
5. Follow the instructions on how to install Windows XP. During the GUI portion of the install you might be prompted to click Yes to install the RAID driver. Click Yes as many times as needed in order to finish the installation. This will not be an issue with a signed driver.



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