



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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Table of Contents

Motherboard Specifications	4
Motherboard Layout	6
Hardware Installation	8
Safety Instructions	8
Preparing the motherboard	8
Installing the CPU	9
Installing the CPU Fan	9
Installing Memory Modules	10
Installing the motherboard	11
Installing the I/O Shield	11
Securing the Motherboard into the Chassis	11
Connecting Cables and Setting Switches	12
SATA Power Connector	13
4-pin ATX 12V Power Connector	13
USB Headers	14
FP Audio Header	15
COM Header	15
Front Panel Header	16
Speaker Header	16
Connecting Serial ATA Cables (optional)	17
Fan Connectors	17
SPDIF-Out Connector	17
Expansion Slots	18
Jumper Settings	19
Configuring the BIOS	20
Enter BIOS Setup	20
Main Menu	20
Advanced Menu	21
PCI Subsystem Settings	21
ACPI Settings	22
OnBoard Device Configuration	22
Power Management	22
CPU Configuration	22
IDE/SATA Configuration	23
USB Configuration	23
WatchDog Configuration	24
Chipset Menu	24
Display Configuration	24
South Bridge	24
North Bridge	24
Boot Menu	25
Boot Settings Configuration	25

Security Menu	26
Administrator Password	26
User Password	26
PC Health Menu	27
CPU Fan Control Mode	27
Exit Menu	27
Save Changes and Exit	28
Discard Changes and Exit	28
Save Changes and Reset	28
Discard Changes and Reset	28
Save Changes	28
Discard Changes	28
Restore Defaults	28
Save as User Defaults	28
Restore User Defaults	28
Launch EFI Shell from filesystem device	29
Flash Update Procedure	29
Installing Drivers and Software	30
Drivers Installation	30
Realtek HD Audio Driver Setup	35
Getting Started	35
Sound Effect	35
Mixer	47
Audio I/O	39
Microphone	43
3D Audio Demo	44
Information	44
SATA RAID User Manual	45
Setting up the BIOS	45
Entering the RAID BIOS Setup	47
Creating a RAID set	47
Deleting a RAID set	49
Installing the RAID Drivers	50

Motherboard Specifications

☐ Chipset

- ❖ AMD A70M (Hudson-M3) Fusion Controller Hub (FCH) 4.7W TDP

☐ Size

- ❖ Mini ITX form factor of 6.7 inch x 6.7 inch

☐ Microprocessor support

- ❖ AMD FS1r2 socket supports R-series (R-464L, R-460H, R-272F, R-268D) and Comal series APU of up to 35W TDP

☐ Operating systems:

- ❖ Supports Windows 7 32bit/64bit and Windows 8 32bit/64bit

☐ System Memory support

- ❖ Supports Dual Channel DDR3 1600/1333/1066
- ❖ Maximum memory size: 16 GB

☐ USB 2.0 Ports

- ❖ Supports hot plug and play
- ❖ Nine USB 2.0 ports (six on the back panel, three via the USB brackets connected to the internal USB headers)
- ❖ Supports wake-up from S1
- ❖ Supports USB 2.0 protocol up to 480 Mbps transmission rate

☐ USB 3.0 Ports

- ❖ Supports hot plug and play
- ❖ Four USB 3.0 ports (two on the back panel, two via the USB bracket connected to the internal USB header)

☐ Onboard Serial ATA III

- ❖ Independent DMA operation on five ports (including one SATA DOM port)
- ❖ Data transfer rates of 6.0 Gb/s

☐ Onboard LAN

- ❖ Supports IEEE 802.3
- ❖ Supports 10/100/1000 Mbps Ethernet
- ❖ Wake On LAN (WOL) power management support

☐ WiFi/BT support

- ❖ Compliant with IEEE802.11b/g/n standard
- ❖ High speed wireless connection up to 150 Mbps

- ❖ Fully qualified Bluetooth v3.0 or above

☐ **Onboard Audio**

- ❖ 8 channel High Definition Audio
- ❖ All DACs support 192k/96k/48k/44.1kHz sample rate
- ❖ One SPDIF-out header on board

☐ **PCI Express Support**

- ❖ Supports PCI Express 2.0
- ❖ Low power consumption and power management features

☐ **Green Function**

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

☐ **Onboard Graphics Support**

- ❖ Integrates HD 7000 series GPU (depends on APU)
- ❖ Supports DirectX11
- ❖ One VGA, two DisplayPorts and one HDMI output support (HDMI and VGA share one DP, they cannot display at the same time)

☐ **Expansion Slots**

- ❖ One PCI Express x16 slot
- ❖ One Mini PCIe slot

Motherboard Layout

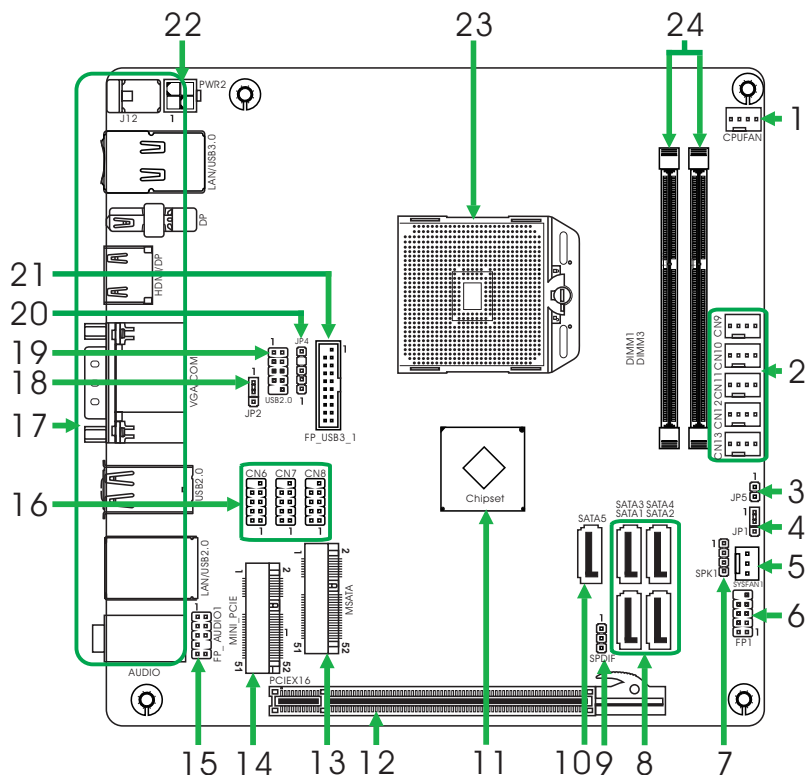
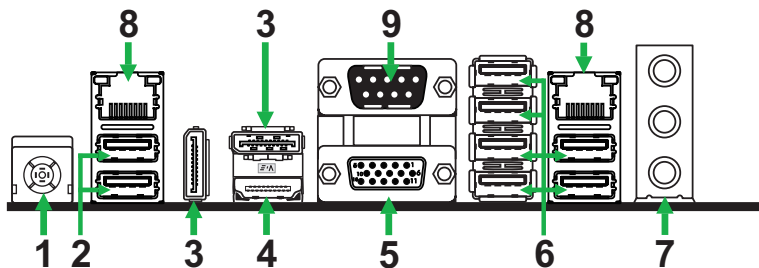


Figure 1. Board Layout

- | | |
|--------------------------------------|-----------------------------------|
| 1. CPU Fan Connector | 13. MSATA Slot |
| 2. SATA Power Connectors | 14. Mini PCIe Slot for WiFi |
| 3. Case Open Connector | 15. Front Panel Audio Header |
| 4. Clear CMOS Jumper | 16. COM Headers |
| 5. System Fan Connector | 17. Backpanel Connectors |
| 6. Front Panel Header | 18. Watch Dog Jumper |
| 7. Speaker Header | 19. USB 2.0 Header |
| 8. SATA Connectors | 20. USB 2.0 Header |
| 9. SPDIF-out Header | 21. USB 3.0 Header |
| 10. SATA DOM (SATA-disk Module) port | 22. 4-pin ATX 12V Power Connector |
| 11. Chipset | 23. CPU Socket |
| 12. PCI Express x16 Slot | 24. DDRIII DIMM Sockets |

Figure 2: Backpanel connectors



1. DC-Jack Power Port

2. USB 3.0 Ports

3. DisplayPort

4. HDMI Port

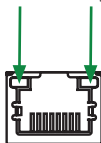
5. VGA Port

6. USB 2.0 Ports

7. 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

8. LAN port LED indicators

Speed LED Activity LED



Speed LED

Status	Description
Off	Speed: 10 Mbps
Green	Speed: 100 Mbps
Orange	Speed: 1000 Mbps

Activity LED

Status	Description
Off	No link
Orange	Linked
Blinking	Data activity

9. COM Port

Hardware Installation

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

- ☐ Preparing the motherboard
 - ❖ Installing the CPU
 - ❖ Installing the CPU fan
 - ❖ Installing Memory Modules
- ☐ Installing the motherboard
 - ❖ Installing the I/O shield
 - ❖ Securing the Motherboard into the Chassis
- ☐ Connecting cables and setting switches

Safety Instructions

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

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

Preparing the Motherboard

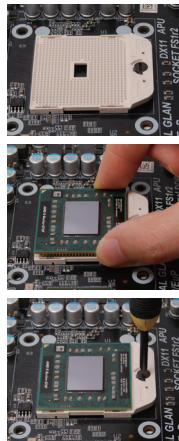
The motherboard shipped in the box does not contain a CPU and memory. You need to purchase these to complete this installation.

Installing the CPU

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

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

1. Please turn off the power and unplug the power cord before installing the processor. Locate the CPU socket.
2. Hold the processor with your thumb and forefinger. Insert the processor into the socket vertically.
 - Align the golden arrow with the pin 1 corner of the CPU socket.
3. Make sure the CPU is fully seated, and then install the screw with the screwdriver.

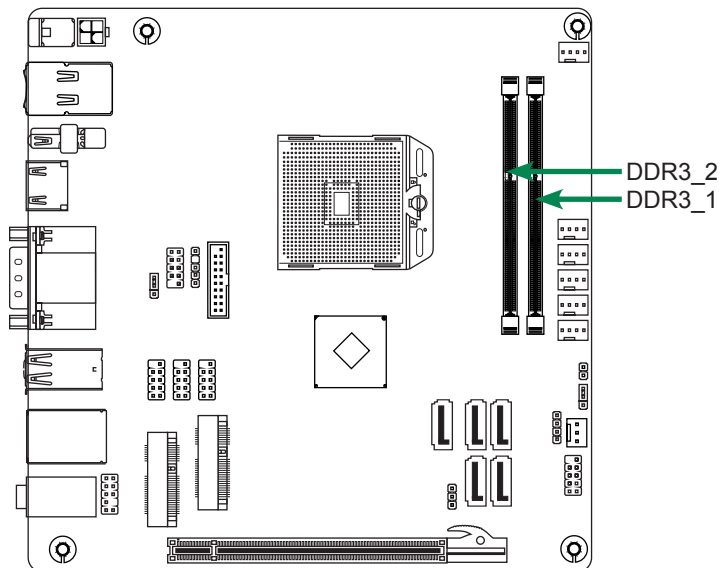


Installing the CPU Fan

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

Installing Memory Modules

This motherboard accommodates two memory modules. It can support two 240-pin DDR3 1866/1600/1333/1066. The total memory capacity is 8 GB. You must install at least one module in any of the two slots. Refer to the following recommendations to install the memory modules.



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

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

Installing the Motherboard

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

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 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.

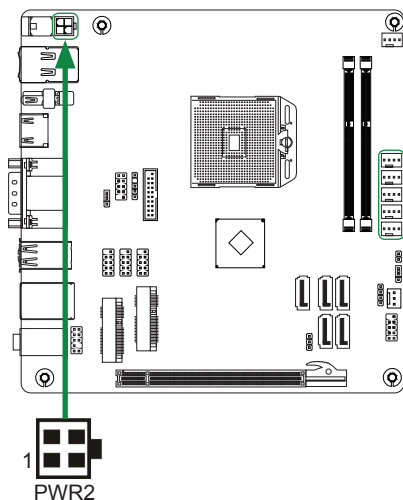
Connecting Cables and Setting Switches

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

- ☐ Power Connectors
 - ❖ 4-pin SATA Power Connectors
 - ❖ 4-pin ATX_12V Power Connector
- ☐ Internal Headers/Connectors
 - ❖ USB Headers
 - ❖ Front Pannel Audio Header
 - ❖ COM Header
 - ❖ Front Panel Header
 - ❖ Speaker Header
 - ❖ SPDIF-Out Header
- ☐ Serial-ATA (SATA) Connectors
- ☐ Fan Connectors
- ☐ Expansion Slots
- ☐ Jumper Settings

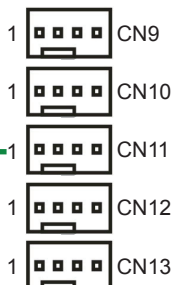
See Figure 1 to locate the connectors and jumpers referenced in the following procedure.

SATA Power Connector



CN9~13-Pin Definition

Pin	Signal
1	GND
2	+12V
3	GND
4	+5V



4-pin ATX_12V Power Connector

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

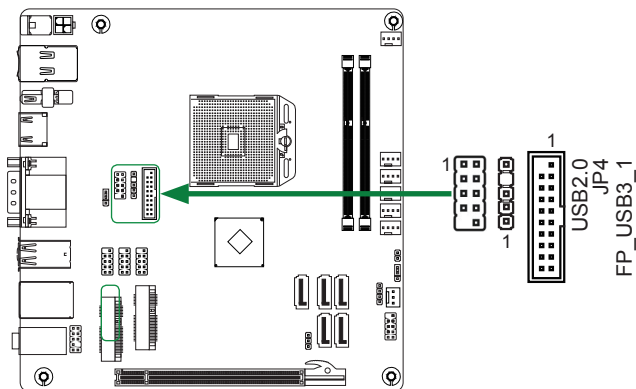
PWR2-Pin Definition

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

USB Headers

This motherboard contains six USB 3.0 ports that are exposed on the rear panel of the chassis (Figure 2). The motherboard also contains one 10-pin internal USB 2.0 header, one 5-pin internal USB 2.0 header and one 20-pin USB 3.0 connector onboard. The onboard headers are optional.

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



USB2.0-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

JP4-Pin Definition

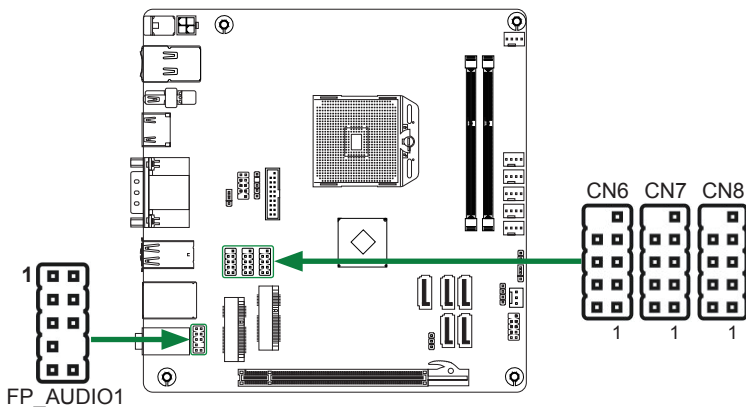
PIN	Assignment
1	USB Power
2	D-
3	D+
4	NC
5	GND

FP_USB3_1-Pin Definition

Pin	Signal	Pin	Signal
1	AVBUS	11	BD+
2	ASSRX-	12	BD-
3	ASSRX+	13	GND2
4	GND	14	BSSTX+
5	ASSTX-	15	BSSTX-
6	ASSTX+	16	GND3
7	GND1	17	BSSRX+
8	AD-	18	BSSRX-
9	AD+	19	BVBUS
10	NC	20	KEY

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_AUDIO1-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 Headers (optional)

CN6/7/8 - 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	Key(No pin)

Front Panel Header

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

☐ PWR LED

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

☐ PWR SW

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

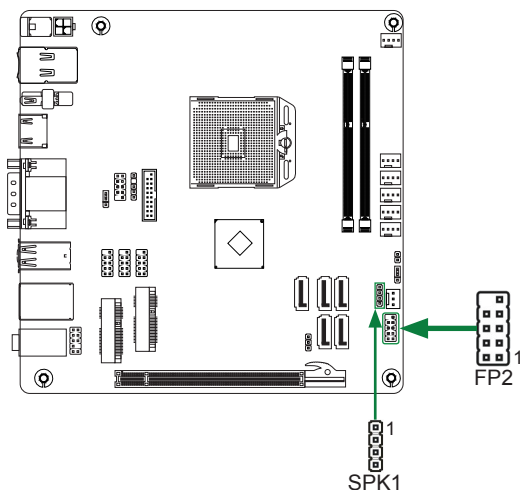
☐ HDD LED

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

☐ RST SW

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

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



FP2-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

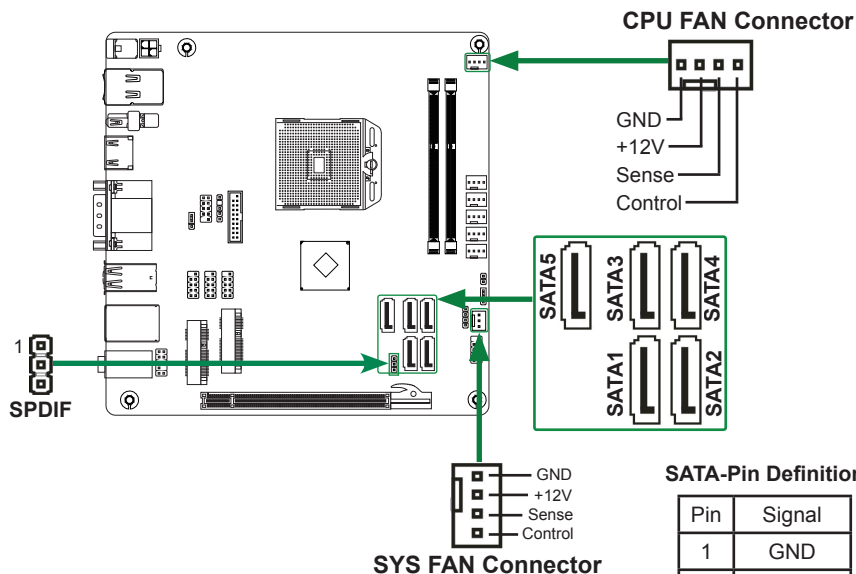
Speaker Header

SPK1-Pin Definition

PIN	Assignment
1	VCC
2	NC
3	NC
4	SPK-

Connecting Serial ATA Cables (optional)

The Serial ATA III connector is used to connect the Serial ATA III device to the motherboard. These connectors support the thin Serial ATA III cables for primary storage devices. The current Serial ATA III interface allows up to 6 Gb/s data transfer rate. There are four serial ATA (SATA1~SATA4) connectors on the motherboard. SATA5 supports SATA DOM (SATA-Disk Module).



Fan Connectors

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

SPDIF-Out Connector

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

SATA-Pin Definition

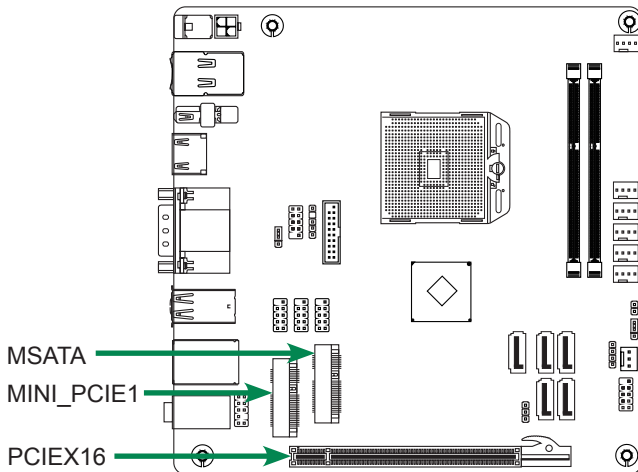
Pin	Signal
1	GND
2	TXP
3	TXN
4	GND
5	RXN
6	RXP
7	GND

CN5 - Pin Definition

Pin	Signal
1	GND
2	SPDIF-out
3	VCC

Expansion Slots

The motherboard contains three expansion slots: one PCI Express x16 slot and two Mini PCI Express slot.



Mini PCI Express Slot-MSATA

There is one Mini PCIe slot, reserved for the MSATA SSD Module.

Mini PCI Express Slot-MINI_PCIE1

There is one Mini PCIe slot, reserved for the WiFi Module.



PCI Express x16 Slot-PCIEX16

There is one PCIe x16 slot reserved for graphics card. It is fully compliant with PCI Express 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-Clear CMOS

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

JP2-Watch Dog

JP1	Selection
1  1-2*	Reset*
1  2-3	NC

JP5-Case Open

JP1	Selection
Pin1	Case Open
Pin2	GND

 Close  Open * = Default setting.

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

Notice:

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

Configuring the BIOS

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

Enter BIOS Setup

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

Use the following procedure to verify/change BIOS settings.

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

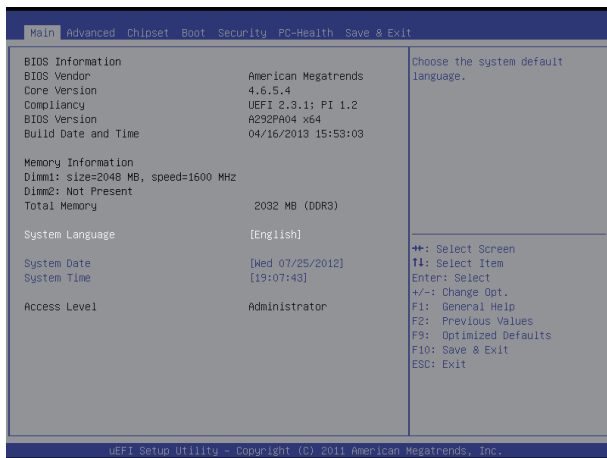
Pressing **Del** takes you to the BIOS Setup Utility.

Note: 1. We reserve the right to update the BIOS version presented in the manual. The BIOS pictures shown in this section are for reference only.

2. It is strongly recommended that you do not change the default BIOS settings. Changing some settings could damage your system.

Main Menu

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



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

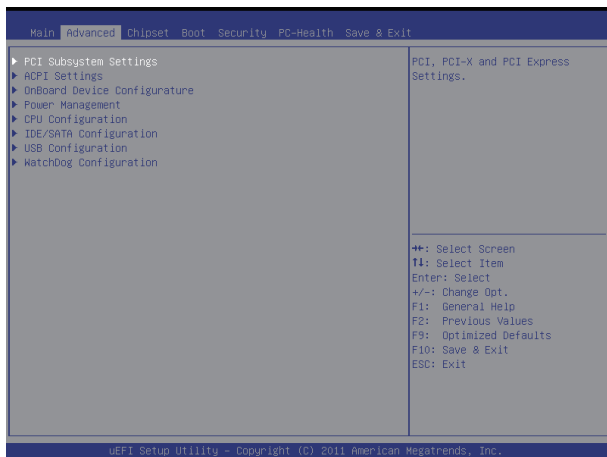
☐ BIOS Information

Displays the auto-detected BIOS information.

- ☐ **Memory Information**
Displays the auto-detected memory information.
- ☐ **System Language**
Choose the system default language.
- ☐ **System Date/Time**
Allows you to set the system date/time.

Advanced Menu

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



PCI Subsystem Settings

The items in this menu show the PCI-related information. Press <enter> to display the configuration options:

- ☐ **PCI Latency Timer**
Allows you to select the value in units of PCI clocks for PCI device latency timer register.
- ☐ **VGA Palette Snoop**
When set to [Enabled], the palette snooping feature informs the PCI devices that an ISA graphics device is installed in the system so that the latter can function correctly.
- ☐ **PERR# Generation/SERR# Generation**
This item allows you to enable or disable PERR#/SERR# Generation.
- ☐ **PCI Express Settings**
This item allows you to configure PCI Express settings.
- ☐ **PCI Express GEN 2 Settings**
This item allows you to configure PCI Express GEN 2 settings.

ACPI Settings

The items in this menu allow you to set ACPI Configuration.

☐ **Enable ACPI Auto Configuration**

Enable or disable BIOS ACPI Auto Configuration.

☐ **Enable Hibernation**

Enable or disable Hibernation.

☐ **ACPI Sleep State**

Select the highest ACPI sleep state, the system will enter when the SUSPEND button is pressed.

☐ **Lock Legacy Resources**

Enable or disable Lock Legacy Resources.

OnBoard Device Configuration

The items allow you to configure onboard device, including HD Audio, LAN and so on.

☐ **Serial Port**

Enable or disable serial port.

☐ **Change Settings**

Enable or disable change settings.

☐ **HD Audio Device**

Enable or disable HD audio device.

☐ **HDMI Audio controller**

Enable or disable HDMI audio controller.

☐ **Onboard Lan Controller 1/2**

Enable or disable onboard Lan controller.

☐ **Launch PXE OpROM**

Enable or disable launch PXE OpROM.

Power Management

The items in this menu allow you to control the system power management. Press <Enter> to display the configuration options:

☐ **Deep Sleep (ErP Compliant)**

When enabled, wake up from S4/S5 can only be done by power button.

☐ **Restore AC Power Loss**

This item allows you to configure how the system board responds to a power failure.

☐ **Wake system with Fixed Time**

Use this item to enable or disable wake system with fixed time.

CPU Configuration

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

☐ **PSS Support**

Use this item to enable or disable PSS support.

☐ **PSTATE/PPC Adjustment**

Use this item to adjust PState/PPC.

☐ **NX Mode**

Use this item to enable or disable NX mode.

☐ **SVM Mode**

Use this item to enable or disable SVM mode.

☐ **CPB Mode**

Use this item to select CPB mode.

☐ **C6 Mode**

Use this item to enable or disable C6 mode.

☐ **Node 0 Information**

Enter this item to view memory information related to Node 0.

IDE/SATA Configuration

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

☐ **OnChip SATA Channel**

Use this item to configure onchip SATA channel.

☐ **OnChip SATA Type**

Use this item to configure the SATA type.

☐ **SATA IDE Combined Mode**

Use this item to enable or disable SATA IDE Combined mode.

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 3.0 Controller Mode**

Allows you to configure the USB 3.0 controller in HiSpeed or Full Speed.

☐ **XHCI Hand-off**

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

☐ **EHCI Hand-Off**

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

☐ **USB Mass Storage Driver Support**

Enable or disable USB Mass Storage Driver Support function.

☐ **USB transfer time-out**

Allows you to set USB transfer time-out.

☐ **Device reset time-out**

Allows you to set device reset time-out.

☐ **Device power-up delay**

Allows you to set device power-up delay.

WatchDog Configuration

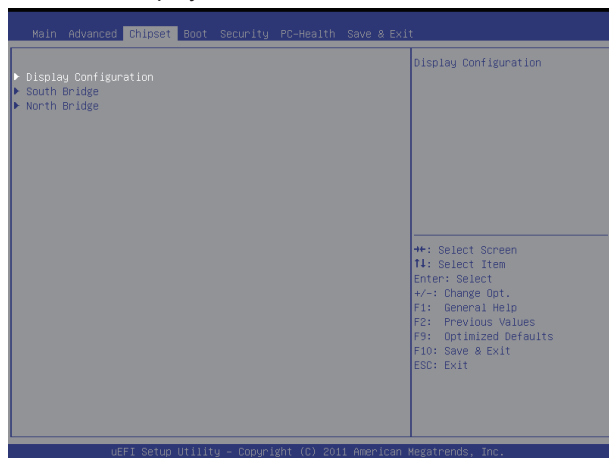
The items in this menu allow you to set watchdog configuration:

☐ **WatchDog Count Mode**

Allows you to select WatchDog Count Mode.

Chipset Menu

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



Display Configuration

The items allow you to configure display features, including Primary Video Device, IGD share memory setting and so on.

South Bridge

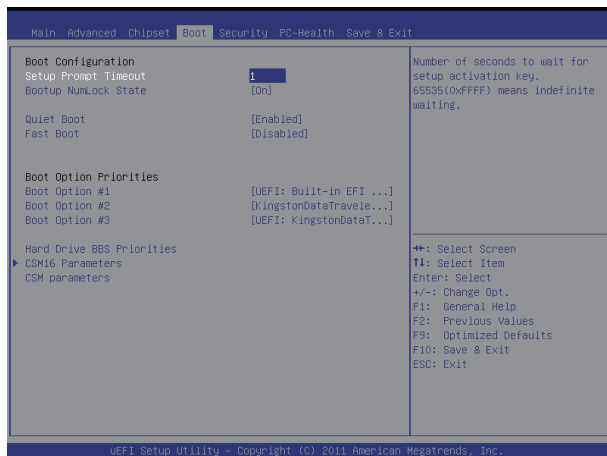
The items allow you to configure southbridge features, including SB SATA/USB/IR/SD/GPP/HD Azalia Configuration and so on.

North Bridge

The items allow you to configure northbridge features, including GFX Configuration, Memory Configuration and so on.

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:

☐ Setup Prompt Timeout

Use this item to set number of seconds to wait for setup activation key.

☐ Bootup NumLock State

Use this item to select the keyboard NumLock state: [On] or [Off].

☐ Quiet Boot

When set to [Disabled], displays normal POST message. When set to [Enabled], displays OEM Logo instead of POST messages.

☐ Fast Boot

Enable or disable boot with initialization of a minimal set of devices required to launch active boot option.

☐ GateA20 Active

When set to [Upon Request], GA20 can be disabled using BIOS services. When set to [Always], GA20 can not be disabled; this option is useful when any RT code is executed above 1MB.

☐ Option ROM Messages

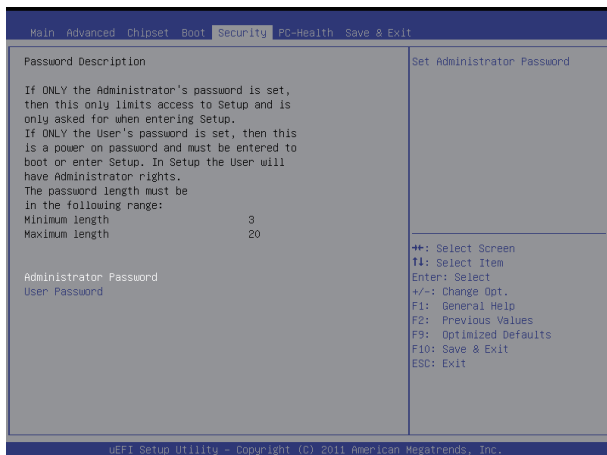
Use this item to set display mode for Option.

☐ Interrupt 19 Capture

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

Security Menu

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



Administrator Password

Select this item to set Setup Administrator Password.

User Password

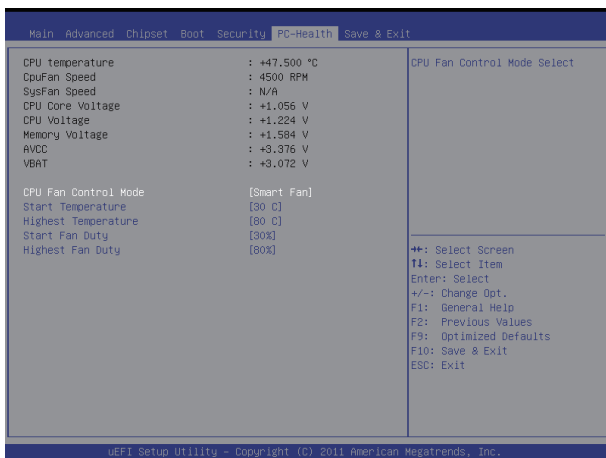
Select this item to set the user password.

To set an Administrator/User Password:

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

PC Health Menu

Select PC Health from the BIOS Setup Utility menu to display the System menu.

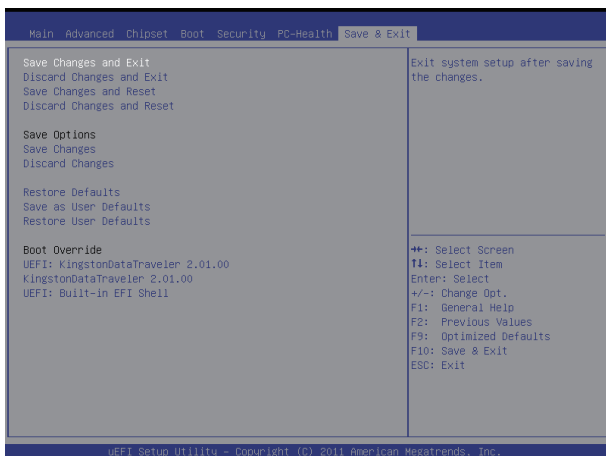


CPU Fan Control Mode

This item allows you to set the CPU fan control mode.

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 and exit?] appears, select [Yes] to save and exit, or select [No] 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.

Save Changes and Reset

Select this item and press <Enter> to reset the system after saving the changes. When the dialog box [Save configuration and reset?] appears, select [Yes] to save and reset, or select [No] to return to the main menu.

Discard Changes and Reset

Select this item and press <Enter> to reset system setup without saving any changes. When the dialog box [Reset without saving?] appears, select [Yes] to discard and reset, or select [No] to return to the main menu.

Save Changes

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?] appears, select [Yes] to save changes, or select [No] to return to the main menu.

Discard Changes

This option allows you to discard the selections you have made and restore the previously saved values. When the dialog box [Load Previous Values?] appears, select [Yes] to discard any change and load the previously saved values.

Restore Defaults

Use this item to restore/load default values for all the setup options.

Save as User Defaults

Use this item to save the changes as User Defaults.

Restore User Defaults

Use this item to restore the User Defaults to all the setup options.

Launch EFI Shell from filesystem device

Use this item to launch EFI Shell application (Shellx64.efi) from one of the available filesystem devices.

Flash Update Procedure

The program EFUDOS.exe is included in the driver disk (X:\Utility\EFUDOS.exe). Please follow the recommended procedure to update the flash BIOS, as listed below.

(X: your driver disk letter).

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

EFUDOS XX.ROM /P /B /R /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

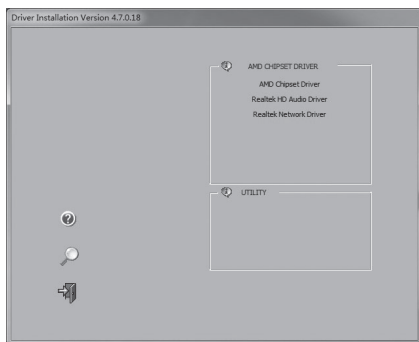
Note: 1. It is important to remember that before installing the driver disk that is shipped in the kit, you need to load your operating system. The motherboard supports Windows 7 32bit/64bit and Windows 8 32bit/64bit.

2. 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.

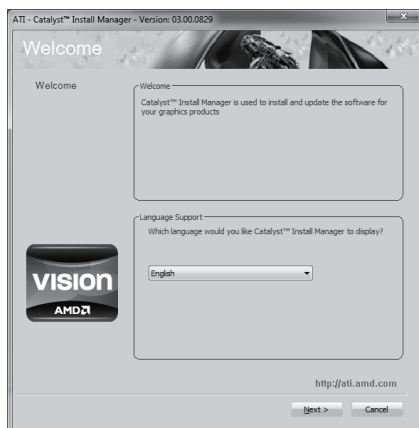
The kit comes with a DVD that contains utility drivers and additional software.

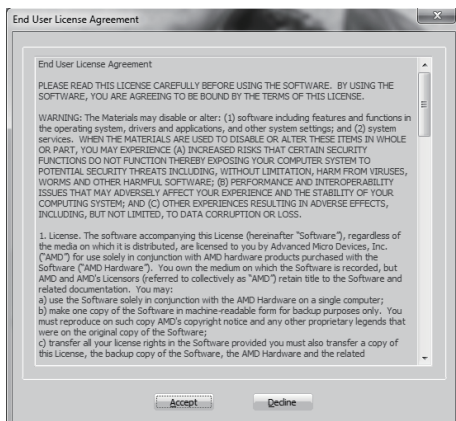
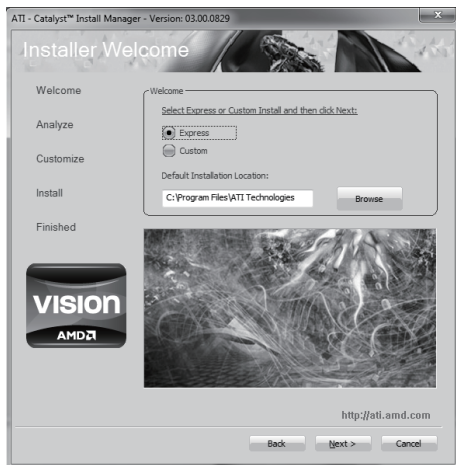
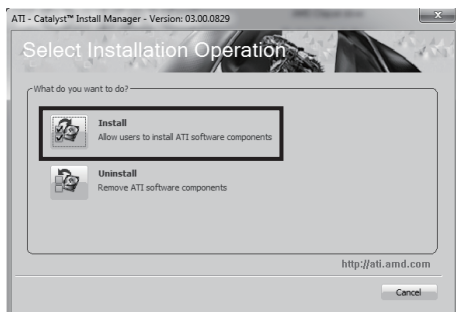
Drivers Installation

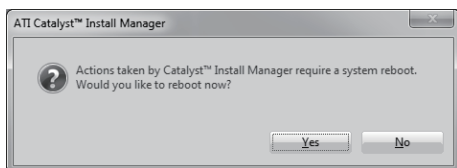
1. Insert the driver disk into the drive after loading your operating system, and then you can see the interface below.



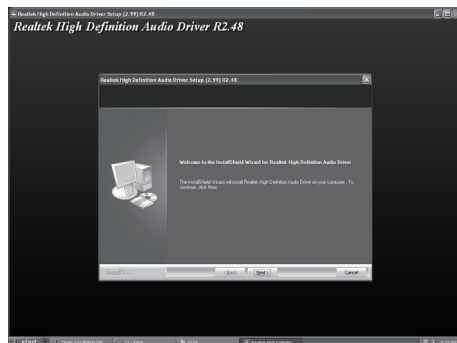
2. Left-click **AMD Chipset Driver**, and follow the instructions below to install the chipset driver.

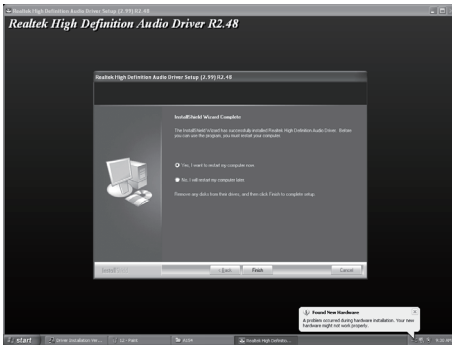




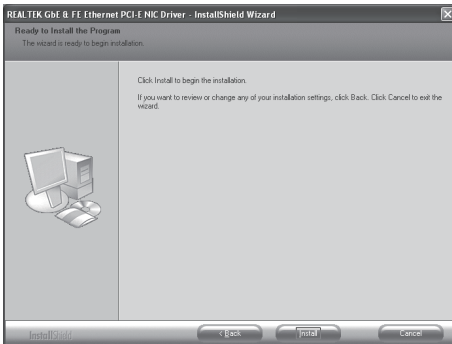
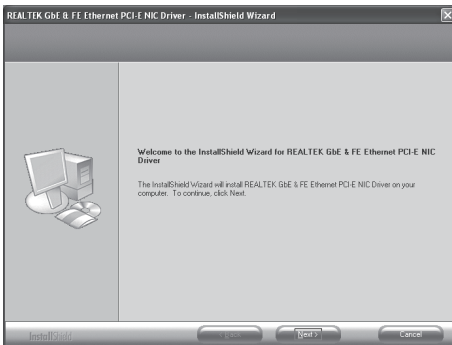


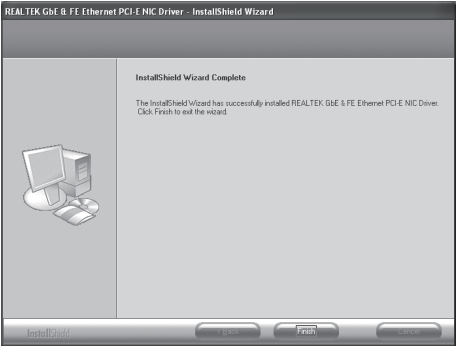
3. Left-click **Realtek HD Audio Driver**, and follow the instructions below to install the sound driver.



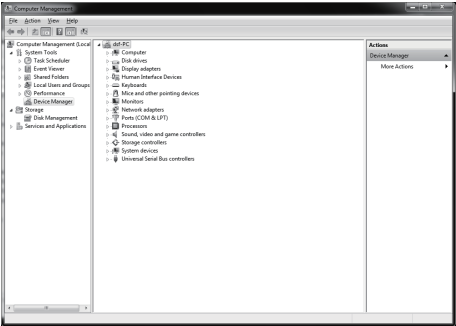


4. Left-click **Realtek Network Driver**, and follow the instructions below to install the network driver.





5. At last, you can enter **Device Manager** interface that provides information about the hardware devices on this motherboard, and check if the installation is finished.



Realtek HD Audio Driver Setup Getting Started

After Realtek HD Audio Driver being installed (insert the driver disk 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.



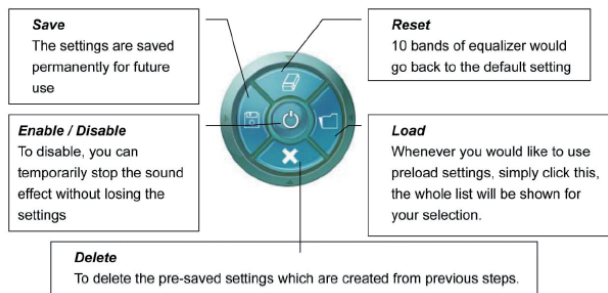
Environment Simulation

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.

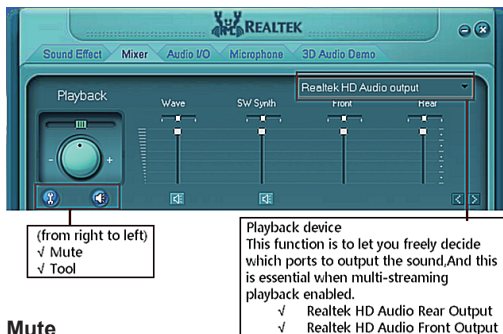
Key Adjustment: Using “Up/Down Arrow” to find a key which better fits your vocal range.

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

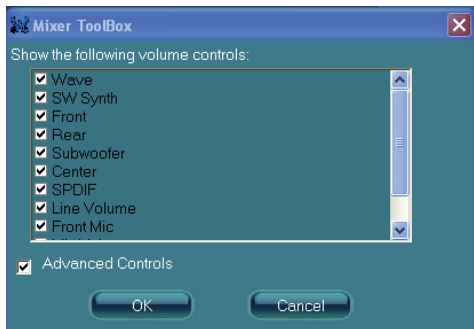
✓ Show the following volume control

This is to let you freely decide which volume control items to be displayed, total 13 items to be chosen.

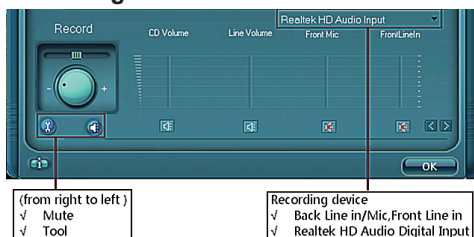
✓ Advanced controls

✓ 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.

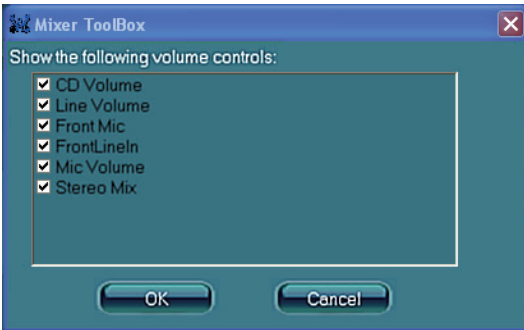
✓ Advanced controls.

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.

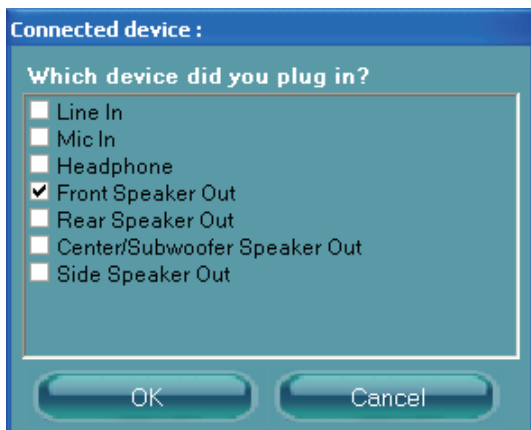


Speaker Configuration

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

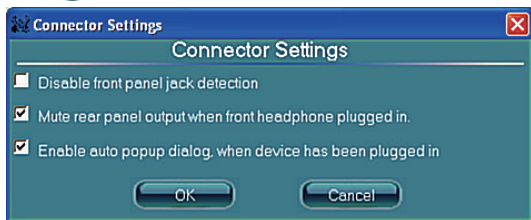
Step 2: Dialogue “Connected device” will pop up for your selection. Please select the device you are trying to plug in.

* 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.



Connector Settings

Click  to access connector settings



✓ **Mute rear panel when front headphone plugged in**

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

✓ **Disable front panel jack detection (option)**

Did not find any function on front panel jacks?

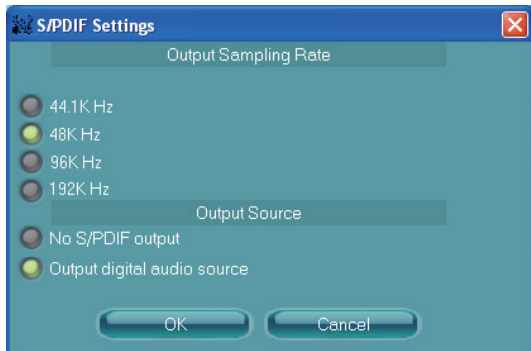
Please check if front jacks on your system are so-called AC'97 jacks. If so, please check this item to disable front panel jack detection.

✓ **Enable auto popup dialogue, when device has been plugged in.**

Once this item checked, the dialog "Connected device" would automatically pop up when device plugged in.

S/PDIF

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



✓ Output Sampling Rate

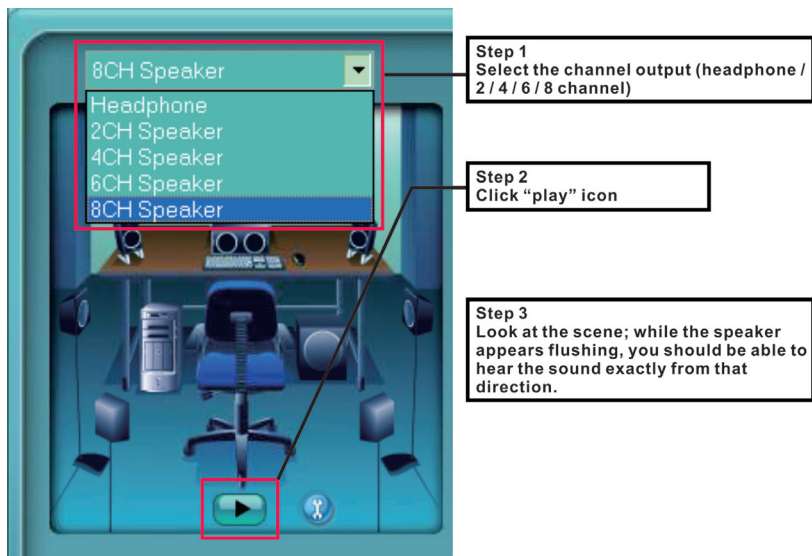
- 44.1KHz: This is recommended while playing CD
- 48KHz: This is recommended while playing DVD or Dolby
- 96KHz: This is recommended while playing DVD-Audio
- 192KHz: This is recommended while playing HD Audio

✓ 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

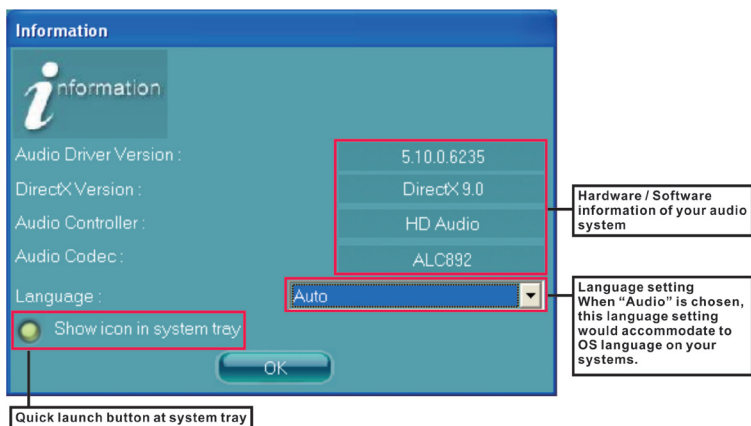
This function prevents playback sound from being recorded by microphone together with your sound. For example, you might have chance to use VOIP function through Internet with your friends. The voice of your friend will come out from speakers (playback). However, the voice of your friend might also be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

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

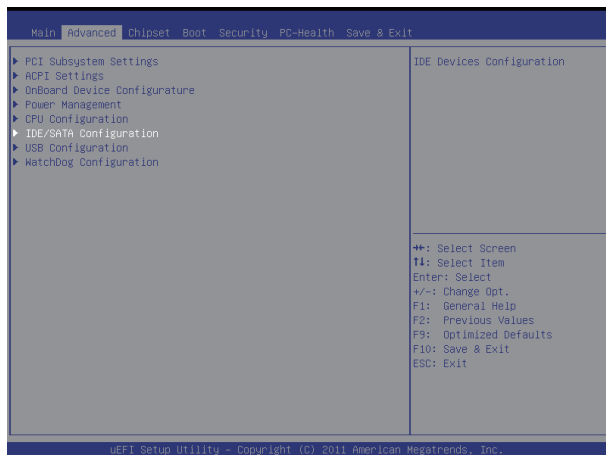


This section provides information about your current system audio device.

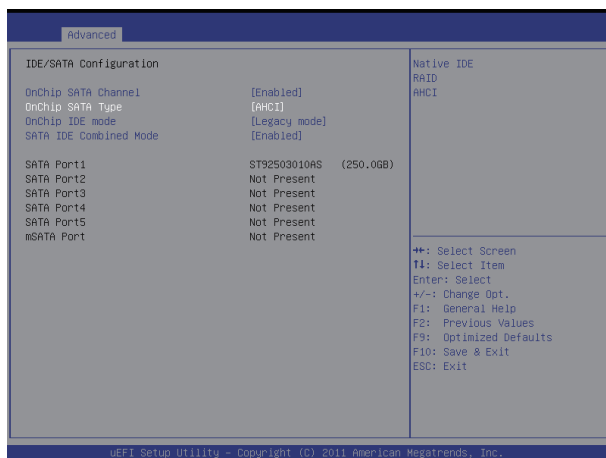
SATA RAID User Manual

Setting up the BIOS

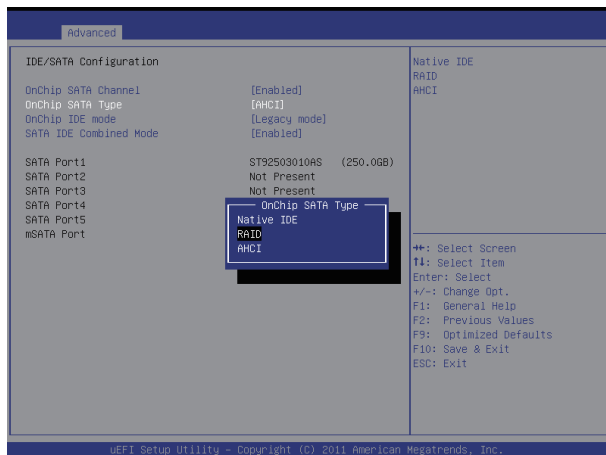
1. Setting your computer, then press <Delete> to enter BIOS SETUP UTILITY.
2. Use the arrow key to select Advanced menu. When enter the Advanced menu, select the Item “IDE/SATA Configuration”.



3. Press <Enter> to display IDE/SATA Configuration, then select the item “OnChip SATA Type”.



4. Press <Enter> and enable the option “**RAID**”.



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

Entering the RAID BIOS Setup

1. After rebooting your computer, wait until you see the RAID software prompting you to press <Ctrl-F>.
2. **Option ROM Utility (c) 2009 Advanced Micro Devices, Inc.-Main Menu** window appears.

```
View Drive Assignments .....[ 1 ]
LD View / LD Define Menu .....[ 2 ]
Delete LD Menu .....[ 3 ]
Controller Configuration .....[ 4 ]
```

Creating a RAID set

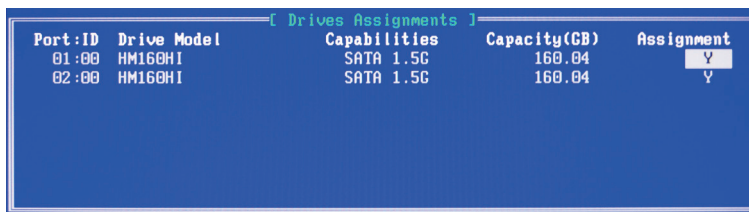
1. In **Main Menu**, select <2> to enter **LD View Menu**, and press <Ctrl-C> to enter **LD Define Menu**.
 - a. In the RAID Mode field, use the space bar to select a RAID Mode. The supported RAID modes include Mirroring (RAID 1), Striping (RAID 0) and Stripe Mirroring (RAID 10). The following is an example of RAID 0 array creation.
 - b. If RAID 0 (Striping) is selected, you can manually set the striping block size. In the Striping Block field, use the UP or DOWN ARROW key to set the Striping Block size. The KB is standard unit of Striping Block size. We recommend you leaving it to the default setting-Optimal (64k). The size range is from 4k to 128k.

```
Option ROM Utility (c) 2009 Advanced Micro Devices, Inc.
                               [ LD Define Menu ]

LD No  LD Name                      RAID Mode  Drv
LD  1  Logical Drive  1             RAID 0      0

Stripe Block    64 KB              Fast Init   ON
Gigabyte Boundary ON              Cache Mode  WriteThru
```

2. In **Drives Assignments** menu, use the space bar to select <Y>, and press <Ctrl-Y>.



Port:ID	Drive Model	Capabilities	Capacity(GB)	Assignment
01:00	HM160HI	SATA 1.5C	160.04	<input checked="" type="checkbox"/> Y
02:00	HM160HI	SATA 1.5C	160.04	<input checked="" type="checkbox"/> Y

3. Enter the LD name.



Port:ID	Drive Model	Capabilities	Capacity(GB)	Assignment
01:00	HM160HI	SATA 1.5C	160.04	<input checked="" type="checkbox"/> Y
02:00				<input checked="" type="checkbox"/> Y

Enter the LD name here:

4. Modify Array Capacity, and press <Ctrl-Y> to save the modification. When the setup is finished, press <Esc> to exit the RAID interface. After the PC reboots, the RAID controller will display the ready RAID.

Deleting a RAID set

1. In **Main Menu**, select <3> to enter **Delete LD Menu**, and select the RAID you want to delete.

Option ROM Utility (c) 2009 Advanced Micro Devices, Inc.
[Delete LD Menu]

LD No	RAID Mode	Drv	Capacity(GB)	Status
LD 1	RAID 0	2	317.99	Functional

2. Press <Ctrl-Y> to delete the RAID, or press any other key to abort.

Option ROM Utility (c) 2009 Advanced Micro Devices, Inc.
[View LD Definition Menu]

LD No	LD Name	RAID Mode	Drv	Capacity(GB)
LD 1	Logical Drive 1	RAID 0	2	317.99
Stripe Block		64 KB	Cache Mode	WriteThru

[Drives Assignments]

Port:ID	Drive Model	Capabilities	Capacity(GB)
01:00	HM160HI	SATA 1.5G	160.04
02:00	HM160HI	SATA 1.5G	160.04

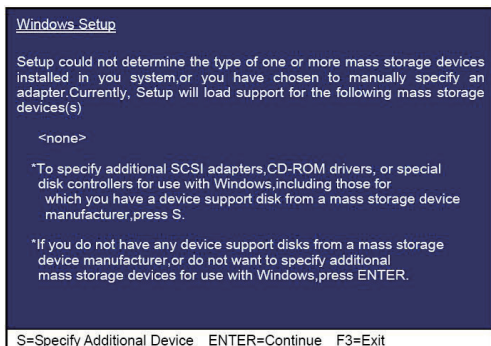
Press Ctrl-Y to delete the data in the disk!
or press any other key to abort...

Installing the RAID Drivers

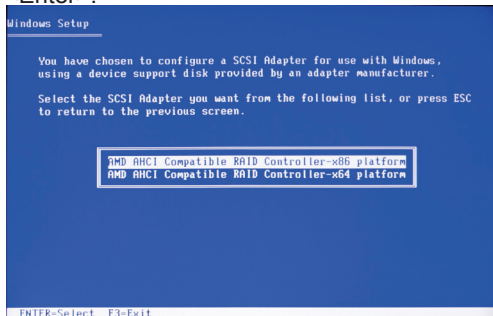
1. After you complete the RAID BIOS setup, boot from the windows disk. The Windows Setup program starts.



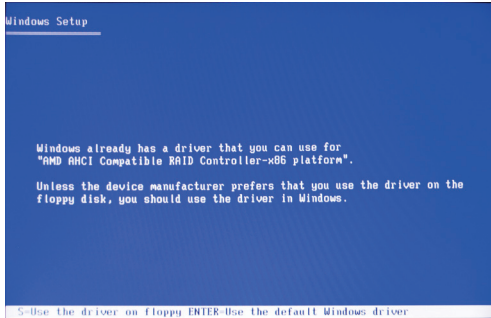
2. Press F6 and wait a few moments for the Windows Setup screen to appear.



3. Specify the AMD drivers.
 - a. Insert the floppy that has the RAID driver, and select the SCSI Adapter, then press <Enter>.



- b. When the window below display, press <S> to use the driver on floppy.



- c. Press <Enter> to continue the windows setup.



