

**AX480A**

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**AX480A-F**

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**AX480A-GF**

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**Motherboard Manual**

**Revision A1**

## **FCC Guidelines**

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the 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 the instructions may cause harmful interference to radio 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 to which the receiver is connected.
- Consult the dealer or an experienced radio TV technician for help.
- Use only shielded cables to connect I/O devices to this equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference. (2) This device must accept any interference received, including interference that may cause undesired operation.

### **Information to User:**

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment. Shielded interference cable, if any, must be used in order to comply with emission limits.

## **Disclaimer of Warranties**

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## Static Electricity Precautions

It is quite easy to inadvertently damage your PC, motherboard, components or devices even before installing them in your system unit. Static electrical discharge can damage computer components without causing any signs of physical damage. You must take extra care in handling them to ensure against electrostatic build-up.

1. To prevent electrostatic build-up, leave the motherboard in its anti-static bag until you are ready to install it.
2. Wear an antistatic wrist strap.
3. Do all preparation work on a static-free surface.
4. Hold the device only by its edges. Be careful not to touch any of the components, contacts or connections.
5. Avoid touching the pins or contacts on all modules and connectors. Hold modules or connectors by their ends.



Electrostatic discharge (ESD) can damage your processor, disk drive and other components. Perform the upgrade instruction procedures described at an ESD workstation only. If such a station is not available, you can provide some ESD protection by wearing an antistatic wrist strap and attaching it to a metal part of the system chassis. If a wrist strap is unavailable, establish and maintain contact with the system chassis throughout any procedures requiring ESD protection.

## Chapter 1

### Introduction

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## Motherboard Manual

### Package Contents

- 1 motherboard
- 1 manual
- 1 pack of floppy and IDE disk drive shackle cables
- 1 ATA/100 IDE disk drive cable
- 1 pack of 2 Serial ATA data cables
- 1 Serial ATA power cable
- 1 USB port bracket with cable
- 1 I/O shield
- 1 CD (contains drivers and utilities)
- 1 CD (Cyberlink DVD solution)

### Optional Items

- 1 1394 port bracket with cable

If you need any of the optional items listed above, please contact your dealer for assistance.



The motherboard and accessories may not come similar to the information stated in this manual. This may differ in accordance to the sales region or models in which it was sold. For more information about the standard package in your region, please contact your dealer or sales representative.

### Before Using the Motherboard...

Before you install and use the motherboard, please check the following:

- Package contents

Make sure the package contains all items listed in the Package Contents section. If any of the items are missing, please contact your dealer or sales representative for assistance.

- Motherboard damage

If the motherboard has been visibly damaged, return the complete package to your dealer with the proof of purchase.

## Introduction

- Damaged accessories

If any of the accessories are damaged, please contact your dealer or sales representative for assistance.

- Prepare basic system components

If you are installing the motherboard in a new system, you will need at least the following internal components.

- A CPU
- DDR SDRAM memory module
- Storage devices such as hard disk drive, CD-ROM, etc.

You will also need external system peripherals you intend to use which will normally include at least a keyboard, a mouse and a video display monitor.

### About this Manual

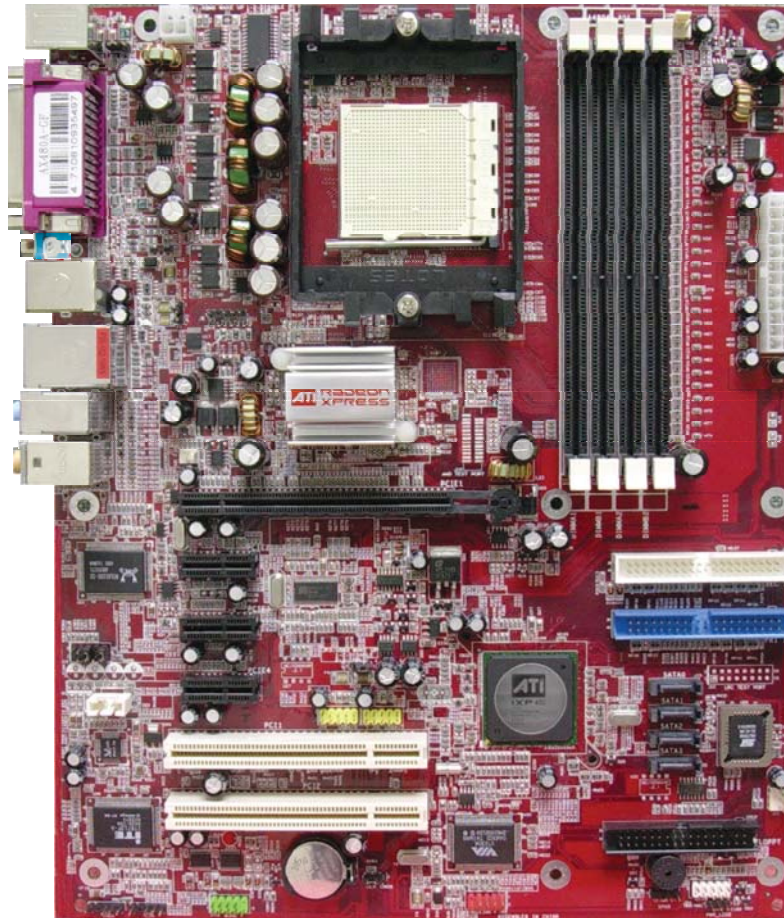
This user's manual is for the standard model motherboard and for the model that supports Gigabit LAN. The differences between these boards are shown below.

	<b>Standard</b>	<b>Model With Gigabit LAN</b>
LAN	100Mbps	1Gbps Gigabit LAN



## Motherboard Manual

### The Motherboard



## Specifications

<b>Chipset</b>	<ul style="list-style-type: none"> <li>• North bridge: RADEON XPRESS 200P (RX480)</li> <li>• South bridge: ATI SB400</li> </ul>
<b>CPU</b>	<ul style="list-style-type: none"> <li>• AMD Athlon 64</li> <li>• Socket 939</li> </ul>
<b>System bus</b>	<ul style="list-style-type: none"> <li>• 2000MT/s Hyper Transport</li> </ul>
<b>Memory</b>	<ul style="list-style-type: none"> <li>• 4 184-pin DDR DIMM sockets</li> <li>• Supports dual channel (128-bit wide) memory interface</li> <li>• Up to 4GB unbuffered non-ECC memory</li> <li>• DDR266/333/400</li> <li>• CPU integrated memory controller</li> </ul>
<b>Expansion slots</b>	<ul style="list-style-type: none"> <li>• 1 PCI Express x16 slot</li> <li>• 3 PCI Express x1 slots</li> <li>• 2 PCI slots</li> </ul>
<b>Storage</b>	<ul style="list-style-type: none"> <li>• 1 FDD connector supports 2 floppy drives</li> <li>• 2 parallel IDE connectors support up to 4 UltraDMA 133 hard drives</li> <li>• 4 Serial ATA connectors support RAID 0 and RAID 1</li> </ul>
<b>USB</b>	<ul style="list-style-type: none"> <li>• Supports up to 8 USB 2.0 ports (4 USB ports and 2 connectors for 4 USB ports)</li> </ul>
<b>IEEE 1394</b>	<ul style="list-style-type: none"> <li>• VIA VT6307 supports 2 IEEE 1394 ports (1 1394 port and 1 connector for 1 1394 port)</li> </ul>
<b>Audio</b>	<ul style="list-style-type: none"> <li>• Realtek ALC850 8-channel audio CODEC</li> <li>• Coaxial S/PDIF-in and S/PDIF-out ports</li> </ul>
<b>LAN</b>	<ul style="list-style-type: none"> <li>• Realtek Gigabit LAN controller supports 1Gbps, IEEE 802.3ab compliant (<i>model with Gigabit LAN</i>)</li> <li>• Realtek PCI LAN controller supports 100Mbps, IEEE 802.3 compliant</li> </ul>
<b>Legacy I/O</b>	<ul style="list-style-type: none"> <li>• ITE 8712 controller</li> </ul>

## Motherboard Manual

<b>Rear Panel I/O</b>	<ul style="list-style-type: none"><li>• 1 PS/2 mouse port</li><li>• 1 PS/2 keyboard port</li><li>• 1 S/PDIF-in port</li><li>• 1 S/PDIF-out port</li><li>• 1 parallel port</li><li>• 1 COM 1 port</li><li>• 1 IEEE 1394 port</li><li>• 1 LAN port</li><li>• 4 USB 2.0 ports</li><li>• Line-in, line-out and mic-in jacks</li><li>• Side right/left, center/subwoofer and rear right/left</li></ul>
<b>Internal I/O</b>	<ul style="list-style-type: none"><li>• 2 connectors for 4 additional USB ports</li><li>• 1 IEEE 1394 connector</li><li>• 1 COM 2 connector</li><li>• 1 front audio connector</li><li>• 1 CD-in connector</li><li>• 1 IrDA connector</li><li>• 1 CIR connector</li><li>• 3 fan connectors</li><li>• 1 24-pin ATX power connector</li><li>• 1 4-pin 12V ATX power connector</li><li>• 1 front panel connector</li><li>• 1 power LED connector</li><li>• 1 speaker connector</li></ul>
<b>BIOS</b>	<ul style="list-style-type: none"><li>• AMI BIOS</li><li>• 4Mbit flash ROM</li></ul>
<b>Form Factor</b>	<ul style="list-style-type: none"><li>• ATX form factor</li><li>• 30.5 cm x 24.5 cm (12 in x 9.65 in)</li></ul>

### Product Features Explained

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#### AMD Athlon™ 64

The AMD Athlon™ 64 CPU provides superior computing for many software applications by allowing both 32-bit and 64-bit applications to run simultaneously on the same platform. This allows the operating system and software to process more data and access a tremendous amount of memory, improving the overall system performance.

#### AMD Cool'n'Quiet™ Technology

AMD CPU's Cool'n'Quiet™ technology allows the system to detect the CPU's tasks and utilization status. When the CPU's task slows down, the system effectively lowers power consumption by lowering its CPU speed and voltage. This subsequently decreases the noise level.

#### DDR

DDR (Double Data Rate) is a type of SDRAM that doubles the data rate through reading and writing at both the rising and falling edge of each clock. This effectively doubles the speed of operation therefore providing two times faster data transfer.

#### PCI Express

PCI Express is a high bandwidth I/O infrastructure that possesses the ability to scale speeds by forming multiple lanes. The motherboard currently supports the physical layer of x1 and x16 lane widths.

The x1 PCI Express lane supports transfer rate of 2.5 Gigabytes (250MBbps) per second. The PCI Express architecture also provides a high performance graphics infrastructure by doubling the capability of the existing AGP 8x designs over a x16 PCI Express lane that provides 4 Gigabytes per second transfer rate.

## **Motherboard Manual**

### **Serial ATA Interface with RAID**

Serial ATA is a storage interface that is compliant with SATA 1.0 specification. With speed of up to 1.5Gbps, it improves hard drive performance faster than the standard parallel ATA whose data transfer rate is 100MB/s. The motherboard allows configuring RAID on SATA drives. It supports RAID 0 and RAID 1.

### **IEEE 1394 Interface**

IEEE 1394 is fully compliant with the 1394 OHCI (Open Host Controller Interface) 1.1 specification. 1394 is a fast external bus standard that supports data transfer rates of up to 400Mbps. In addition to its high speed, it also supports isochronous data transfer which is ideal for video devices that need to transfer high levels of data in real-time. 1394 supports both Plug-and-Play and hot plugging.

### **IrDA Interface**

IrDA provides wireless connectivity between your computer and peripheral devices. The IRDA (Infrared Data Association) specification supports data transfers of 115K baud at a distance of 1 meter.

### **USB Ports**

The motherboard supports USB 2.0 and USB 1.1 ports. USB 1.1 supports 12Mb/second bandwidth while USB 2.0 supports 480Mb/second bandwidth providing a marked improvement in device transfer speeds between your computer and a wide range of simultaneously accessible external Plug and Play peripherals.

### **8-channel Audio Output**

The 7.1-channel audio CODEC, S/PDIF interfaces and the audio ports at the rear panel of the motherboard provides 8-channel audio output.

## Introduction

### S/PDIF

S/PDIF is a standard audio file transfer format that transfers digital audio signals to a device without having to be converted first to an analog format. This prevents the quality of the audio signal from degrading whenever it is converted to analog. S/PDIF is usually found on digital audio equipment such as a DAT machine or audio processing device. The S/PDIF interfaces on the motherboard sends surround sound and 3D audio signal outputs to amplifiers and speakers and to digital recording devices like CD recorders.

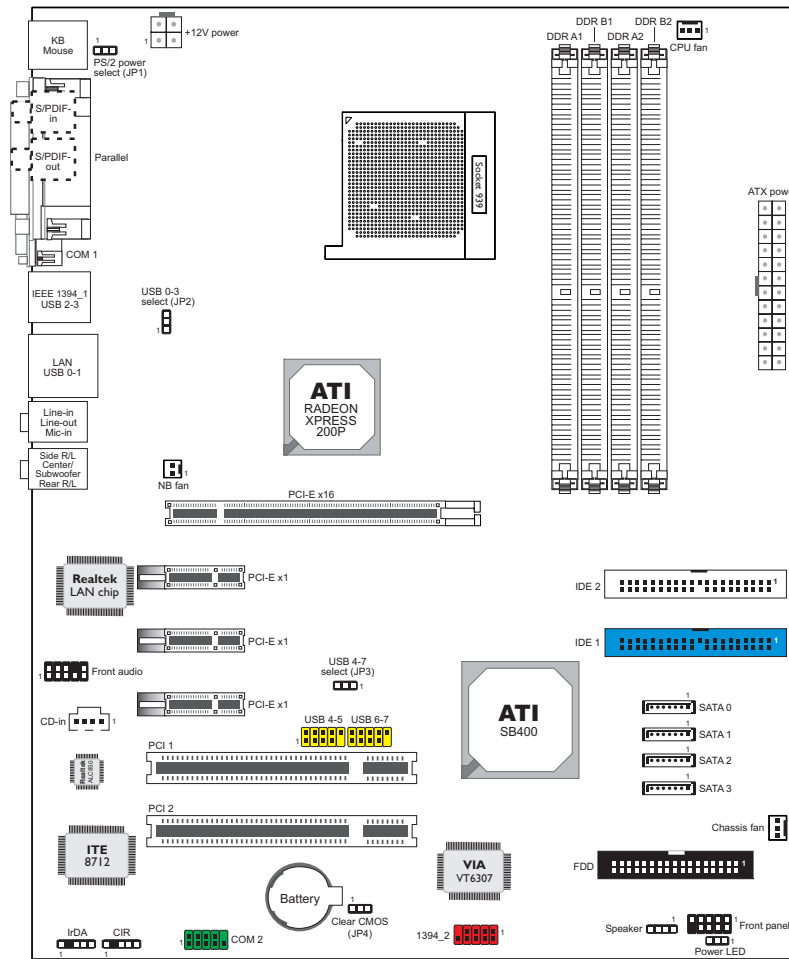
## Chapter 2

### Installation

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## Installation

### The Components of the Motherboard





## Motherboard Manual

### Quick Installation Guide

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- Make sure the PC and all other peripheral devices connected to it has been powered-off.
- Disconnect all power cords and cables.

#### **Step 1**

Install the CPU, CPU fan / heatsink and other system fans.

#### **Step 2**

Install the DIMM.

#### **Step 3**

Install add-in cards.

#### **Step 4**

Configure the jumpers.

#### **Step 5**

Connect the storage device cables to their respective devices.

#### **Step 6**

Connect the ATX power supply's cables to the appropriate connectors and devices.

#### **Step 7**

Connect devices to the ports located at the rear panel.

#### **Step 8**

Connect the front panel cables (LED indicators and switch connectors) to the front panel connectors.

#### **Step 9**

Power on the PC.

#### **Step 10**

Configure the BIOS.

#### **Step 11**

Reboot the PC.

#### **Step 12**

Install the drivers and utilities that are in the provided CD.

## Installation

### CPU

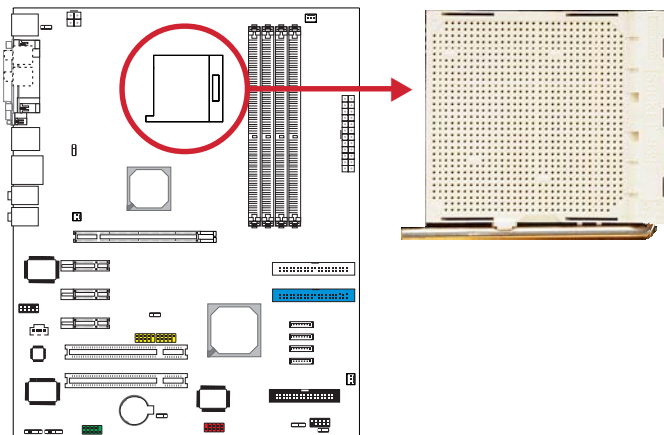
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#### Overview

The 939-pin CPU socket on the motherboard is exclusively designed for installing an AMD Athlon 64 CPU.

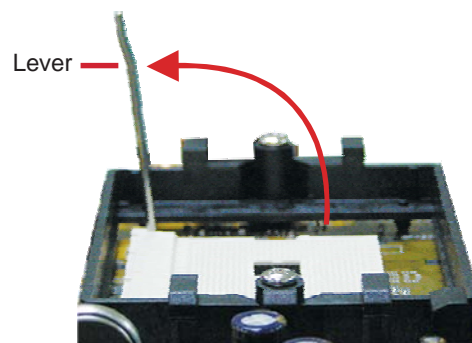
#### Installing the CPU

1. Make sure the PC and all other peripheral devices connected to it has been powered down.
2. Disconnect all power cords and cables.
3. Locate the 939-pin CPU socket on the motherboard.



## Motherboard Manual

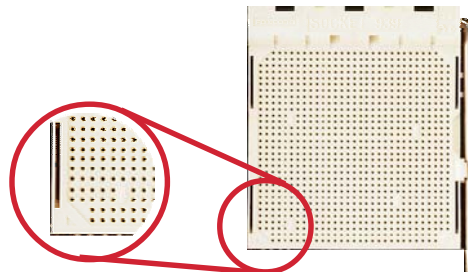
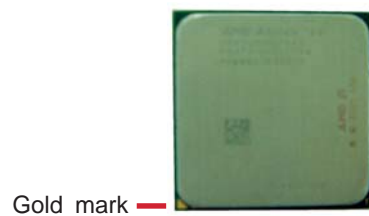
4. Unlock the socket by pushing the lever sideways, away from the socket, then lifting it up to a 90° angle. Make sure the lever is lifted to at least this angle otherwise the CPU will not fit in properly.



5. Position the CPU above the socket. The gold mark on the CPU must align with the corner of the CPU socket (refer to the enlarged view) shown below.

### **Important**

- Handle the CPU by its edges and avoid touching the pins.

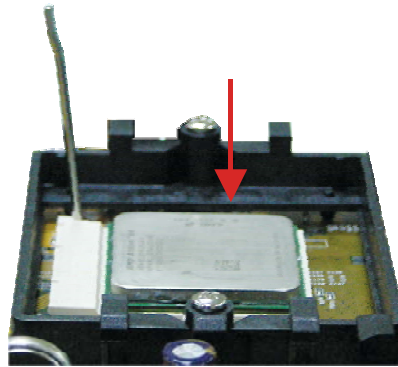


## Installation

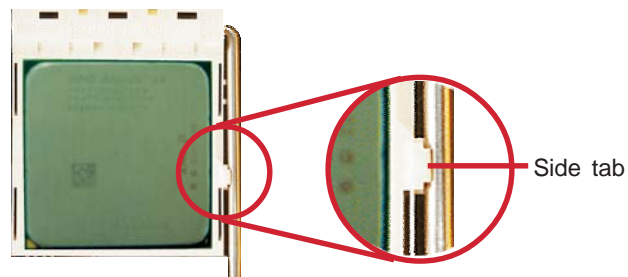
6. Insert the CPU into the socket until it is seated in place. The CPU will fit in only one orientation and can easily be inserted without exerting any force.

### **Important**

- Do not force the CPU into the socket. Forcing the CPU into the socket may bend the pins and damage the CPU.



7. Once the CPU is in place, push down the lever to lock the socket. The lever should click on the side tab to indicate that the CPU is completely secured in the socket.



## Motherboard Manual

### Installing the Fan and Heat Sink

The CPU must be kept cool by using a CPU fan with heat sink. Without sufficient air circulation across the CPU and heat sink, the CPU will overheat damaging both the CPU and motherboard.

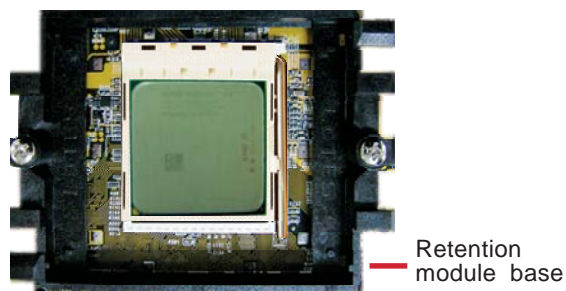
#### Note

- Use only certified fan and heat sink.
- The fan and heat sink package usually contains the fan and heat sink assembly, and an installation guide. If the installation procedure in the installation guide differs from the one in this section, please follow the installation guide in the package.

1. Before you install the fan / heat sink, you must apply a thermal paste onto the top of the CPU. The thermal paste is usually supplied when you purchase the CPU or fan heat sink assembly. Do not spread the paste all over the surface. When you later place the heat sink on top of the CPU, the compound will disperse evenly.

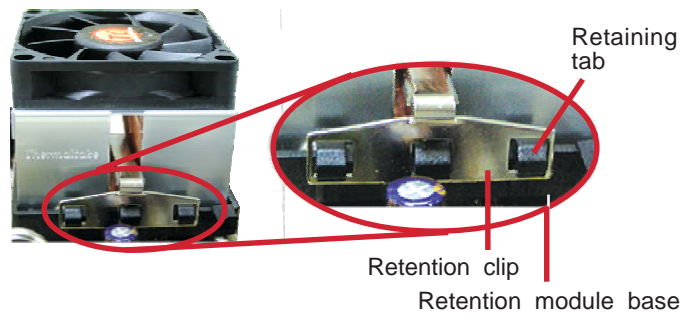
Do not apply the paste if the fan / heat sink already has a patch of thermal paste on its underside. Peel the strip that covers the paste before you place the fan / heat sink on top of the CPU.

2. The motherboard comes with the retention module base already installed.

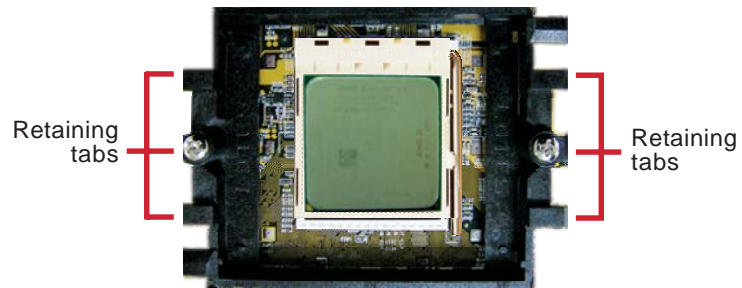


## Installation

3. Place the heat sink on top of the CPU. Now hook one side of the retention clip onto the retention module base by fitting the holes on the retention clip into the retaining tabs of the retention module base.



Side View



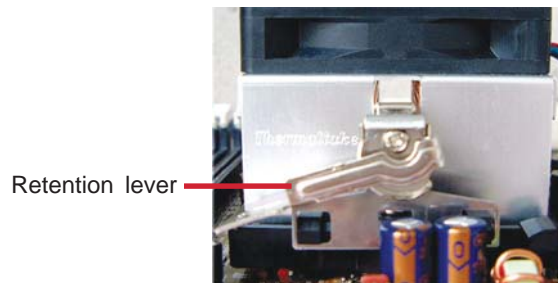
Top View

## Motherboard Manual

- Hook the other side of the retention clip (the one near the retention lever) so that the holes on the retention clip also fit into the retaining tabs of the retention module base.

### Note

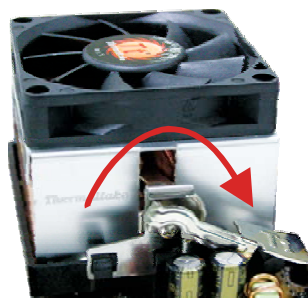
- You will not be able to secure the fan and heat sink assembly in place if it did not fit properly onto the retention module base.



- Move the retention lever to its opposite side then push it down to lock the fan and heat sink assembly to the retention module base.

### Note

- Make sure there is sufficient air circulation across the CPU fan and heat sink.

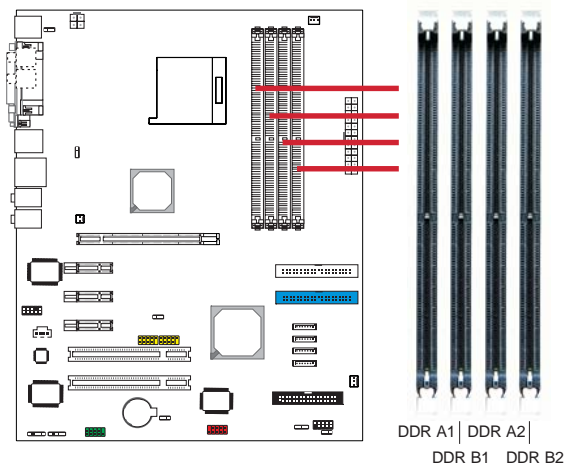


- Connect the CPU fan's cable connector to the CPU fan connector on the motherboard.

### System Memory

#### Overview

The 4 DDR (Double Data Rate) sockets support up to 4GB system memory using 184-pin unbuffered non-ECC DDR266/333/400 DIMMs.



The four DDR DIMM sockets are divided into 2 channels:

- Channel A - DDR A1 and DDR A2
- Channel B - DDR B1 and DDR B2

The supported memory interfaces are:

#### Single Channel (SC)

Data will be accessed in chunks of 64 bits (8B) from the memory channels.

#### Dual Channel (DC)

Dual channel provides better system performance because it doubles the data transfer rate.



## Motherboard Manual

Single Channel	<ul style="list-style-type: none"><li>• DIMMs are on the same channel.</li><li>• DIMMs in a channel can be identical or completely different. However, we highly recommend using identical DIMMs.</li><li>• Not all slots need to be populated.</li></ul>
Dual Channel	<ul style="list-style-type: none"><li>• DIMMs of the same memory configuration are on different channels.</li></ul>

### **Important**

- *Use the same type and size of DIMMs.*
- *Using non-compliant DIMMs or overclocking the memory bus speed may severely damage the motherboard.*

## BIOS Setting

You can further configure the system memory in the Chipset menu of the BIOS. Refer to chapter 3 for more information.

## Installation

### Installing a DIMM

#### **Important**

- *Power-off the PC and unplug the power cord prior to adding or removing DIMMs. Failure to do so may cause severe damage to the motherboard.*

1. Unlock the DIMM socket by pulling the “tabs” that are at the ends of the socket to the side.



2. Position the DIMM above the socket with the “notch” in the module aligned with the “key” on the socket.
3. Insert the module vertically into the socket until the tabs snap back in place. Make sure it is completely seated. The tabs will hold the DIMM in place.

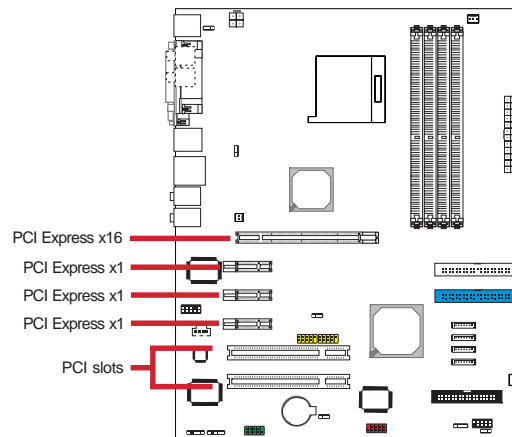


#### **Important**

- *The DIMM is keyed with a notch so that it will fit in only one orientation. It can easily be inserted without exerting any force.*

## Motherboard Manual

### Expansion Slots



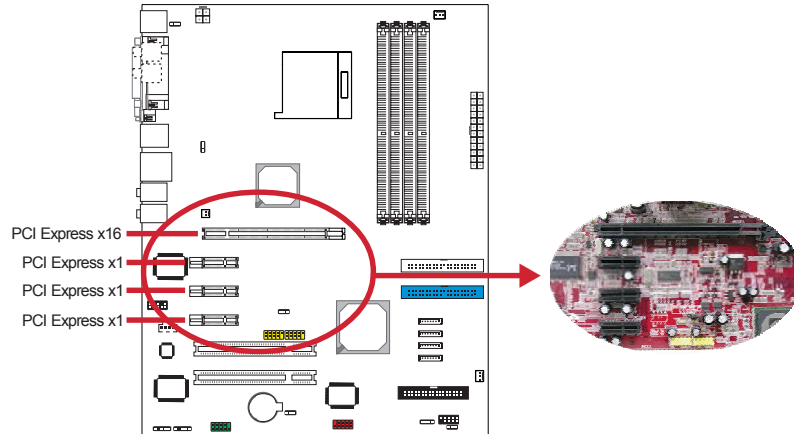
#### PCI Express

The motherboard allows installing one x16 and three x1 PCI Express cards.

Install PCI Express x16 graphics card, that comply to the PCI Express specifications, into the PCI Express x16 slot. To install a graphics card into the x16 slot, push down the slot's retaining clip. Align the graphics card above the slot then press it down firmly until it is completely seated in the slot. The retaining clip will automatically hold the graphics card in place.

Install PCI Express x1 card such as network cards or other cards that comply to the PCI Express specifications into the PCI Express x1 slot.

## Installation

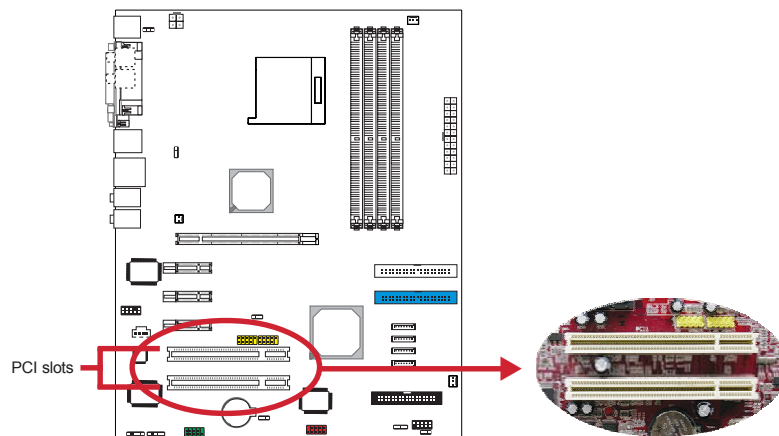


### PCI Slots

The motherboard is equipped with 2 PCI slots for installing PCI expansion cards. These slots are Bus Master, 32-bit, 33MHz and PCI 2.2 compliant. The slots provide a fast high-bandwidth pathway between the motherboard and expansion cards.

### BIOS Settings

The BIOS automatically configures Plug and Play and other PCI bus settings. Basically, you do not need to change any resource settings unless you encounter a problem after installing an expansion card. You can reconfigure the settings in the PCIPnP menu of the BIOS. Refer to chapter 3 for more information.



## Motherboard Manual

### Installing an Expansion Card

The steps below assume that the motherboard is already installed in the system chassis.

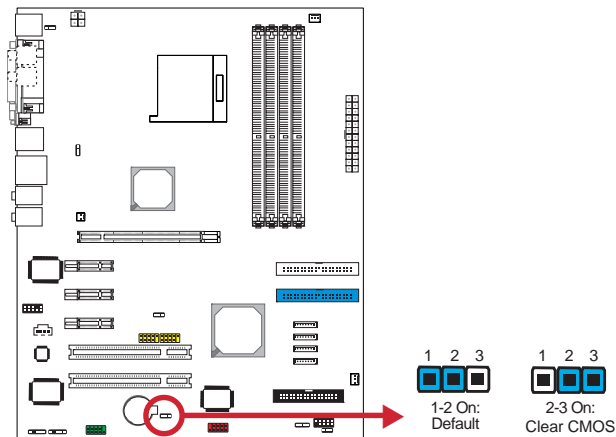
#### **Important**

- *Make sure the PC and all other peripheral devices connected to it has been powered-off.*
- *Disconnect all power cords and cables.*

1. Remove the system unit cover.
2. Remove the bracket of the slot that you intend to use. (You need to remove the screw in order to remove the bracket.)
3. Align the card above the slot then press it down firmly until it is completely seated in the slot.
4. Secure the card to the chassis with the screw you removed in step 2.
5. Replace the system unit cover.
6. Power on the PC.
7. Enter the BIOS setup program to make the necessary settings.
8. Save the settings and restart the PC.
9. Install the software drivers of the expansion cards, if necessary.

## Jumper

### Clear CMOS Data



The Clear CMOS jumper (JP4) is used to clear the RAM data stored in the battery-backed CMOS. If the CMOS data becomes corrupted or you forgot the supervisor or user password, clear the CMOS data to reconfigure the system back to the default values stored in the ROM BIOS.

To clear the RAM data:

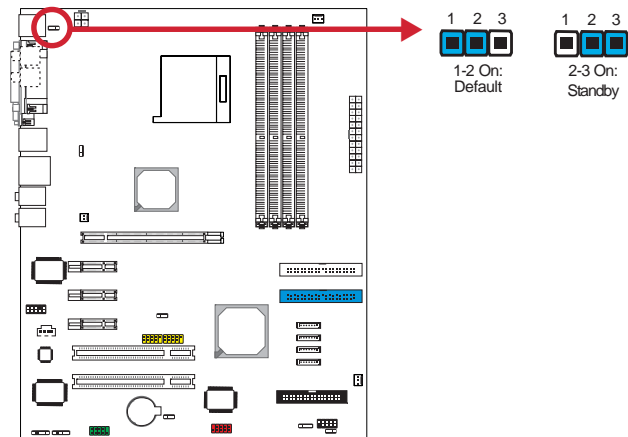
1. Power-off the system and unplug the power cord.
2. Set JP4 pins 2 and 3 to On. Wait for a few seconds then set JP4 back to its default setting, pins 1 and 2 On.
3. Plug the power cord then power-on the system.

#### **Important**

- *DO NOT remove the jumper cap from JP4 unless you are clearing the RAM data. Doing so will cause system boot failure.*

## Motherboard Manual

### PS/2 Power Select



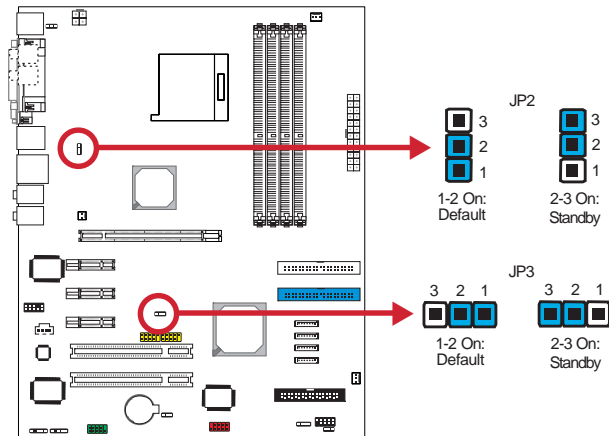
The PS/2 power select jumper (JP1) is used to select the power of the PS/2 keyboard/mouse port. Selecting Standby will allow you to use the PS/2 keyboard or PS/2 mouse to wake up the system.

#### **Important**

- The 5VSB power source of your power supply must support  $\geq 720\text{mA}$ .

## Installation

### USB Power Select



The USB power select jumpers (JP2 for USB 0-3 and JP3 for USB 4-7) are used to select the power of the USB ports. Selecting Standby will allow you to use a USB device to wake up the system.

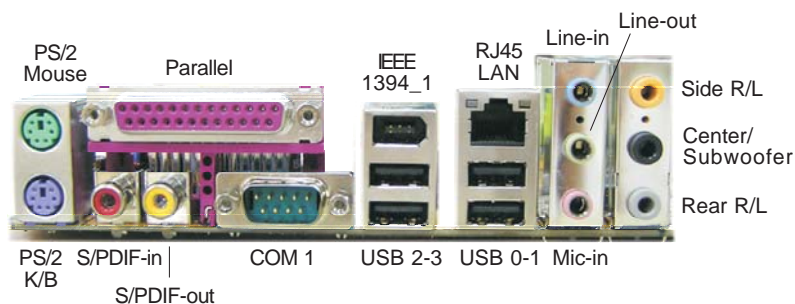
#### **Important**

- If you are using the Wake-On-USB function for 2 USB ports, the 5VSB power source of your power supply must support  $\geq 1.5A$ .
- If you are using the Wake-On-USB function for 3 or more USB ports, the 5VSB power source of your power supply must support  $\geq 2A$ .



## Motherboard Manual

### Rear Panel I/O



#### PS/2 Mouse

The PS/2 mouse port is used to connect a PS/2 mouse.

#### PS/2 Keyboard

The PS/2 keyboard port is used to connect a standard keyboard that has a PS/2 plug.

#### S/PDIF-in and S/PDIF-out

These ports are used to connect external audio output devices that uses a coaxial S/PDIF cable.

#### Parallel

The parallel port is used to connect a parallel printer.

#### COM 1

The COM 1 port is used to connect a serial device.

#### IEEE 1394

The IEEE 1394 port is used to connect a 1394 device.

#### LAN

The LAN port allows network connection to a local area network by means of a network hub.

## Installation

### **USB**

The USB ports are used to connect USB 2.0 devices.

### **Line-in**

The line-in port is used to connect any audio devices such as Hi-fi set, CD player, tape player, AM/FM radio tuner, synthesizer, etc.

### **Line-out**

The line-out port is used to connect to the front right and front left speakers of the audio system.

### **Mic-in**

The mic-in port is used to connect an external microphone.

### **Side Right/Left**

The side right/left port is used to connect to the side left and side right speakers of the audio system.

### **Center/Subwoofer**

The center/subwoofer port is used to connect to the center and subwoofer speakers of the audio system.

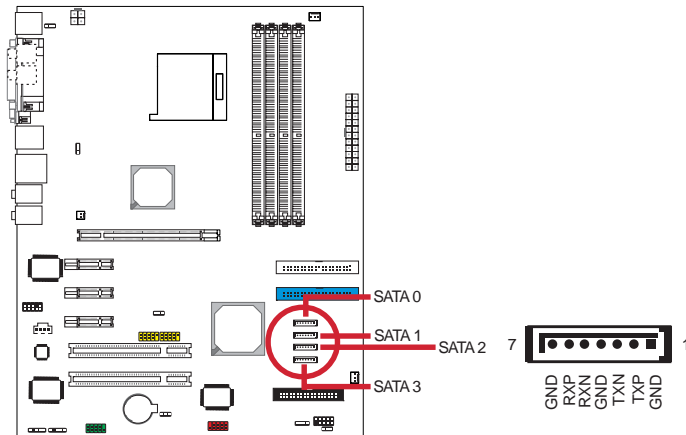
### **Rear Right/Left**

The rear right/left port is used to connect to the rear right and rear left speakers of the audio system.

## Motherboard Manual

### Internal I/O

#### Serial ATA Connectors



#### 1 Connecting Serial ATA Drives

The four Serial ATA connectors are used to connect Serial ATA devices. Connect one end of the Serial ATA data cable to the Serial ATA device and the other end to SATA 0 (J16), SATA 1 (J18), SATA 2 (J21) or SATA 3 (J22).

#### 2 Configuring the BIOS

Configure the onboard SATA in the Chipset menu (SouthBridge Configuration section) of the AMI BIOS. Refer to chapter 3 for more information.

#### 3 Configuring RAID on Serial ATA Drives

The motherboard allows configuring RAID on Serial ATA drives. It supports RAID 0 and RAID 1. The following must be set accordingly.

1. Set the "Serial ATA Controller" field to Enabled (Chipset menu, SouthBridge Configuration section of the AMI BIOS).

## Installation

2. Reboot the PC.
3. When the system powers-up, press the <Ctrl> and <S> keys simultaneously to run the RAID BIOS Setting Utility. The utility is used to configure the Serial ATA drives to RAID 0 and RAID 1.
4. Install the ATI Chipset Driver.

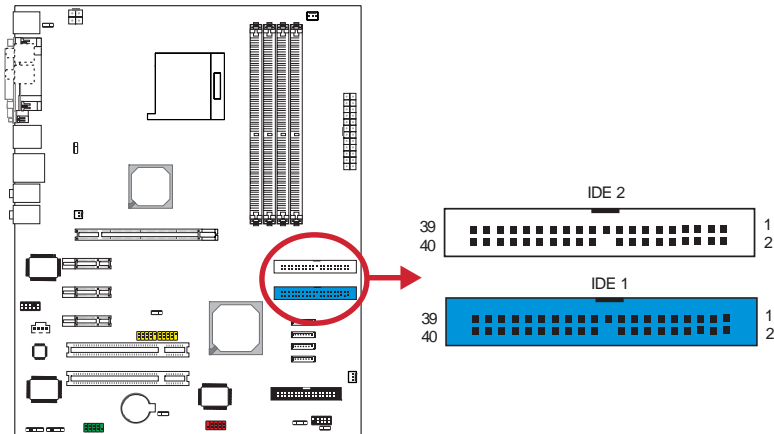
For steps 1 to 3, refer to chapter 3 for more information. For step 4, refer to chapter 4 for more information.

### Note

- *Before creating RAID, make sure you have installed the Serial ATA drives and connected the data cables otherwise you won't be able to enter the RAID BIOS utility.*

## Motherboard Manual

### IDE Connectors



#### 1 Connecting IDE Drives

Each IDE connector supports 2 IDE devices, a Master and a Slave. Use an IDE ribbon cable to connect the drives to the motherboard. An IDE ribbon cable has 3 connectors on them, one that plugs into an IDE connector on the motherboard and the other 2 connect to IDE devices. The connector at the end of the cable is for the Master drive and the connector in the middle of the cable is for the Slave drive.

Insert one end of the IDE cable into the IDE 1 connector (J14) on the motherboard and the other connectors to the IDE devices. If you are adding a third or fourth IDE device, use another IDE cable then insert one end of the cable into the IDE 2 connector (J12) on the motherboard and the other connectors to the IDE devices.

#### Note

- Pin 20 of the IDE connector has been removed to match the corresponding covered hole of the cable connector. This prevents improper IDE cable installation because the connector will insert in only one orientation.

## Installation

### **2 Adding a Second IDE Disk Drive**

When using two IDE drives, one must be set as the master and the other as the slave. Follow the instructions provided by the drive manufacturer for setting the jumpers and/or switches on the drives.

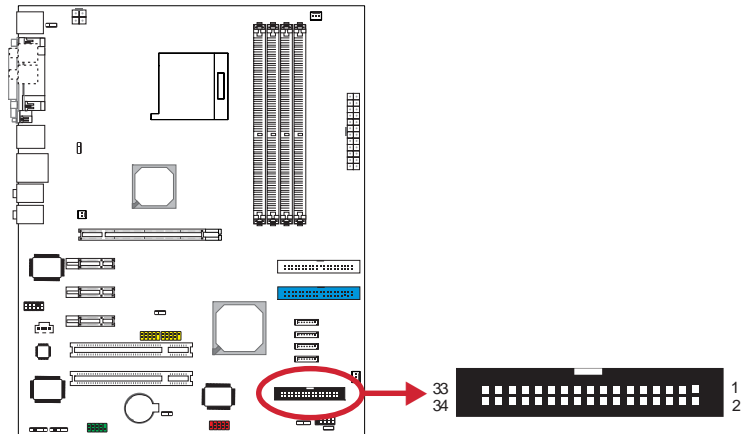
We recommend that you use hard drives from the same manufacturer. In a few cases, drives from two different manufacturers will not function properly when used together. The problem lies in the hard drives, not the motherboard.

### **3 Configuring the BIOS**

Configure the onboard IDE in the Advanced menu of the BIOS. Refer to chapter 3 for more information.

## Motherboard Manual

### FDD Connector



#### 1 Connecting Floppy Drives

The FDD connector supports 2 floppy disk drives. Use a FDD ribbon cable to connect the drives to the motherboard.

Insert one end of the floppy disk drive cable into the floppy connector (CN12) on the motherboard and the other end-most connector to the drive you want to designate as Drive A. If you are connecting another drive (Drive B), insert the middle connector of the cable to the drive. The colored edge of the daisy chained ribbon cable should be aligned with pin 1 of CN12.

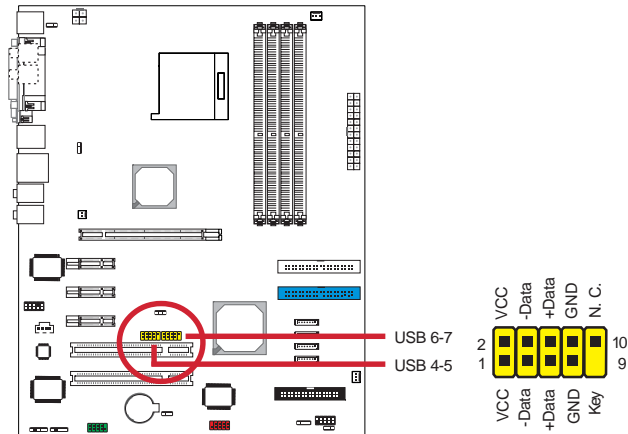
The 34-pin cable connector can be inserted into the FDD connector only if pin 1 of the cable connector is aligned with pin 1 of the FDD connector.

#### 2 Configuring the BIOS

Enable or disable this function in the Advanced menu of the BIOS. Refer to chapter 3 for more information.

## Installation

### USB Connectors



#### 1 Connecting USB Cables

USB 4-5 (J19) and USB 6-7 (J20) are used to connect 4 additional USB 2.0 ports. Insert the connector that is attached to the USB port cables to J19 or J20 then install the USB port bracket to an available bracket slot at the rear of the system chassis.

#### 2 Configuring the BIOS

Configure the onboard USB in the Advanced menu and Chipset menu of the BIOS. Refer to chapter 3 for more information.

#### 3 Installing the USB Driver

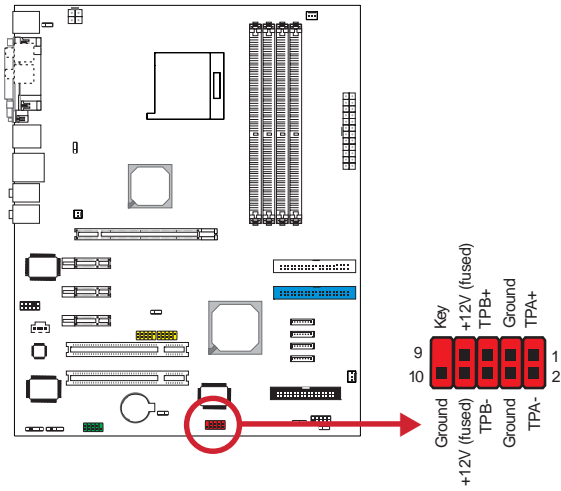
You may need to install the proper drivers in your operating system to use the USB device. Refer to your operating system's manual or documentation for more information.

Refer to chapter 4 for more information on installing the USB 2.0 driver.



## Motherboard Manual

### IEEE 1394 Connector

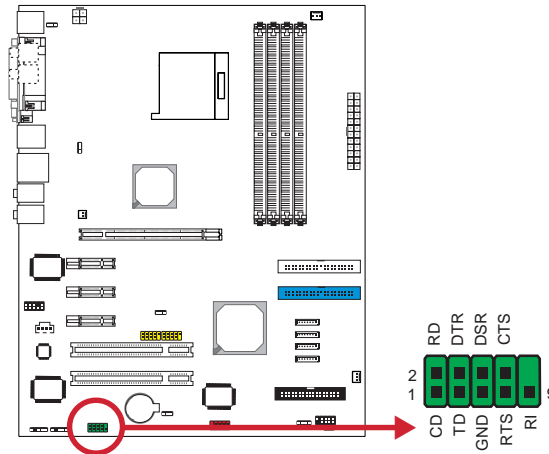


#### 1 Connecting the IEEE 1394 Cable

The IEEE 1394 connector (J26) is used to connect an additional 1394 device. Insert the connector that is attached to the 1394 port cable to J26 then install the 1394 port bracket to an available bracket slot at the rear of the system chassis.

## Installation

### Serial (COM 2) Connector



#### 1 Connecting the Serial Port Cable

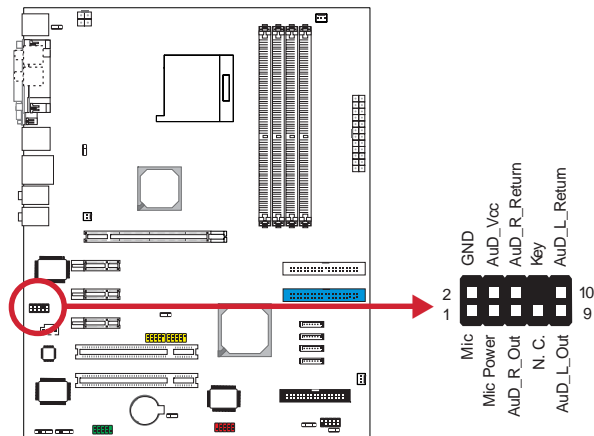
The serial connector (J30) is for connecting a modem, serial printer, remote display terminal or other serial devices. Insert the connector that is attached to the serial port cable to J30 then install the serial port bracket to an available bracket slot at the rear of the system chassis.

#### 2 Configuring the BIOS

Select the serial port's I/O address in the Advanced menu of the BIOS. Refer to chapter 3 for more information.

## Motherboard Manual

### Front Audio Connector



#### 1 Connecting the Front Audio Cable

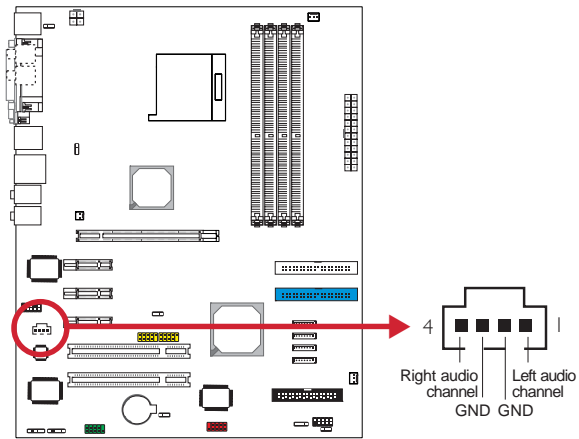
The front audio connector (J15) is used to connect to the audio module that is mounted at the front panel of the system chassis. The audio module is normally equipped with a line-out port and a mic-in port.

Remove the jumper caps from pins 5-6 and pins 9-10 of J15 prior to connecting the front audio cable connector. If you are not using this connector, make sure to replace the jumper caps back to their original pin locations.

Pins 5-6 and 9-10 short (default)	The front audio is disabled. The rear audio is enabled.
Pins 5-6 and 9-10 open	The front audio is enabled. The rear audio is disabled.

## Installation

### CD-in Connector

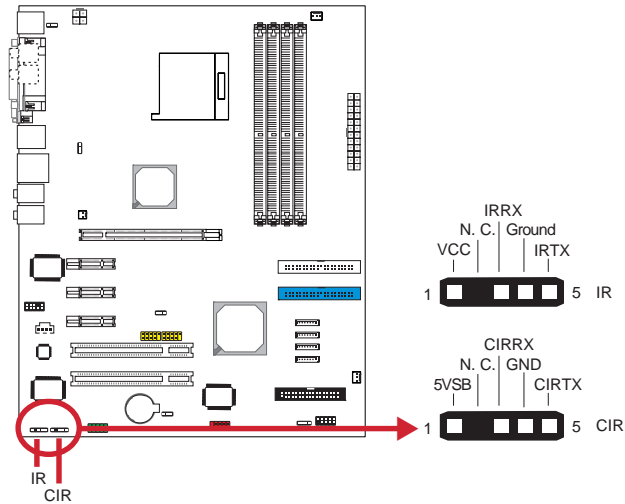


#### 1 Connecting the CD-in Cable

The CD-in connector (J17) uses a 4-pin audio cable to connect to the rear of an optical drive.

## Motherboard Manual

### IR and CIR Connectors



#### 1 Connecting the CIR/IR Cable

The IR (J28) and CIR (J29) connectors are used to connect IR devices. Insert the cable connector from the IR or CIR module to J28 or J29.

#### 2 Configuring the BIOS

Configure IR/CIR in the Advanced menu of the BIOS.

#### 3 Installing the Driver

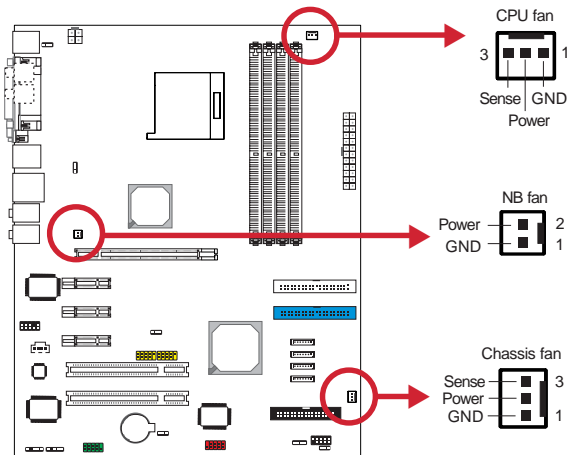
You may need to install the proper drivers in your operating system to use the IR/CIR function. Refer to your operating system's manual or documentation for more information.

#### Note

- The sequence of the pin functions on some IR/CIR cable may be reversed from the pin function defined on the motherboard. Make sure to connect the cable connector to the IR/CIR connector according to their pin functions.

## Installation

### Cooling Fan Connectors



#### 1 Connecting the Cooling Fan Cables

The cooling fan connectors are used to connect cooling fans. Insert the CPU fan, NB fan and chassis fan cable connectors to J3, J11 and J23 respectively.

#### 2 Viewing the Fan Speed

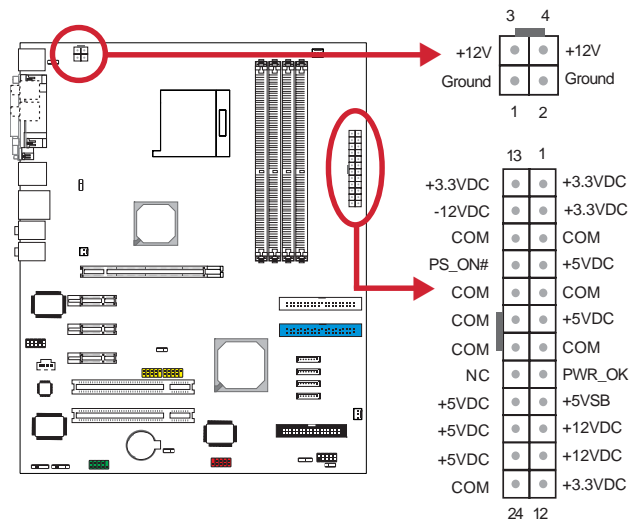
The motherboard is capable of monitoring the fan speed in RPM (Revolutions Per Minute). The Advanced menu of the BIOS will display the current speed of the cooling fan. Refer to chapter 3 for more information.

#### Note

- Make sure to connect the cooling fans to the fan connectors. The cooling fans will provide adequate airflow throughout the chassis to prevent overheating the CPU and motherboard components.

## Motherboard Manual

### ATX Power Connectors



#### 1 Connecting the Power Cables

The motherboard is equipped with a standard 24-pin ATX main power connector (J8) and a 4-pin +12V power connector (CN1) for connecting an ATX12V power supply. The plugs of the power cables are designed to fit in only one orientation. Find the proper orientation then insert the plugs into the connectors until they fit in place.

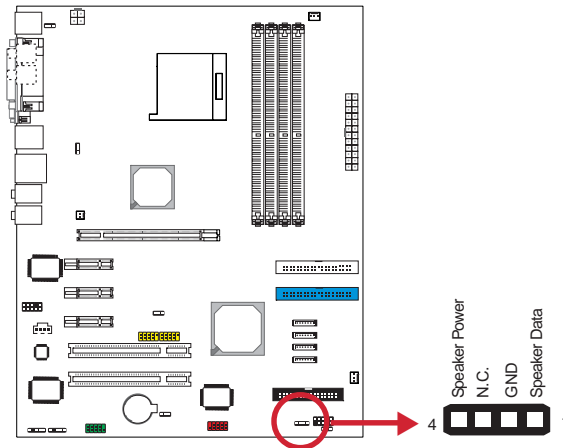
The 4-pin +12V power connector enables the delivery of more +12VDC current to the processor's Voltage Regulator Module (VRM). Make sure to connect the 4-pin +12V power plug.

#### Note

- The motherboard requires a minimum of 250 Watt power supply to operate. Your system configuration (amount of memory, add-in cards, peripherals, etc.) may exceed the minimum power requirement. To ensure that adequate power is provided, use a 300 Watt (or greater) power supply.

## Installation

### Speaker Connector



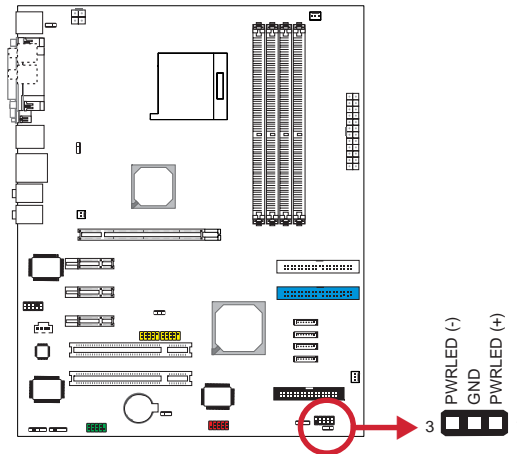
#### 1 Connecting the Speaker Cable

The speaker connector (J25) is used to connect to the speaker that is in the system chassis.



## Motherboard Manual

### Power LED Connector



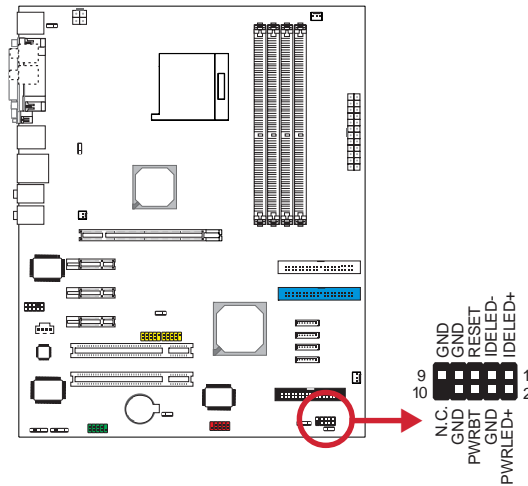
#### 1 Connecting the Power LED Cable

Connect the front panel's power LED cable to J27. When the system's power is on, the power LED will light and will blink when the system is in the standby mode.

The function of this LED connector is identical to pins 2 and 4 of the front panel connector. Refer to the next page for more information.

## Installation

### Front Panel Connector



The front panel connector (J24) on the motherboard supports several system indicators and controls that connect to the front panel of the system chassis. This will enable you to determine information about the system's operational status and provide some system controls.

#### IDE LED

Connect the front panel's IDE LED cable to pins 1 and 3. The IDE LED will light when the hard drive is being accessed.

#### Reset Button

Connect the front panel's reset button cable to pins 5 and 7. The Reset button is used to restart the system. Do not use the reset button if you can shut the system down from the operating system (OS). Shutting the system down from the OS minimizes the possibility of hard disk drive problems or data loss. However, if your system hangs, you have two hardware reboot options. "Warm" reboot using the <Ctrl> <Alt> <Del> keys or using the reset button.

#### Power LED

Connect the front panel's power LED cable to pins 2 and 4. When the system's power is on, the power LED will light and will blink when the system is in the standby mode.

## Motherboard Manual

### Power Button

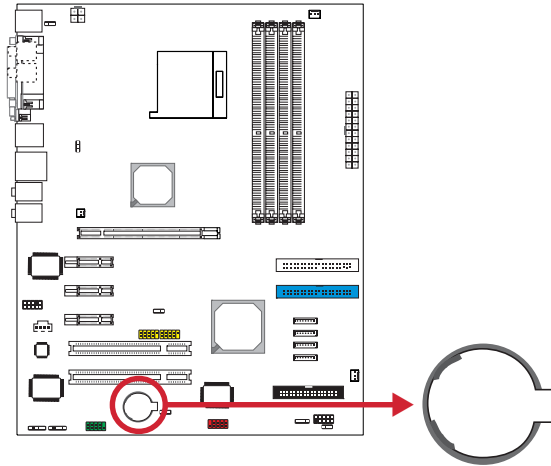
Connect the front panel's power button cable to pins 6 and 8. The power button is used to power on and off the system. You can also configure the system to use the keyboard or mouse to power-on the system, or to respond to power restoration after a power outage occurs. These functions can be configured by making appropriate settings in the Integrated Peripherals submenu ("Super IO Device" field) of the BIOS.

#### Note

- *If a system did not boot-up and the Power/Standby LED did not light after it was powered-on, it may indicate that the CPU or memory module was not installed properly. Please make sure they are properly inserted into their corresponding socket.*

## Installation

### Battery



The Lithium coin cell battery powers the real-time clock and CMOS memory. It is an auxiliary source of power when the main power is shut off.

## Chapter 3

### BIOS Setup

---

### Overview

---

The BIOS is a program that takes care of the basic level of communication between the CPU and peripherals. It contains codes for various advanced features found in this motherboard. The BIOS allows you to configure the system and save the configuration in a battery-backed CMOS so that the data retains even when the power is off. In general, the information stored in the CMOS RAM of the EEPROM will stay unchanged unless a configuration change has been made such as a hard drive replaced or a device added.

It is possible that the CMOS battery will fail causing CMOS data loss. If this happens, you need to install a new CMOS battery and reconfigure the BIOS settings.

#### **Important**

- *The BIOS is constantly updated to improve the performance of the motherboard; therefore the BIOS screens in this chapter may not appear the same as the actual one. These screens are for reference purposes only.*

### Default Configuration

Most of the configuration settings are either predefined according to the Load Optimal Defaults settings which are stored in the BIOS or are automatically detected and configured without requiring any actions. There are a few settings that you may need to change depending on your system configuration.

### Entering the BIOS Setup Utility

The BIOS Setup Utility can only be operated from the keyboard and all commands are keyboard commands. The commands are available at the right side of each setup screen.

The BIOS Setup Utility does not require an operating system to run. After you power up the system, the BIOS message appears on the screen and the memory count begins. After the memory test, the message "Press DEL to enter setup" will appear on the screen. If the message disappears before you respond, restart the system or press the "Reset" button. You may also restart the

## Motherboard Manual

system by pressing the <Ctrl> <Alt> and <Del> keys simultaneously.

### Legends

Keys	Function
Right and Left arrows	Moves the highlight left or right to select a menu.
Up and Down arrows	Moves the highlight up or down between submenus or fields.
<Esc>	Exits to the BIOS Setup Utility.
<Enter>	Press <Enter> to enter the highlighted submenu.
+ (plus key)	Scrolls forward through the values or options of the highlighted field.
- (minus key)	Scrolls backward through the values or options of the highlighted field.
<F1>	Displays General Help.
<F10>	Saves and exits the Setup program.

### Scroll Bar

When a scroll bar appears to the right of the setup screen, it indicates that there are more available fields not shown on the screen. Use the up and down arrow keys to scroll through all the available fields.

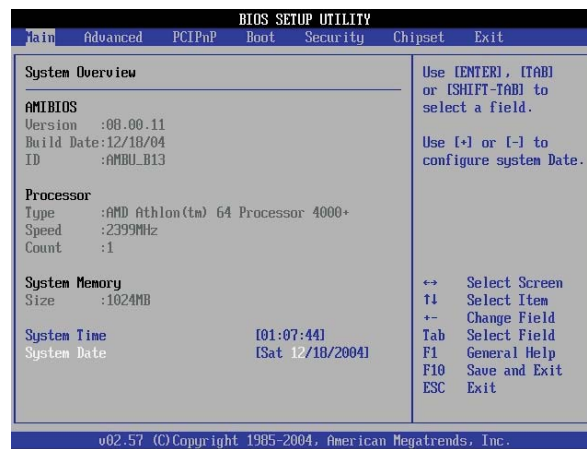
### Submenu

When a “▶” appears on the left of a particular field, it indicates that a submenu which contains additional options are available for that field. To display the submenu, move the highlight to that field and press <Enter>.

## BIOS Setup

### BIOS Setup - Main

This is the first screen that you will see when you enter the BIOS Setup Utility.



#### AMIBIOS

This field will show the version and other information about the current BIOS.

#### Processor

This field will show the detected type and speed of the processor.

#### System Memory

This field will show the detected system memory.

#### System Time

The time format is <hour>, <minute>, <second>. The time is based on the 24-hour military-time clock. Hour displays hours from 00 to 23. Minute displays minutes from 00 to 59. Second displays seconds from 00 to 59.



## **Motherboard Manual**

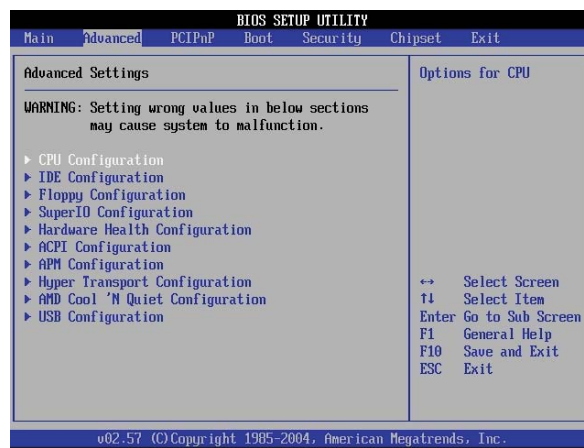
### **System Date**

The date format is <day>, <month>, <date>, <year>. Day displays a day, from Sunday to Saturday. Month displays the month, from January to December. Date displays the date, from 1 to 31. Year displays the year, from 1990 to 2098.

### Advanced

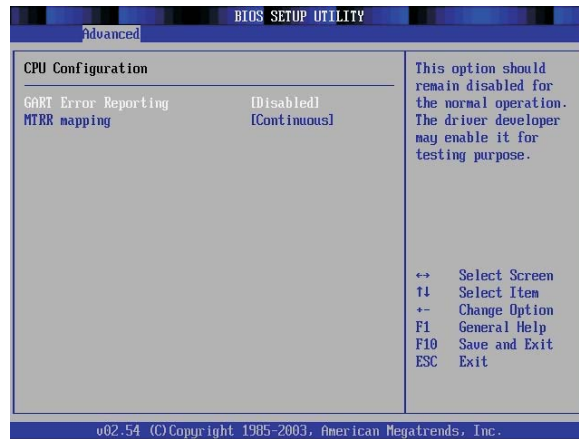
Advanced menu comes with several submenus allowing you to configure your system for basic operation.

Some entries are defaults required by the motherboard, while others, if enabled, will improve the performance of your system or let you set some features according to your preference.



## Motherboard Manual

### CPU Configuration



The fields in the CPU Configuration submenu will show the CPU information detected by the BIOS. Most of these fields are for testing purposes only. Do not alter the settings in these fields.

#### **GART Error Reporting**

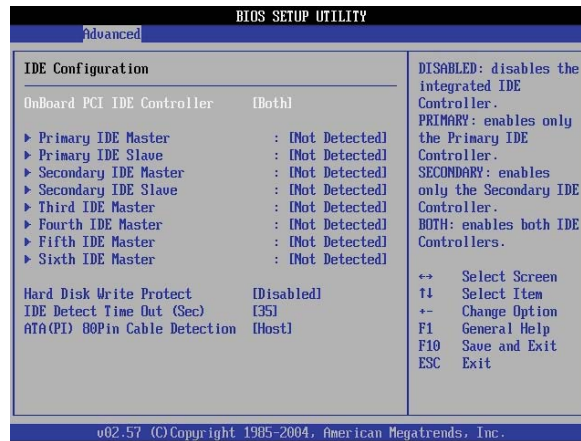
This field is basically for testing purposes only. Leave this field in its default setting, Disabled, for the system to operate normally.

#### **MTRR Mapping**

This field is used to select the method used for programming the CPU's MTRRs when 4GB or more memory is present.

- Discrete This option leaves the PCI hole below the 4GB boundary undescribed.
- Continuous This option explicitly describes the PCI hole as non-cacheable.

IDE Configuration



Onboard PCI IDE Controller

- Disabled Disables the onboard IDE controller.
- Primary Enables the primary IDE only.
- Secondary Enables the secondary IDE only.
- Both Enables both primary and secondary IDE.

Primary IDE Master, Primary IDE Slave, Secondary IDE Master and Secondary IDE Slave

The BIOS can automatically detect the IDE devices connected to the PC. These fields are submenus for each IDE device that will allow you to view the IDE device information. The items in the submenu will show N/A if no IDE device is connected to the IDE channel.

Type

- Auto Automatically detect the IDE device type.
- CDROM Select this option if you are configuring a CD-ROM drive.
- ARMD Select this option if you are configuring an ATAPI removable media device such as ZIP or MO drive.

## Motherboard Manual

### LBA/Large Mode

- Auto Automatically enables the LBA mode if the mode is supported by the device.
- Disabled Select this option if the device was not formatted with LBA mode.

### Block (Multi-Sector Transfer)

- Auto Data transfer to and from the device occurs multiple sectors at a time.
- Disabled Data transfer to and from the device occurs one sector at a time.

### PIO Mode

This field is used to select the PIO mode.

### DMA Mode

This field is used to select the DMA mode.

### S.M.A.R.T.

SMART (Self-Monitoring, Analysis and Reporting Technology) is a reliability prediction technology for ATA/IDE and SCSI drives. The drive will provide sufficient notice to the system or user to backup data prior to the drive's failure. The default is Disabled. If you are using hard drives that support S.M.A.R.T., set this field to Enabled. SMART is supported in ATA/33 or later hard drives.

### 32Bit Data Transfer

This field is used to enable or disable the 32-bit data transfer.

### Hard Disk Write Protect

- Enabled Enables the "hard disk write protect" function. Data will not be written to the hard drive. This function is applicable only when the device is accessed from the BIOS.
- Disabled Disables the "hard disk write protect" function, allowing you to write into the hard drive anytime needed.

## BIOS Setup

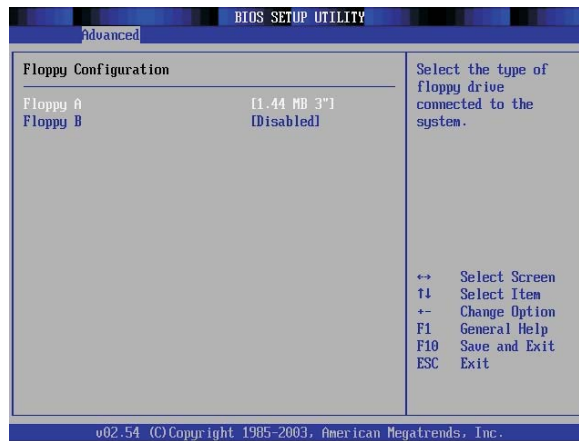
### IDE Detect Time Out (Sec)

This field is used to select the duration time for detecting an IDE drive (ATA/ATAPI devices).

### ATAPI 80Pin Cable Detection

This field is used to select the ATAPI device that will detect 80-pin cable connection.

### Floppy Configuration



### Floppy A and Floppy B

These fields are used to select the type of floppy drive connected to channel A or B.

Disabled	No floppy drive is installed
360K, 5.25 in.	5-1/4 in. standard drive; 360KB capacity
1.2M, 5.25 in.	5-1/4 in. AT-type high-density drive; 1.2MB capacity
720K, 3.5 in.	3-1/2 in. double-sided drive; 720KB capacity
1.44M, 3.5 in.	3-1/2 in. double-sided drive; 1.44MB capacity
2.88M, 3.5 in.	3-1/2 in. double-sided drive; 2.88MB capacity

## Motherboard Manual

### SuperIO Configuration



#### Onboard Floppy Controller

This field is used to enable or disable the onboard floppy controller.

#### Floppy Drive Swap

When this field is enabled and the system is booting from the floppy drive, the system will boot from drive B instead of drive A. When this field is disabled, the system will boot from drive A. You must have two floppy drives connected to use this function.

#### Serial Port 1 Address and Serial Port 2 Address

These fields are used to select an I/O base address for Serial Port 1 and Serial Port 2.

#### Serial Port 1 Mode and Serial Port 2 Mode

These fields are used to select the type of IrDA standard connected to Serial Port 1 and/or Serial Port 2.

#### Parallel Port Address

This field is used to select an I/O base address for the parallel port.

## BIOS Setup

### Parallel Port Mode

The options are Normal, EPP, ECP and EPP+ECP. These apply to a standard specification and will depend on the type and speed of your device. Refer to your peripheral's manual for the best option.

#### Normal

Allows normal speed operation but in one direction only.

#### ECP (Extended Capabilities Port)

Allows parallel port to operate in bidirectional mode and at a speed faster than the normal mode's data transfer rate.

#### EPP (Enhanced Parallel Port)

Allows bidirectional parallel port operation at maximum speed.

### Parallel Port IRQ

This field is used to select an IRQ address for the parallel port.

### Onboard CIR Port

This field is used to select a port for the connected Consumer IR.

### Keyboard PowerOn

This field is used to select the method of powering on the PC via the keyboard.

### Mouse PowerOn

Select Enabled if you want to use the mouse to power-on the PC.



## Motherboard Manual

### Hardware Health Configuration

BIOS SETUP UTILITY	
Advanced	
Hardware Health Configuration	
H/W Health Function	[Enabled]
Temperature Sensor #1	:51°C/123°F
Temperature Sensor #2	:-35°C/-95°F
Temperature Sensor #3	:22°C/71°F
Fan1 Speed	:4821 RPM
Fan2 Speed	:N/A
VCore	:1.504 V
VDIMM	:2.640 V
VCC3	:3.312 V
VCC_NB	:1.232 V
VCC	:5.026 V
+1.80V	:1.792 V
+12.0V	:11.776 V
5VSB	:5.053 V

Enables Hardware Health Monitoring Device.

← Select Screen  
↑ Select Item  
+ Change Option  
F1 General Help  
F10 Save and Exit  
ESC Exit

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#### H/W Health Function

This field is used to enable or disable the hardware monitoring function.

#### Temperature Sensor #1, Temperature Sensor #2 and Temperature Sensor #3

These fields will show the detected temperature of the CPU and system.

#### Fan1 Speed and Fan2 Speed

These fields will show the current fan speed of the detected cooling fans in RPM (Rotations Per Minute).

#### VCore

This field will show the voltage of the CPU.

#### VDIMM, VCC3, VCC\_NB, VCC, +1.80V, +12.0V and 5VSB

These fields will show the output voltage of the monitored devices or components.

## BIOS Setup

### Overclocking Configuration



#### FID/VID Change

**Auto** The system will automatically detect the frequency and voltage.

**Manual** This option allows you to manually select the frequency and voltage.

#### CPU/HT Clock Mhz

This field is used to select the CPU clock.

#### Clock Change Reset

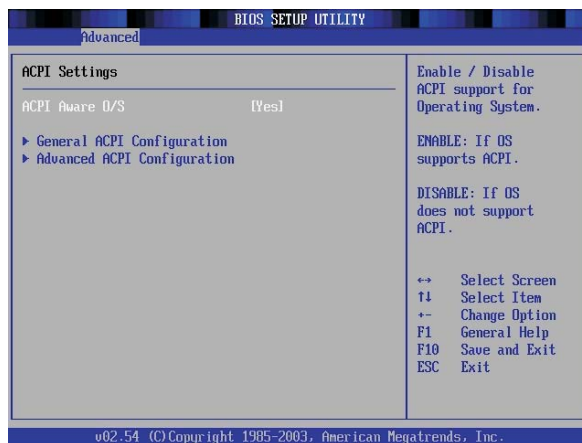
The options are Enabled and Disabled.

#### PCI Clock Mhz

This field is used to select the PCI clock.

## Motherboard Manual

### ACPI Configuration



#### ACPI Aware OS

This field is used to enable or disable the ACPI function supported by an operating system. ACPI is Advanced Configuration and Power Interface.

- Yes The OS supports ACPI.
- No The OS does not support ACPI.

#### General ACPI Configuration

Highlight this submenu and press <Enter>.

##### Suspend Mode

This field is used to select the type of Suspend mode.

- S1 (POS) only Enables the Power On Suspend function.
- S1 & S3 (STR) Enables both S1 and S3.
- S3 (STR) Enables the Suspend to RAM function.

##### Repost Video on S3 Resume

This field is used to select the method of initializing the VGA BIOS when the system resumes from the S3 state. This can be configured only if the "Suspend Mode" field is set to "S3(STR)".

## BIOS Setup

### **C State Support**

The options are Disabled, C2, and C2 and C3.

### **Advanced ACPI Configuration**

Highlight this submenu and press <Enter>.

#### **ACPI 2.0 Support**

This field is used to enable or disable ACPI (Advanced Configuration and Power Interface) 2.0. The function should be enabled only in operating systems that support ACPI.

#### **ACPI APIC Support**

This field is used to enable the ACPI APIC (Advanced Programmable Interrupt Controller) function. It allows you to distribute interrupt routings other than the 16 IRQs. The usual Programmable Interrupt Controller setting allows 16 IRQs only. When enabled, it includes the ACPI APIC table pointer to RSDT pointer list.

#### **MCFG Table**

This field is used to enable or disable the MCFG table.

#### **BIOS - AML ACPI Table**

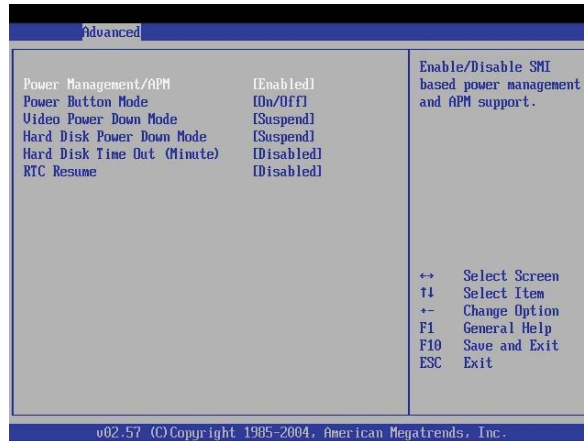
This field when enabled includes the BIOS - AML exchange table pointer to (X) RSDT pointer list.

#### **Headless Mode**

This field is used to enable or disable the headless operation mode through ACPI.

## Motherboard Manual

### APM Configuration



#### Power Management/APM

This field is used to enable or disable the Power Management and Advanced Power Management (APM) functions.

#### Power Button Mode

- On/Off When the power button is pressed, the system will enter the on/off mode.
- Suspend When the power button is pressed, the system will enter the Suspend mode.

#### Video Power Down Mode

This field is used to select the video device's power saving mode (Standby or Suspend).

#### Hard Disk Power Down Mode

This field is used to select the hard disk drive's power saving mode (Standby or Suspend).

#### Hard Disk Time Out (Minute)

This field is used to select an IDE drive's time out time.

## BIOS Setup

### RTC Resume

**Enabled** When Enabled, you can set the date and time you would like the PC to power-on. Set the date and time in the fields below. However, if the system is being accessed by incoming calls or the network prior to the date and time set in these fields, the system will give priority to the incoming calls or network.

**Disabled** Disables the automatic power-on function.

### RTC Alarm Date (Days)

**Every Day** The system will power-on everyday according to the time set in the fields below.

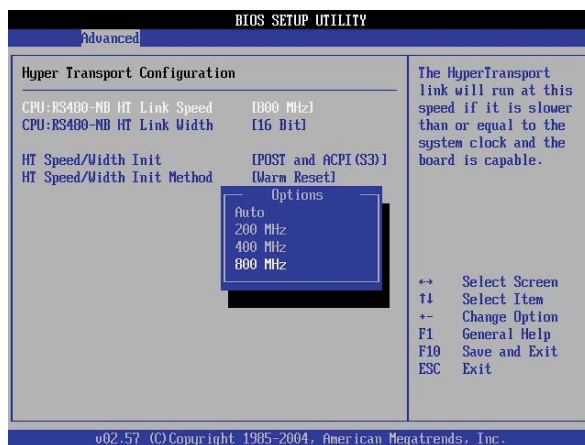
**1-31** Select a date you would like the system to power-on.

### RTC Alarm Hour, RTC Alarm Minute and RTC Alarm Second

These fields are used to select the time you would like the system to power-on.

## Motherboard Manual

### Hyper Transport Configuration



#### **CPU: RS480-NB HT Link Speed**

The Hyper Transport link will run at the speed selected in this field if the speed is slower than or equal to the system clock and if the system is capable of running at the selected speed.

#### **CPU: RS480-NB HT Link Width**

The Hyper Transport link will run according to the selected width.

#### **HT Speed/Width Init**

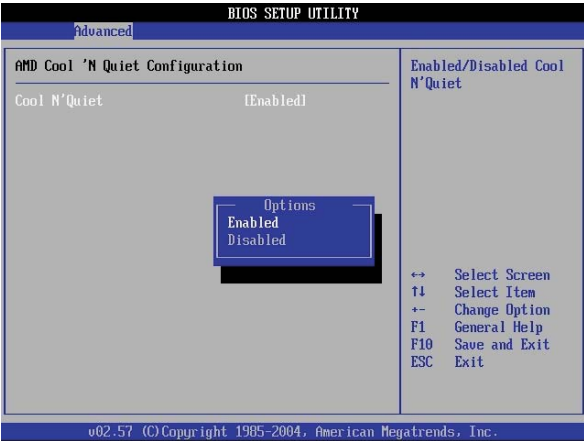
This field is used to select the state that will initialize the HyperTransport speed and width.

#### **HT Speed/Width Init Method**

This field is used to select the method of initializing the HyperTransport speed and width.

**BIOS Setup**

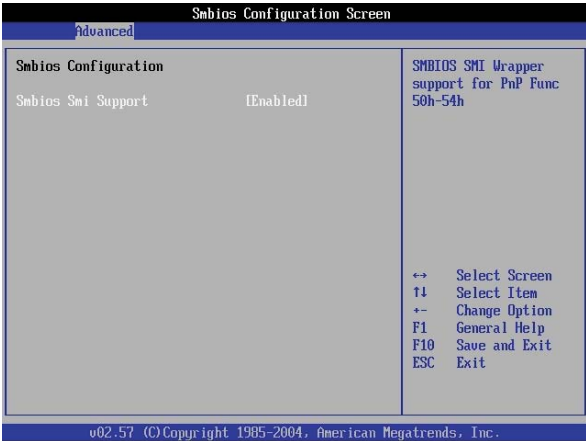
**AMD Cool 'N Quiet Configuration**



**Cool N Quiet**

This field is used to enable or disable the AMD Cool and Quiet function.

**SMBIOS Configuration**



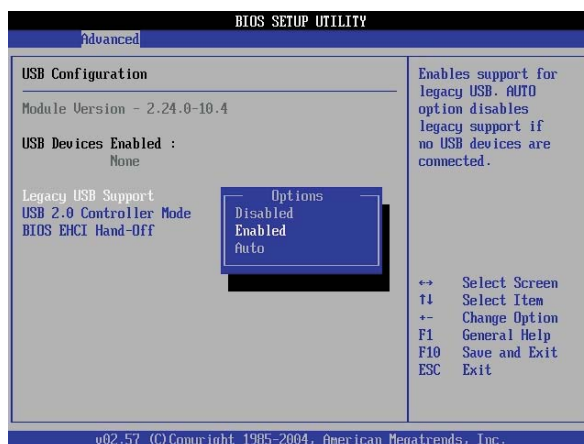
**Smbios Smi Support**

The options are Enabled and Disabled.



## Motherboard Manual

### USB Configuration



#### USB Devices

This field is used to enable or disable the USB devices.

#### Legacy USB Support

- Auto The system will automatically detect USB devices upon boot-up. If the devices were detected, the USB controller legacy mode will be enabled. If no USB devices were detected, the legacy support function will be disabled.
- Enabled The USB controller legacy mode is enabled.
- Disabled The USB controller legacy mode is disabled regardless of whether you are using a USB device or not.

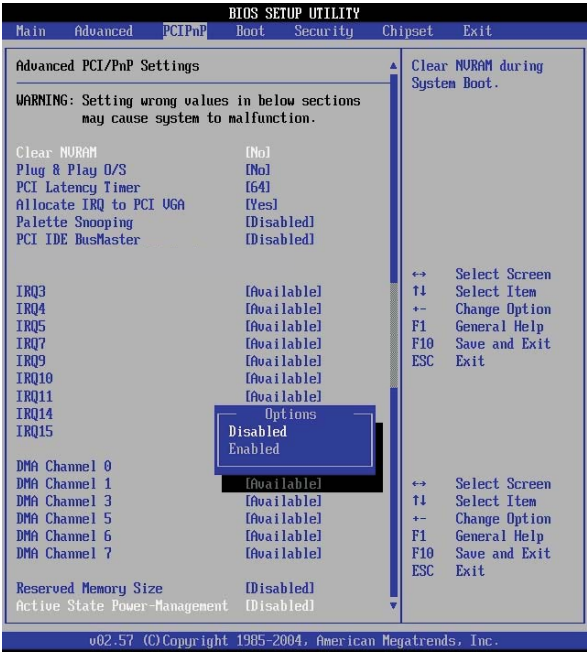
#### USB 2.0 Controller Mode

This field is used to select the USB 2.0 controller in hi-speed (480Mbps) or full speed (12Mbps).

#### BIOS EHCI Hand-Off

This is a workaround for OSes that doesn't have EHCI hand-off support.

PCIPnP



**Clear NVRAM**

This field is used to clear the NVRAM during system boot.

**Plug and Play O/S**

This field is used to select whether to configure the PCI bus slots using the BIOS or PnP OS.

- Yes Allows the operating system to configure Plug and Play (PnP) devices not required to boot.
- No Allows the BIOS to configure all the devices in the system.

**PCI Latency Time**

This field is used to select the latency time of the PCI device. The value is in unit of PCI clock.

## Motherboard Manual

### Allocate IRQ to PCI VGA

Select Yes for the system to automatically assign an IRQ for the VGA card installed. Your VGA card will need an IRQ only when using the video capture function of the card. If you are not using this function and a new device requires an IRQ, you can set this field to No. The IRQ (previously occupied by the VGA card) will be available for your new device.

### Palette Snooping

Set this field to Enabled to inform PCI devices that an ISA graphics device is installed in the system. This is to allow the graphics card to function properly.

### PCI IDE BusMaster

This field is used to enable the PCI IDE Bus Master function when reading and/or writing to IDE devices.

### IRQ 3/4/5/7/9/10/11/14/15

Available The IRQ is available for a PCI/PNP device.  
Reserved The IRQ is reserved for a Legacy ISA device.

### DMA Channel 0/1/3/5/6/7

Available The DMA channel is available for a PCI/PNP device.  
Reserved The DMA channel is reserved for a Legacy ISA device.

### Reserved Memory Size

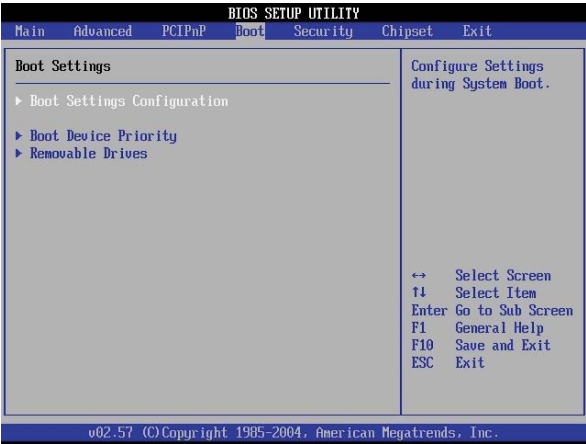
This field is used to select the memory size that will be reserved for legacy ISA devices.

### Active State Power-Management

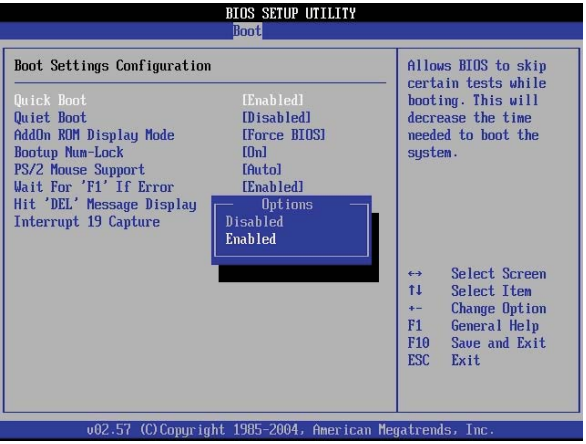
This field is used to enable or disable PCI Express L0s and L1 link power states.

BIOS Setup

Boot



Boot Settings Configuration



Quick Boot

This field is used to speed up Power On Self Test (POST) and allows the BIOS to skip some check items during system boot-up thus shortening the time needed to boot up the system.

## Motherboard Manual

### Quiet Boot

This field is used to enable the OEM logo.

- Enabled Displays the OEM logo instead of the usual POST messages during system boot-up.
- Disabled Displays the usual POST messages during system boot-up.

### AddOn ROM Display Mode

- Force BIOS During system boot-up, the AddOn ROM screen which is the screen showing the add-on card's BIOS message will appear right after the vendor's logo.
- Keep Current The AddOn ROM screen will not appear.

### Bootup Num-Lock

This field allows you to determine the default state of the numeric keypad. By default, the system boots up with NumLock On wherein the function of the numeric keypad is the number keys. When set to Off, the function of the numeric keypad is the arrow keys.

### PS/2 Mouse Support

- Auto The system will automatically detect the PS/2 mouse.
- Enabled Enables the PS/2 mouse.
- Disabled Disables the PS/2 mouse.

### Wait for 'F1' If Error

This field when enabled allows you to use the F1 function key when the system encounters an error.

### Hit 'DEL' Message Display

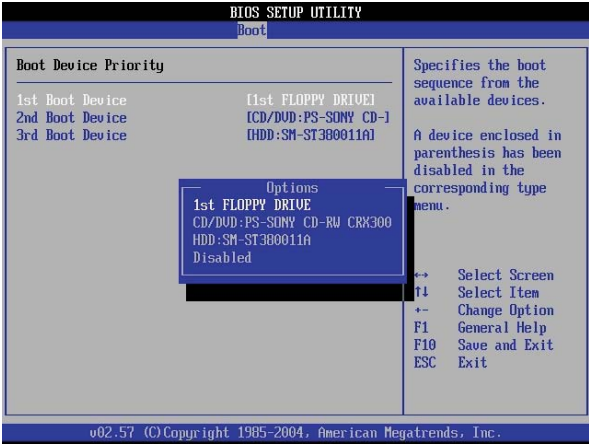
When this field is set to Enabled, the "Press DEL key to run Setup" message will appear during system boot-up.

### Interrupt 19 Capture

Setting this field to Enabled will allow the option ROM to trap interrupt 19.

**BIOS Setup**

**Boot Device Priority**



**Boot Device Priority**

Select the drive to boot first, second and third in the “1st Boot Device” “2nd Boot Device” and “3rd Boot Device” fields respectively. The BIOS will boot the operating system according to the sequence of the drive selected.

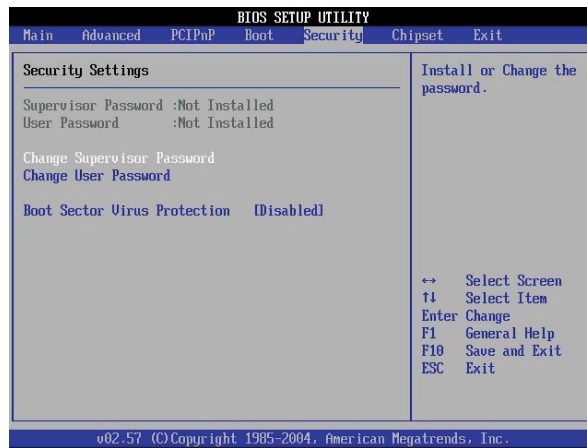
## Motherboard Manual

### Removable Drives



This submenu is used to select the boot sequence of the removable drives such as floppy drive, MO drive, etc.

Security



**Supervisor Password and User Password**

These fields are used to set a Supervisor password and a User password. If you intend to use both, you must first set the Supervisor password.

The Supervisor password is necessary to enter the BIOS Setup utility. This is to prevent unauthorized access to the Setup. The User password is necessary to boot the system. This is to prevent unauthorized use of the system.

Highlight the appropriate field then press <Enter>. Type in the password. You can enter up to six characters.

- Installed      A password has been set.
- Not Installed    No password was set.

**Change Supervisor Password and Change User Password**

These fields are used to change the supervisor password and the user password. Highlight the field and press <Enter> to change the password.



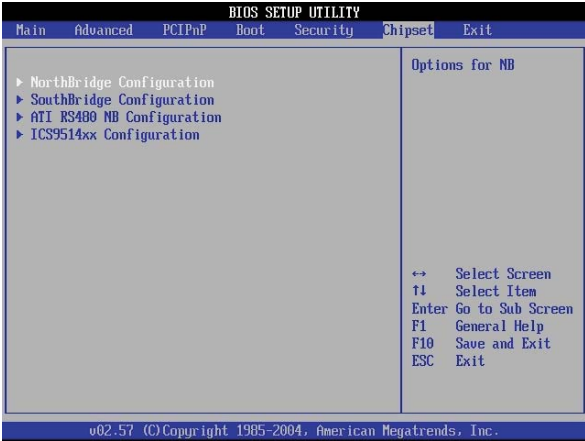
## **Motherboard Manual**

### **Boot Sector Virus Protection**

This field protects the boot sector and partition table of the hard disk drive. When this field is enabled, the BIOS will monitor the boot sector and partition table of the hard disk drive. If an attempt is made to write to the boot sector or partition table of the hard disk drive, the BIOS will halt the system and an error message will appear. After seeing the error message, if necessary, you will be able to run an anti-virus program to locate and remove the problem before any damage is done. Many disk diagnostic programs which attempt to access the boot sector table will cause the warning message to appear. If you are running such a program, we recommend that you first disable this field.

# BIOS Setup

## Chipset



## NorthBridge Configuration



### Video Display Devices

This field is used to select the type of video output device to be used by the system.

## Motherboard Manual

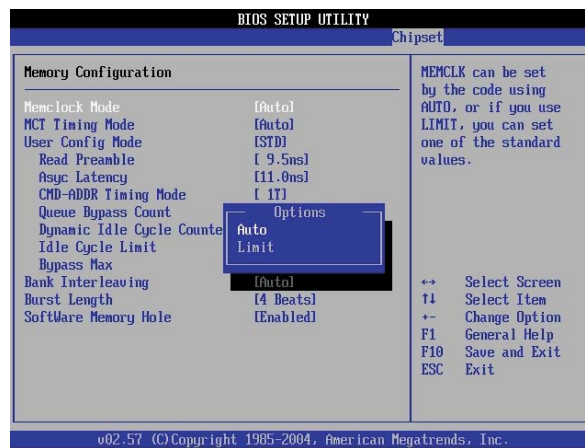
### TV Standard

This field is used to select the TV's output standard.

### Expansion Mode

This field is used to enable the text and graphics expansion / central mode selection.

### Memory Configuration



### Memclock Mode

This field is used to select the memory clock.

- Auto Sets the memory clock by the code.
- Limit Sets the memory clock by using one of the standard values.

### MCT Timing Mode

The options are Auto and Manual.

### User Config Mode

The options are Auto and Manual. If you selected Manual, you can manually configure the system memory in the fields that follow.

## BIOS Setup

### Bank Interleaving

The options are Auto and Disabled.

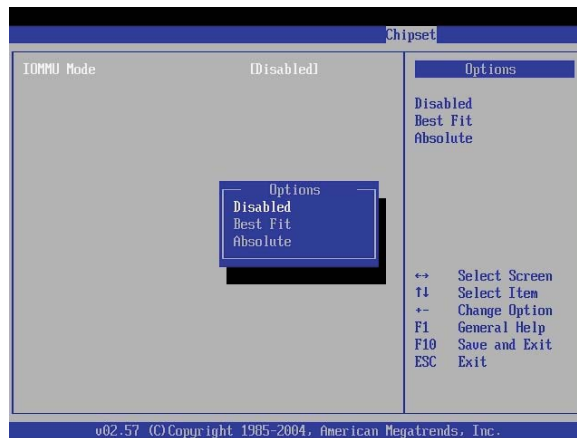
### Burst Length

The options are 2 Beats, 4 Beats and 8 Beats. Select 4 Beats for 64 Bit Dq.

### Software Memory Hole

This field is used to enable or disable the software memory remapping around memory hole.

### IOMMU Mode

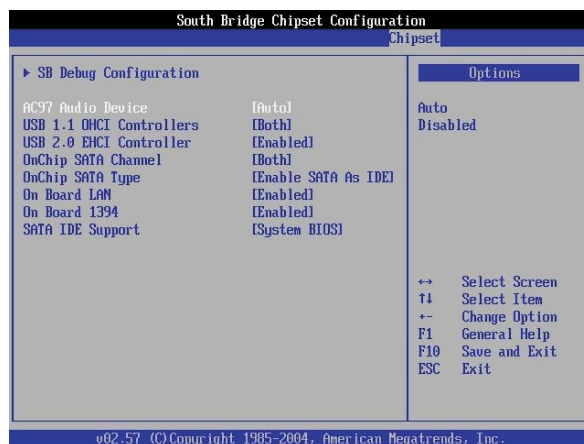


### IOMMU Mode

The options are Disabled, Best Fit and Absolute.

## Motherboard Manual

### SouthBridge Configuration



#### AC97 Audio Device

Select Auto for the system to detect the onboard AC97.

#### USB 1.1 OHCI Host Controller

This field is used to enable or disable the USB 1.1 port.

#### USB 2.0 EHCI Host Controller

This field is used to enable or disable the USB 2.0 EHCI port.

#### OnChip SATA Channel

This field is used to enable or disable a SATA channel.

#### OnChip SATA Type

This field is used to configure SATA as IDE, storage or RAID device.

#### On Board LAN

This field is used to enable or disable the onboard LAN.

#### On Board 1394

This field is used to enable or disable the onboard 1394.

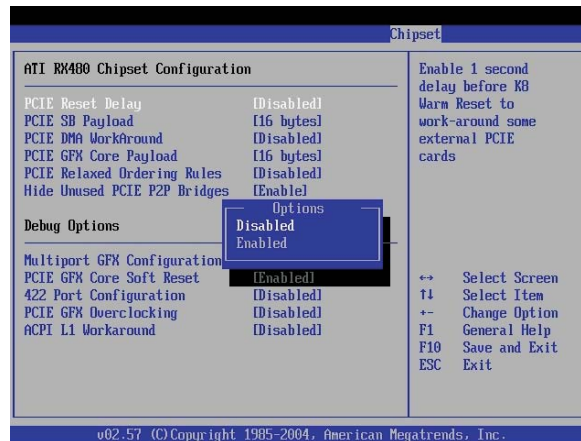
## BIOS Setup

### SATA IDE Support

The options are Option ROM and System BIOS.

## Motherboard Manual

### ATI RS480 NB Configuration



#### PCIE Reset Delay

When this field is Enabled, it allows one second delay before K8 warm reset to work around some external PCIE cards.

#### PCIE SB Payload

The options are 16 Bytes, 32 Bytes and 64 Bytes.

#### PCIE DMA WorkAround

The options are Disabled, Multi Port and Single Port.

#### PCIE GFX Core Payload

The options are 16 Bytes, 32 Bytes and 64 Bytes.

#### PCIE Relaxed Ordering Rules

The options are Enabled and Disabled.

#### Hide Unused PCIE P2P Bridges

The options are Enabled and Disabled.

## BIOS Setup

### Multiport GFX Configuration

The options are Enabled and Disabled.

### PCIe GFX Core Soft Reset

The options are Enabled and Disabled.

### 422 Port Configuration

The options are Enabled and Disabled.

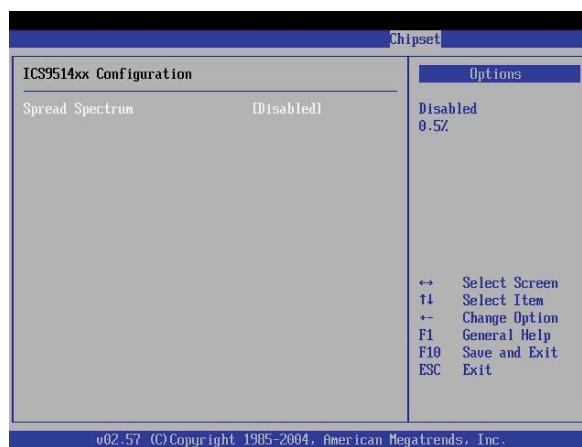
### PCIe GFX Overclocking

The options are Enabled and Disabled.

### ACPI L1 Workaround

The options are Enabled and Disabled.

## ICS9514xx Configuration



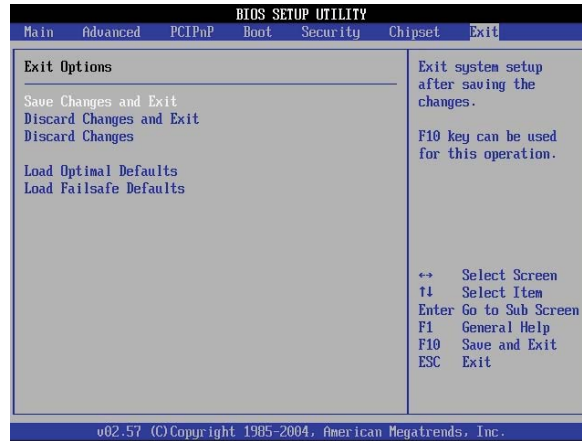
### Spread Spectrum

The options are Enabled and Disabled.

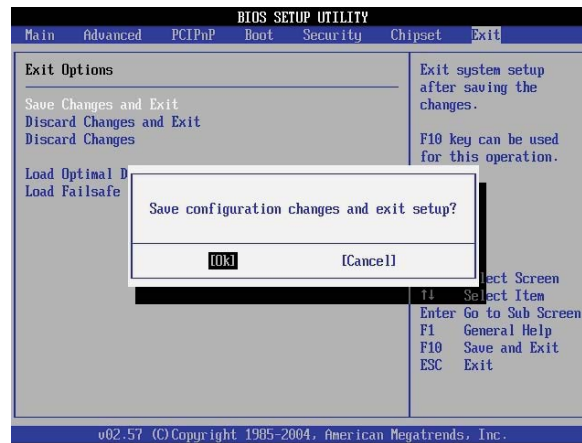


## Motherboard Manual

### Exit



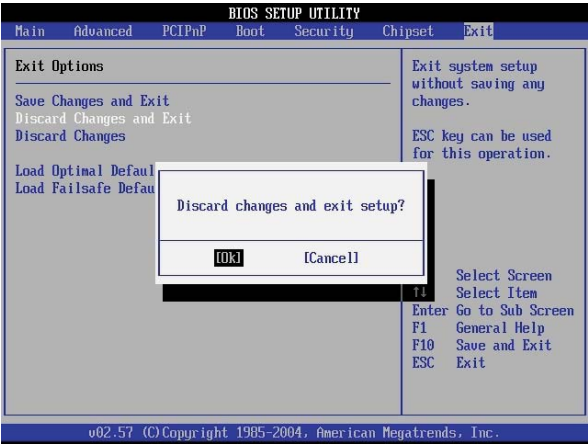
### Save Changes and Exit



After you are done with the system configuration changes, move the cursor to this field and press <Enter>. Select <OK> to save the changes and exit the setup utility. The modifications you have made will be written into the CMOS memory, and the system will reboot.

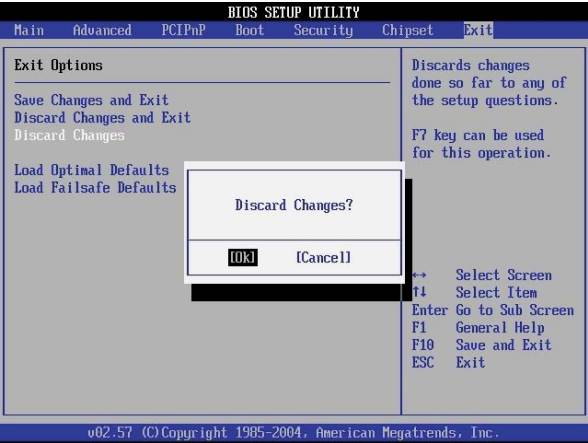
**BIOS Setup**

**Discard Changes and Exit**



If you do not want to save the changes you have made, move the cursor to this field and press <Enter>. Select <OK>. This will allow you to exit the setup utility without the changes being saved to the CMOS memory.

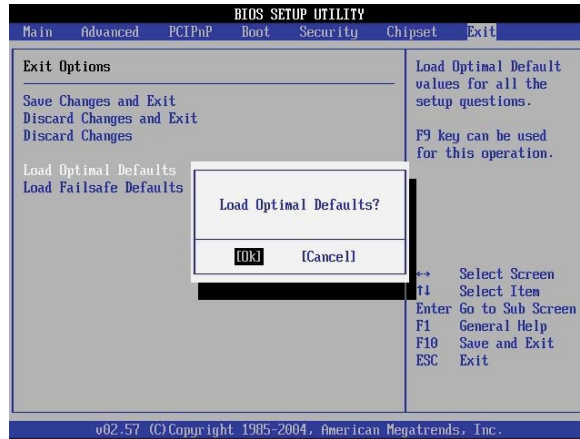
**Discard Changes**



Move the cursor to this field then select <OK> to discard the changes you made and restore the previously saved values.

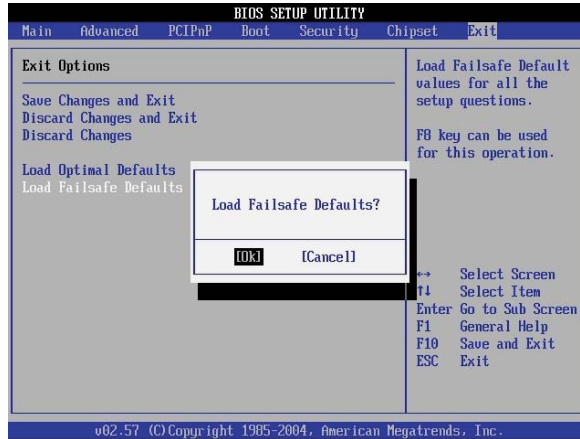
## Motherboard Manual

### Load Optimal Defaults



This field allows the BIOS to automatically set all fields to their respective default settings. This function is designed for maximum system performance but may not work best with some computer applications.

### Load Fail Safe Defaults



This field allows the BIOS to automatically set all fields to their respective default settings. This function is designed for maximum system stability but not for maximum performance.

### RAID BIOS

---

The RAID BIOS utility is used to configure and manage RAID on Serial ATA drives.

After you power up the system and all Serial ATA drives have been detected, the RAID BIOS status message screen will appear. Press the <Ctrl> and <S> keys simultaneously to enter the utility. The utility allows you to build a RAID system using the Serial ATA hard drives.

## Chapter 4

### Drivers and Utilities

## Drivers and Utilities

The CD that came with the system board contains drivers, utilities and software applications required to enhance the performance of the system board.

Insert the CD into a CD-ROM drive. If the computer supports autorun, the Utility CD screen will automatically appear. If autorun is not enabled, double-click "setup.exe" in the root directory of the CD.

### Chipset Drivers



The Chipset Drivers menu contains drivers that must be installed to activate the device.

#### **ATI South Bridge Driver**

This installs the chipset drivers for the RADEON XPRESS 200P (RX480) chipset.

## **Motherboard Manual**

### **Realtek Audio Driver**

This installs the Realtek audio driver and its application.

### **Realtek LAN Driver**

This installs the driver for the onboard Realtek LAN.

### **USB Driver**

This installs the USB 2.0 driver.

#### **Windows® XP**

If your Windows® XP CD already includes Service Pack 1, the USB 2.0 driver will automatically install when you install the operating system. If the CD does not include Service Pack 1, it is available for download at Microsoft's Windows Update website <http://v4.windowsupdate.microsoft.com/en/default.asp>.

#### **Windows® 2000**

If your Windows® 2000 CD already includes Service Pack 4, the USB 2.0 driver will automatically install when you install the operating system. If the CD does not include Service Pack 4, it is available for download at Microsoft's Windows Update website <http://v4.windowsupdate.microsoft.com/en/default.asp>.

## Drivers and Utilities

### Software Utilities



The Software Utilities menu contains applications and software supported by the motherboard.

#### **Pc-cillin 2004**

This installs the Pc-cillin 2004 anti-virus program. The program is the most reliable and convenient way of detecting and protecting your PC from computer viruses.

#### **Power Speeder**

This installs the Power Speeder utility.

#### **Hardware Monitor**

This installs the Hardware Monitor utility. The utility is capable of monitoring the system's temperature, voltage and fan speed. If the settings/values are over or under the set range, a warning message will pop-up. The utility can also be configured so that a beeping alarm will sound whenever an error occurs. This will keep the system in good working condition.

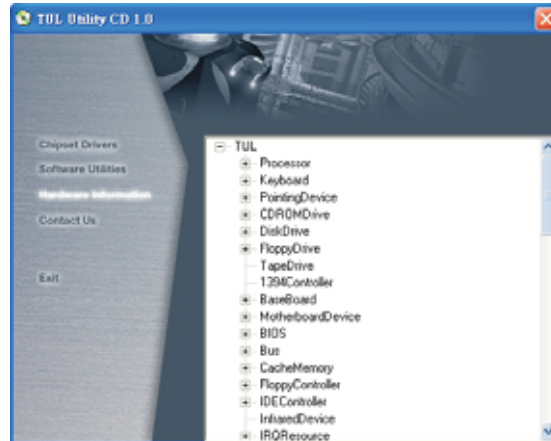
#### **SATA Utility**

This installs the SATA Utility. The utility allows you to easily monitor and see report activities of the RAID devices.



## Motherboard Manual

## Hardware Information



The Hardware Information menu displays basic information about the motherboard.

## Contact Us



The Contact Us menu displays TUL's contact information.

### RAID

The ATI SB400 chipset allows you to configure RAID (Redundant Array of Independent Disks) on Serial ATA drives. It supports RAID 0 and RAID 1.

#### **RAID 0 (Striped Disk Array without Fault Tolerance)**

RAID 0 uses two new identical hard disk drives to read and write data in parallel, interleaved stacks. Data is divided into stripes and each stripe is written alternately between two disk drives. This improves the I/O performance of the drives at different channel; however it is not fault tolerant. A failed disk will result in data loss in the disk array.

#### **RAID 1 (Mirroring Disk Array with Fault Tolerance)**

RAID 1 copies and maintains an identical image of the data from one drive to the other drive. If a drive fails to function, the disk array management software directs all applications to the other drive since it contains a complete copy of the drive's data. This enhances data protection and increases fault tolerance to the entire system. Use two new drives or an existing drive and a new drive but the size of the new drive must be the same or larger than the existing drive.

### Configuring RAID

The following describes the basic steps on configuring RAID.

1. Set the "Serial ATA Controller" field to Enabled (Chipset menu, SouthBridge Configuration section of the AMI BIOS).
2. Reboot the PC.
3. When the system powers-up, press the <Ctrl> and <S> keys simultaneously to run the RAID BIOS Setup Utility. The utility allows you to create, delete or rebuild RAID.

The three major sections of the utility are: Main Menu, Physical Drive Properties and RAID Array List.

Main Menu - this is where you create, delete and rebuild RAID.

Physical Drive Properties - the connected drives and their respective information will be shown in this menu.

## Motherboard Manual

RAID Array List - existing and newly created RAID arrays are shown in this section of the utility.

4. Install the ATI Chipset Driver.

If you are in the process of installing Windows® XP or Windows® 2000 on RAID configured Serial ATA drives, you will need to prepare a floppy diskette that contains the RAID driver. If you are installing the driver on existing Windows® XP or Windows® 2000, install the ATI Chipset Driver from the provided CD.

5. Install the SATARaid Utility. The utility allows you to easily monitor and see report activities of the RAID devices. After installing the utility, run the utility by double-clicking the icon at the taskbar (bottom right hand corner of the desktop).

### **Important**

- *You must first create RAID in the RAID BIOS (refer to step 3) before you can use the SATARaid utility to see and monitor the RAID devices.*

## Chapter 5

### Troubleshooting

## Motherboard Manual

This section details things you can do to evaluate problems that could possibly occur in the course of using this motherboard. The topics covered include possible hardware problems and problems with the CMOS Setup Utility's system configuration record.

### Hardware Problems

A hardware problem may occur either after you installed additional hardware or because some existing hardware failed or has a disconnected or loose connection. This section has some pointers on things you can check before seeking assistance.

#### General Hardware Troubleshooting

If the motherboard does not operate properly when you first try to use it in the system, it is likely that it is either configured incorrectly or there are problems with the external connections. It is also possible the board or some other system component is defective. Always check the most common possibilities first.

- First, check the external components.
  - Make sure the system and the power LEDs of the external peripherals are on.
  - Make sure the system, the monitor and all other external peripherals are plugged in and turned on.
  - Make sure the monitor, keyboard and mouse are properly connected.
- Second, check the BIOS Setup Utility.
  - Run the BIOS Setup Utility and load the optimal defaults. Reset any other custom settings. Remember to save the changes and exit to restart the computer.

## Troubleshooting

- Third, check the internal components. Turn off and unplug the system before you remove the system's chassis cover.
  - Make sure all DIMMs are properly installed in the memory sockets.
  - Make sure you used the correct cables to connect the internal peripherals and that the peripherals are properly connected to the motherboard. Check the Master/Slave settings of all IDE cables. If you installed a device that uses ATA/100 mode, make sure you used an ATA/100 cable to connect it to the motherboard so as to ensure maximum performance.
  - Check that all add-in cards are correctly installed and fully inserted in the expansion slots. Pay particular attention to the graphics card.
  - Make sure the processor and its cooling assembly are properly installed.
  - Check all the hardware settings on the motherboard and make sure they are correct.

When you're done, reassemble the system and try again. If the problem persists after you have checked all of the above, there may be a hardware conflict or bug. See the next section for additional information.

### Hardware Configuration Conflicts

It is possible for system hardware components to conflict with each other. While all the components and subsystems on the motherboard are designed and tested to work together, add-in cards and peripheral devices can be a problem.

Assuming you have gone through the general troubleshooting procedures and the system still will not start, and you have earlier added a new hardware to your system, there may be a hardware conflict or bug or a problem with a device driver. Try removing the new hardware and see if the system will start. If it does, consult the device manufacturer for information on solving the problem. In some cases, a firmware or driver upgrade may resolve the problem.

## Motherboard Manual

### Plug and Play Problems

The motherboard supports automatic recognition and configuration of add-in cards that support the Plug and Play (PnP) specification. Most currently available add-in cards support PnP. PnP simplifies card installation by allowing the system to handle system resource allocation.

If you installed an add-in card that is not PnP compliant, you need to configure the card manually. Consult the card's documentation for instructions or other information.

### Replacing the System Configuration Record

As noted previously, the BIOS Setup Utility creates a system configuration record and stores it in CMOS memory on the motherboard. The record must be correct and not corrupt for the system to operate properly.

However, it is possible that the system's configuration record will corrupt and you will lose the data. If this occurs, the system will not operate properly or will not operate at all. This is not a serious problem. You can restore it by using the BIOS Setup Utility to create a new configuration record. Load the optimal defaults and reenter any other settings you have made.

### Loading Optimized Defaults

The BIOS Setup Utility does not require an operating system to run. Run the utility by typing the <Del> key during system boot-up. There are two sets of defaults, Optimal and Fail-Safe.

#### Load Optimal Defaults

This allows the BIOS to automatically set all fields to their respective default settings. This function is designed for maximum system performance but may not work best with some computer applications.

#### Load Fail Safe Defaults

This allows the BIOS to automatically set all fields to their respective default settings. This function is designed for maximum system stability but not for maximum performance.