



## 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.

### **Copyright**

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While every precaution has been taken in the preparation of this manual, no responsibility for errors or omissions is assumed. Neither is any liability assumed for damages resulting from the use of the information contained herein.

### **Trademarks**

All brand names, logos and registered trademarks mentioned are property of their respective owners.

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## HARDWARE CONFIGURATION

### Key Features :

#### Chipset

- ATI® RS485+SB460/SB600 Chipset.

#### Processor

- Support for AMD™ K8 Processor in a Socket AM2 package.
- Support Hypertransport interface bus.

#### VRM (Voltage Regulator Modules) on Board

- Flexible motherboard design with on board VRM, easy to upgrade with future AMD™ K8 processors.
- 0.800V to 1.55V in 25mV steps.

#### System Memory

- A total of four 240 pin DDRII SDRAM sockets.
- DIMM sizes from 64 Mbytes to 4Gbyte.
- Supports Dual Channel 128-bit Wide Memory Interface.
- Supports 533/667/800 DDRII SDRAM memory types.

#### System BIOS

- PnP, APM, ATAPI and Windows® 2000/XP.
- Full support of ACPI & DMI.
- Auto detects and supports LBA harddisk with capacities over 160GB.
- Easy to upgrade BIOS by end-user.

#### Plug and Play

- Supports Plug and Play specification 1.1.
- Plug and play for Windows® 2000, as well as Windows® XP.
- Fully steerable PCI interrupts.

#### On-board VGA

- Integrated ATI PCIE X300 graphic core.
- Supports CRT or TV Out display.
- Integrated DAC and CRT controllers.
- Full screen/full speed video playback.
- Up to 2048x1536, non-interlaced screen resolution for CRT.

#### TV Out

- Integrated TV encoder.
- 10-bit DAC with 4-tap filter.
- PAL/NTSC TV Out with Composite and S-Video outputs (via a header).
- ATI's exclusive "Composite Dot Crawl" freeze option for PAL and NTSC to improve the picture quality.
- TV-Out power management support.

---

**Expanded USB Support**

- Includes 2 OHCI host controllers.
- Includes 1 EHCI USB2.0 Host Controller that supports all ports (Bandwidth is shared between the all ports).
- This motherboard supports USB 2.0 only on Windows® 2000 (with SP4 or above) and Windows® XP (with SP1 or above) operation systems.
- SB600 support ten ports and SB460 support eight ports only.

**PCI Express Graphics interface**

- One 16-lane (X16 port) PCI Express graphics port, fully compliant with the PCI Express Base Specification revision 1.0a.
- A base PCI Express frequency of 2.5Gb/s only.
- PCI Express support and Enhanced Addressing Mechanism.

**PCI ExpressX1 Ports**

- Full PCI Express 1.0a compliant.
- One virtual channel support for full isochronous data transfers.
- Support for full 2.5Gb/s bandwidth in each direction per X1 lane.

**On-board I/O**

- One on board PCI fast IDE ports supporting up to 2 ATA, ATA2 , Ultra ATA33/66/100/133 IDE HDDs, CD-ROMs, ZIP drives and LS-120 drives as boot drive.
- One ECP/EPP parallel port.
- One 16550 Compatible UART serial port (via a header).
- One floppy port which supports two FDD of 1.44MB, 2.88MB capacity.
- Eight USB ports (four ports via two headers) for SB460.
- Ten USB ports (six ports via three headers) for SB600.
- PS/2 keyboard support.
- PS/2 mouse support.
- One front panel sound connector.
- Infrared (IrDA) support via a header.

**On-board Realtek RTL8100C/RTL8110S PCI LAN (optional)**

- Provides 32-bit performance, PCI bus master capability.
- Full compliance with IEEE 802.3u 100 Base-T specifications and IEEE 802.3X Full Duplex Flow Control.
- Supports 10 Mb/s, 100 Mb/s and 1000 Mb/s (only for RTL8110S) operation.
- Supports Wake-On-LAN function and remote wake-up.
- Supports ACPI, PCI Power management and PCI VPD.

**Power Management**

- Supports SMM, APM and ACPI.
- Break switch for instant suspend/resume on system operations.
- Energy star “Green PC” compliant.
- Hardware monitoring circuit provides voltage, fan speed, etc. monitoring (optional).
- External Modem Ring-in Wake-up support.
- Supports suspend-to-RAM (STR) (optional).

**(Note:** Make sure that the current of your 5VSB power supply is more than 1.5A. Please use a 300 watt power supply or greater.)

**On-board AC97 Sound (optional)**

- Integrated AC97 controller with standard AC97 Codec.
- Direct Sound and Sound Blaster compatible.
- Full-Duplex 16-bit record and play back.
- PnP and APM 1.2 support.
- Windows® 2000/XP ready.
- Line-in, Line-out, Mic-in.
- Supports ALC655 AC97 codes for six sound channel output (optional).

**On-board IEEE1394 (optional)**

- Compliant with 1394 OHCI specifications v1.0 and v1.1.
- Integrated 400Mbit 2 port PHY.

**On board Serial ATA host Controller (only for SB460)**

- Independent DMA operation on four ports.
- Data transfer rates of 150Mb/s.
- RAID feature support .

**On board Serial ATAII Host Controller (only for SB600)**

- Independent DMA operation on four ports.
- Data transfer rates of 300Mb/s.
- RAID feature support .

**Expansion Slots**

- 1 PCI Express X16 slot.
- 1 PCI Express X1 slot.
- 2 PCI slots, - ver. 2.2 compliant.

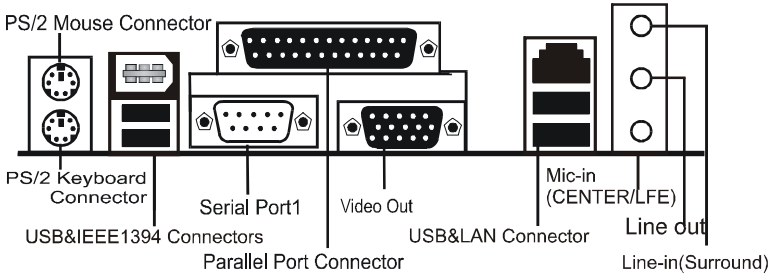


Static electricity can harm delicate components of the motherboard. To prevent damage caused by static electricity, discharge the static electricity from your body before you touch any of the computers electronic components.



## REAR PANEL

The back panel provides the following connectors:



### PS/2 Mouse Connector

The motherboard provides a standard PS/2<sup>®</sup> mouse mini DIN connector for attaching a PS/2<sup>®</sup> mouse. You can plug a PS/2<sup>®</sup> mouse directly into this connector.

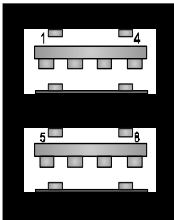
### PS/2 Keyboard Connector

The motherboard provides a standard PS/2<sup>®</sup> keyboard mini DIN connector for attaching a PS/2<sup>®</sup> keyboard. You can plug a PS/2<sup>®</sup> keyboard directly into this connector.

### USB 2.0 Connector

The motherboard provides an OHCI (Open Host Controller Interface) Universal Serial Bus root for attaching USB devices such as keyboard, mouse or other USB-compatible devices. You can plug the USB device directly into the connector.

#### USB 2.0 Connector



#### USB 2.0 Connector Description

PIN	SIGNAL	DESCRIPTION
1	VCC	+5V/5VSB (optional)
2	-Data 0	Negative Data Channel 0
3	+Data0	Positive Data Channel 0
4	GND	Ground
5	VCC	+5V/5VSB (optional)
6	-Data 1	Negative Data Channel 1
7	+Data 1	Positive Data Channel 1
8	GND	Ground



**VIA VT6307 IEEE 1394 Connector (Optional)**

The motherboard provides an IEEE 1394 Connector and allows you to connect an IEEE 1394 device directly to the connector.

**Video Out Connector (Optional)**

The motherboard provides a Video out port to connect a 15-pin analog video monitor.

**SPDIF Connector (Optional)**

The motherboard provides a S-Bracket (SPDIF) connector that allows you to connect a S-Bracket (coaxial) for a Digital Interface (SPDIF).

**LAN Jack (Optional)**

The motherboard provides one standard RJ-45 jack for connecting to a Local Area Network(LAN). You can connect a network cable to the LAN jack.

**Parallel Port Connector: LPT1**

The motherboard provides a 25-pin female centronic connector. A parallel port is a standard printer port that supports Enhanced Parallel Port (EPP) and Extended Capabilities Parallel Port (ECP) mode.

**Audio Port Connector**

**Line\_Out** is a connector for speakers or headphones. **Line\_In** is used for external CD players, tape players, or other audio devices. **Mic\_In** is the microphone connector.

The ALC655 embeds an internal analog switch (by driver software) to select LINE input or Surround output, and to select MIC input or CENTER/LFE output.

## AUDIO CONFIGURATION

After installing the audio driver, you can select 2/4/6 channel surround audio output in the software utility and then connect surround speakers to appropriate audio ports.

There are two ways to obtain 4/6 channel surround audio output:

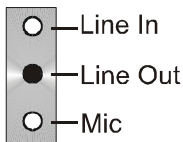
1. Using the 4/6 surround audio output of the back panel only. All surround speakers connect to this audio connector.
2. Using the S-Bracket (optional cable). You have install the S-Bracket into the computer. Connect two front speakers to back panel's "Line Out" port, and the rest of speakers to S-Bracket. For connection details, please refer to page 15.

## SPEAKER CONFIGURATION

### Method 1:

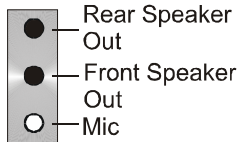
#### Using the 4/6 surround audio output of the back panel only

After installing the audio drivers, you can attach the speakers for 2-/4-/6- channel audio output. Please connect the speakers to the LINE OUT connectors. Different connector configurations for 2-/4-/6-channel options are listed below:



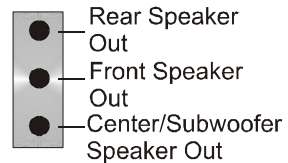
#### 2-Channel

In 2-channel configuration, Line Out, Line In and MIC functions all exist.




#### 4-Channel

When set to 4-channel configuration, Line In is replaced by Rear Speaker Out. The Line in function does not exist.



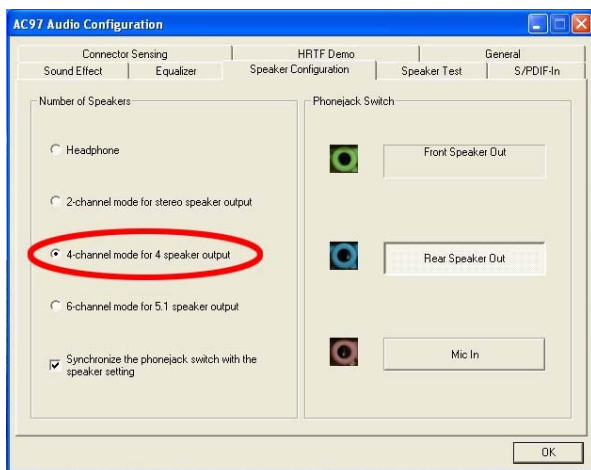
#### 6-Channel

When set to 6-channel configuration, Line In is replaced by Rear Speaker Out. Mic is replaced by Center/Subwoofer Speaker Out. Line in and Mic functions do not exist.

In the software utility, double click the “AC97 Audio configuration” icon  from the window tray on the right bottom.

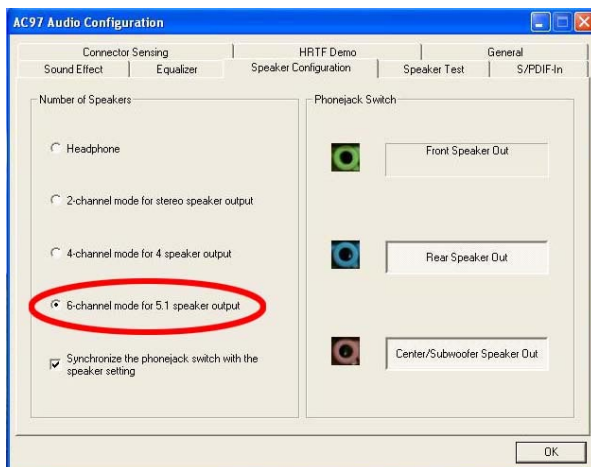
The “AC97 Audio Configuration” box will appear. Click on the **Speaker Configuration** tab to select the audio mode.

A. When you choose 4-channel mode for 4 speaker output, the selected item is shown (Figure 1).



(Figure 1)

B. When you choose 6-channel mode for 5.1 speaker output, the selected item is shown (Figure 2).



(Figure 2)

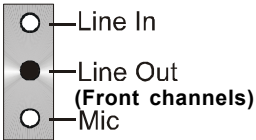
## Method 2: Using S-BRACKET connectors:

The S-Bracket (shown on page 15) is an optional accessory. To use the S-Bracket, you should select the correct setting in the software utility. For information about the setting, refer to selecting 4- or 6- Channel Settings later in this section.

Connector configurations for 4- and 6- channel using S-Bracket are described below:

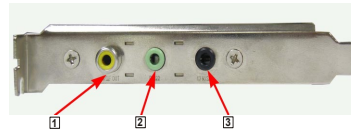
### 4-Channel Analog Audio Output

#### Back Panel



+

#### S-Bracket



- 1 SPDIF jack (coaxial)
- 2 Rear Speaker Out
- 3 No function

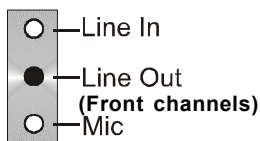
### Description:

Connect two speakers to the back panel's Line Out connector and two speakers to one Line Out connector on the S-Bracket, or connect all four speakers to one connector on the S-Bracket. If you want to use the **Line In** function, please click the **Rear Speaker Out** button (shown below)



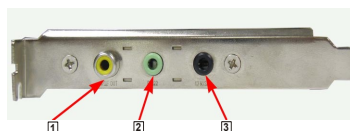
## 6-Channel Analog Audio Output

### Back Panel



+

### S-Bracket



- 1 SPDIF jack (coaxial)
- 2 Rear Speaker Out
- 3 Center and Subwoofer Out

### Description:

Connect two speakers to the back panel's Line Out connector and four speakers to the Line Out connector of the S-Bracket, or attach all six speakers to the connector on the S-Bracket. If you want to use the **Line In** and **MIC** functions at the same time, please click the **Rear Speaker Out** and **Center/Subwoofer Speaker Out** buttons (shown below).



## Connectors

The motherboard provides connectors to connect to the FDD, IDE HDD, and USB Ports and the CPU/System FAN etc.

### Floppy Disk Drive Connector: CN3

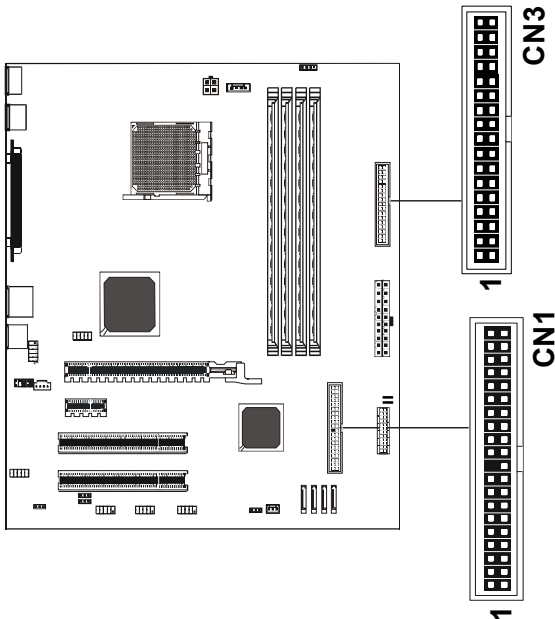
The motherboard provides a standard floppy disk drive connector that supports 1.44M, 2.88M floppy disk types.

### Hard Disk Connectors: CN1

The motherboard has a 32-bit Enhanced PCI IDE and Ultra DMA 33/66/100/133 controller that provides PIO mode 0~4, Bus Master, and Ultra DMA 33/66/100/133 function. You can connect up to two hard disk drives, CD-ROMs, 120MB Floppy (reserved for future BIOS) and other devices.

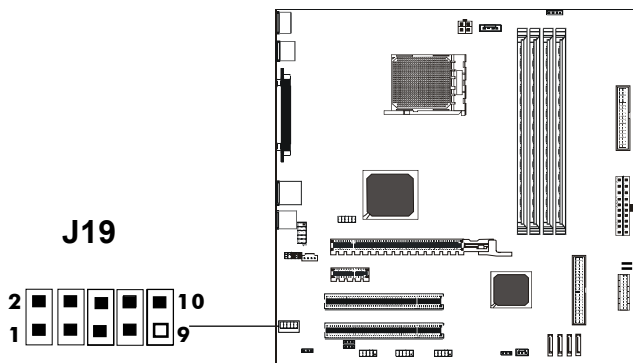
#### CN1 (Primary IDE Connector)

The first hard drive should always be connected to CN1. CN1 can connect a Master and a Slave drive. You must configure the second hard drive to Slave mode by setting the jumper accordingly.



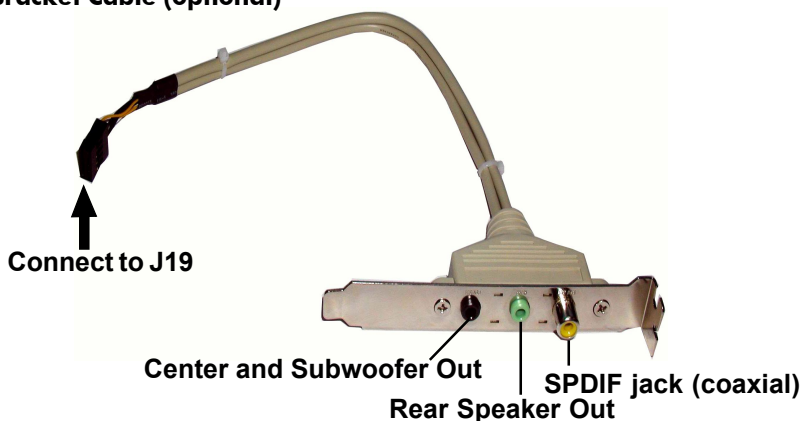
### S-Bracket (SPDIF) /CEN/LFE/Surround Output Connector - J19 (optional)

This connector allows you to connect a S-Bracket for a digital interface (SPDIF). The S-Bracket offers 1 SPDIF jack for digital audio transmission and 2 analog Line-Out jacks for other 4-channel audio outputs. So you can use Line in, Mic in and 6 channel audio output features at the same time.



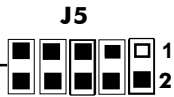
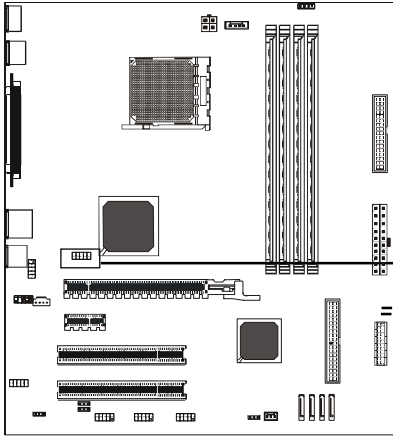
PIN	SIGNAL	DESCRIPTION
1	SOUT-L	Audio left surrounding output
2	SOUT-R	Audio right surrounding output
3	GND	Ground
4	GND	Ground
5	CET-OUT	Audio center output
6	LFE-OUT	Audio bass output
7	GND	Ground
8	SPDIF	S/PDIF input
9	KEY	NC
10	SPDFO	S/PDIF output

### S-Bracket Cable (optional)



## TV Out Connector

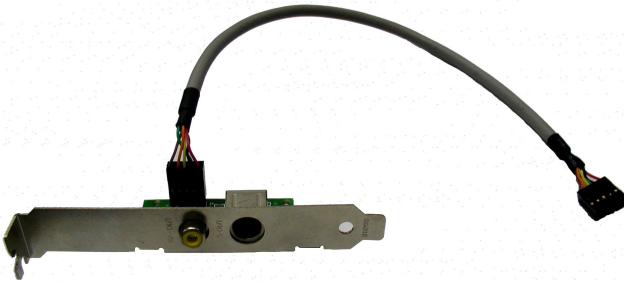
The motherboard provides TV Out connectors.



### J5 - Pin Definition

PIN	Assignment
1	KEY
2	C
3	HDTV-DET
4	Y
5	NC
6	COMP/B
7	NC
8	GND
9	NC
10	GND

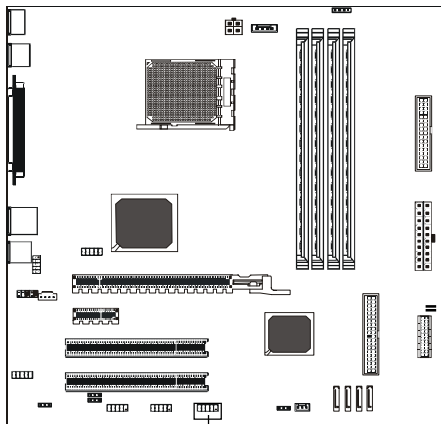
## TV Out cable



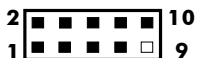


### IEEE 1394 Connector: J23 (optional)

The mainboard provides two 1394 pin headers that allow you to connect IEEE 1394 ports.



**J23**



### J23 - Pin Definition

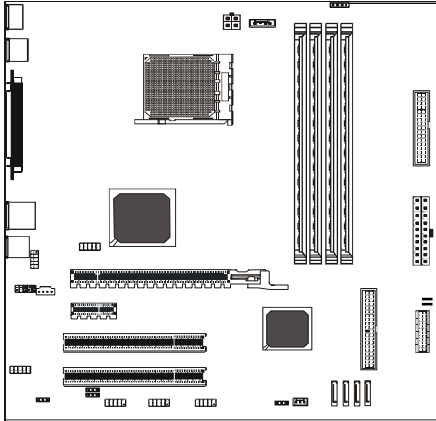
PIN	Assignment
1	TPA+
2	TPA-
3	Ground
4	Ground
5	TPB+
6	TPB-
7	Cable power
8	Cable power
9	Key (no pin)
10	Ground

### IEEE 1394 Cable (optional)



### Chassis Alarm Lead: JP12 (optional)

This lead is for a chassis designed with an intrusion detection feature. This requires an external detection mechanism such as a chassis intrusion sensor or microswitch. When you remove any chassis component, the sensor triggers and sends a high-level signal to this lead to record a chassis intrusion event.



 1  
**JP12**

#### JP12 - Pin Definition

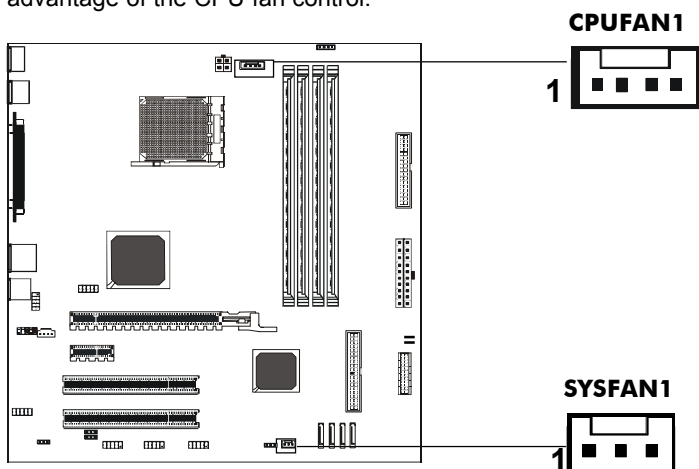
PIN	Assignment
1	+5VSB
2	KEY
3	Chassis Signal
4	GND

#### Note:

If you want to use “Chassis Alarm” Connector, you must remove 3-4 jumper.

### Fan Power Connectors: CPUFAN1, SYSFAN1

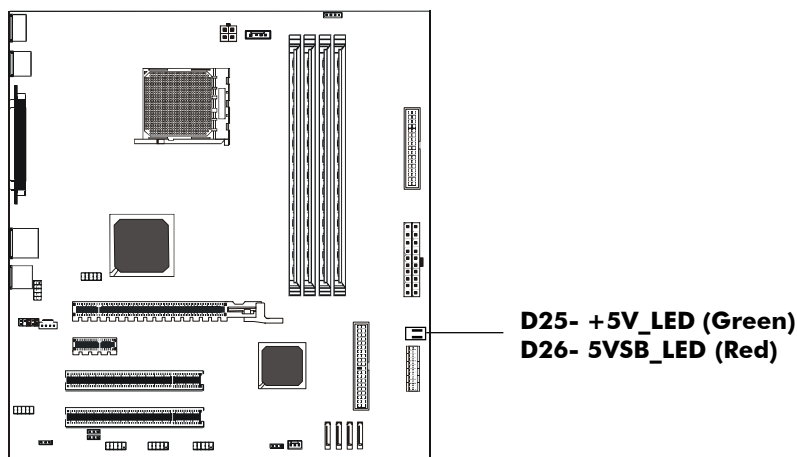
The CPUFAN1 (processor fan) and SYSFAN1 (system fan) support system cooling fans using +12V via four-pin head connectors. When connecting the wire to the connectors, always take note that the red wire is the positive and should be connected to the +12V, the black wire is Ground and should be connected to GND. If the motherboard has a System Hardware Monitor chipset on-board, you must use a specially designed fan with speed sensor to take advantage of the CPU fan control.



### Power LED: D25, D26 (optional)

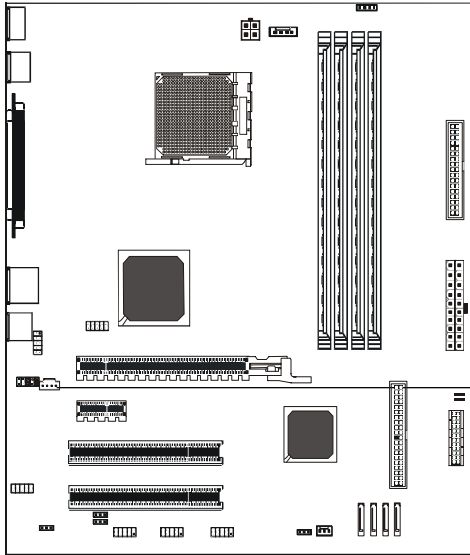
The green LED lights when the system is in the power-on state.

The red LED lights whenever AC mains power is attached, irrespective of whether the system is power-on or power-off or standby mode.

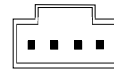


**CD-IN Connector: J18**

The connector is for CD-ROM Drive.

**J18**

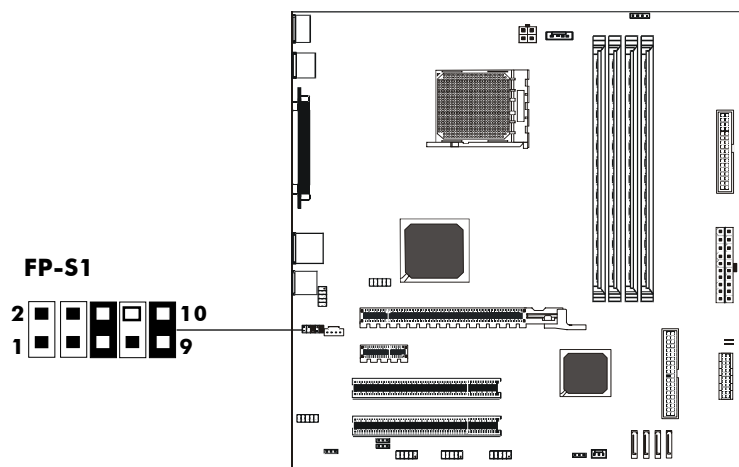
1

**CDS1 : J18 - Pin Definition**

PIN	Assignment
1	CD-L
2	GND
3	GND
4	CD-R

### Front Panel Audio Header: FP-S1

This motherboard supports front panel microphone and speaker out ports. If your computer case has these ports, connect them to FP-S1.



### FP-S1 - Pin Definition

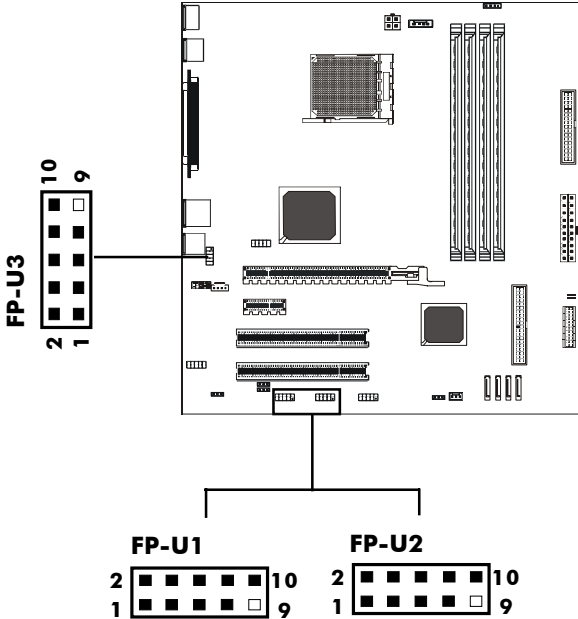
PIN	Assignment
1	MIC
2	GND
3	REF
4	POWER
5	Front Audio (R)
6	Rear Audio (R)
7	Reserved
8	Key (No pin)
9	Front Audio (L)
10	Rear Audio (L)

#### Note:

If you want to use the "Front Audio" connector, you must remove the 5-6, 9-10 pin jumpers. 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 motherboard header. To find out if the chassis you are buying supports a front audio connector, please contact your dealer.

**USB Connectors: FP-U1, FP-U2,FP-U3 (only for SB600)**

This motherboard has USB ports. Some computer cases have a special module that mounts USB ports at the front of the case. If you have this kind of case, use the auxiliary USB connector FP\_U1/FP\_U2/FP\_U3 to connect the front mounted ports to the motherboard.

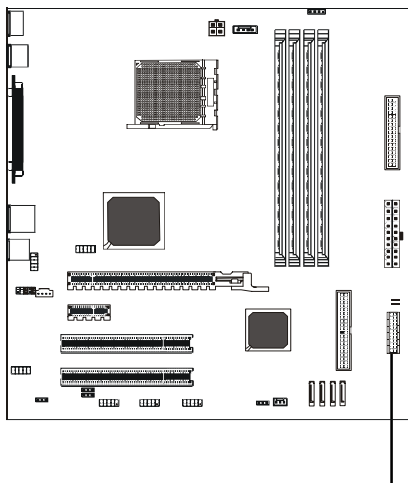


**FP-U1, FP-U2 USB Connector**

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

## Front Panel Header: FP1

The motherboard provides one front panel connector for the front panel switches and LEDs.

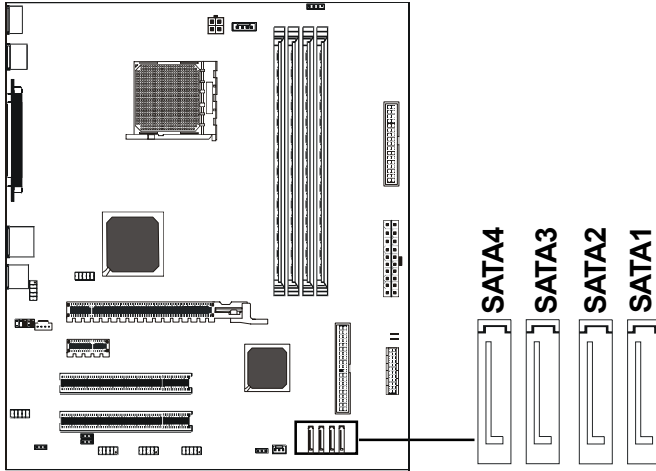


### FP1

GND	24	23	VCC
KEYLOCK	22	21	GND
KEY	20	19	NC
KEY	18	17	SPEAKER
IRRX	16	15	IRTX
GND	14	13	VCC
KEY	12	11	NC
KEY	10	9	NC
GND	8	7	RESET
PWR_SW	6	5	GND
PW_LED-	4	3	HDD_LED-
PW_LED+	2	1	HDD_LED+

**Serial ATA Hard Disk Connectors: SATA1, SATA2, SATA3, SATA4 (optional)**

The motherboard has four SATA connectors. The motherboard provides optional dual high-speed Serial ATA interface ports, SATA1,2,3,4. Each supports 1<sup>st</sup> generation serial ATA data rates of 150 MB/s,300MB/s (only for SB600). Both connector types are fully compliant with Serial ATA 1.0 specifications. Each Serial ATA connector can connect to 1 hard disk device. Please refer to Serial ATA Raid manual for detail software installation procedure.



**SATA1, SATA2, SATA3, SATA4 - Serial Connectors**

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



## Serial ATA Cable



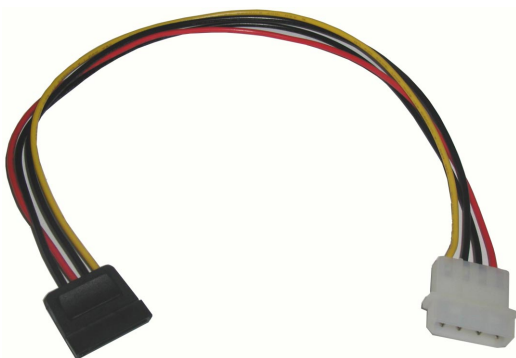
Connect one end of the SATA cable to the motherboard, and connect the other end to the SATA Hard Disk.



CAUTION!

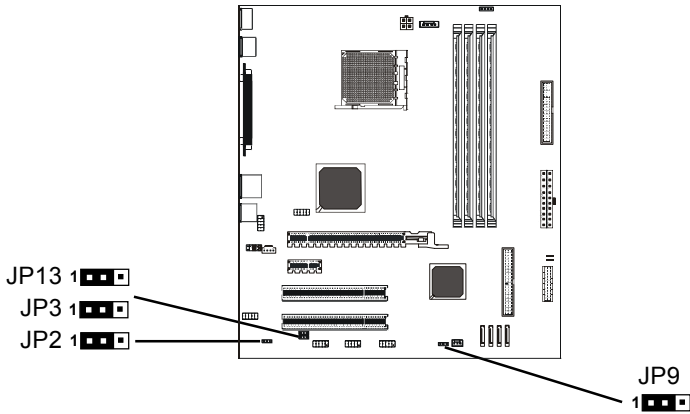
Please do not fold the serial ATA cable at a 90-degree angle as this will cause a loss of data during the transmission.

## Serial ATA Hard Disk Devices Power Cable (optional)



## JUMPER SETTING

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.



### Clear CMOS Jumper: JP9

If you want to clear the system configuration, use the JP9 (Clear CMOS Jumper) to clear data.

JP9	Selection
1 <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 1-2*	Normal*
1 <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 2-3	CMOS Clear

### JP2-On Board AC97 Sound Select

JP2	Function
1 <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 1-2*	AC97 Sound Enable*
1 <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 2-3	AC97 Sound Disable

### JP13-On Board LAN Select (optional)

JP13	Function
1 <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 1-2*	LAN Enable*
1 <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 2-3	LAN Disable

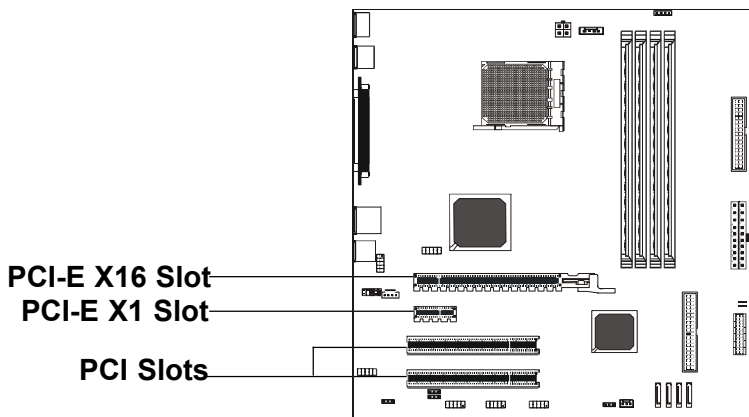
### JP3-On board IEEE1394 Select (optional)

JP3	Selection
1 <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 1-2*	IEEE1394 Enable*
1 <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 2-3	IEEE1394 Disable

Close     Open    \* = Default setting.

## SLOTS

The motherboard provides one PCI-E X16 slot, one PCI-E X1 slot and two 32-bit PCI bus slots.



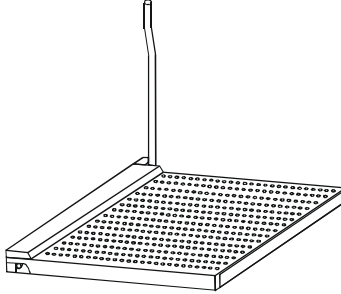
### PCI (Peripheral Component Interconnect) Slots

The PCI slots allow you to insert expansion cards to meet your needs. When adding or removing expansion cards, make sure that you unplug the power supply first. Read the documentation for the expansion card and make any necessary hardware or software settings for the expansion card, such as jumpers, switches or BIOS configuration.

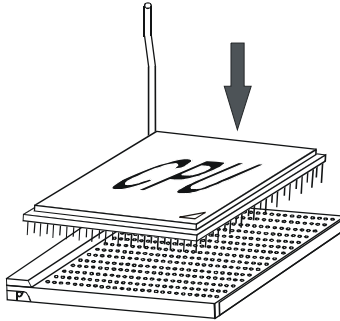
## CPU INSTALLATION

**Please follow below steps to install the CPU.**

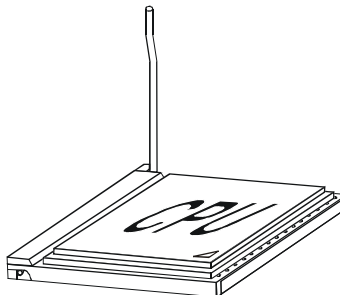
1. Please turn off the power and unplug the power cord before installing the CPU. Pull the lever up and away from the socket until it is at a 90 degree angle to the motherboard.



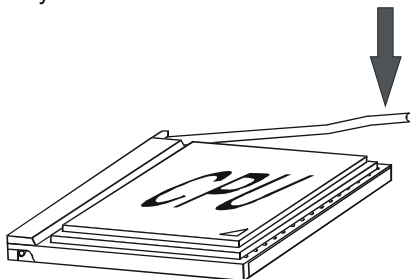
2. Look for the gold arrow on the CPU. The gold arrow should point away from the lever pivot. The CPU can only sit properly in the socket in the correct orientation.



3. If the CPU is correctly seated, the pins should be completely embedded in the socket and can not be seen (Please note that any deviation from the correct installation procedures may cause permanent damage to your motherboard).



4. Press the CPU down firmly into the socket and close the lever. As the CPU is likely to move while the lever is being closed, always close the lever with your fingers pressing tightly on top of the CPU to make sure the CPU is properly and completely seated in the socket.

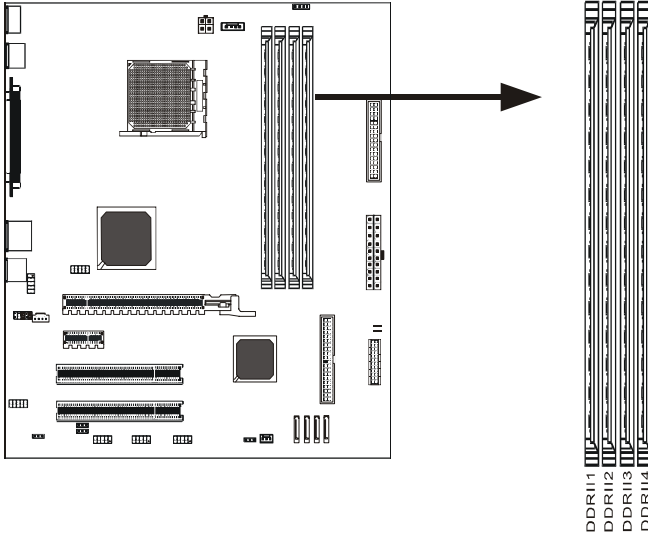


5. When you are installing the CPU, make sure the CPU has a heat sink and a cooling fan attached on the top to prevent overheating. If you do not have the heat sink and cooling fan, contact your dealer to purchase and install them before turning on the computer.

## MEMORY CONFIGURATIONS

### 1. DDRII DIMM Sockets Location

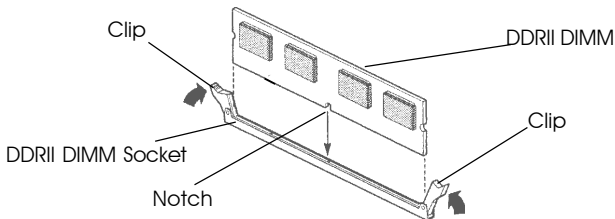
Please refer to the following figure for the location of the DDRII DIMM Sockets.



### 2. Installing DDRII DIMMs

Please follow the steps below to install DDRII DIMMs.

- Locate the DDRII DIMM sockets.
- Holding the DDRII DIMM by the edges, remove it from its antistatic package.
- Make sure the clips at either end of the socket are pushed away from the socket.



- Position the DDRII DIMM above the socket. Align the small notch in the bottom edge of the DDRII DIMM with the key in the socket.
- Insert the bottom edge of the DDRII DIMM into the socket.

- f. When the DDRII DIMM is seated, push down on the top edge of the DDRII DIMM until the retaining clips at the ends of the socket snap into place. Make sure the clips are firmly in place.

**Note:** Please turn the system off before installing or removing any device, otherwise system damage can occur.

### 3. Memory Configurations

Please refer to the following recommended memory configurations.

Model (DIMM Type)	Case	Sockets			
		DDRII1	DDRII2	DDRII3	DDRII4
Dual-channel/ (DDRII533/DDRII667/DDRII800)	1	Populated	Populated	---	----
	2	---	---	Populated	Populated
	3	Populated	Populated	Populated	Populated

You can install identical DIMMs in DDRII1 and DDRII2 and identical DIMMs in DDRII3 and DDRII4.

**Note:**

- In dual channel mode, always install an identical (the same type and size) DDRII DIMM pair in the sockets.
- Using the three DIMMs configuration is not recommended.
- Memory channel speed is determined by slowest DIMM populated in system.

## BIOS SETUP

### About the Setup Utility

The computer uses the latest Award BIOS with support for Windows Plug and Play. The CMOS chip on the motherboard contains the ROM setup instructions for configuring the motherboard BIOS.

The BIOS (Basic Input and Output System) Setup Utility displays the system's configuration status and provides you with options to set system parameters. The parameters are stored in battery-backed-up CMOS RAM that saves this information when the power is turned off. When the system is turned back on, the system is configured with the values you stored in CMOS.

The BIOS Setup Utility enables you to configure:

- Hard drives, diskette drives and peripherals**
- Video display type and display options**
- Password protection from unauthorized use**
- Power Management features**
- Overclocking features**

The settings made in the Setup Utility affect how the computer performs. Before using the Setup Utility, ensure that you understand the Setup Utility options.

This chapter provides explanations for Setup Utility options.

### The Standard Configuration

A standard configuration has already been set in the Setup Utility. However, we recommend that you read this chapter in case you need to make any changes in the future.

This Setup Utility should be used:

- when changing the system configuration
- when a configuration error is detected and you are prompted to make changes to the Setup Utility
- when trying to resolve IRQ conflicts
- when making changes to the Power Management configuration
- when changing the password or making other changes to the Security Setup

### Entering the Setup Utility

When you power on the system, BIOS enters the Power-On Self Test (POST) routines. POST is a series of built-in diagnostics performed by the BIOS. After the POST routines are completed, the following message appears:



## Press DEL to enter SETUP

Pressing the delete key accesses the BIOS Setup Utility:

Phoenix - Award Workstation BIOS CMOS Setup Utility	
<ul style="list-style-type: none"> <li>▶ Standard CMOS Features</li> <li>▶ Advanced BIOS Features</li> <li>▶ Advanced Chipset Features</li> <li>▶ Integrated Peripherals</li> <li>▶ Power Management Setup</li> <li>▶ PnP/PCI Configurations</li> <li>▶ PC Health Status</li> </ul>	<ul style="list-style-type: none"> <li>▶ Frequency/Voltage Control</li> <li>Load Fail-Safe Defaults</li> <li>Load Optimized Defaults</li> <li>Set Supervisor Password</li> <li>Set User Password</li> <li>Save &amp; Exit Setup</li> <li>Exit Without Saving</li> </ul>
Esc: Quit : F10: Save & Exit Setup	↑↓→←: Select Item
Time, Date, Hard Disk Type...	

(Note: The sample BIOS Setup Menu included here only shows a typical case, and may not be exactly the same as the one on your unit.)

## BIOS Navigation Keys

The BIOS navigation keys are listed below:

KEY	FUNCTION
↑↓→←	Move
<b>Enter</b>	Select item or option
<b>+/-/PU/PD</b>	Value
<b>ESC</b>	Exit
<b>F1</b>	Display the General Help
<b>F5</b>	Restore the Previous Values
<b>F6</b>	Load the Fail-Safe Defaults
<b>F7</b>	Load the Optimized Defaults
<b>F10</b>	Save configuration

## Updating the BIOS

You can download and install updated BIOS for this motherboard from Sapphire's web site. New BIOS provides support for new peripherals, improvements in performance, or fixes for known bugs. Install new BIOS as follows:

1. Create a bootable system disk. (Refer to Windows online help for information on creating a bootable system disk.)
2. Download the Flash Utility and new BIOS file from the manufacturer's Web site. Copy these files to the system diskette you created in Step 1.
3. Turn off your computer and insert the system diskette in your computer's diskette drive. (You might need to run the Setup Utility and change the boot priority items on the Advanced BIOS Features Setup page, to force your computer to boot from the floppy diskette drive first.)
4. At the A:\ prompt, type the Flash Utility program name and press <Enter>.
5. Type the filename of the new BIOS in the "File Name to Program" text box. Follow the onscreen directions to update the motherboard BIOS.

- When the installation is complete, remove the floppy diskette from the diskette drive and restart your computer. If your motherboard has a Flash BIOS jumper, reset the jumper to protect the newly installed BIOS from being overwritten.

**Using BIOS**

When you start the Setup Utility, the main menu appears. The main menu of the Setup Utility displays a list of the options that are available. A highlight indicates which option is currently selected. Use the cursor arrow keys to move the highlight to other options. When an option is highlighted, execute the option by pressing <Enter>.

Some options lead to pop-up dialog boxes that prompt you to verify that you wish to execute the option. Other options lead to dialog boxes that prompt you for information.

Some options (marked with a triangle ▶) lead to submenus that enable you to change the values for the option. Use the cursor arrow keys to move the items in the submenu.

In this manual, default values are enclosed in parenthesis. Submenu items are denoted by a triangle▶ .

**Standard CMOS Features**

This option displays basic information about your system.

Phoenix - Award WorkstationBIOS CMOS Setup Utility  
Standard CMOS Features

Date (mm:dd:yy)	Fri, Aug 19 2005	Item Help
Time (hh:mm:ss)	9 : 25 : 53	
▶ IDE Channel 0 Master	[WDC WD800JB-00FMA0]	Menu Level ▶ Change the day, month, year and century
▶ IDE Channel 0 Slave	[None]	
▶ IDE Channel 1 Master	[COMBO-48W16]	
▶ IDE Channel 1 Slave	[None]	
Drive A	[1.44M, 3.5 in.]	
Halt On	[All, But Keyboard]	
Base Memory	640K	
Extended Memory	456704K	
Total Memory	457728K	

↑↓→←: Move    Enter: Select    +/-/PU/PD: Value    F10: Save    ESC: Exit    F1: General Help  
F5: Previous Values    F6:Fail-Safe Defaults    F7: Optimized Defaults

## Date and Time

The Date and Time shows the current date and time on the computer. If you are running Windows, it is automatically updated whenever you make changes to the Windows Date and Time Properties utility.

## IDE Devices (None)

Your computer has two IDE channels (Primary and Secondary) and each channel can be installed with one or two devices (Master and Slave). Use these items to configure each device on the IDE channel.

Press <Enter> to display the IDE submenu:

Phoenix - AwardBIOS WorkstationBIOS CMOS Setup Utility  
IDE Channel 0 Master

IDE HDD Auto-Detection	[Press Enter]	Item Help
IDE Channel 0 Master	[Auto]	Menu Level ▶▶
Access Mode	[Auto]	To auto-detect the HDD's size, head... on this channel
Capacity	80GB	
Cylinder	38308	
Head	16	
Precomp	0	
Lading Zone	38307	
Sector	255	

↑↓→←: Move    Enter: Select    +/-/PU/PD: Value    F10: Save    ESC: Exit    F1: General Help  
F5: Previous Values    F6:Fail-Safe Defaults    F7: Optimized Defaults

## IDE HDD Auto-Detection

Press <Enter> while this option is highlighted to prompt the Setup Utility to automatically detect and configure an IDE device on the IDE channel.

**NOTE:** If you are setting up a new hard disk drive that supports LBA mode, more than one line will appear in the parameter box. Choose the line that lists LBA for the LBA drive.

## IDE Channel 0/1 Master/Slave (Auto)

Leave this option at Auto to enable the system to automatically detect and configure IDE devices on the channel. If it fails to find a device, change the value to Manual and then manually configure the drive by entering the characteristics of the drive in the items described below. Refer to your drive's documentation or look on the drive casing if you need to obtain this information. If no device is installed, change the value to None.

**NOTE:** Before attempting to configure a hard disk drive, ensure that you have the configuration information supplied by the manufacturer of your hard drive. Incorrect settings can result in your system not recognizing the installed hard disk.

**Access Mode (Auto)**

This option defines ways that can be used to access IDE hard disks such as LBA (Large Block Addressing). Leave this value at Auto and the system will automatically decide the fastest way to access the hard disk drive.

Press <Esc> to return to the Standard CMOS Features Page

**Drive A (1.44M, 3.5 in./None)**

This option define the characteristics of any diskette drive attached to the system. You can connect one or two diskette drives.

**Halt On (All Errors)**

This option defines the operation of the system POST (Power On Self Test) routine. You can use this item to select which types of errors in the POST are sufficient for you to halt the system.

**Base Memory, Extended Memory, and Total Memory**

These options are automatically detected by the system at startup. They are display-only fields. You cannot make changes to these fields.

**Advanced BIOS Features**

This section defines advanced information about your system.

Phoenix - Award WorkstationBIOS CMOS Setup Utility  
Advanced BIOS Features

▶ Hard Disk Boot Priority	[Press Enter]	Item Help
Virus Warning	[Disabled]	Menu Level ▶  Select Hard Disk Boot Device Priority
CPU Internal Cache	[Enabled]	
External Cache	[Enabled]	
Quick Power On Self Test	[Enabled]	
First Boot Device	[Floppy]	
Second Boot Device	[Hard Disk]	
Third Boot Device	[CDROM]	
Boot Other Device	[Enabled]	
Boot Up Floppy Seek	[Enabled]	
Boot Up NumLock Status	[On]	
Gate A20 Option	[Fast]	
Typematic Rate Setting	[Disabled]	
x Typematic Rate (Chars/Sec0X)	6	
x Typematic Delay (Msec)	250	
Security Option	[Setup]	
APIC Mode	[Enabled]	
MPS Version Control For OS	[1.4]	
OS Select for DRAM > 64MB	[Non-OS2]	

↑↓→←: Move    Enter: Select    +/-/PU/PD: Value    F10: Save    ESC: Exit    F1: General Help  
F5: Previous Values    F6:Fail-Safe Defaults    F7: Optimized Defaults

## Hard Disk Boot Priority

Navigate to this section and press <Enter> to view the following screen:

Phoenix - Award WorkstationBIOS CMOS Setup Utility  
Hard Disk Boot Priority

1. Ch0 M. : WDC WD800JB-00FMA0 2. Bootable Add-in Cards	<table border="1"> <thead> <tr> <th data-bbox="707 293 934 320">Item Help</th> </tr> </thead> <tbody> <tr> <td data-bbox="707 320 934 347">Menu Level ▶▶</td> </tr> <tr> <td data-bbox="707 347 934 481">Use &lt;↑&gt; or &lt;↓&gt; to select a device, then press &lt;+&gt; to move it up, or &lt;-&gt; to move it down the list. Press &lt;ESC&gt; to exit this menu.</td> </tr> </tbody> </table>	Item Help	Menu Level ▶▶	Use <↑> or <↓> to select a device, then press <+> to move it up, or <-> to move it down the list. Press <ESC> to exit this menu.
Item Help				
Menu Level ▶▶				
Use <↑> or <↓> to select a device, then press <+> to move it up, or <-> to move it down the list. Press <ESC> to exit this menu.				
↑↓←→: Move    Enter: Select    +/-/PU/PD: Value    F10: Save    ESC: Exit    F1: General Help F5: Previous Values    F6:Fail-Safe Defaults    F7: Optimized Defaults				

### Virus Warning (Disabled)

If this function is enabled and someone attempts to write data into this area, BIOS will show a warning message on screen and alarm beep

### CPU Internal Cache (Enabled)

All processors that can be installed in this motherboard use internal level 1 (L1) cache memory to improve performance. Leave this item at the default value for better performance.

### External Cache (Enabled)

All processors that can be installed in this motherboard use an integrated Level2 cache. In older systems, the L2 cache was external and for easier differentiation from the Level1 cache the External Cache terminology is still widely used. Disabling the L2 cache will result in a significant performance hit and should only be used for debugging purpose

### Quick Power On Self Test (Enabled)

To allow the system to skip certain tests while booting. This will decrease the time needed to boot the system. You might like to enable this option when you are confident that your system hardware is operating smoothly.

### First/Second/Third Boot Device (Floppy/Hard Disk/CDROM)

Use these three options to select the priority and order of the devices that your system searches for an operating system at start-up time.

### Boot Other Device (Enable)

When this option enabled, the system searches all other possible locations for an operating system if it fails to find one in the devices specified among the First, Second, and Third boot devices.

### Boot Up Floppy Seek (Enable)

When this option is enabled, it checks the size of the floppy disk drives at start-up time.

### Boot Up Num Lock Status (On)

This option defines if the keyboard Num Lock key is active when your system is started, default is on.

**Gate A20 Option (Fast)**

This option defines how the system handles legacy software that was written for an earlier generation of processors.

**Typematic Rate Setting (Disabled)**

If this option is enabled, you can use the following two options to set the typematic rate and the typematic delay settings for your keyboard.

- **Typematic Rate (Chars/Sec):**  
This option defines how many characters per second are generated by a held-down key.
- **Typematic Delay (Msec):**  
This option defines how many milliseconds must elapse before a held-down key begins generating repeat characters.

**Security Option (Setup)**

If you have installed password protection, this option defines if the password is required at system start up or if it is only required when a user tries to enter the Setup Utility.

**APIC Mode (Enabled)**

APIC is the acronym for advanced programmable interrupt controller. The APIC was developed originally for multiprocessor systems to overcome the limitations of the standard 15 interrupts available along with the conflicts arising from two processors simultaneously trying to generate interrupt requests. For any modern operating systems, APIC should be enabled, only in legacy operating systems could there be a need to disable APIC and run in legacy PIC mode

**MPS Version Control For OS (1.4)**

This setting specifies the APIC lookup table used for best compatibility with the OS. In Microsoft operating systems, Windows NT 3.51 and older should be configured to Version 1.1, any more recent operating system should be set to 1.4.

**OS Select For DRAM > 64 MB (Non-OS2)**

This setting only applies if you are running OS2 and are using more than 4 MB of system memory. All current DDR modules as those required in your motherboards are of greater density than 64 MB. Therefore, in the rare case you are running OS2, this setting has to be changed to the OS2 tab in order to support the higher memory space

**HDD S.M.A.R.T Capability (Disabled)**

The S.M.A.R.T. (Self-Monitoring, Analysis, and Reporting Technology) system is a diagnostics technology that monitors and predicts device performance. S.M.A.R.T. software resides on both the disk drive and the host computer. The disk drive software monitors the internal performance of the motors, media, heads and electronics of the drive. The host software monitors the overall reliability status of the drive. If a device failure is predicted, the host software warns the user of the impending condition and advises appropriate actions to protect the data.

## Advanced Chipset Features

These options define critical timing parameters of the Sapphire motherboard. You should leave the options on this page at their default values unless you are familiar with the technical specification of your system hardware. Changing the values to a incorrect setting may result in fatal errors or may cause your system to run unstable.

### Phoenix - Award WorkstationBIOS CMOS Setup Utility Advanced Chipset Features

▶ DRAM Configuration	[Press Enter]	Item Help
▶ LDT & PCI Bus Control	[Press Enter]	
PCIE GFX Core Payload Size	[64 Bytes]	Menu Level ▶
PCIE GPP Core Payload Size	[64 Bytes]	DRAM timing and control
GFX0 Link Width	[x16]	
ASPM GFX	[Disabled]	
ASPM GPP	[Disabled]	
ASPM NB-SB	[Disabled]	
TXCLK GATING	[Disabled]	
PCIE COMMON CLOCK	[Disabled]	
GFX0 SLOT POWER LINIT,WATT	[75]	
GPP SLOT POWER LINIT,WATT	[25]	
GFX MULTI FUNCTION MODE	[Disabled]	
UMA Frame Buffer Size	[RECOMMENDED]	
GURRENT UMA SIZE	[128MB]	
AGP APERTURE SIZE	[64MB]	
RS482 VIDEO MODE	[RS482 MODE]	
GFX CLOCK MODE	[SYNC]	
X ASYNC GFX CLOCK	[200MHZ]	

↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help  
F5: Previous Values F6:Fail-Safe Defaults F7: Optimized Defaults

## DRAM Configuration

Navigate to this section and press <Enter> to view the following screen:

### Phoenix - Award WorkstationBIOS CMOS Setup Utility DRAM Configuration

Timing Mode	[AUTO]	Item Help
X Memory Clock value or Limit	DDR 400	
DQS Training Control	[Skip DQS]	
CKE based powerdown	[Enabled]	Menu Level ▶▶
Memory Clock tri-stating	[Disabled]	Auto, no user limit
Memory Hole Remapping	[Enabled]	MaxMemClk, limit by
Auto Optimize Bottom IO	[Enabled]	Memory Clock value
X Bottom of [31:24] 10 space D8		
Bottom of UMA DRAM [31:24]	[FC]	
DDR11 Timing Item	[Disabled]	
1T/2T Memory Timing	[2T]	
X TUTr Command Delay	3 bus clocks	
X Trfc0 for DIMM0	75ns	
X Trfc1 for DIMM1	75ns	
X Trfc2 for DIMM1	75ns	
X Trfc3 for DIMM1	75ns	
X (Twr) Write Recovery Time	6 bus clocks	
X (Trtp) Precharge Time	3 Clocks_	

↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help  
F5: Previous Values F6:Fail-Safe Defaults F7: Optimized Defaults

### Timing Mode (Auto)

In Auto mode, the system reads the electronic data sheet of the memory modules as provided within the serial presence detect (SPD) ROM on each module and adjusts the timings accordingly. Most overclockers will prefer the Manual settings that allow manual configuration of the following parameters

### Memory clock value or Limit

This tab allows the user to manually specify the memory clock frequency independent of the system bus frequency

### LDT & PCI Bus Control

LDT is the acronym for Lightning Data Transport, which was the original name for the bus protocol now known as HyperTransport. HyperTransport uses a highly scalable bus interface in full duplex mode, which means that there is one dedicated bus for upstream and one for downstream data transfer (to and from the CPU, respectively). Each bit uses a low voltage differential signaling (LVDS) scheme, which means that there are two complementary data lines with mirror-symmetric signals that are compared against each other. Each HT signaling pair provides 2000 Mbit/sec data bandwidth using a DDR protocol on a 1000 MHz clock rate. Therefore, a 16 bit interface will support as much as 4 GB/sec data bandwidth. Since concurrent upstream and downstream data transports are supported, the theoretical maximum bandwidth is 8 MB/sec

The maximum HT interface width supported by current AMD processors is 16 bit wide in each direction, however, the interface is scalable and allows selective disabling of eight of the 16 data lines in each direction. For optimal performance, all 16 lanes in both upstream and downstream signal pathways should be enabled.

The LDT or HT interface is specified for optimal signal characteristics when running at 1000 MHz, that is, the trace layout is optimized for 1 GHz clock rate. Any frequency above or below the nominal value will generate resonance to a certain extent and signal reflexions known as ringing. Therefore, it is advisable to keep the LDT or HT frequency as close as possible to 1000 MHz. Since the actual Hypertransport frequency is derived from the external bus frequency and the multiplier, this means that if the external clock is overclocked, the ratio of the LDT bus multiplier needs to be lowered to bring the resulting LDT frequency back to 1000 MHz

Phoenix - Award WorkstationBIOS CMOS Setup Utility

LDT & PCI Bus Control

LDT Configuration	[Enabled]	Item Help
Upstream LDT Bus Width	[16 bit]	Menu Level ▶▶
Downstream LDT Bus Width	[16 bit]	
LDT Bus Frequency	[Auto]	
PCIE Reset Delay	[Disabled]	

↑↓←→: Move    Enter: Select    +/-/PU/PD: Value    F10: Save    ESC: Exit    F1: General Help  
 F5: Previous Values    F6: Fail-Safe Defaults    F7: Optimized Defaults



## Integrated Peripherals

This section displays options that define the operation of peripheral components on the system's input/output ports.

### Phoenix - Award WorkstationBIOS CMOS Setup Utility Integrated Peripherals

		Item Help
▶ South OnChip IDE Device	[Press Enter]	Menu Level ▶
▶ South OnChip PCI Device	[Press Enter]	
Init Display First	[PCI Slot]	
x Surroundview	Disabled	
USB EHCI Controller	[Enabled]	
OnChip USB Controller	[Enabled]	
OnChip USB KBC Controller	[Enabled]	
USB Mouse Support	[Enabled]	
IDE HDD Block Mode	[Enabled]	
POWER ON Function	[BUTTON ONLY]	
x KB Power ON Password	Enter	
x Hot Key Power ON	Ctrl - F1	
Onboard FDC Controller	[Enabled]	
Onboard Serial Port 1	[Auto]	
Onboard Serial Port 2	[Disabled]	
x UART Mode Select	Normal	
x UR2 Duplex Mode	Half	
Onboard Parallel Port	[378/IRQ7]	
Parallel Port Mode	[SPP]	

↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help  
F5: Previous Values F6:Fail-Safe Defaults F7: Optimized Defaults

## South OnChip IDE Device

Navigate to this option and press <Enter> to view the following screen:

### Phoenix – Award WorkstationBIOS CMOS Setup Utility South OnChip IDE Device

		Item Help
IDE DMA transfer access	[Enabled]	Menu Level ▶▶
OnChip IDE Channel0	[Enabled]	
IDE Prefetch Mode	[Disabled]	
Primary Master PIO	[Auto]	
Primary Slave PIO	[Auto]	
Primary Master UDMA	[Auto]	
Primary Slave UDMA	[Auto]	

↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help  
F5: Previous Values F6:Fail-Safe Defaults F7: Optimized Defaults

**IDE DMA transfer access (Enabled)**

This option allows you to enable the transfer access of the IDE DMA. If you disable this function you will only have PIO modes 1-4 available.

**OnChip IDE Channel0/1 (Enabled)**

Use this option to enable or disable the PCI IDE channels that are integrated on the motherboard.

**IDE Prefetch Mode (Enabled)**

The onboard IDE drive interface supports IDE prefetching for faster drive access. If you install a primary and secondary add-on interface, set this field to Disable if the interface does not support prefetching.

**Primary Master/Slave PIO (Auto)**

Each IDE channel supports a master device and a slave device. These four items let you assign the kind of PIO (Programmed Input/Output) was used by the IDE devices. Choose Auto to let the system auto detect which PIO mode is best, or select a PIO mode from 0 to 4.

**Primary Master/Slave UDMA (Auto)**

Each IDE channel supports a master device and a slave device. This motherboard supports UltraDMA technology, which provides faster access to IDE devices. If you install a device that supports UltraDMA, change the appropriate item on this list to Auto.

Press <Esc> to return to the Standard CMOS Features Page

**South OnChip PCI Device**

Navigate to this option and press <Enter> to view the following screen:

Phoenix - Award WorkstationBIOS CMOS Setup Utility  
South OnChip PCI Device

ATI Azalia Audio	[Auto]	Item Help
ATI Azalia Clock	[UsbClk48]	
ATI AC97 Audio	[Auto]	Menu Level ▶▶
ATI MC97 Modem	[Disabled]	
ATI SATA Controller	[Enabled]	
ATI SATA Type	[Legacy IDE]	
SB600 Spread Spectrum	[Disabled]	
Onboard Lan Boot ROM	[Disabled]	

↑↓→←: Move    Enter: Select    +/-/PU/PD: Value    F10: Save    ESC: Exit    F1: General Help  
F5: Previous Values    F6: Fail-Safe Defaults    F7: Optimized Defaults

---

**ATI Azalia AUDIO (Auto)**

This option allows you to control the onboard Azalia (High Definition) audio. Disable this option if you do not need the high definition onboard sound.

**ATI SATA Controller (Both)**

This option allows you to enable or disable the Serial ATA controller.

**ATI SATA Type (RAID Controller)**

This option allows you to control the Serial ATA controller as IDE mode or RAID mode.

Press <Esc> to return to the Standard CMOS Features Page

**Init Display First (PCIEx)**

Use this option to specify whether your graphics adapter is installed in one of the PCI Express or PCI slots.

**OnChip USB Controller (Enabled)**

This option allows you to enable or disable the onboard USB controller.

**OnChip USB KBC Controller (Enabled)**

This option allows you to enable or disable the USB Keyboard support.

**USB Mouse Support (Enabled)**

This option allows you to enable or disable the USB mouse support.

**IDE HDD Block Mode (Enabled)**

Block mode is also called block transfer or multiple sector read/write. If your IDE hard drive supports block mode, select Enabled for automatic detection of the optimal number of block read/write per sector the drive can support.

**Onboard FDC Controller (Enabled)**

Select Enabled if your system has a floppy drive controller (FDC) installing in the system board and you want to use it. If you install add-in FDC or the system has no floppy drive, select Disabled.

**Onboard Serial Port 1/2 (Auto)**

Select a logical COM port name and matching address for the first and second serial ports. Select an address and corresponding interrupt for the first and second serial ports.

**Onboard Parallel Port (378/IRQ7)**

This option allows you to determine onboard parallel port controller I/O address setting.

## Parallel Port Mode (SPP)

Select an operating mode for the onboard parallel (printer) port. Select Normal, Compatible, or SPP unless you are sure your hardware and software both support one of the other available modes.

## Power Management Setup

This option lets you control system power management. The system has various power-saving modes including powering down the hard disk, turning off the video, suspending to RAM, and software power down that allows the system to be automatically resumed by certain events.

Phoenix-Award WorkstationBIOS CMOS Setup Utility  
Power Management Setup

ACPI function	[Enabled]	Item Help
ACPI Suspend Type	[S1(POS)]	
C2 Disable/Enable	[Disabled]	
Power Management Option	[User Define]	Menu Level ▶
HDD Power Down	[Disabled]	
Video Off Option	[Suspend -> Off]	
Video Off Method	[V/H SYNC+Blank]	
MODEM Use IRQ	[3]	
Soft-Off by PWRBTN	[Instant-Off]	
PowerOn by PCI Card	[Disabled]	
ACPI XSDT Table	[Disabled]	
RTC Alarm Resume	[Disabled]	
* Date (of Month)	0	
* Resume Time (hh:mm:ss)	0 : 0 : 0	

↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help  
F5: Previous Values F6:Fail-Safe Defaults F7: Optimized Defaults

### ACPI function (Enabled)

Select Enabled only if your computer's operating system supports the Advanced Configuration and Power Interface (ACPI) specification.

ACPI Suspend Type (S1&S3)

Use this item to define the suspend mode for your system.

### Power Management Option (User Define)

This option allows you to select the type (or degree) of power saving for Doze, Standby, and Suspend modes.

- User Define – Select time-out period in the section for each mode stated below.
- Max Saving – Maximum power savings. Inactivity period is 1 minute in each mode.
- Min Saving – Minimum power savings. Inactivity period is 1 hour in each mode (except the hard driver)

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**HDD Power Down (Disabled)**

The IDE hard drive will spin down if it is not accessed within a specified length of time. Options are from 1 Min to 15 Min and Disabled.

**Video Off Option (Suspend—→ Off)**

This option defines if the video is powered down when the system is put into suspend mode.

**Video Off Method (V/H SYNC+Blank)**

This item defines how the video is powered down to save power.

**MODEM Use IRQ (3)**

If you want an incoming call on a modem to automatically resume the system from a power-saving mode, use this item to specify the interrupt request line (IRQ) that is used by the modem. You might have to connect the fax/modem to the motherboard Wake On Modem connector for this feature to work.

**Soft-Off by PWRBTN (Instant Off)**

Under ACPI (Advanced Configuration and Power management Interface) you can create a software power down. In a software power down, the system can be resumed by Wake Up Alarms. This option lets you install a software power down that is controlled by the power button on your system. If you select Instant-Off, then the power button causes a software power down. If you select Delay 4 Sec. then holding the power button down for four seconds is required to cause a software power down.

**PowerOn by PCI Card (Disabled)**

This options allows the system to be awakened from power saving modes when activity or input signal of the PCI Card is detected.

**PWRON After PWR-Fail (Off)**

This option enables your computer to automatically restart or return to its operating status after a power down.

**RTC Alarm Resume (Disabled)**

When set to Enabled, you can set the date (day of the month), hour, minute and second to turn on your system. When set to 0 (zero) for the day of the month, the alarm will power on your system every day at the specified time.

- **Date of Month:** Use this field to define the date of month when using the RTC alarm to resume the system.
- **Resume Time:** Use this field to define the time when using the RTC alarm to resume the system.

## PnP/PCI Configurations

This section configures how PnP (Plug and Play) and PCI expansion cards operate in your system. The PCI bus on the motherboard use system IRQs (Interrupt ReQuests) and DMAs (Direct Memory Access). You must set up the IRQ and DMA assignments correctly through the PnP/PCI Configurations Setup utility for the motherboard to work properly. This screen appears after entering:

Phoenix-AwardBIOS CMOS Setup Utility  
PnP/PCI Configurations

Reset Configuration Data	[Disabled]	Item Help
Resources Controlled By	[Auto(ESCD)]	Menu Level ►
* IRQ Resources	Press Enter	Default is Disabled. Select Enabled to reset Extended System Configuration Data ESCD) when you exit Setup if you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the OS cannot boot
PCI/VGA Palette Snoop	[Disabled]	
Assign IRQ For VGA	[Enabled]	
Assign IRQ For USB	[Enabled]	
PCI Latency Timer (CLK)	[64]	
** PCI Express relative items **		
Maximum Payload Size	[4096]	

↑↓←→: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help  
F5: Previous Values F6:Fail-Safe Defaults F7: Optimized Defaults

### Reset Configuration Data (Disabled)

If you enable this option and restart the system, any Plug and Play configuration data stored in the BIOS Setup is cleared from memory.

### Resources Controlled By (Auto(ESCD))

You should leave this option at the default (Auto (ESCD)). Enabling this setting, the system dynamically allocates resources to Plug and Play devices as they are required. If you cannot get a legacy ISA (Industry Standard Architecture) expansion card to work properly, you might be able to solve the problem by changing this item to Manual, and then opening up the IRQ Resources submenu.

#### \* IRQ Resources:

In the IRQ Resources submenu, if you assign an IRQ to Legacy, then that Interrupt Request Line is reserved for a legacy ISA expansion card. In the Memory Resources submenu, use the first item Reserved memory Base to set the start address of the memory you want to reserve for the ISA expansion card. Use the second item Reserved Memory Length to set the amount of reserved memory. Press <Esc> to close the Memory Resources submenu.

**PCI/VGA Palette Snoop [Disabled]**

This option is designed to overcome problems that can be caused by some nonstandard VGA cards.

**Assign IRQ For VGA [Enabled]**

This option assigns an interrupt request (IRQ) to the VGA on your system. Activity of the selected IRQ always awakens the system.

**Assign IRQ For USB [Enabled]**

This option assigns an interrupt request (IRQ) to the USB on your system. Activity of the selected IRQ always awakens the system.

**PC Health Status**

Your Sapphire motherboard supports hardware monitoring; this section lets you monitor the parameters for critical voltages, temperatures and fan speeds.

Phoenix-AwardBIOS CMOS Setup Utility  
PC Health Status

CPU Voltage	1.28V	Item Help
+3.3V Voltage	3.32V	Menu Level ▶▶
+5V Voltage	4.83V	
+12V Voltage	11.77V	
DRAM Voltage	1.84V	
NB Voltage	1.2V	
Voltage Battery	2.99V	
CPU Temperature	32°C	
NB Temperature	27°C	
CPU FAN Spd	3125 RPM	
SYS FAN Spd	0 RPM	

↑↓→←: Move    Enter: Select    +/-/PU/PD: Value    F10: Save    ESC: Exit    F1: General Help  
F5: Previous Values    F6: Fail-Safe Defaults    F7: Optimized Defaults

**Shutdown Temperature [Disabled]**

Enables you to set the maximum temperature the system can reach before powering down.

### System Component Characteristics

These fields provide you with information about the systems current operating status. You cannot make changes to these fields.

- CPU Voltage
- +3.3V Voltage
- +5V Voltage
- +12V Voltage
- DRAM Voltage
- NB Voltage
- Voltage Battery
- CPU Temperature
- NB Temperature
- CPU FAN Spd
- SYS FAN Spd

### Load Fail-Safe Defaults

If you select this item and press Enter a dialog box will appear. If you select [OK], and then Enter, the Setup Utility loads a set of performance default values. These default settings are quite demanding and your system might not function properly if you are using slower CPU, memory, or other low-performance components.

**Note:** To load Performance settings may make your system become unstable or unbootable. When loading the Performance Defaults fails, users can choose “either” step to return the motherboard to its defaults BIOS:

1. Power on the system and press “Insert” key. The system will bypass the previous BIOS setting and automatically reload the default BIOS. (This procedure is BIOS setup only!)
2. Apply to the jumper setting reference onboard and proceed with the “Clear CMOS” to recover the default BIOS setting. Please refer to Chapter 2, page 9, to complete the clear CMOS action. (This procedure requires opening the chassis!)

### Load Optimized Defaults

This option opens a dialog box that lets you install optimized defaults for all appropriate items in the Setup Utility. Press <Y> and then <Enter> to install the defaults. Press <N> and then <Enter> to not install the defaults. The optimized defaults place demands on the system that may be greater than the performance level of the components, such as the CPU and the memory. You can cause fatal errors or instability if you install the optimized defaults when your hardware does not support them. If you only want to install setup defaults for a specific option, select and display that option, and then press <F7>.



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**Note:** Users please remain the factory BIOS default setting of “Load optimized Defaults” when install Operation System onto your system.

## Set Supervisor/User Password

When this function is selected, the following message appears at the center of the screen to assist you in creating a password.

### ENTER PASSWORD

Type the password, up to eight characters, and press <Enter>. The password typed now will clear any previously entered password from CMOS memory. You will be asked to confirm the password. Type the password again and press <Enter>. You may also press <Esc> to abort the selection. To disable password, just press <Enter> when you are prompted to enter password. A message will confirm the password being disabled. Once the password is disabled, the system will boot and you can enter BIOS Setup freely.

### PASSWORD DISABLED

If you have selected “**System**” in “Security Option” of “BIOS Features Setup” menu, you will be prompted for the password every time the system reboots or any time you try to enter BIOS Setup. If you have selected “**Setup**” at “Security Option” from “BIOS Features Setup” menu, you will be prompted for the password only when you enter BIOS Setup.

Supervisor Password has higher priority than User Password. You can use Supervisor Password when booting the system or entering BIOS Setup to modify all settings. Also you can use User Password when booting the system or entering BIOS Setup but can not modify any setting if Supervisor Password is enabled.

## Save & Exit Setup

Navigate to this option and press <Enter> to save the changes that you have made in the Setup Utility and exit the Setup Utility. When the Save and Exit dialog box appears, press <Y> to save and exit, or press <N> to return to the main menu.

## Exit Without Saving

Navigate to this option and press <Enter> to discard any changes that you have made in the Setup Utility and exit the Setup Utility. When the Exit Without Saving dialog box appears, press <Y> to discard changes and exit, or press <N> to return to the main menu.

**Note:** If you have made settings that you do not want to save, use the “Exit Without Saving” item and press <Y> to discard any changes you have made.

## BIOS Update Procedure

The program AWDFLASH.EXE is included on the driver CD (D:\Utility\AWDFLASH.EXE). It is recommended to follow the procedure below to update the BIOS.

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

**AWDFLASH<ENTER>**

4. Enter the file name of the new BIOS.
5. The question: "Do you want to save BIOS (Y/N)?" is displayed.

***Press "N" if there is no need to save the existing BIOS.  
Press "Y" if a backup copy of the existing BIOS is needed.  
(A file name has to be assigned to the existing BIOS binary file.)***

6. The message : "Press "Y" to program or "N" to exit" is displayed. Type

**"Y"<ENTER>**

7. Wait until the flash-update is completed.
8. 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.

## SATA RAID User Manual (only for SB600)

### BIOS Setup

Power on the computer, when the following message briefly appears at the bottom of the screen during the POST (Power On Self Test), press <Del> key to enter the AWARD BIOS CMOS Setup Utility.

### Press Del to enter SETUP

Pressing the delete key accesses the BIOS Setup Utility:

Phoenix - Award WorkstationBIOS CMOS Setup Utility	
<ul style="list-style-type: none"> <li>▶ Standard CMOS Features</li> <li>▶ Advanced BIOS Features</li> <li>▶ Advanced Chipset Features</li> <li>▶ Integrated Peripherals</li> <li>▶ Power Management Setup</li> <li>▶ PnP/PCI Configurations</li> <li>▶ PC Health Status</li> </ul>	<ul style="list-style-type: none"> <li>▶ Frequency/Voltage Control</li> <li>Load Fail-Safe Defaults</li> <li>Load Optimized Defaults</li> <li>Set Supervisor Password</li> <li>Set User Password</li> <li>Save &amp; Exit Setup</li> <li>Exit Without Saving</li> </ul>
Esc: Quit :	↑↓→←: Select Item
F10: Save & Exit Setup	
Time, Date, Hard Disk Type...	

When you have entered, the Main Menu appears on the screen. Use the arrow keys to select the item “Integrated Peripherals” and press the <Enter> key to accept.

Set “ATI SATA Type” to [RAID] in the sub-menu “South OnChip PCI Device” of “Integrated Peripherals” . Then save the setup and exit.

### RAID Setup

Creating and deleting RAID sets is a function found in the BIOS. During boot up, the following message will appear, pausing for a few moments to allow the user to choose what to do:

#### Press Ctrl+F to enter RAID utility

An easy-to-use screen will appear with the following choices:

- View Drive Assignments.....[1]
- Define LD.....[2]
- Delete LD.....[3]
- Controller Configuration.....[4]

Below this will be listed the drives currently installed on the system. The top right half of the screen displays directions and comments for the user. The bottom right half lists the command keys:

- Arrows up and down are Select Keys
- ESC takes the user to the previous menu
- Enter selects the user's choice
- Press <Y> to exits the utility

### **View Drive Assignments**

View the previous RAID setting.

### **Define LD**

Because SATA Raid supports two drives, creating RAID Sets is a simple procedure.

1. Press <2> to Select "Define LD.....[2]".
2. Press the <Enter> key to select it and enter the Define RAID Sub-Menu to create the array.
3. Use the <space> key to choose either a "RAID 0" or "RAID 1" RAID Set.
4. Use arrow keys **5** and **6** to highlight the drive you want to assign to the disk array and change the status of "Assignments" to "Y" by pressing the <Y> key.
5. Press <Ctrl+Y> to complete the setting.

### **Delete LD**

1. To remove one or more RAID sets, press <3> to select "Delete LD.....[3]".
2. Press <DEL> or <Alt+D> to delete the previous array.
3. Press <Ctrl+Y> to finish the setting.

### **Controller Configuration**

View System Resources Configuration

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## SATA RAID USER MANUAL (for SB460)

Creating and deleting RAID sets is a function found in the BIOS. During bootup, the following message will appear, pausing for a few moments to allow the user to choose what to do:

**Press Ctrl+S or F4 to enter RAID utility**

An easy-to-use screen will appear with the following choices in the top left:

**Create RAID Set**  
**Delete RAID Set**  
**Rebuild RAID Set**  
**Resolve Conflicts**

Below this will be listed the drives currently installed on the system.

The top right half of the screen displays directions and comments for the user. The bottom right half lists the command keys:

**Arrows up and down** are Select Keys  
**ESC** takes the user to the previous menu  
**Enter** selects the user's choice  
**Ctrl-E** exits the utility

### Creating RAID Sets

Because SATA Raid supports two drives, creating RAID Sets is a simple procedure.

1. Select "Create RAID Set."
2. Choose either a "Striped" or "Mirrored" RAID Set.
3. Select if you want the utility to Auto Configure the RAID Set or if you want to manually configure the RAID Set. For Striped Sets, you can change the chunk size. For Mirrored Sets, you assign which is the Source and Target drives, as well as if you want Disk Copy.

**What is Disk Copy?** If the disk assigned as the source disk has already been partitioned and has data stored on it, and then a second disk is added for redundancy, the data on the source drive can be copied to the destination drive, so that the disks are identical, and all subsequent data will be written to both drives as a Mirrored set. If, however, the source disk does not have data already stored on it, there is no need for Disk Copy.

4. The utility will ask “Are You Sure?” before completing the configuration.

### **Deleting RAID Sets**

1. To remove one or more RAID sets, select “Delete RAID Set.”
2. Select desired set and press Y when asked “Are You Sure?”

### **Resolving Conflict**

When a RAID set is created, the metadata written to the disk includes drive connection information (Primary Channel, Secondary Channel). If, after a disk failure, the replacement disk was previously part of a RAID set (or used in another system), it may have conflicting metadata, specifically in reference to the drive connection information. If so, this will prohibit the RAID set from being either created or rebuilt. In order for the RAID set to function properly, this old metadata must be first overwritten with the new metadata.

To resolve this, select “Resolve Conflict” and the correct metadata, including the correct drive connection information, will be written to the replacement disk.

## DRIVER AND RAIDSOFTWARE INSTALLATION (only for SB460)

1. For Windows 2000 and XP, after Windows has finished booting up, the system will automatically find the newly installed adapter and prompt the **Found New Hardware Wizard** window. Click **Cancel** to skip it.



2. Insert the bundled driver CD DISC into your CD-ROM drive, select “**ATI Chipset\ATI\_Raid Driver**” (for SB460) or **ATI Chipset \ATI SB600** (for SB600) installation bar on the dialogue Window to begin the driver and software installation. (Please follow the instruction to finish the installation).

When you install a new Windows 2000 or XP operating system on your RAID set, please follow the below procedure:

1. Insert the bundled driver CD DISC into CD-ROM (G:). Copy all files from the directory ( G:\**ATI chipset\ATI\_Raid** ) to a floppy disk. (for SB460)
2. Insert the bundled driver CD DISC into CD-ROM (G:). Copy all files from the directory ( G:\**ATI chipset\ATI SB600** ) to a floppy disk.(for SB600)
3. Install OS from CD-ROM.
4. Press “**F6**” when display “Press **F6** if you need to install a third party SCSI or RAID driver...”
5. Insert floppy disk.
6. Choose the OS device driver wanted for loading.
7. Install OS.
8. Install driver after OS is installed.

## APPENDIX

**Note to User:**

The bundled driver CD contains all the drivers that the motherboard needs. Each driver will install automatically once it is selected. Please select the drivers that you want to install by clicking on the driver's button.