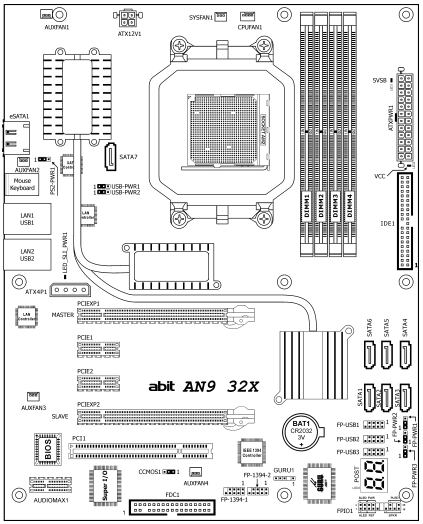
AN9 32X

Motherboard
AMD Socket AM2

User's Manual



- ❑ **AMD Socket AM2 ATX Motherboard**
- ❑ **NB: NVIDIA C51XE SB: NVIDIA MCP55PXE**
- ❑ **2GHz HT**
- ❑ **Dual DDR2 800 DIMM Slots**
- ❑ **NVIDIA SLI Technology**
- ❑ **Dual PCI-E X16 Slots**
- ❑ **Dual GbE LAN**
- ❑ **IEEE 1394a**
- ❑ **8x SATA 3Gb/s with RAID**
- ❑ **ABIT Guru™ Technology**
- ❑ **ABIT Silent OTES™ Technology**
- ❑ **7.1 Channel HD Audio**

About this Manual:
This user's manual contains all the information you may need for setting up this motherboard. To read the user's manual of PDF format (readable by Adobe Reader), place the "Driver & Utility CD" into the CD-ROM drive in your system. The auto-run screen will appear, click the "Manual" tab to enter its submenu. If not, browse the root directory of the CD-ROM via the File Manager, and double click the "AUTORUN" file.

AN9 32X

User's Manual

English, 2nd Edition

July, 2006

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If you do not properly set the motherboard settings, causing the motherboard to malfunction or fail, we cannot guarantee any responsibility.

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1. Introduction

1.1 Features & Specifications

CPU

- Supports Socket 940 AM2 Processor with 2GHz system bus using Hyper-Transport™ Technology
- Supports AMD CPU Cool 'n' Quiet Technology

Chipset

- Northbridge: NVIDIA®C51XE Chipset
- Southbridge: NVIDIA® MCP55PXE Chipset

Memory

- Four 240-pin DIMM slots
- Supports Dual Channel DDR2 800 Un-buffered ECC/Non-ECC memory
- Supports maximum memory capacity up to 8GB

ABIT Engineered

- ABIT Guru™ Technology
- ABIT Silent OTES™ Technology

NVIDIA SLI Technology

- Two PCI-Express X16 slots support NVIDIA Scalable Link Interface

SATA 3Gb/s RAID

- Supports 6 ports NV SATA 3Gb/s RAID 0/1/0+1/5/JBOD

2nd SATA 3Gb/s RAID

- 1x Internal SATA 3Gb/s port
- 1x External SATA 3Gb/s port

Dual GbE LAN

- Dual NVIDIA® Gigabit Ethernet

IEEE 1394

- Supports 2 Ports IEEE 1394a at 400Mb/s transfer rate

Audio

- ABIT AudioMAX HD 7.1 CH
- Supports auto jack sensing and optical S/PDIF In/Out

Expansion Slots

- 2x PCI Express x16 slots
- 2x PCI Express x1 slots
- 1x PCI slot

- 1x AudioMAX slot

Internal I/O Connectors

- 1x Floppy port
- 1x UDMA 133/100/66/33 connector
- 7x SATA connectors
- 3x USB 2.0 headers
- 2x IEEE1394a headers

Rear Panel I/O

- Silent OTES™
- 1x eSATA connector
- 1x PS/2 Keyboard connector
- 1x PS/2 Mouse connector
- 2x RJ-45 Gigabit LAN ports
- 4x USB 2.0 ports

RoHS Compliancy

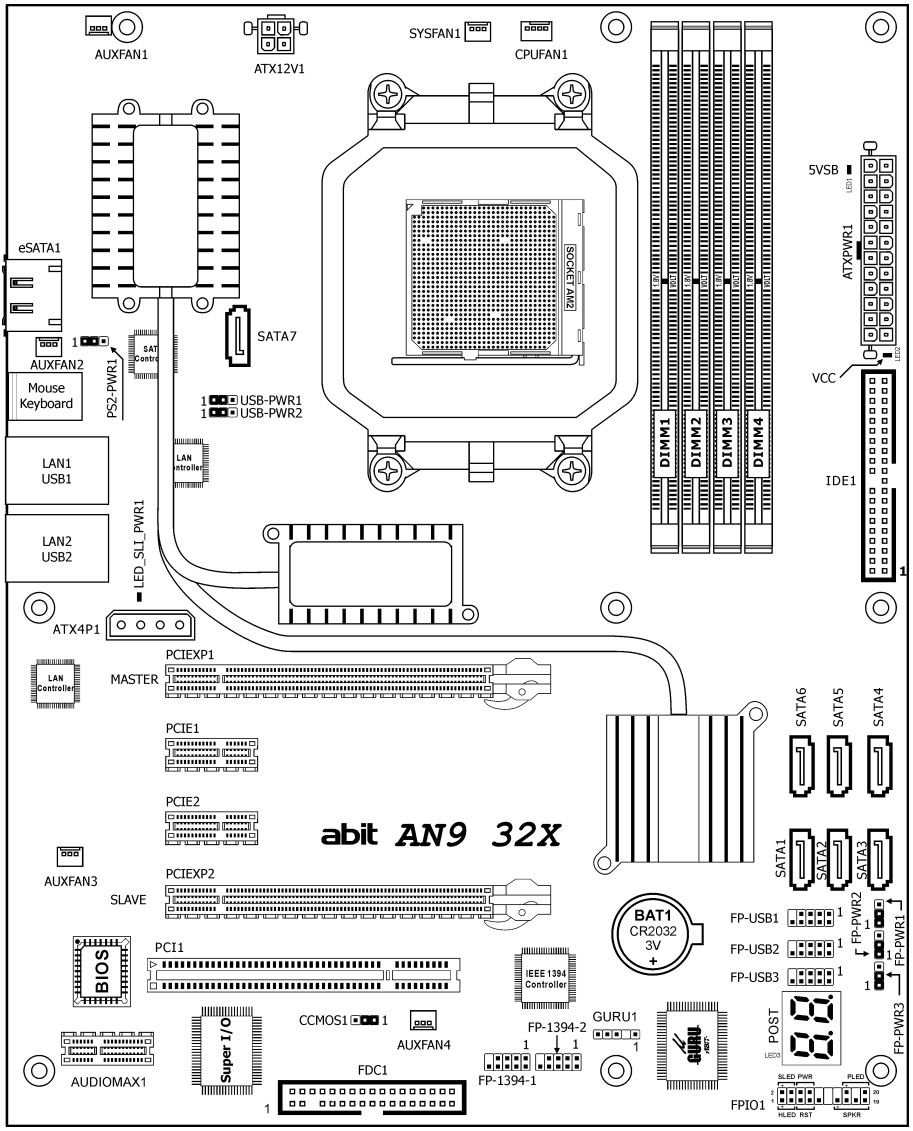
- 100% Lead-free process and RoHS compliancy

Miscellaneous

- ATX form factor (305mm x 245mm)

※ **Specifications and information contained herein are subject to change without notice.**

1.2 Motherboard Layout



2. Hardware Setup

In this chapter we will elaborate all the information you need upon installing this motherboard to your computer system.

※ **Always power off the computer and unplug the AC power cord before adding or removing any peripheral or component. Failing to so may cause severe damage to your motherboard and/or peripherals. Plug in the AC power cord only after you have carefully checked everything.**

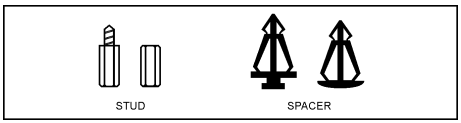
2.1 Choosing a Computer Chassis

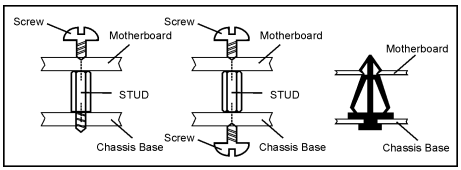
- This motherboard carries an ATX form factor of 305 x 245 mm. Choose a chassis big enough to install this motherboard.
- As some features for this motherboard are implemented by cabling connectors on the motherboard to indicators and switches or buttons on the chassis, make sure your chassis supports all the features required.
- If there is possibility of adopting some more hard drives, make sure your chassis has sufficient power and space for them.
- Most chassis have alternatives for I/O shield located at the rear panel. Make sure the I/O shield of the chassis matches the I/O port configuration of this motherboard. You can find an I/O shield specifically designed for this motherboard in its package.

2.2 Installing Motherboard

Most computer chassis have a base with many mounting holes to allow the motherboard to be securely attached, and at the same time, protected the system from short circuits. There are two ways to attach the motherboard to the chassis base:

1. with studs,
2. or with spacers

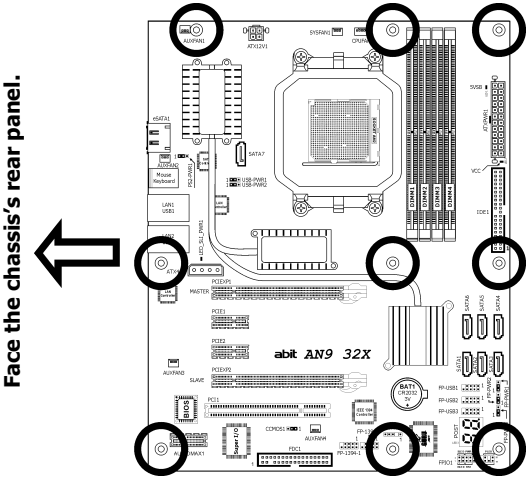




In principle, the best way to attach the board is with studs. Only if you are unable to do this should you attach the board with spacers. Line up the holes on the board with the mounting holes on the chassis. If the holes line up and there are screw holes, you can attach the board with studs. If the holes line up and there are only slots, you can only attach with spacers. Take the tip of the spacers and insert them into the slots. After doing this to all the slots, you can slide the board into position aligned with slots. After the board has been positioned, check to make sure everything is OK before putting the chassis back on.

To install this motherboard:

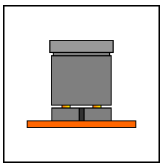
1. Locate all the screw holes on the motherboard and the chassis base.
2. Place all the studs or spacers needed on the chassis base and have them tightened.
3. Face the motherboard's I/O ports toward the chassis's rear panel.
4. Line up all the motherboard's screw holes with those studs or spacers on the chassis.
5. Install the motherboard with screws and have them tightened.

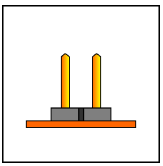


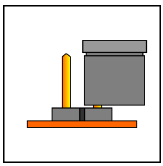
※ **To prevent shorting the PCB circuit, please REMOVE the metal studs or spacers if they are already fastened on the chassis base and are without mounting-holes on the motherboard to align with.**

2.3 Checking Jumper Settings

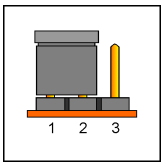
For a 2-pin jumper, plug the jumper cap on both pins will make it CLOSE (SHORT). Remove the jumper cap, or plug it on either pin (reserved for future use) will leave it at OPEN position.


SHORT

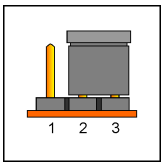

OPEN


OPEN

For 3-pin jumper, pin 1~2 or pin 2~3 can be shorted by plugging the jumper cap in.



Pin 1~2 SHORT



Pin 2~3 SHORT

2.3.1 CMOS Memory Clearing Header and Backup Battery

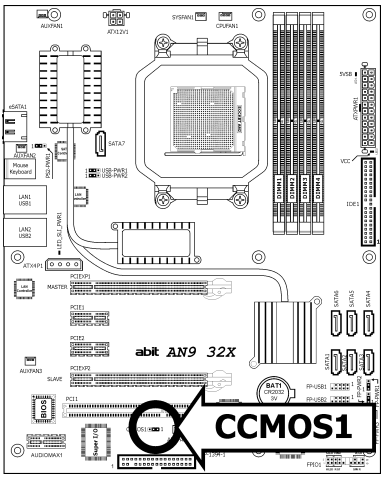
The time to clear the CMOS memory occurs when (a) the CMOS data becomes corrupted, (b) you forgot the supervisor or user password preset in the BIOS menu, (c) you are unable to boot-up the system because the CPU ratio/clock was incorrectly set in the BIOS menu, or (d) whenever there is modification on the CPU or memory modules.

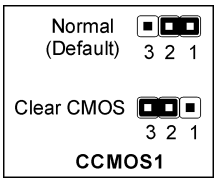
This header uses a jumper cap to clear the CMOS memory and have it reconfigured to the default values stored in BIOS.

- **Pins 1 and 2 shorted (default):** Normal operation.
- **Pins 2 and 3 shorted:** Clear CMOS memory.

To clear the CMOS memory and load in the default values:

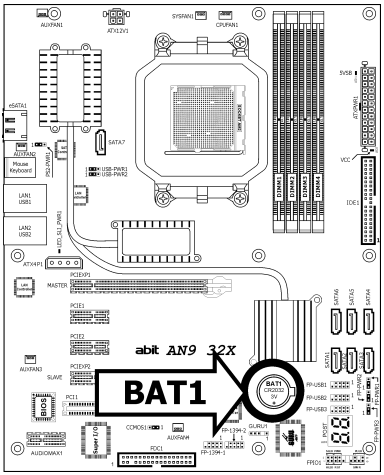
1. Power off the system and disconnect with AC power source.
2. Set pin 2 and pin 3 shorted by the jumper cap. Wait for a few seconds. Set the jumper cap back to its default settings --- pin 1 and pin 2 shorted.
3. Power on the system.
4. For incorrect CPU ratio/clock settings in the BIOS, press <Del> key to enter the BIOS setup menu right after powering on system.
5. Set the CPU operating speed back to its default or an appropriate value.
6. Save and exit the BIOS setup menu.

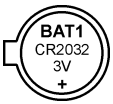




CMOS Backup Battery:

An onboard battery saves the CMOS memory to keep the BIOS information stays on even after disconnected your system with power source. Nevertheless, this backup battery exhausts after some five years. Once the error message like "**CMOS BATTERY HAS FAILED**" or "**CMOS checksum error**" displays on monitor, this backup battery is no longer functional and has to be renewed.





To renew the backup battery:

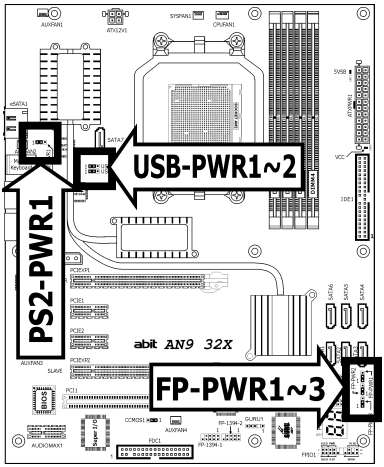
1. Power off the system and disconnect with AC power source.
2. Remove the exhausted battery.
3. Insert a new CR2032 or equivalent battery. Pay attention to its polarity. The "+" side is its positive polarity.
4. Connect AC power source and power on the system.
5. Enter the BIOS setup menu. Reconfigure the setup parameters if necessary.

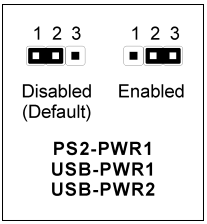
CAUTION:

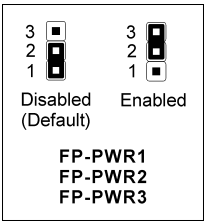
- ※ **Danger of explosion may arise if the battery is incorrectly renewed.**
- ※ **Renew only with the same or equivalent type recommended by the battery manufacturer.**
- ※ **Dispose of used batteries according to the battery manufacturer's instructions.**

2.3.2 Wake-up Headers

These headers use a jumper cap to enable/disable the wake-up function.





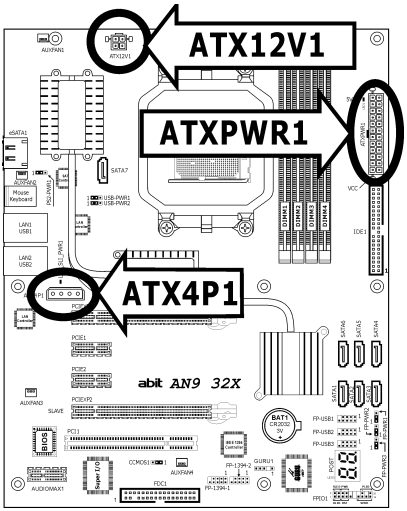


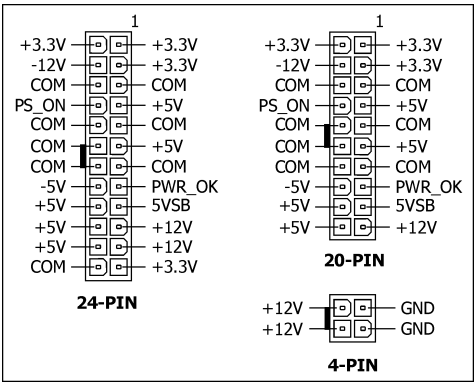
- **PS2-PWR1:**
  Pin 1-2 shorted (Default): Disable wake-up function support at Keyboard/Mouse port.
  Pin 2-3 shorted: Enable wake-up function support at Keyboard/Mouse port.
- **USB-PWR1:**
  Pin 1-2 shorted (Default): Disable wake-up function support at USB1 port.
  Pin 2-3 shorted: Enable wake-up function support at USB1 port.
- **USB-PWR2:**
  Pin 1-2 shorted (Default): Disable wake-up function support at USB2 port.
  Pin 2-3 shorted: Enable wake-up function support at USB2 port
- **FP-PWR1:**
  Pin 1-2 shorted (Default): Disable wake-up function support at FP-USB1 port.
  Pin 2-3 shorted: Enable wake-up function support at FP-USB1 port.
- **FP-PWR2:**
  Pin 1-2 shorted (Default): Disable wake-up function support at FP-USB2 port.
  Pin 2-3 shorted: Enable wake-up function support at FP-USB2 port
- **FP-PWR3:**
  Pin 1-2 shorted (Default): Disable wake-up function support at FP-USB3 port.
  Pin 2-3 shorted: Enable wake-up function support at FP-USB3 port

2.4 Connecting Chassis Components

2.4.1 ATX Power Connectors

These connectors provide the connection from an ATX power supply. As the plugs from the power supply fit in only one orientation, find the correct one and push firmly down into these connectors.





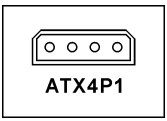
ATX 24-Pin Power Connector:

The power supply with 20-pin or 24-pin cables can both be connected to this 24-pin connector. Connect from pin-1 for either type. However, a 20-pin power supply may cause the system unstable or even unbootable for the sake of insufficient electricity. A minimum power of 300W or higher is recommended.

ATX 12V 4-Pin Power Connector:

This connector supplies power to CPU. The system will not start without connecting power to this one.

Auxiliary 12V Power Connector:

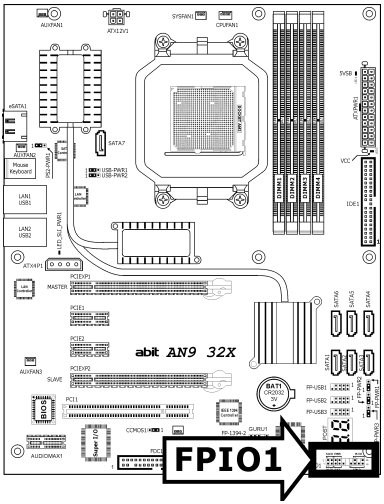


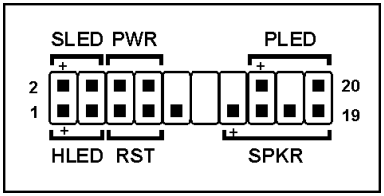
This connector provides an auxiliary power source for devices added on PCI Express slots.

2.4.2 Front Panel Switches & Indicators Headers

This header is used for connecting switches and LED indicators on the chassis front panel.

Watch the power LED pin position and orientation. The mark "+" align to the pin in the figure below stands for positive polarity for the LED connection. Please pay attention when connecting these headers. A wrong orientation will only cause the LED not lighting, but a wrong connection of the switches could cause system malfunction.





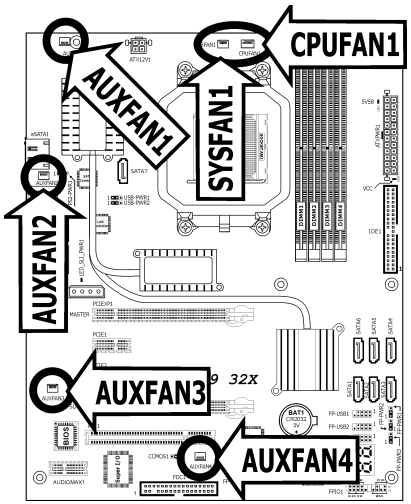
- **HLED (Pin 1, 3):**
  Connects to the HDD LED cable of chassis front panel.
- **RST (Pin 5, 7):**
  Connects to the Reset Switch cable of chassis front panel.
- **SPKR (Pin 13, 15, 17, 19):**
  Connects to the System Speaker cable of chassis.
- **SLED (Pin 2, 4):**
  Connects to the Suspend LED cable (if there is one) of chassis front panel.
- **PWR (Pin 6, 8):**
  Connects to the Power Switch cable of chassis front panel.
- **PLED (Pin 16, 18, 20):**
  Connects to the Power LED cable of chassis front panel.

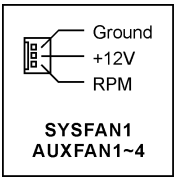
2.4.3 FAN Power Connectors

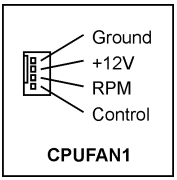
These connectors each provide power to the cooling fans installed in your system.

- **CPUFAN1:** CPU Fan Power Connector
- **SYSFAN1:** System Fan Power Connector
- **AUXFAN1~4:** Auxiliary Fan Power Connector

※ **These fan connectors are not jumpers. DO NOT place jumper caps on these connectors.**







2.5 Installing Hardware

※ **DO NOT scratch the motherboard when installing hardware. An accidentally scratch of a tiny surface-mount component may seriously damage the motherboard.**

2.5.1 CPU Socket AM2

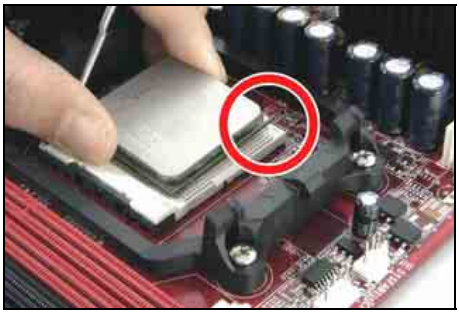
※ **DO NOT touch or bend the delicate pins on the CPU whenever you are holding it.**

The installation procedures vary with different types of CPU fan-and-heatsink assembly. The one shown here is served for **DEMO** only. For detailed information on how to install the one you bought, refer to its installation guidelines.

1. Pull out the socket lever away from the socket and fully lift it up over 90-degree angle.

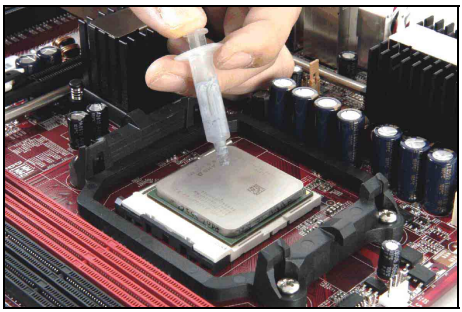
   Locate and align the triangle mark with both the CPU and the socket body. Vertically place the CPU with its pin-side down into the socket.

   Be careful to insert the CPU into the socket. The CPU only fits in one orientation with the socket. DO NOT force the CPU into the socket.



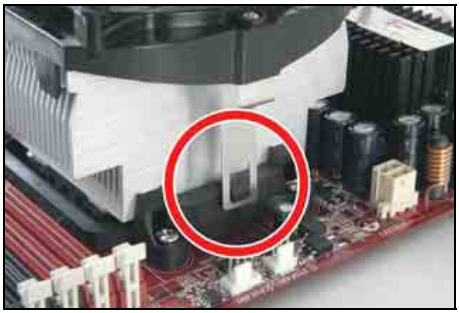
2. After placing the CPU into position, push the socket lever down into its locked position to secure the CPU. The lever clicks when it's locked into position.

3. The heatsink for CPU may have thermal interface material attached to its bottom. If not, applying a few squeeze of thermal paste to the CPU die will help to increase the contact.

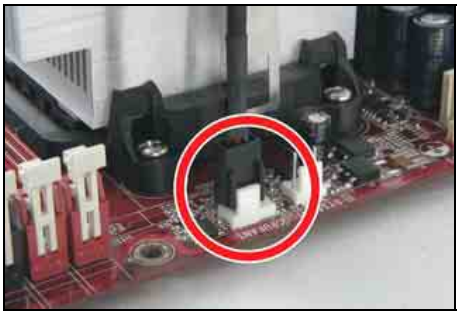


4. Place the heatsink and fan assembly onto the retention frame. Match the heatsink clip with the socket mounting-lug. Hook the spring clip to the mounting-lug.

5. On the other side, push the retention clip straight down to lock into the plastic lug on the retention frame.



6. Connect the CPU cooling fan power cable to the CPUFAN1 connector on this motherboard.



※ **The "CPUFAN1" connector can be connected either with a 3-Pin or 4-Pin CPU cooling fan. For a 3-Pin connection, there will be no speed control available in the BIOS setup menu; the CPU fan will run at full speed.**

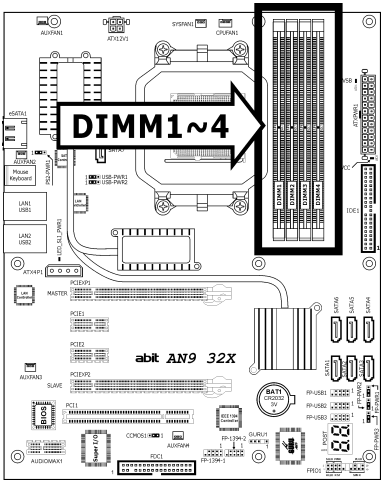
Also, please watch out for the orientation when inserting 3-Pin plug into this 4-Pin fan connector.

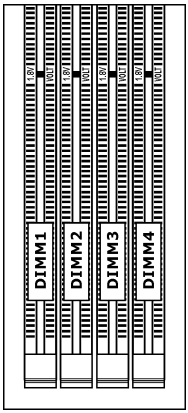
※ **The motherboard in this illustration is served for DEMO only, may not be the same type or model as the one described in this user's manual.**

※ **A higher fan speed will be helpful for better airflow and heat-dissipation. Nevertheless, stay alert to touch any heatsink since the high temperature generated by the working system is still possible.**

2.5.2 DDR2 Memory Slots

This motherboard provides four 240-pin DIMM slots for Dual Channel DDR2 800 memory modules with memory expansion size up to 8GB.





To reach the performance of Dual Channel DDR2, the following rules must be obeyed:

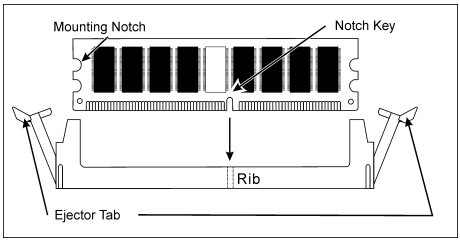
- **For a 2-DIMM dual-channel installation:**
  Populate DIMM modules of the same type and size on slots [**DIMM1**]+[**DIMM2**], or slots [**DIMM3**]+[**DIMM4**].
- **For a 4-DIMM dual-channel installation:**
  Populate 2 DIMM modules of the same type and size on slots [**DIMM1**]+[**DIMM2**], and another 2 DIMM modules of the same type and size on slots [**DIMM3**]+[**DIMM4**].

※ [**DIMM1**] and [**DIMM2**] slots are made of the same color.
[**DIMM3**] and [**DIMM4**] are made of another same color.

Usually there is no hardware or BIOS setup required after adding or removing memory modules, but you will have to clear the CMOS memory first if any memory module related problem occurs.

To install system memory:

1. Power off the computer and unplug the AC power cord before installing or removing memory modules.
2. Locate the DIMM slot on the board.
3. Hold two edges of the DIMM module carefully, keep away from touching its connectors.
4. Align the notch key on the module with the rib on the slot.



5. Firmly press the module into the slots until the ejector tabs at both sides of the slot automatically snap into the mounting notch. Do not force the DIMM module in with extra force as the DIMM module only fits in one direction.
6. To remove the DIMM modules, push the two ejector tabs on the slot outward simultaneously, and then pull out the DIMM module.

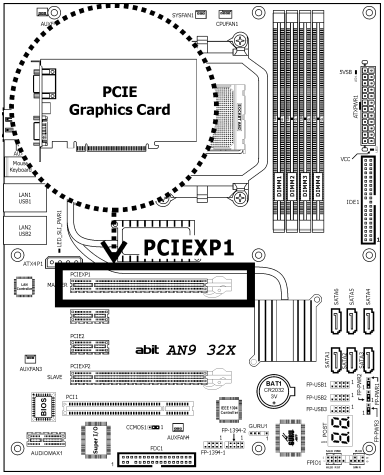
※ **Static electricity can damage the electronic components of the computer or optional boards. Before starting these procedures, ensure that you are discharged of static electricity by touching a grounded metal object briefly.**

2.5.3 PCI Express X16 Add-on Slots (Install Graphics Card)

These slots support the connections of graphics cards that comply with PCI Express specifications. This motherboard provides dual PCI-Express X16 slots for one or two graphics cards installation:

One PCIE graphics card installation (Normal Mode):

Insert your PCIE graphics card into [PCIEXP1] slot.



Two PCIE graphics cards installation (SLI Mode):

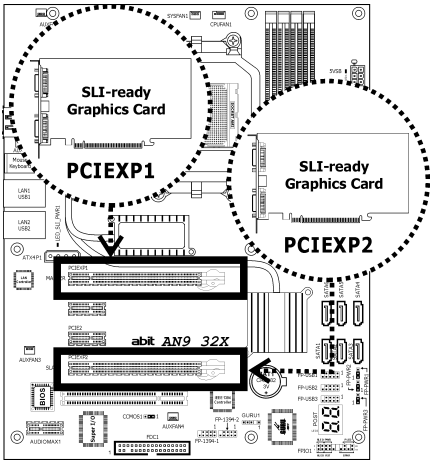
To install two SLI-ready graphics cards under SLI Mode, you will need to:

- Prepare two identical NVIDIA certified, SLI-ready PCI Express x16 graphics cards (the same model from the same manufacturer).
- Make sure the graphics card driver supports the NVIDIA SLI technology. Download the latest driver form NVIDIA website (www.nvidia.com).
- Make sure your power supply unit is sufficient to provide the minimum power required.

※ **The following illustration is served for DEMO only. All the devices, including the motherboard, the graphics cards, the SLI Bridge Connector, or the SLI bracket, may not be exactly the same type, shape, or model as the one you bought.**

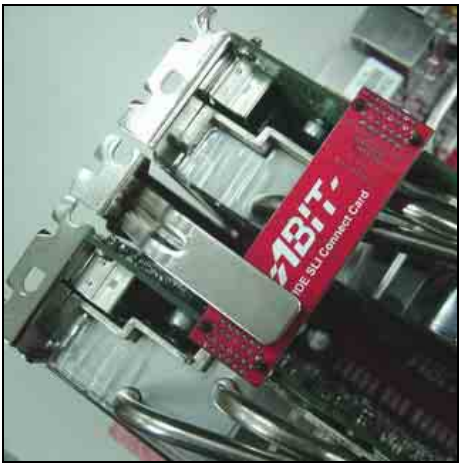
1. Insert two identical SLI-ready graphics cards into both PCIEXP1 and PCIEXP2 slots.

※ **The NVIDIA SLI technology currently supports the Windows XP operating system only.**



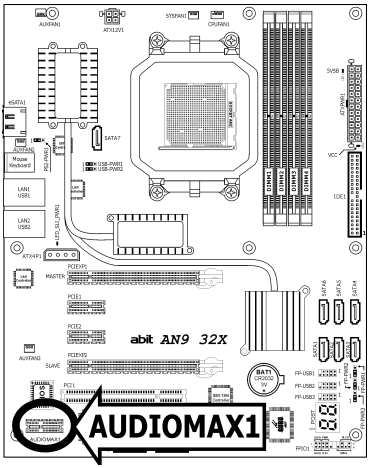
2. Bridge connecting two graphics cards with the "SLI Connector Card" (fit in both direction).

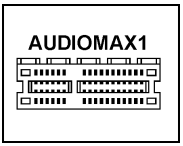
   Insert and secure the SLI supporting bracket.

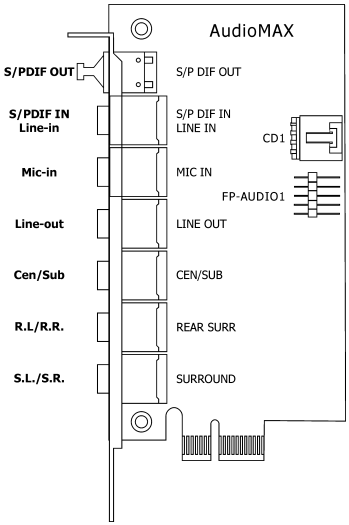


2.5.4 AudioMAX Connection Slot

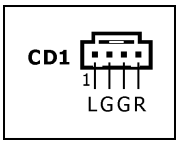
This slot provides the audio input/output connection over the rear I/O part through an add-on daughter-card. Find your "**AudioMAX**" daughter-card and its driver in the motherboard package.



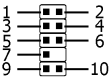




- **S/PDIF Out:** This connector provides an S/PDIF-Out connection through optical fiber to digital multimedia devices.
- **S/PDIF In:** This connector provides an S/PDIF-In connection through optical fiber to digital multimedia devices.
  Line-In: Connects to the line out from external audio sources.
- **Mic-In:** Connects to the plug from external microphone.
- **Line-Out:** Connects to the front left and front right channel in the 7.1-channel or regular 2-channel audio system.
- **Cen/Sub:** Connects to the center and subwoofer channel in the 7.1-channel audio system.
- **R.L./R.R. (Rear Left / Rear Right):** Connects to the rear left and rear right channel in the 7.1-channel audio system.
- **S.L./S.R. (Surround Left / Surround Right):** Connects to the surround left and surround right channel in the 7.1-channel audio system.
- **CD1:** This connector connects to the audio output of internal CD-ROM drive or add-on card.



- **FP-AUDIO1:** This header provides the connection to audio connector at front panel.



FP-AUDIO1

This header provides the front panel connection for HD (High Definition) Audio, yet for AC'97 Audio CODEC connection, you must carefully check the pin assignment before connecting from the front panel module. An incorrect connection may cause malfunction or even damage the motherboard.

※ **Please do not connect the "Ground" cable or "USB VCC" cable from the front panel module to the Pin 4 "AVCC" of this header.**

Pin	Pin Assignment (HD AUDIO)
1	MIC2 L
2	AGND
3	MIC2 R
4	**AVCC**
5	FRO-R
6	MIC2_JD
7	F_IO_SEN
9	FRO-L
10	LINE2_JD

Pin	Pin Assignment (AC'97 AUDIO)
1	MIC In
2	GND
3	MIC Power
4	NC
5	Line Out (R)
6	NC
7	NC
9	Line Out (L)
10	NC

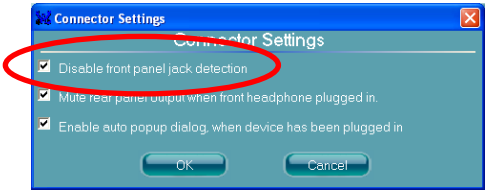
Driver Configuration for AC'97 audio connection:

The audio driver is originally configured to support HD Audio. For AC'97 audio connection, you may:

1. Right-click the "Realtek HD Audio Manager" icon in system tray.

2. Click "Audio I/O" tab, and then click "Connector Settings".

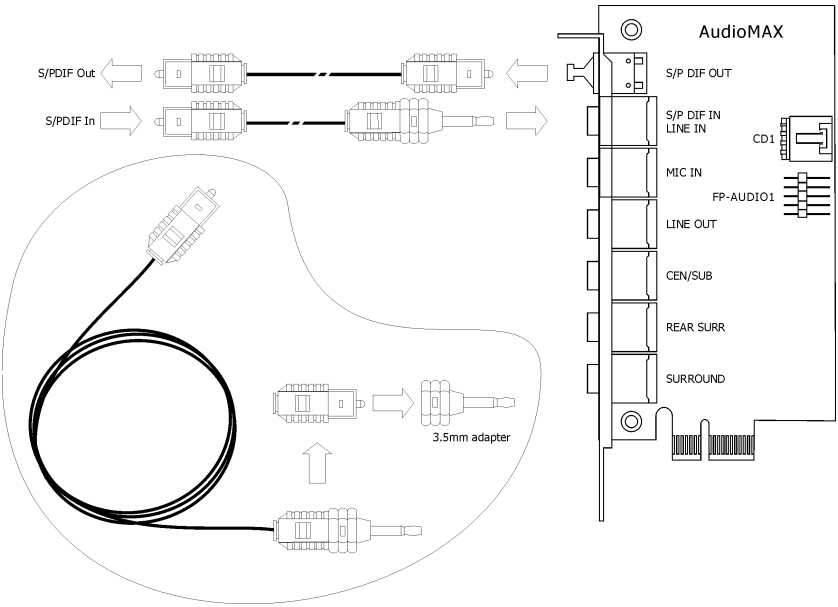
3. Click "**Disabled front panel jack detection**", and then click "OK" to confirm.



S/PDIF Connection:

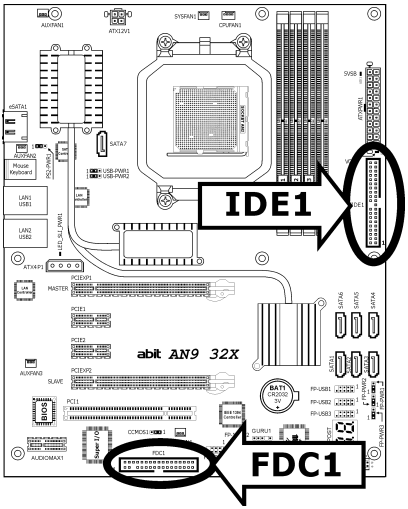
In the motherboard package you can find one audio daughter-card and one optical-fiber cable.

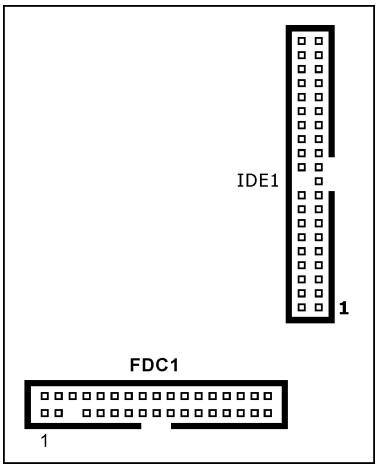
- S/PDIF Input Connection:
  1. Remove the rubber protection-cap. Attach one end of the optical cable with the 3.5mm Optical-to-Stereo adapter, and have it plugged into the [Line-In] jack on this daughter-card. (This jack is served for either optical or line input.)
  2. Connect the other end of the optical cable to the [Digital-Out] (SPDIF-Out) jack on your digital multimedia device.
- S/PDIF Output Connection:
  1. Remove the rubber protection-cap. Plug one end of the optical cable into the [SPDIF-Out] jack on this daughter-card.
  2. Connect the other end of the optical cable to the [Digital-In] (SPDIF-In) jack on your digital multimedia device.



2.6 Connecting Peripheral Devices

2.6.1 Floppy and IDE Disk Drive Connectors



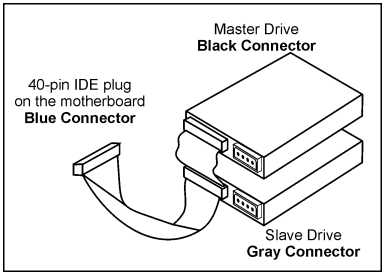


The FDC1 connector connects up to two floppy drives with a 34-wire, 2-connector floppy cable. Connect the single end at the longer length of ribbon cable to the FDC1 on the board, the two connectors on the other end to the floppy disk drives connector. Generally you need only one floppy disk drive in your system.

※ The red line on the ribbon cable must be aligned with pin-1 on both the FDC1 port and the floppy connector.

Each of the IDE port connects up to two IDE drives at Ultra ATA/100 mode by one 40-pin, 80-conductor, and 3-connector Ultra ATA/66 ribbon cables.

Connect the single end (blue connector) at the longer length of ribbon cable to the IDE port of this board, the other two ends (gray and black connector) at the shorter length of the ribbon cable to the connectors of your hard drives.

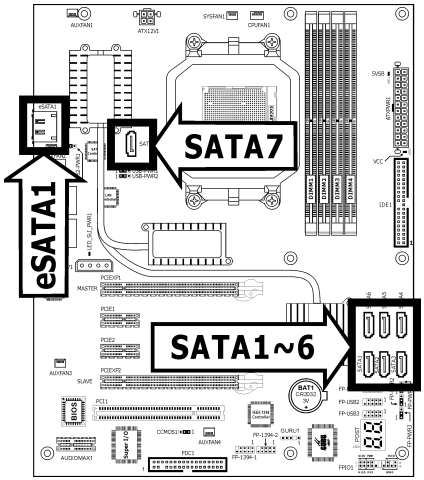


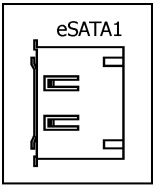
※ Make sure to configure the "Master" and "Slave" relation before connecting two drives by one single ribbon cable. The red line on the ribbon cable must be aligned with pin-1 on both the IDE port and the hard-drive connector.

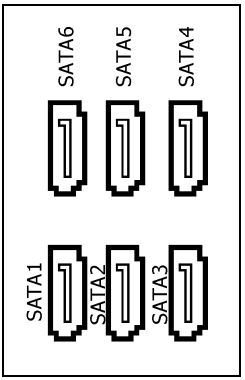
2.6.2 Serial ATA Connectors

Each SATA connector serves as one single channel to connect one SATA device by a thin SATA cable.

- **SATA1~SATA6:** Available for RAID 0, RAID 1, RAID 0+1, RAID 5, or RAID 10 configuration by the utility "Intel Matrix Storage Manager".
- **SATA7、eSATA1:** Available for RAID 0 or RAID 1 configuration by the utility "Sil3132 SATA RAID Driver".

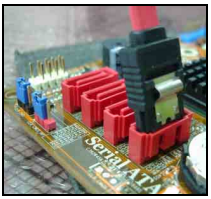






To connect SATA device:

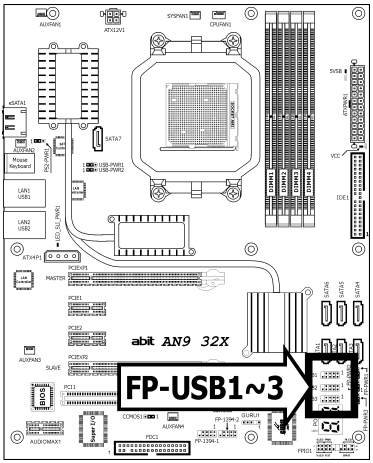
1. Attach either end of the signal cable to the SATA connector on motherboard. Attach the other end to SATA device.
2. Attach the SATA power cable to the SATA device and connect the other end from the power supply.

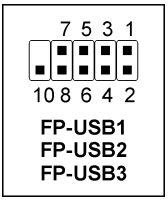


※ **The motherboard in this illustration is served for DEMO only, may not be the same type or model as the one described in this user's manual.**

2.6.3 Additional USB 2.0 Port Headers

Besides the 4x USB 2.0 ports located at rear I/O part, this motherboard also features 3x more USB 2.0 headers onboard. Each header supports 2x additional USB 2.0 ports by connecting bracket or cable to the rear I/O panel or the front-mounted USB ports of your chassis.



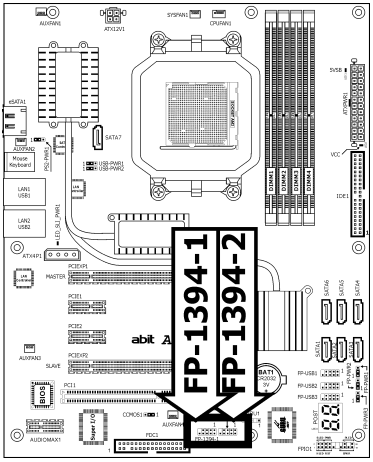


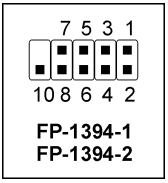
Pin	Pin Assignment	Pin	Pin Assignment
1	VCC	2	VCC
3	Data0 -	4	Data1 -
5	Data0 +	6	Data1 +
7	Ground	8	Ground
		10	NC

※ Make sure the connecting cable bears the same pin assignment.

2.6.4 Additional IEEE1394 Port Headers

Each header supports 1x additional IEEE1394 port by connecting bracket or cable to the rear I/O panel or the front-mounted IEEE1394 port of your chassis.



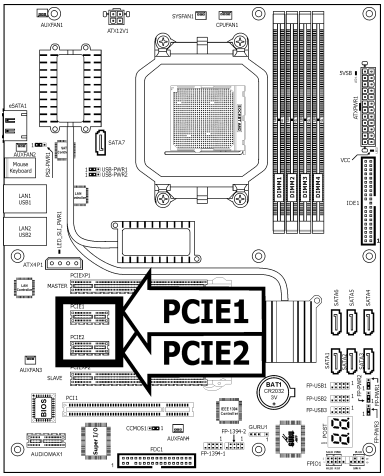


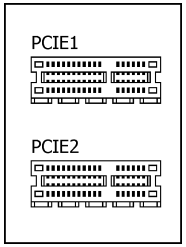
Pin	Pin Assignment	Pin	Pin Assignment
1	TPA0 +	2	TPA0 -
3	Ground	4	Ground
5	TPB0 +	6	TPB0 -
7	+12V	8	+12V
		10	Ground

※ Make sure the connecting cable bears the same pin assignment.

2.6.5 PCI Express X1 Add-on Slots

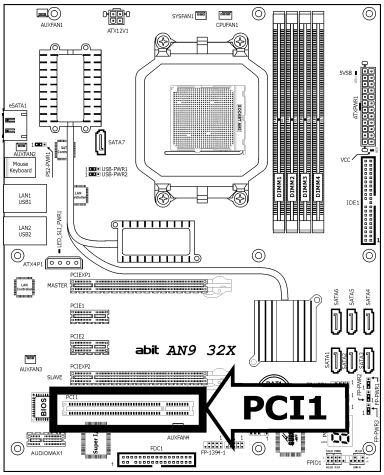
These slots provide the connection of add-on cards that comply with PCI Express specifications.

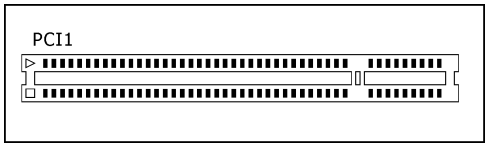




2.6.6 PCI Add-on Slot

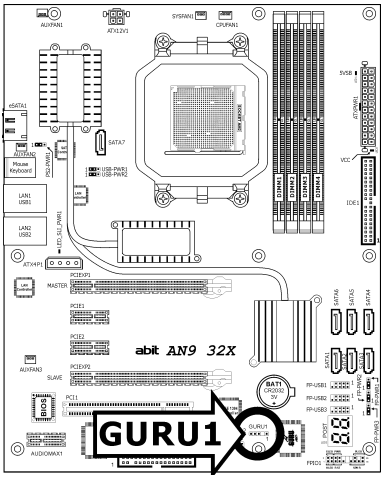
This slot provides the connection of add-on cards that comply with PCI specifications.

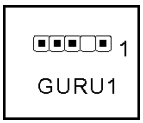


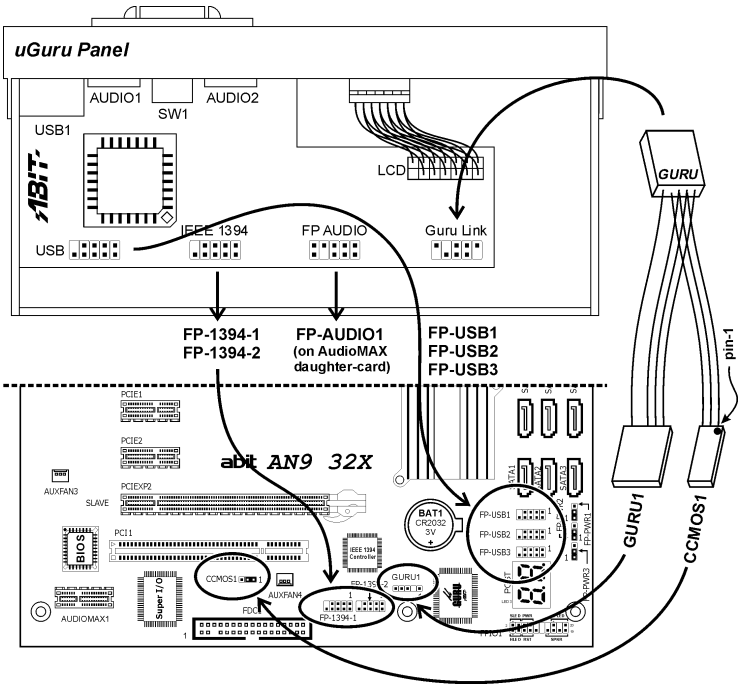


2.6.7 GURU Panel Connection Header

This header is reserved for connecting ABIT's exclusive GURU Panel. For more information, please refer to the included GURU Panel Installation Guide.







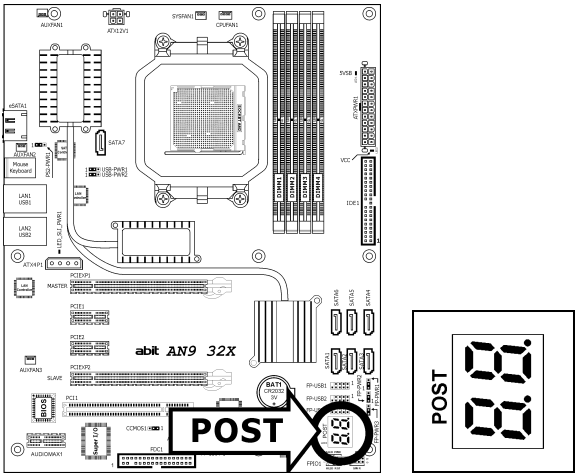
2.7 Onboard Status Display

2.7.1 POST Code Displayer

This is an LED device to display the "**POST**" Code, the acronym for **P**ower **O**n **S**elf **T**est. The computer will execute the POST action whenever you power on the computer. The POST process is controlled by the BIOS. It is used to detect the status of the computer's main components and peripherals. Each POST Code corresponds to different checkpoints that are also defined by the BIOS in advance. For example, "memory presence test" is an important checkpoint and its POST Code is "C1". When the BIOS execute any POST item, it will write the corresponding POST Code into the address 80h. If the POST passes, the BIOS will process the next POST item and write the next POST Code into the address 80h. If the POST fails, we can check the POST Code in address 80h to find out where the problem lies.

This LED device also displays the "POST" Code of AC2005, an "uGuru" chipset developed exclusively by Universal ABIT.

※ **The decimal point lights up during the AC2005 POST action.**



See Appendix for both AWARD and AC2005 POST Code definitions.

2.7.2 Power Source Indicators

These indicators work as a reminding device to display the power status of this motherboard with power source connected.

- **5VSB:**

  Lights On: Your ATX power supplier is connected with power source, and its power switch is on.

  Lights Off: Your ATX power supplier is not connected with power source, or connected with power source but its power switch is off.

- **VCC:**

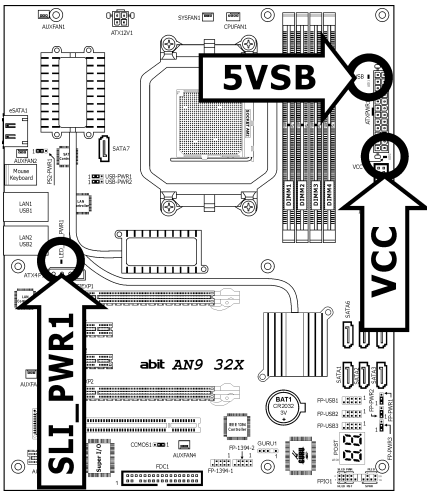
  Lights On: The system power is on.

  Lights Off: The system power is off.

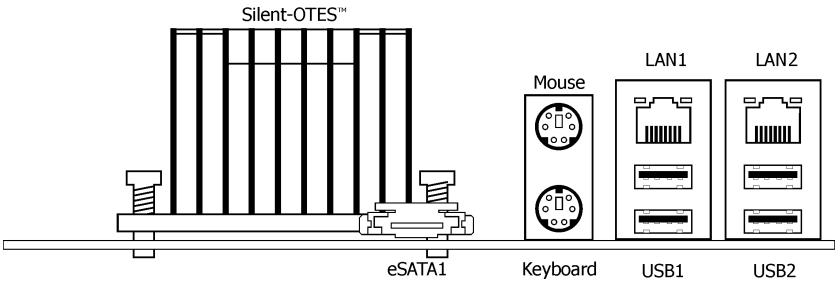
- **SLI_PWR1:**

  Lights On: The system power is on.

  Lights Off: The "ATX4P1" connector is connected with power source from your ATX power supplier.



2.8 Connecting I/O Devices



- **Silent OTES™:** The Silent OTES™ (Silent Outside Thermal Exhaust System) is a device specifically designed to silently cool the motherboard's North Bridge chipset. (Keep the area for outgoing heat wave open.)
- **eSATA1:** This connector supports the external SATA connection.
- **Mouse:** Connects to PS/2 mouse.
- **Keyboard:** Connects to PS/2 keyboard.
- **LAN1/LAN2:** Connects to Local Area Network.
- **USB1/USB2:** Connects to USB devices such as scanner, digital speakers, monitor, mouse, keyboard, hub, digital camera, joystick etc.

3. BIOS Setup

This motherboard provides a programmable EEPROM so that you can update the BIOS utility. The BIOS (Basic Input/Output System) is a program that deals with the basic level of communication between processor and peripherals. Use the BIOS Setup program only when installing motherboard, reconfiguring system, or prompted to "Run Setup". This chapter explains the Setup Utility of BIOS utility.

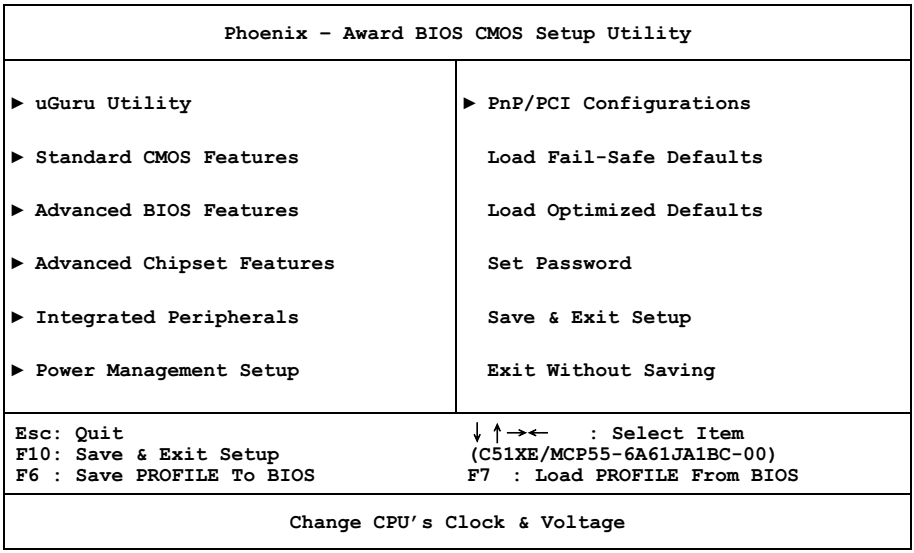
After powering up the system, the BIOS message appears on the screen, the memory count begins, and then the following message appears on the screen:

PRESS DEL TO ENTER SETUP

If this message disappears before you respond, restart the system by pressing <Ctrl> + <Alt> + <Del> keys, or by pressing the Reset button on computer chassis. Only when these two methods fair should you restart the system by powering it off and then back on.

After pressing <Del> key, the main menu screen appears.

After pressing <Del> key, the main menu screen appears.

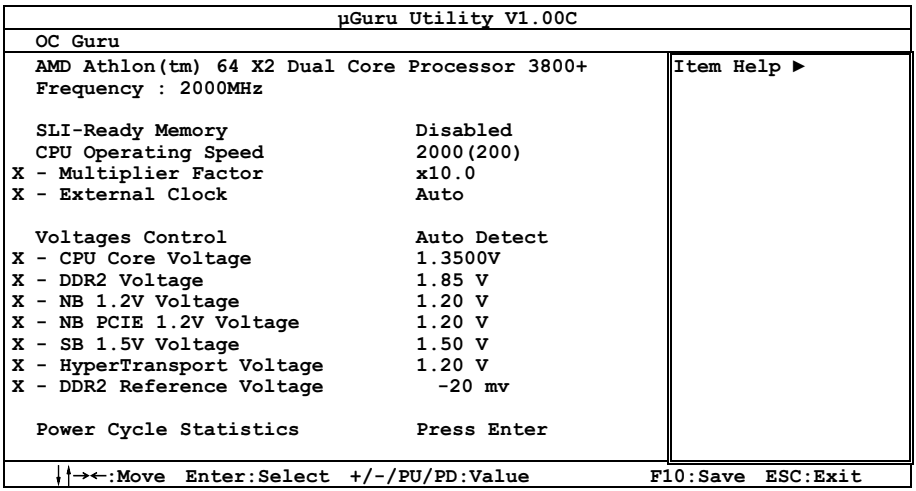


※ In order to increase system stability and performance, our engineering staff is constantly improving the BIOS menu. The BIOS setup screens and descriptions illustrated in this manual are for your reference only, and may not completely match with what you see on your screen.

3.1 µGuru™ Utility

There are two setup menus in this µGuru utility. You may switch between these two by clicking the left or right arrow key on keyboard:

3.1.1 OC Guru



Brand Name

This item displays the CPU model name installed on this motherboard.

Frequency

This item displays the processor speed of the CPU installed on this motherboard.

SLI-Ready Memory

This item allows you to select the SPD profile for SLI-Ready memory modules of EPP standard. The default setting is [Disabled]. You may determine the percentage of how much you would like to raise up according to the type of memory module you installed.

CPU Operating Speed

This item displays the CPU operating speed according to the type and speed of your CPU. You can also select the [User Define] option to enter the manual option.

User Define:

※ **The wrong settings of the multiplier and external clock in certain circumstances may cause CPU damage. Setting the working frequency higher than the PCI chipset or processor specs, may cause abnormal memory module functioning, system hangs, hard disk drive data lose, abnormal functioning of the VGA card, or abnormal functioning with other add-on cards. Using non-specification settings for your CPU is not the intention of this explanation. These should be used for engineering testing, not for normal applications.**

※ **There will be no guaranty for the settings beyond specification. Any damage of any component on this motherboard or peripherals resulting therein is not our responsibility.**

- **Multiplier Factor**

This item displays the multiplier factor for the CPU installed.

- **External Clock**

This item selects the external clock frequency. Due to the specification limit of the CPU you installed, the speed you set over its standard bus speed is supported, but not guaranteed.

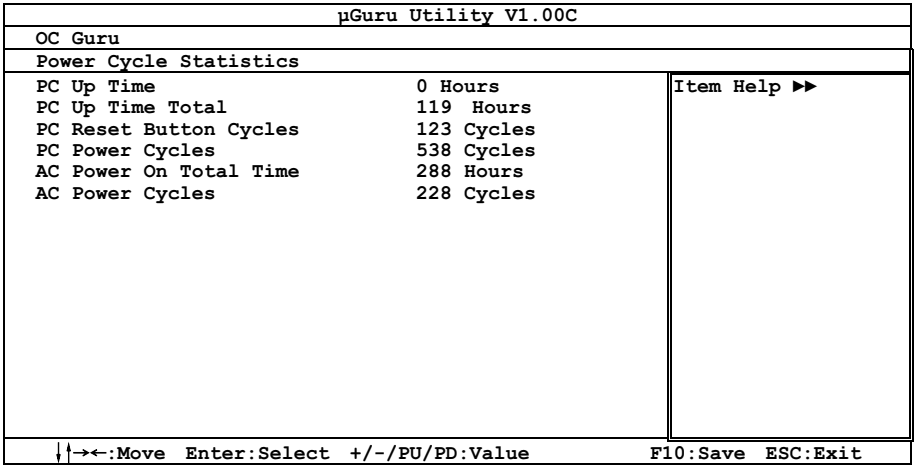
Voltages Control

This option allows you to switch between the default and user-defined voltages. Leave this setting at default unless the current voltage setting cannot be detected or is not correct. The option "**User Define**" enables you to select the following voltages manually.

- **CPU Core Voltage**
- **DDR2 Voltage**
- **NB 1.2V Voltage**
- **NB PCIE 1.2V Voltage**
- **SB 1.5V Voltage**
- **HyperTransport Voltage**
- **DDR2 Reference Voltage**

Power Cycle Statistics

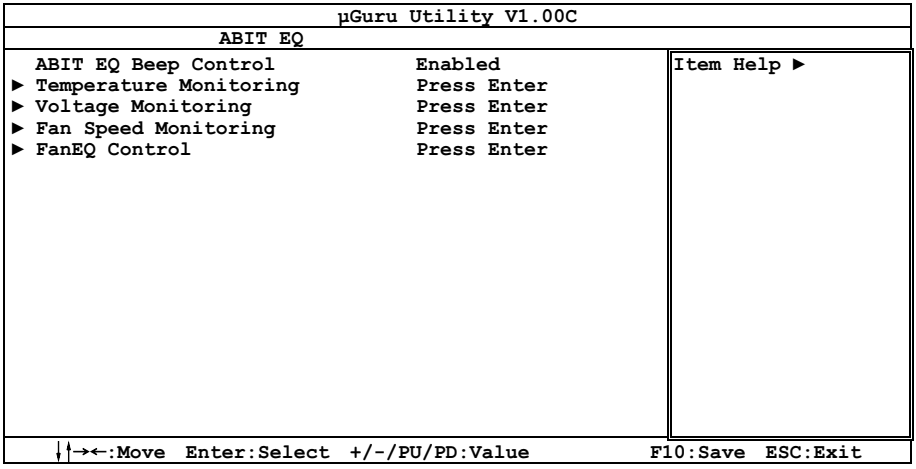
Click <Enter> key to enter its submenu:



These items display the power cycle statistics for each element.

3.1.2 ABIT EQ

Click right-arrow <→> key to switch from OC Guru setup menu to ABIT EQ setup menu:



ABIT EQ Beep Control

This item allows you to enable or disable ABIT EQ Beep Control function.

Temperature Monitoring

Click <Enter> key to enter its submenu:

```
                        µGuru Utility V1.00C
                    ABIT EQ
                    Temperature Monitoring
                                Reading   Shutdown  Shutdown   Beep    Beep
                                          Enable    Temp.      Enable  Temp.
(*)CPU Temperature              34°C/93°F (*)       85°/185°F  (*)     75°C/167°F
(*)System Temperature           29°C/84°F ( )       65°C/149°F (*)     55°C/131°F
(*)PWM Temperature              36°C/96°F ( )       90°C/194°F (*)     88°C/176°F
    ↓↑→←:Move  Enter:Select  +/-/PU/PD:Value              F10:Save  ESC:Exit
```

CPU Temperature/System Temperature/PWM Temperature

These items display the temperature of CPU, System, and Power Module.

- **Shutdown Enable**

Use <Space> key to enable system shutdown function. If the CPU/System/PWM's temperature exceeds the shutdown temperature limit, the system will shutdown automatically.

- **Shutdown Temp.**

This items sets the temperature that will shutdown the system automatically in order to prevent system overheating.

- **Beep Enable**

Use <Space> key to enable warning beeps function. Once the system has detected that the CPU/System/PWM's temperature exceeded the beep temperature limit, warning beeps will sound.

- **Beep Temp.**

This item selects the warning temperature limit.

※ **The shutdown temperature must be set above the warning temperature.**

Voltage Monitoring

Click <Enter> key to enter its submenu:

```
                        µGuru Utility V1.00C
                    ABIT EQ
                    Voltage Monitoring
                                  Reading   Shutdown  Beep    High    Low
                                            Enable    Enable  Limit   Limit
(*)CPU Core Voltage                1.40 V (*)       (*)      1.60 V     0 V
(*)DDR2 Voltage                    1.80 V ( )       (*)      2.20 V  1.50 V
(*)DDR2 VTT Voltage                0.90 V ( )       (*)      1.10 V  0.75 V
(*)HyperTransport Voltage          1.20 V ( )       (*)      1.45 V  0.95 V
(*)NB Voltage                      1.20 V ( )       (*)      1.45 V  0.95 V
(*)CPU VDDA 2.5V Voltage           2.50 V ( )       (*)      3.00 V  2.00 V
(*)SB Voltage                      1.50 V ( )       (*)      1.00 V  1.20 V
(*)ATX +12V (24-Pin Connector)    12.00 V ( )       (*)     14.40 V  9.60 V
(*)ATX +12V (4-Pin Connector)     12.00 V ( )       (*)     14.40 V  9.60 V
(*)ATX +5V                         5.00 V ( )       (*)      6.00 V  4.00 V
(*)ATX +3.3V                       3.30 V ( )       (*)      3.95 V  2.65 V
(*)ATX 5VSB                        5.00 V ( )       (*)      6.00 V  4.00 V

   ↓↑→←:Move  Enter:Select  +/-/PU/PD:Value          F10:Save  ESC:Exit
```

All Voltages

These items display the voltage of each element.

- Shutdown Enable

Use <Space> key to enable system shutdown function. If the voltage of corresponding element is higher/lower than the high/low limit, the system will automatically shutdown.

- Beep Enable

Use <Space> key to enable warning beeps function. If the voltage of corresponding element is higher/lower than the high/low limit, warning beeps will sound.

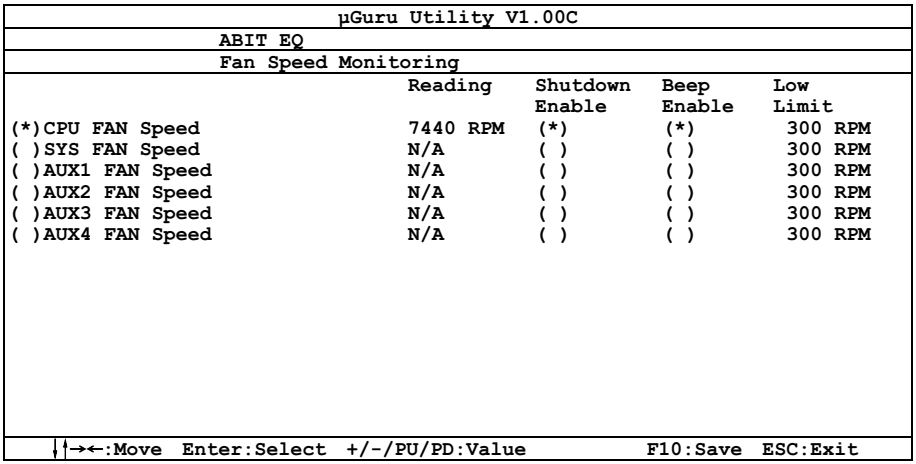
- High/Low Limit

These items set the high and low voltage limit.

※ The value of high limit must be set above the one of low limit.

Fan Speed Monitoring

Click <Enter> key to enter its submenu:



CPU/SYS/AUX1~4 FAN Speed

These items display the speed of the fans connected to CPU, SYS, and AUX1~4 FAN headers.

- **Shutdown Enable**

Use <Space> key to enable system shutdown function. Once the system has detected that the fan speed is lower than the low limit value, system will shutdown automatically.

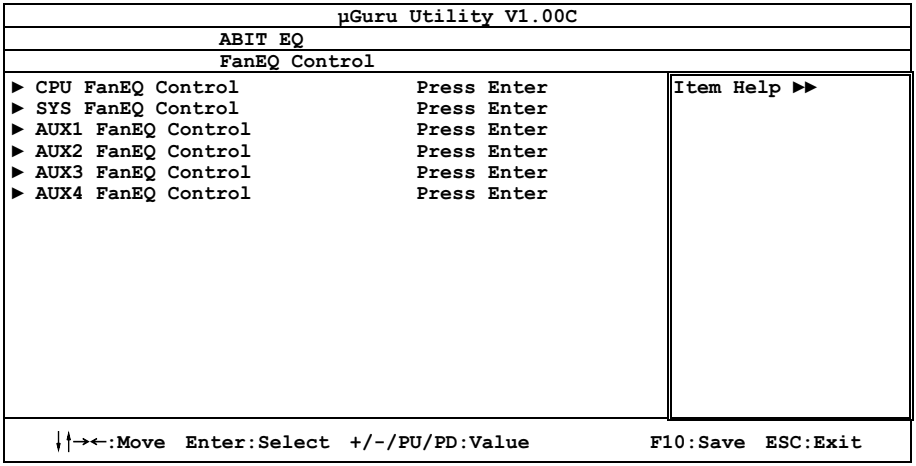
- **Beep Enable**

Use <Space> key to enable warning beeps function. If the fan speed is lower than the low limit value, warning beeps will sound.

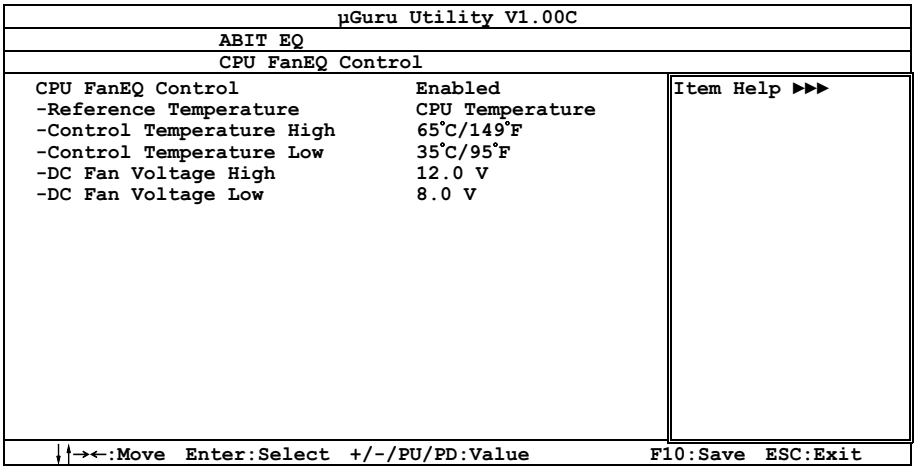
- **Low Limit**

These items set the low limit of fan speed.

FanEQ Control



Click <Enter> key to enter its submenu (CPU FanEQ Control):



CPU FanEQ Control

When set to [Enabled], these items control the CPU fan speed by the following setting combinations.

- Reference Temperature

This item selects the reference point for taking temperature among the available options of CPU, SYS, and PWM Temperature, but there is only one "CPU Temperature" item to choose for the "CPU FanEQ Control".

- **Control Temperature High/Low**

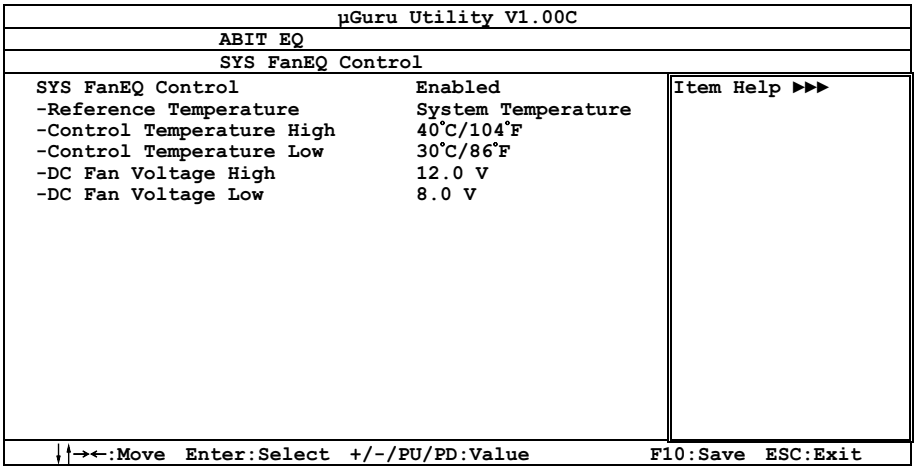
These items set the high and low temperature limit that you want to do the fan speed control.

- **DC Fan Voltage High/Low**

These items set the high and low voltage limit that you want to provide the fan with.

※ **The value of high limit must be set above the one of low limit.**

Click <ESC> key to exit this menu and move back to the main menu of "ABIT EQ". Move the down-arrow key to the next item (SYS FanEQ Control), and then click <Enter> key to enter its submenu:



SYS FanEQ Control

When set to [Enabled], these items control the SYS fan speed by the following setting combinations.

- **Reference Temperature**

This item selects the reference point for taking temperature among the available options of CPU, SYS, and PWM Temperature.

- **Control Temperature High/Low**

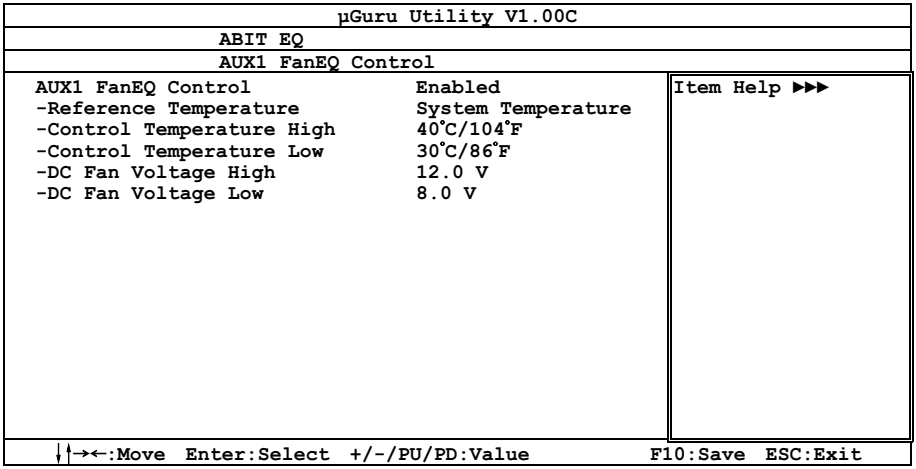
These items set the high and low temperature limit that you want to do the fan speed control.

- **DC Fan Voltage High/Low**

These items set the high and low voltage limit that you want to provide the fan with.

※ **The value of high limit must be set above the one of low limit.**

Click <ESC> key to exit this menu and move back to the main menu of "ABIT EQ". Move the down-arrow key to the next item (AUX1 FanEQ Control ~ AUX4 FanEQ Control), and then click <Enter> key to enter its submenu:



AUX1 FanEQ Control ~ AUX4 FanEQ Control

When set to [Enabled], these items control the AUX1~4 fan speed by the following setting combinations.

- Reference Temperature

This item selects the reference point for taking temperature among the available options of CPU, SYS, and PWM Temperature.

- Control Temperature High/Low

These items set the high and low temperature limit that you want to do the fan speed control.

- DC Fan Voltage High/Low

These items set the high and low voltage limit that you want to provide the fan with.

※ The value of high limit must be set above the one of low limit.

3.2 Standard CMOS Features

```
                Phoenix – Award BIOS CMOS Setup Utility
                      Standard CMOS Features
  Date (mm:dd:yy)                Mon. Jul 03 2006        Item Help
  Time (hh:mm:ss)                12 : 34 : 56

▶ IDE Channel 1 Master           None
▶ IDE Channel 1 Slave            None
▶ IDE Channel 3 Master           None
▶ IDE Channel 4 Master           None
▶ IDE Channel 5 Master           None
▶ IDE Channel 6 Master           None
▶ IDE Channel 7 Master           None
▶ IDE Channel 8 Master           None

  Drive A                        1.44M, 3.5 in.
  Drive B                        None
  Floppy 3 Mode Support          Disabled
  Halt On                        All, But keyboard

  Base Memory                         640K
  Extended Memory                1046520K
  Total Memory                   1047552K
↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
  F5: Previous Values   F6: Fail-Safe Defaults   F7: Optimized Defaults
```

Date (mm:dd:yy)

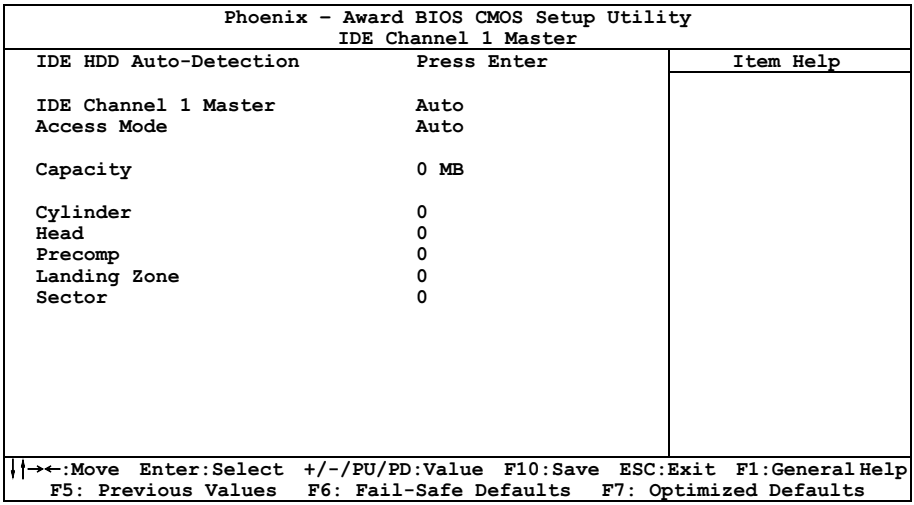
This item sets the date you specify (usually the current date) in the format of [Month], [Date], and [Year].

Time (hh:mm:ss)

This item sets the time you specify (usually the current time) in the format of [Hour], [Minute], and [Second].

↳ IDE Channel 1 Master/Slave, IDE Channel 3~8 Master:

Click <Enter> key to enter its submenu:



IDE HDD Auto-Detection

This item allows you to detect the parameters of IDE drives by pressing <Enter> key. The parameters will be shown on the screen automatically.

IDE Channel 1 Master/Slave, IDE Channel 3~8 Master

When set to [Auto], the BIOS will automatically check what kind of IDE drive you are using. If you want to define your own drive by yourself, set it to [Manual] and make sure you fully understand the meaning of the parameters. Please refer to the instruction manual provided by the device's manufacturer to get the setting right.

Access Mode

This item selects the mode to access your IDE devices. Leave this item at its default [Auto] setting to detect the access mode of your HDD automatically.

Capacity

This item displays the approximate capacity of the disk drive. Usually the size is slightly greater than the size of a formatted disk given by a disk-checking program.

Cylinder

This item configures the number of cylinders.

Head

This item configures the number of read/write heads.

Precomp

This item displays the number of cylinders at which to change the write timing.

Landing Zone

This item displays the number of cylinders specified as the landing zone for the read/write heads.

Sector

This item configures the number of sectors per track.

↳ Back to Standard CMOS Features Setup Menu:

Drive A & Drive B

This item sets the type of floppy drives (usually only Drive A) installed.

Floppy 3 Mode Support

This item allows you to use "3 Mode Floppy Drive" in Japanese computer system by selecting drive A, B, or both. Leave this item at its default [Disabled] setting if you are not using this Japanese standard floppy drive.

Halt On

This item determines whether the system stops if an error is detected during system boot-up.

[All Errors]: The system-boot will stop whenever the BIOS detect a non-fatal error.

[No Errors]: The system-boot will not stop for any error detected.

[All, But Keyboard]: The system-boot will stop for all errors except a keyboard error.

[All, But Diskette]: The system-boot will stop for all errors except a diskette error.

[All, But Disk/Key]: The system-boot will stop for all errors except a diskette or keyboard error.

Base Memory

This item displays the amount of base memory installed in the system. The value of the base memory is typically 640K for system with 640K or more memory size installed on the motherboard.

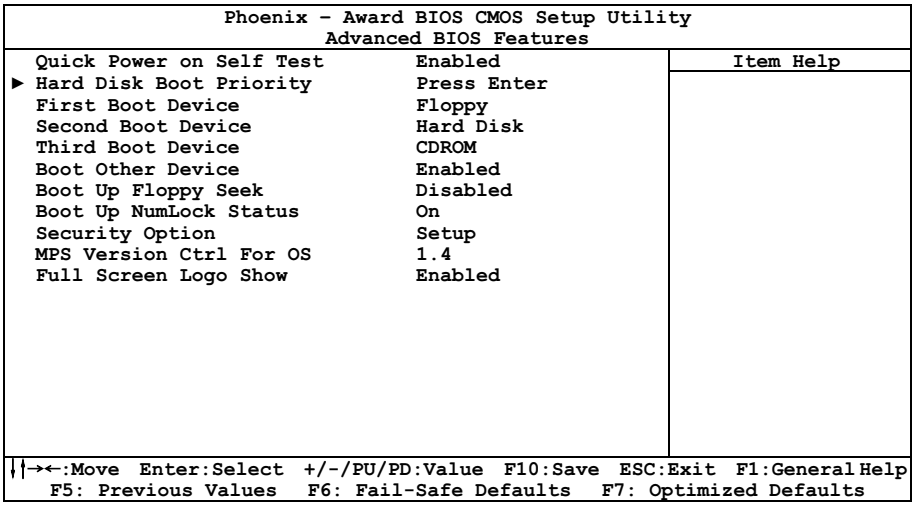
Extended Memory

This item displays the amount of extended memory detected during system boot-up.

Total Memory

This item displays the total memory available in the system.

3.3 Advanced BIOS Features



Quick Power On Self Test

When set to [Enabled], this item speeds up the Power On Self Test (POST) after powering on the system. The BIOS shorten or skip some check during the POST.

Hard Disk Boot Priority

This item selects the hard disks booting priority. By pressing <Enter> key, you can enter its submenu where the hard disks detected can be selected for the booting sequence to boot up system.

This item functions only when there is the option of [Hard Disk] in any one of the First/Second/Third Boot Device items.

First Boot Device / Second Boot Device / Third Boot Device / Boot Other Device

Select the drive to boot first, second and third in the [First Boot Device], [Second Boot Device], and [Third Boot Device] items respectively. The BIOS will boot the operating system according to the sequence of the drive selected. Set [Boot Other Device] to [Enabled] if you wish to boot from another device other than these three items.

Boot Up Floppy Seek

When the computer boots up, the BIOS detects if the system has a FDD or not. When this item is set to *Enabled*, if the BIOS detects no floppy drive, it will display a floppy disk drive error message. If this item is disabled, the BIOS will skip this test. The default setting is *Disabled*.

Boot Up NumLock Status

This item determines the default state of the numeric keypad at system booting up.

[On]: The numeric keypad functions as number keys.

[Off]: The numeric keypad functions as arrow keys.

Security Option

This item determines when the system will prompt for password - every time the system boots or only when it enters the BIOS setup.

[Setup]: The password is required only when accessing the BIOS Setup.

[System]: The password is required each time the computer boots up.

To disable security, select *Set Password* at main menu and then you will be asked to enter the password. Do not type anything and just press the *<Enter>* key and it will disable security. Once security is disabled, the system will boot and you can enter the *BIOS setup menu* freely.

※ **Don't forget your password. If you forget the password, you will have to open the computer case and clear all information in the CMOS before you can start up the system. But by doing this, you will have to reset all previously set options.**

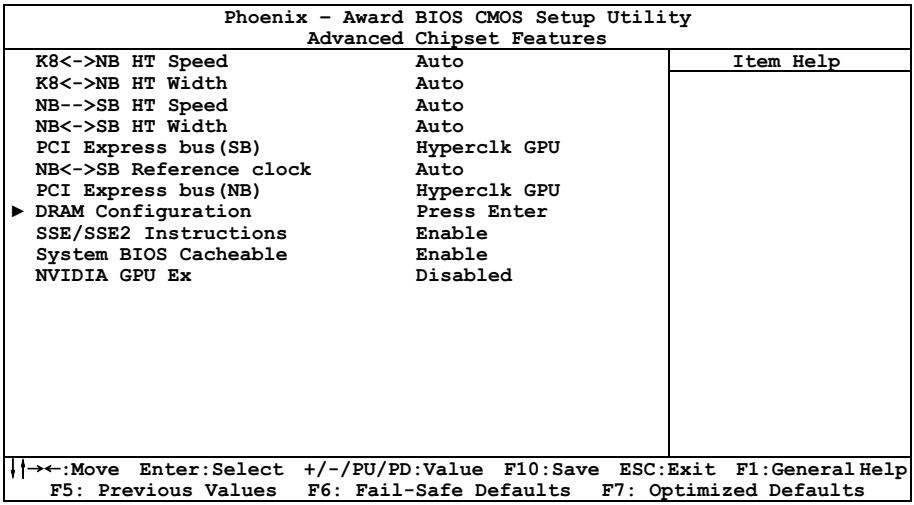
MPS Version Ctrl For OS

This item specifies which version of MPS (Multi-Processor Specification) this motherboard will use. Leave this item at its default setting.

Full Screen LOGO Show

This item determines if the full screen logo is shown when booting.

3.4 Advanced Chipset Features



K8<->NB HT Speed:

This item selects the LDT Bus Frequency between CPU and NB.

K8<->NB HT Width:

This item selects the LDT Bus Width between CPU and NB.

NB-->SB HT Speed:

This item selects NB to SB LDT Bus Frequency.

NB<->SB HT Width:

This item selects the LDT Bus Width between NB and SB.

PCI Express bus(SB)

This item adjusts the bus clock for "PCIEXP2" slot.

NB<->SB Reference clock

This item adjusts the bus clock between NB and SB.

PCI Express bus(NB)

This item adjusts the bus clock for "PCIEXP1" slot.

DRAM Configuration:

Click <Enter> key to enter its submenu.

You may manually set the DRAM timing parameters through the following sub-items, or leave them at their default settings according to the SPD (Serial Presence Detect) data stored in the DRAM.

```
                Phoenix – Award BIOS CMOS Setup Utility
                        DRAM Configuration
  DRAM Timing Selectable          Auto          |  Item Help
X - DRAM Clock                    DDR2 533      |
  - DQS Timing Training           Skip DQS      |
  - CKE Base Power Down Mode      Enabled       |
  - CKE Base Power Down by        Channel       |
  - Memclock Tri-Stating          Disabled      |
X - TwTr Command Delay            2 Clocks      |
X - Trfc0 for DIMM1               105  ns       |
X - Trfc1 for DIMM2                75  ns       |
X - Trfc2 for DIMM3                75  ns       |
X - Trfc3 for DIMM4                75  ns       |
X - Write Recovery Time(Twr)      4 Clocks      |
X - Precharge Time(Trtp)          2 Clocks      |
X - Row Cycle Time(Trc)           17 Clocks     |
X - RAS2CAS R/W Delay(Trcd)       4 Clocks      |
X - RAS to RAS Delay(Trrd)        2 Clocks      |
X - Row Precharge Time(Trp)       4 Clocks      |
X - Min. RAS Act-Time(Tras)       12 Clocks     |
  Memory Hole Remapping           Enabled       |
  DRAM ECC Enable                 Disabled      |
X - DRAM MCE Enable               Disabled      |
X - Chip-Kill Mode Enable         Disabled      |
X - DRAM ECC Redirection          Disabled      |
X - DRAM Scrub Rate               Disabled      |
X - L2 Cache Scrub Rate           Disabled      |
X - DCache Scrub Rate             Disabled      |
  Auto Optimize Bottom IO         Enabled       |
X - [31:24] IO Space              F0            |
↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
  F5: Previous Values   F6: Fail-Safe Defaults   F7: Optimized Defaults
```

↳ Back to Advanced Chipset Features Setup Menu:

SSE/SSE2 Instructions

This item allows you to Enable or Disable the SSE/SSE2 (Streaming SIMD Extensions) instruction set.

System BIOS Cacheable

This item enables or disables caching the system BIOS for faster execution.

NVIDIA GPU Ex

Stands for "GPU Extra Performance". Enable this item to work for certain NVIDIA SLI graphics cards with certain driver version, but only minor performance will be expected. Leave this item at its default setting (Disabled).

3.5 Integrated Peripherals

```
Phoenix – Award BIOS CMOS Setup Utility
Integrated Peripherals

▶ OnChip IDE/RAID Function        Press Enter      Item Help
  Init Display First              PCIEXP1
  OnChip USB                      V1.1+V2.0
  - USB Keyboard Support          OS
  - USB Mouse Support             OS
  OnChip Audio Controller         Auto
  OnChip LAN1 Controller          Auto
  OnChip LAN2 Controller          Auto
  Onboard LAN Boot ROM            Disabled
  Onboard FDD Controller          Enabled
  Onboard SATA Controller         Enabled
  - Onboard SATA Mode             IDE
  - SATA Option ROM               Enabled
  Onboard 1394 Controler          Enabled

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

↳ OnChip IDE/RAID Function

Click <Enter> key to enter its submenu:

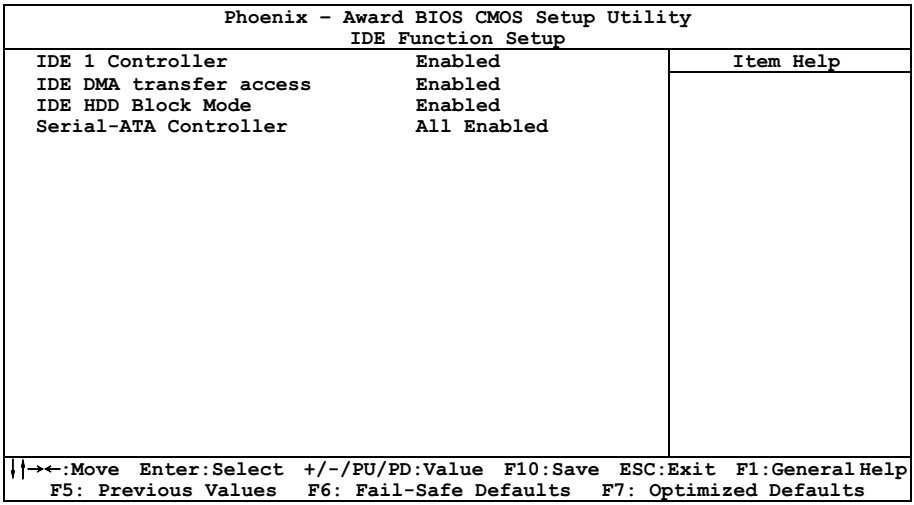
```
Phoenix – Award BIOS CMOS Setup Utility
OnChip IDE/RAID Function

▶ IDE Function Setup              Press Enter      Item Help
▶ RAID Configuration              Press Enter

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

IDE Function Setup:

Click <Enter> key to enter its submenu:



IDE 1 Controller

This item allows you to enable or disable the IDE1 controller.

IDE DMA transfer access:

This item selects the DMA mode for devices connected through IDE channels.

IDE HDD Block Mode

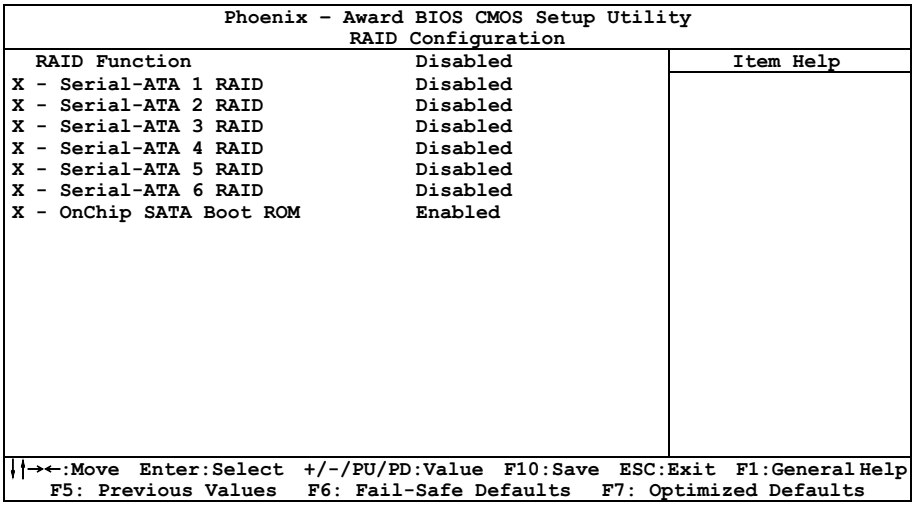
This item enables or disables the IDE HDD Block Mode.

Serial-ATA Controller

This item enables or disables the on-chip SATA controller.

↳ RAID Configuration:

Click <Enter> key to enter its submenu:



RAID Function

This item allows you to enable or disable the RAID function for Serial-ATA 1~6 ports.

- Serial-ATA 1 RAID ~ Serial-ATA 6 RAID

This item allows you to enable or disable the RAID function for each of the Serial-ATA 1~6 port individually.

- OnChip SATA Boot ROM

This item allows you to use the boot ROM of OnChip SATA to boot up system.

↳ Back to Integrated Peripherals Setup Menu:

Init Display First

This item selects which display slot to initialize first when the system boots.

OnChip USB

Select the type of USB controller. Three options are available: Disabled ➔ V1.1+V2.0 ➔ V1.1. The default setting is *V1.1+V2.0*. If you choose to disable this item, the "**USB Keyboard Support"** and "**USB Mouse Support**" items will not be available to select in *Integrated Peripherals* menu.

- **USB Keyboard Support**

Select [**BIOS**] for the legacy operating system (such as DOS) that does not support USB keyboard.

- **USB Mouse Support**

Select [**BIOS**] for the legacy operating system (such as DOS) that does not support USB mouse.

OnChip Audio Controller

This option enables or disables the audio controller.

OnChip LAN1 Controller

This option enables or disables the LAN1 controller.

OnChip LAN2 Controller

This option enables or disables the LAN2 controller.

Onboard LAN Boot ROM

This item allows you to use the boot ROM (instead of a disk drive) to boot-up the system and access the local area network directly.

Onboard FDD Controller

Two options are available: Enabled and Disabled. The default setting is ***Enabled***. You can enable or disable the onboard FDD controller.

Onboard SATA Controller

This item enables or disables the Onboard SATA controller.

- **Onboard SATA Mode**

This item determines the mode for Onboard Serial ATA.

[IDE]: The on-chip Serial ATA served as IDE mode.

[RAID]: The on-chip Serial ATA served as RAID mode.

- **SATA Option ROM**

This item allows you to use the boot ROM of onboard Serial ATA RAID to boot up system.

Onboard 1394 Controller

This option enables or disables the IEEE 1394 controller.

3.6 Power Management Setup

```
Phoenix – Award BIOS CMOS Setup Utility
Power Management Setup
  ACPI Suspend Type              S3(Suspend-To-RAM)      Item Help
  - USB Resume from S3           Disabled
  Power Button Function          Instant-Off
  Wakeup by PME# of PCI          Enabled
  Wakeup by OnChip LAN           Enabled
  Wakeup by Alarm                Disabled
X - Day (of Month) Alarm          0
X - Time (hh:mm:ss) Alarm         0: 0 : 0
  Cool'n'Quiet Technology        Auto
  Power On Function              Button Only
X - KB Power On Password         Enter
X - Hot Key Power On             Ctrl-F1
  Restore on AC Power Loss       Power Off

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

ACPI Suspend Type

This item selects the type of Suspend mode.

[S1(PowerOn-Suspend)]: Enables the Power On Suspend function.

[S3(Suspend-To-RAM)]: Enables the Suspend to RAM function.

- USB Resume from S3

When set to [Enabled], this item allows you to use a USB device to wake up a system that is in the S3 (STR - Suspend To RAM) state. This item can be configured only if the item "ACPI Suspend Type" is set to [S3(STR)].

Power Button Function

This item selects the method of powering off your system:

[Delay 4 Sec.]: Pushing the power button for more than 4 seconds will power off the system. This will prevent the system from powering off in case you accidentally hit or pushed the power button.

[Instant-Off]: Pressing and then releasing the power button at once will immediately power off the system.

Wakeup by PME# of PCI

When set to [Enabled], access through the add-on PCI card can remotely wake up the system that was in Soft-Off condition. The PCI card must support the wake up function.

Wakeup by OnChip LAN

When set to [Enabled], you can remotely wake up a PC in Soft-Off condition via a LAN card that support the wake up function.

Wakeup by Alarm

When set to [**Enabled**], you can set the date and time you would like the Soft-Off PC to power-on in the "**Date (of Month) Alarm**" and "**Time (hh:mm:ss) Alarm**" items. However, if the system is being accessed by incoming calls or the network (Resume On Ring/LAN) prior to the date and time set in these items, the system will give priority to the incoming calls or network instead.

- **Date (of Month) Alarm**

[0]: This option power-on the system everyday according to the time set in the "Time (hh:mm:ss) Alarm" item.

[1-31]: This option selects a date you would like the system to power-on. The system will power-on on the date set, and the time set in the "Time (hh:mm:ss) Alarm" item.

- **Time (hh:mm:ss) Alarm**

This item sets the time you would like the system to power-on.

Cool 'n' Quiet Technology:

This option enables or disables the AMD K8 cool and quiet function.

Power On Function

This item selects the way you want your system to power on.

[Password]: Use a password to power on the system, select this option then press <Enter>. Enter your password. You can enter up to 5 characters. Type in exactly the same password to confirm, and then press <Enter>.

[Hot KEY]: Use any of the function keys between <F1> to <F12> to power on the system.

[Mouse Left]: Double click the mouse left button to power on the system.

[Mouse Right]: Double click the mouse right button to power on the system.

[Any KEY]: Use any keyboard keys to power on the system.

[Button Only]: Use only the power button to power on the system.

[Keyboard 98]: Use the power-on button on the "Keyboard 98" compatible keyboard to power on the system.

※ **The mouse wake up function can only be used with the PS/2 mouse, not with the COM port or USB type. Some PS/2 mice cannot wake up the system because of compatible problems. If the specs of your keyboard are too old, it may fail to power on.**

- **KB Power ON Password**

This item sets the password required in order to power on your computer.

※ **Do not forget your password, or you will have to clear the CMOS and reset all parameters in order to utilize this function again.**

- Hot Key Power ON

This item powers on the system by pressing <Ctrl> key plus one of each function key (<F1> ~ <F12>) simultaneously.

Restore on AC Power Loss

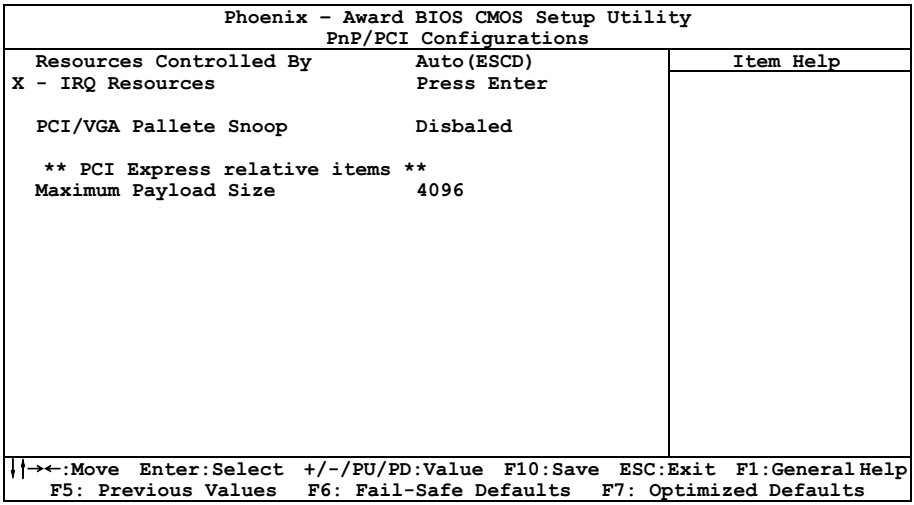
This item selects the system action after an AC power failure.

[Power Off]: When power returns after an AC power failure, the system's power remains off. You must press the Power button to power-on the system.

[Power On]: When power returns after an AC power failure, the system's power will be powered on automatically.

[Last State]: When power returns after an AC power failure, the system will return to the state where you left off before power failure occurs. If the system's power is off when AC power failure occurs, it will remain off when power returns. If the system's power is on when AC power failure occurs, the system will power-on when power returns.

3.7 PnP/PCI Configurations



Resources Controlled By

This item configures all of the boot and Plug-and-Play compatible devices.

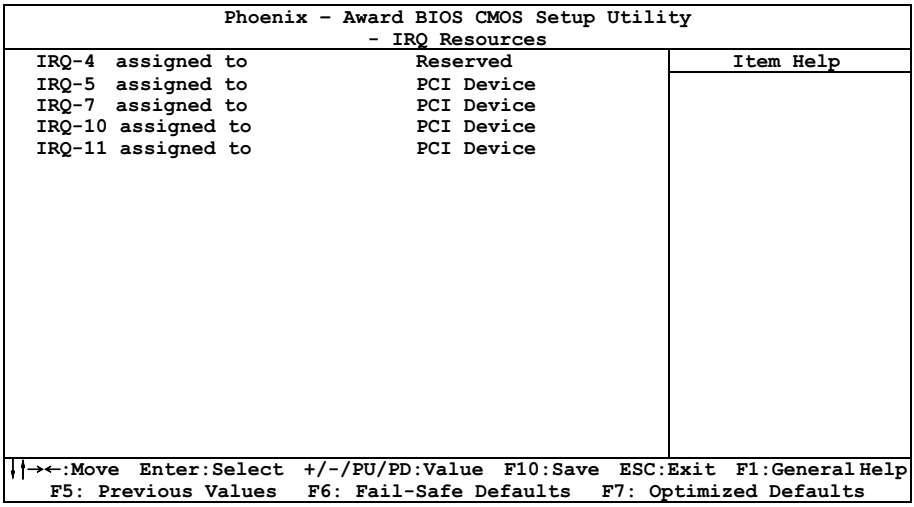
[Auto(ESCD)]: The system will automatically detect the settings.

[Manual]: Choose the specific IRQ resources in the "IRQ Resources" menu.

- IRQ Resources

Click <Enter> key to enter its submenu:

This item sets each system interrupt to either [PCI Device] or [Reserved].



↳ Back to PnP/PCI Configurations Setup Menu:

PCI/VGA Palette Snoop

This item determines whether the MPEG ISA/VESA VGA cards can work with PCI/VGA or not.

[Disabled]: MPEG ISA/VESA VGA cards do not work with PCI/VGA.

[Enabled]: MPEG ISA/VESA VGA cards work with PCI/VGA.

Maximum Payload Size

This item sets the maximum TLP payload size for the PCI Express devices.

3.8 Load Fail-Safe Defaults

This option loads the BIOS default values for the most stable, minimal-performance system operations.

3.9 Load Optimized Defaults

This option loads the BIOS default values that are factory settings for optimal-performance system operations.

3.10 Set Password

This option protects the BIOS configuration or restricts access to the computer itself.

3.11 Save & Exit Setup

This option saves your selections and exits the BIOS setup menu.

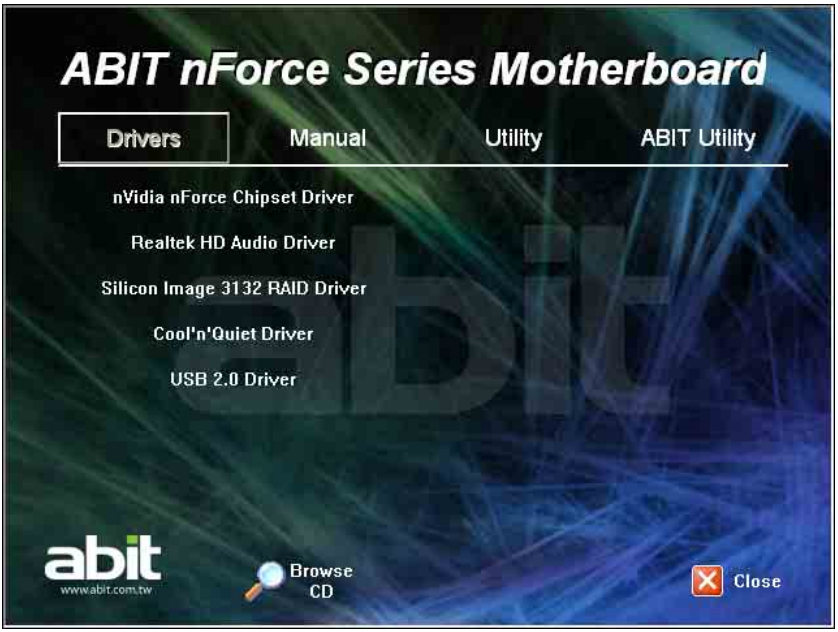
3.12 Exit Without Saving

This option exits the BIOS setup menu without saving any changes.

4. Driver & Utility CD

The "Driver & Utility CD" that came packed with this motherboard contains drivers, utilities and software applications required for its basic and advanced features.

Place the "Driver & Utility CD" into the CD-ROM drive in your system. The following installation auto-run screen appears. If not, browse the root directory of the CD-ROM via the File Manager, and double click the "AUTORUN" file.



- [**Drivers**]: Click to enter the driver installation menu.
- [**Manual**]: Click to enter the user's manual menu.
- [**Utility**]: Click to enter the utilities installation menu.
- [**ABIT Utility**]: Click on this tab to enter the menu for installing utilities exclusively developed by ABIT.
- [

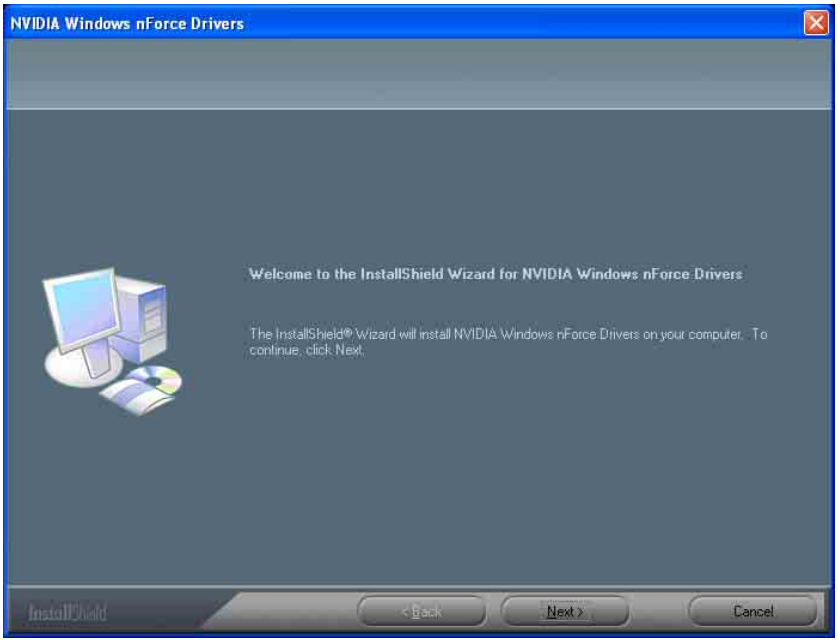
Browse CD]: Click to browse the contents of this "Driver & Utility CD".
- [

Close]: Click to exit this installation menu.

4.1 nVidia nForce Chipset Driver

To install this driver:

1. Click on the [Drivers] tab in the installation menu screen.
2. Click the [nVidia nForce Chipset Driver]. The following screen appears:



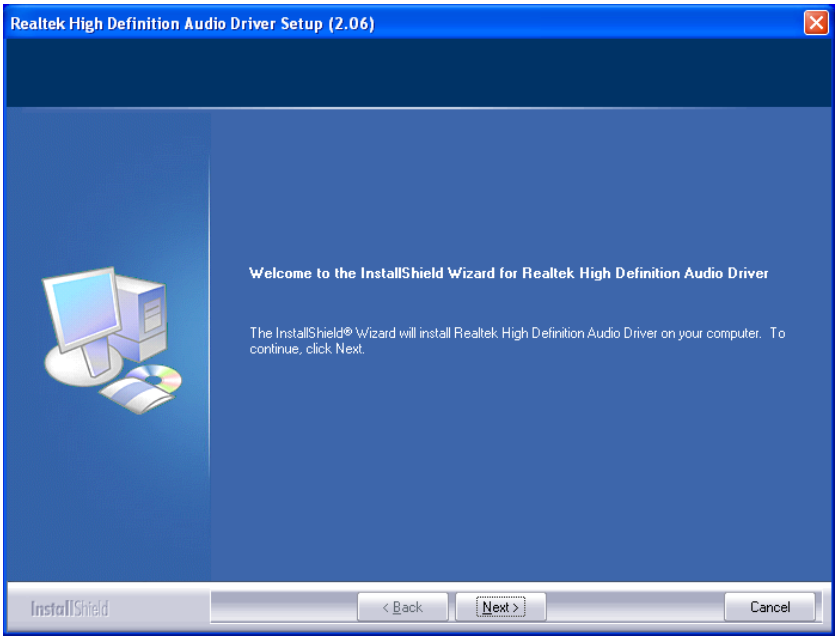
3. Follow the prompts on the screen to complete installation.
4. Restart the system for the driver to take effect.

※ Please install this nVidia nForce Chipset Driver first after having installed the Windows operating system.

4.2 Realtek HD Audio Driver

To install this driver:

1. Click on the [Drivers] tab in the installation menu screen.
2. Click the [Realtek HD Audio Driver] item. The following screen appears:



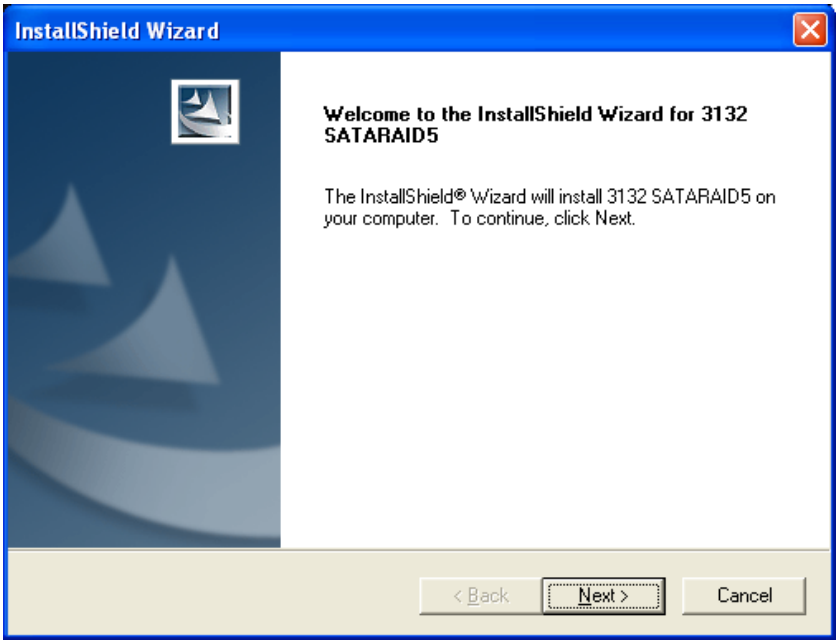
3. Follow the prompts on the screen to complete installation.
4. Restart the system for the driver to take effect.

※ **Install this Driver after having installed the "AudioMAX" daughter-card.**

4.3 Silicon Image 3132 RAID Driver

To install this driver:

1. Click on the [Drivers] tab in the installation menu screen.
2. Click the [Silicon Image 3132 RAID Driver] item. The following screen appears:

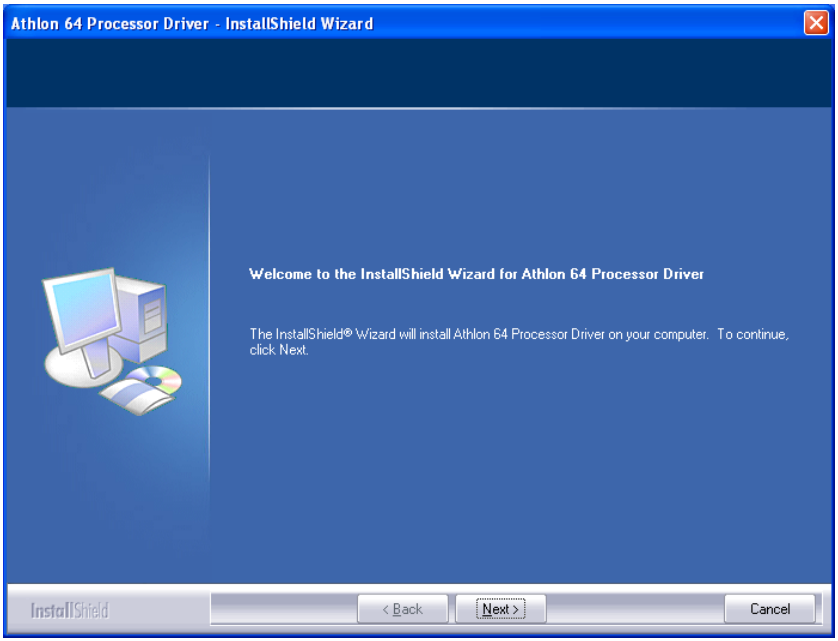


3. Follow the prompts on the screen to complete installation.
4. Restart the system for the driver to take effect.

4.4 Cool'n'Quiet Driver

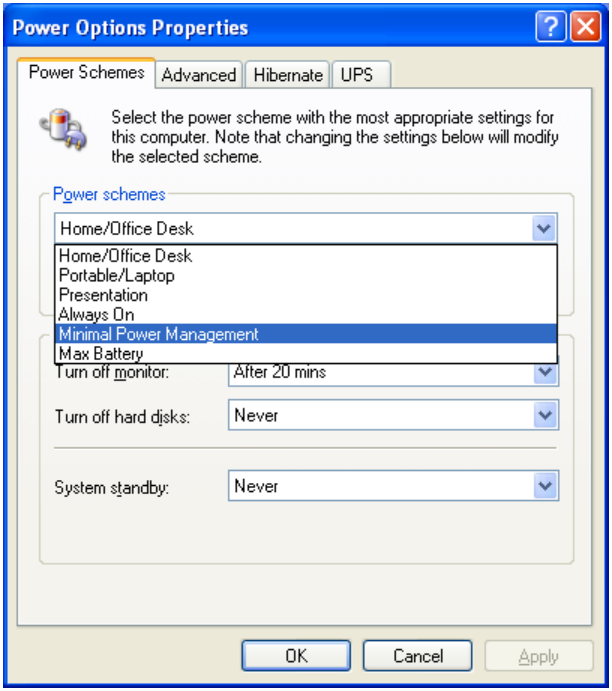
To install this driver:

1. Click on the [Drivers] tab in the installation menu screen.
2. Click the [Cool'n'Quiet Driver] item. The following screen appears:



3. Follow the prompts on the screen to complete installation.
4. Restart the system for the driver to take effect.

5. After the system restarted, open the "Power Options" from the control panel and choose the power scheme "Minimal Power Management" to enable Cool 'n' Quiet.



※ **For Windows 2000 or ME system, an AMD Cool 'n' Quiet tab will appear under "Power Options" when the Cool 'n' Quiet software for Windows 2000 and ME is installed. This must be set to "Automatic Mode" for Cool 'n' Quiet to be enabled.**

4.5 USB 2.0 Driver

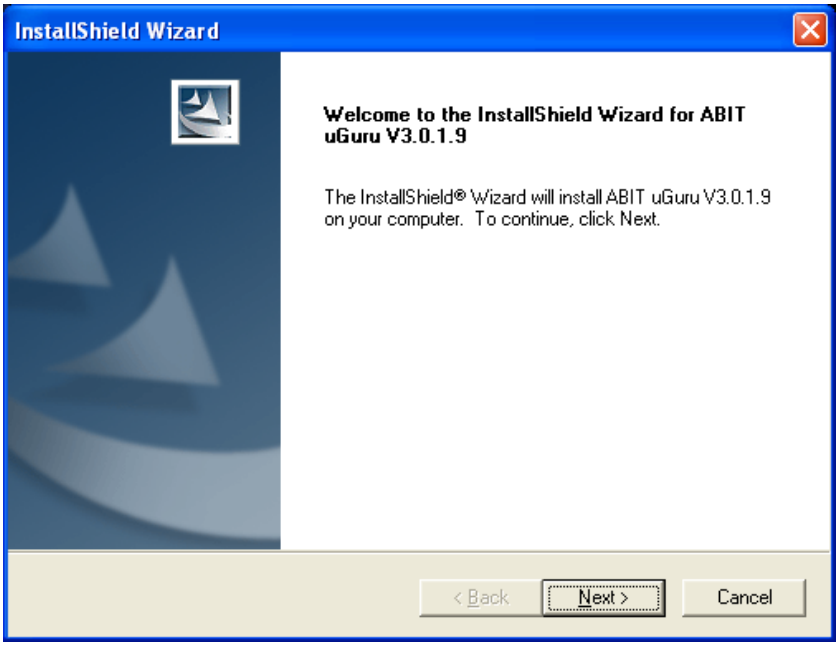
※ **There is no need to install this driver for Windows 2000 with Service Pack 4, Windows XP with Service Pack 1, or their later version.**

4.6 ABIT µGuru Utility

The µGuru Utility combined with the optional Guru Clock allows you to access and select system performance of your system while playing games, listening music, browsing Internet or office applications in full screen with no need to stop or close the running application.

To install this utility:

1. Click on the [ABIT Utility] tab in the installation menu screen.
2. Click the [ABIT Guru] item. The following screen appears:



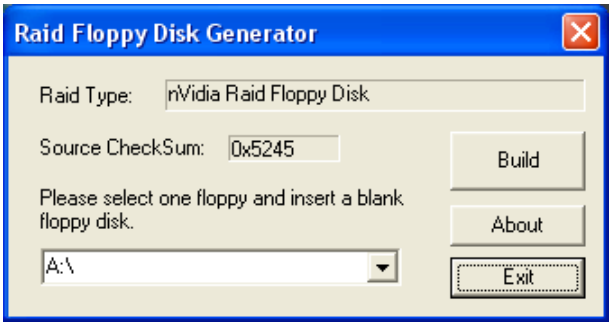
3. Follow the prompts on the screen to complete installation.
4. Restart the system for the driver to take effect.

4.7 NVRaid Floppy Disk

If you lost or damaged the SATA Driver Disk that came with the package, use the NVRaid Floppy Disk to create another one.

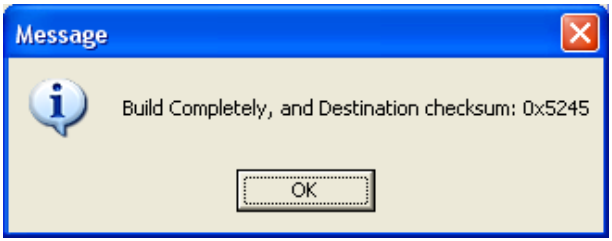
To install this utility:

1. Click on the [ABIT Utility] tab in the installation menu screen.
2. Click the [Generate NVRaid Floppy Disk[32bit]]. The following screen appears:



Insert one blank floppy disk to the selected floppy drive and click [Build].

3. Click [OK] to finish building the SATA Driver Disk.



※ If you are using a windows 2000 operating system, please update your system to Service Pack 4 before starting to setup the NVIDIA RAID.

5. Appendix

5.1 POST Code Definitions

5.1.1 AWARD POST Code Definitions

POST (hex)	Description
CF	Test CMOS R/W functionality
C0	Early chipset initialization: -Disable shadow RAM -Disable L2 cache (socket 7 or below) -Program basic chipset registers
C1	Detect memory -Auto-detection of DRAM size, type and ECC -Auto-detection of L2 cache (socket 7 or below)
C3	Expand compressed BIOS code to DRAM
C5	Call chipset hook to copy BIOS back to E000 & F000 shadow RAM
01	Expand the Xgroup codes locating in physical address 1000:0
03	Initial Superio_Early_Init switch
05	1. Blank out screen 2. Clear CMOS error flag
07	1. Clear 8042 interface 2. Initialize 8042 self-test
08	1. Test special keyboard controller for Winbond 977 series Super I/O chips 2. Enable keyboard interface
0A	1. Disable PS/2 mouse interface (optional) 2. Auto detect ports for keyboard & mouse followed by a port & interface swap (optional) 3. Reset keyboard for Winbond 977 series Super I/O chips
0E	Test F000h segment shadow to see whether it is R/W-able or not. If test fails, keep beeping the speaker
10	Auto detect flash type to load appropriate flash R/W codes into the run time area in F000 for ESCD & DMI support
12	Use walking 1's algorithm to check out interface in CMOS circuitry. Also set real-time clock power status, and then check for override
14	Program chipset default values into chipset. Chipset default values are MODBINable by OEM customers
16	Initial onboard clock generator if Early_Init_Onboard_Generator is defined. See also POST 26.
18	Detect CPU information including brand, SMI type (Cyrix or Intel) and CPU level (586 or 686)
1B	Initial interrupts vector table. If no special specified, all H/W interrupts are directed to SPURIOUS_INT_HDLR & S/W interrupts to SPURIOUS_soft_HDLR.
1D	Initial EARLY_PM_INIT switch
1F	Load keyboard matrix (notebook platform)
21	HPM initialization (notebook platform)
23	1. Check validity of RTC value: e.g. a value of 5Ah is an invalid value for RTC minute. 2. Load CMOS settings into BIOS stack. If CMOS checksum fails, use default value instead.
24	Prepare BIOS resource map for PCI & PnP use. If ESCD is valid, take into consideration of the ESCD's legacy information.

25	Early PCI Initialization: -Enumerate PCI bus number. -Assign memory & I/O resource -Search for a valid VGA device & VGA BIOS, and put it into C000:0
26	1. If Early_Init_Onboard_Generator is not defined Onboard clock generator initialization. Disable respective clock resource to empty PCI & DIMM slots. 2. Init onboard PWM 3. Init onboard H/W monitor devices
27	Initialize INT 09 buffer
29	1. Program CPU internal MTRR (P6 & PII) for 0-640K memory address. 2. Initialize the APIC for Pentium class CPU. 3. Program early chipset according to CMOS setup. Example: onboard IDE controller. 4. Measure CPU speed.
2B	Invoke Video BIOS
2D	1. Initialize double-byte language font (Optional) 2. Put information on screen display, including Award title, CPU type, CPU speed, full screen logo.
33	Reset keyboard if Early_Reset_KB is defined e.g. Winbond 977 series Super I/O chips. See also POST 63.
35	Test DMA Channel 0
37	Test DMA Channel 1.
39	Test DMA page registers.
3C	Test 8254
3E	Test 8259 interrupt mask bits for channel 1
40	Test 8259 interrupt mask bits for channel 2
43	Test 8259 functionality
47	Initialize EISA slot
49	1. Calculate total memory by testing the last double word of each 64K page 2. Program writes allocation for AMD K5 CPU
4E	1. Program MTRR of M1 CPU 2. Initialize L2 cache for P6 class CPU & program CPU with proper cacheable range 3. Initialize the APIC for P6 class CPU 4. On MP platform, adjust the cacheable range to smaller one in case the cacheable ranges between each CPU are not identical
50	Initialize USB
52	Test all memory (clear all extended memory to 0)
53	Clear password according to H/W jumper (Optional)
55	Display number of processors (multi-processor platform)
57	Display PnP logo Early ISA PnP initialization -Assign CSN to every ISA PnP device
59	Initialize the combined Trend Anti-Virus code
5B	(Optional Feature) Show message for entering AWDFLASH.EXE from FDD (optional)
5D	1. Initialize Init_Onboard_Super_IO 2. Initialize Init_Onbaord_AUDIO
60	Okay to enter Setup utility; i.e. not until this POST stage can users enter the CMOS setup utility
63	Reset keyboard if Early_Reset_KB is not defined
65	Initialize PS/2 Mouse
67	Prepare memory size information for function call: INT 15h ax=E820h
69	Turn on L2 cache

6B	Program chipset registers according to items described in Setup & Auto-configuration table
6D	1. Assign resources to all ISA PnP devices 2. Auto assign ports to onboard COM ports if the corresponding item in Setup is set to "AUTO"
6F	1. Initialize floppy controller 2. Set up floppy related fields in 40:hardware
75	Detect & install all IDE devices: HDD, LS120, ZIP, CDROM …
76	(Optional Feature) Enter AWDFLASH.EXE if: -AWDFLASH is found in floppy drive -ALT+F2 is pressed
77	Detect serial ports & parallel ports.
7A	Detect & install co-processor
7C	Init HDD write protect
7F	Switch back to text mode if full screen logo is supported -If errors occur, report errors & wait for keys -If no errors occur or F1 key is pressed to continue: Clear EPA or customization logo
E8POST.ASM starts	
82	1. Call chipset power management hook 2. Recover the text font used by EPA logo (not for full screen logo) 3. If password is set, ask for password
83	Save all data in stack back to CMOS
84	Initialize ISA PnP boot devices
85	1. USB final Initialization 2. Switch screen back to text mode
87	NET PC: Build SYSID Structure
89	1. Assign IRQs to PCI devices 2. Set up ACPI table at top of the memory.
8B	1. Invoke all ISA adapter ROMs 2. Invoke all PCI ROMs (except VGA)
8D	1. Enable/Disable Parity Check according to CMOS setup 2. APM Initialization
8F	Clear noise of IRQs
93	Read HDD boot sector information for Trend Anti-Virus code
94	1. Enable L2 cache 2. Program Daylight Saving 3. Program boot up speed 4. Chipset final initialization. 5. Power management final initialization 6. Clear screen & display summary table 7. Program K6 write allocation 8. Program P6 class write combining
95	Update keyboard LED & typematic rate
96	1. Build MP table 2. Build & update ESCD 3. Set CMOS century to 20h or 19h 4. Load CMOS time into DOS timer tick 5. Build MSIRQ routing table
FF	Boot attempt (INT 19h)

5.1.2 AC2005 POST Code Definitions

POST (hex)	Description
Power On Sequence	
8.1.	Start power on sequence
8.2.	Enable ATX power supply
8.3.	ATX power supply ready
8.4.	DDR voltage ready
8.5.	Setup PWM for CPU core voltage
8.6.	Assert PWM for CPU core voltage
8.7.	Check CPU core voltage
8.8.	CPU core voltage ready
8.9.	Initial clock generator IC
8.A.	North Bridge chipset voltage ready
8.B.	AGP voltage ready
8.C.	3VDUAL voltage ready
8.D.	VDDA 2.5V voltage ready
8.D.	GMCHVTT voltage ready
8.E.	Check CPU fan speed
8.F.	Assert all power ready
9.0.	Complete µGuru initial process AWARD BIOS take over booting job
Power Off Sequence	
9.1.	Start power off sequence
9.2.	De-Assert all power
9.3.	De-Assert power on
9.4.	De-Assert LDT Bus power
9.5.	De-Assert PWM for CPU core voltage
9.6.	De-Assert CPU core voltage
9.7.	Check CPU core voltage
9.8.	De-Assert ATX power supply
9.9.	Complete power off sequence
Others	
F.0.	Button reset
F.1.	SoftMenu reset
F.2.	Power on sequence timeout
F.3.	Power off sequence timeout

5.2 Troubleshooting (How to Get Technical Support?)

5.2.1 Q & A

Q: Do I need to clear the CMOS before I use a new motherboard to assemble my new computer system?

A: Yes, we highly recommend that you clear the CMOS before installing a new motherboard. Please move the CMOS jumper from its default 1-2 position to 2-3 for a few seconds, and then back. When you boot up your system for the first time, follow the instructions in the user's manual to load the optimized defaults.

Q: If my system hangs when I update the BIOS or set the wrong CPU parameters, what should I do?

A: Whenever you update the BIOS or if the system hangs due to wrong CPU parameters setting, always clear CMOS jumper before booting up again.

Q: Why does the system fail to boot up again right after a mechanical power-off?

A: Please keep a 30-second interval between each mechanical power On/Off.

Q: Why does the system fail to boot up and nothing displays on the screen after I did some over-clocking or non-standard settings inside the BIOS?

A: It should not cause hardware or permanent damage to motherboard when BIOS settings were changed from default to over-clocking or non-standard status.

We suggest the following three troubleshooting methods to discharge CMOS data, recover the hardware default status, and then making the motherboard work again. There is no need to bother returning the motherboard to where you bought it from or go through an RMA process.

Step 1. Switch off the power supply unit and then switch it on again after one minute. If there is no power-switch on the power supply unit, disconnect its power cord for one minute and then reconnect.

Press and hold the <Insert> key on the keyboard, and press the power-on button to boot up system. If it works, release the <Insert> key and hit <Del> key to enter the BIOS setup page to apply the correct settings.

If the situation remains the same, repeat the procedures in Step 1 for three times, or try Step 2.

Step 2. Switch off the power supply unit or disconnect the power cord. Open the chassis cover. Locate the CCMOS jumper near the button battery. Change the jumper position from default 1-2 to 2-3 for one minute to discharge the CMOS data, and then put it back to default 1-2 position.

Close the chassis and switch on the power supply unit or plug in the power cord. Press the power-on button to boot up system. If it works, hit <Del> key to enter the BIOS setup page to do the correct settings.

If the situation remains the same, try Step 3.

Step 3. The same procedure as Step 2, but while discharging the CMOS data, pull out the ATX power connectors from motherboard and remove the button battery during CMOS discharge.

Q: How to get a quick response for my request on technical support?

A: Please carry out a simple troubleshooting before sending "**Technical Support Form**":

System boot-up fails after the system had been assembled:

Check the motherboard's supporting specifications first to see if all the key components attached in your system can meet.

To do so, you may:

- Remove all the unnecessary add-on devices (except the CPU, VGA card, DRAM, and Power Supply), and then reboot.
- If the trouble still exists, try another VGA card of different brand/model to see if the system will start.
- If the trouble still exists, try another memory module of different brand/model.
- If the trouble still exists, try another CPU and Power Supply.

If the system runs successfully, shut it down and start re-installing the interface cards and devices that were previously installed in the system. Re-install and start the system one at a time until the system won't start.

Malfunction in the OS:

If the system hangs after resuming from S3 or some testing program, if the CPU cannot be recognized properly, if the display resolution mixed, or if a certain program cannot be executed, etc, you may:

- Upgrade the motherboard's latest BIOS version.
- Upgrade the add-on device's latest driver version.
- Check if there is any conflict in the "Control Panel/System Properties".

Q: How to fill in the "Technical Support Form"?

A: To fill in this "**Technical Support Form**", please refer to the following instructions:

- **Region:** Type in your country name.
- **E-mail:** Type in your contact E-mail information.
- **First name:** Type in your first name.
- **Last name:** Type in your last name.
- **Subject:** Type in the model name and the problem of your motherboard.
  Example 1: AA8XE and SCSI 29160 malfunction
  Example 2: AA8XE boot fails, POST code AF
  Example 3: AA8XE (system hang when S3 resume)
- **Motherboard:** Type in the model name and revision number of your motherboard.
  Example: AA8XE REV: 1.00
- **BIOS Version:** Type in the BIOS version of your motherboard. (You can find it on the screen during the POST sequence.)
- **CPU**: Type in the brand name and the speed (MHz) of your CPU. (Illustrate the over-clocking status if you had done so.)
  Example: Intel 650 3.4GHz (OC FSB=220MHz)
- **Memory brand:** Type in the brand and model name of your memory module.
  Example: Memory brand: Kingston (KVR533D2N4/1G)

- **Memory size:** Type in the size of your memory module.
  Example: 512M* 4PCS
- **Memory configuration:** Type in the memory configuration in BIOS setting.
  Example: Memory Timing: 2.5-3-3-7 @533MHz
- **Graphics information:** Note Graphics card's brand, model and driver version
- **Graphics card:** Type in the brand and model name of your graphics card.
  Example: ATI RADEON X850 XT PE
- **Graphics driver version:** Type in the driver version of your graphics card
  Example: Catalyst 5.12V
- **Power supply maker:** Type in the brand and model name of your power supply unit.
- **Power supply wattage:** Type in the power wattage of your power supply unit.
- **Storage devices:** Type in the brand and specifications of your HDD drive and quantity. Specify if it was inserted on IDE (Master or Slave) or SATA ports, including the RAID allocation status.
  Example 1: WD Caviar WD600 60GB (on IDE2 master), Maxtor DiamondMax 10 SATA 300GB (on SATA 3)
  Example 2: Maxtor DiamondMax 10 SATA 300GB *2 (on SATA 3, SATA 4 RAID 1)
- **Optical devices:** Type in the brand and specifications of your optical drives and quantity. Specify if it was inserted on IDE (Master or Slave) or SATA ports.
- **Other devices:** Indicate which add-on cards or USB devices that you *absolutely sure* are related to the problem. If you cannot identify the problem's origin, indicate all the add-on cards or USB devices inserted on your system.
  Example: AHA 29160 (on PCI 2), Sandisk Cruzer mini 256MB USB Flash-disk.
- **Operating system**: Indicate which OS and language version
  Example: Microsoft Windows XP SP2, English version
  Example: Microsoft Media Center Edition 2005, Korean version
- **Problem description:** Describe the problem of your system configuration. Indicate the steps to duplicate problem if possible.

  See the next page for a blank Technical Support Form, or visit our website to fill in the form on line (http://www.abit.com.tw/page/en/contact/technical.php).

Q. Is the motherboard dead? Do I need to return it to where I bought from or go through an RMA process?

A: After you had gone through the troubleshooting procedures, yet the problem still exists, or you find an evident damage on the motherboard. Please contact our RMA center. (http://www2.abit.com.tw/page/en/contact/index.php?pFUN_KEY=18000&pTITLE_IMG)

5.2.2 Technical Support Form

Region:	
E-mail:	
First name:	
Last Name:	
Subject:	
Motherboard:	
BIOS Version:	
CPU:	
Memory brand:	
Memory size:	
Memory configuration:	
Graphics card:	
Graphics driver version:	
Power supply maker:	
Power supply wattage:	
Storage devices:	
Optical devices:	
Other devices:	
Operating system:	
Problem description:	

5.2.3 Universal ABIT Contact Information

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