

## Preface

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Version 1.0

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### Federal Communications Commission (FCC)

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment onto an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Shielded interconnect cables and a shielded AC power cable must be employed with this equipment to ensure compliance with the pertinent RF emission limits governing this device. Changes or modifications not expressly approved by the system's manufacturer could void the user's authority to operate the equipment.

## Preface

## Declaration of Conformity

This device complies with part 15 of the FCC rules. Operation is subject to the following conditions:

- This device may not cause harmful interference, and
- This device must accept any interference received, including interference that may cause undesired operation.

## Canadian Department of Communications

This class B digital apparatus meets all requirements of the Canadian Interference-causing Equipment Regulations.

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

## About the Manual

The manual consists of the following:

### Chapter 1

#### Introducing the Motherboard

Describes features of the motherboard.

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### Chapter 2

#### Installing the Motherboard

Describes installation of motherboard components.

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### Chapter 3

#### Using BIOS

Provides information on using the BIOS Setup Utility.

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### Chapter 4

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Describes the motherboard software

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## **Chapter 1**

### ***Introducing the Motherboard***

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#### **Introduction**

Thank you for choosing A11G motherboard of great performance and with enhanced function. This motherboard is designed to fit the AMD AM2 processors in the 940-pin package. Based on the Micro ATX form factor, measuring 244 mm x 224 mm, this motherboard incorporates the following chipsets: C51G Northbridge and MCP51G Southbridge chipsets.

The C51G Northbridge features the HyperTransport Technology up to 1.0 GHz for a total bandwidth of 8.0 GT/s. Two unbuffered DDR2 SDRAM DIMM sockets support DDR2 800/667/533/400 with maximum 16 GB in total memory. One PCI Express x16 slot, intended for Graphics interface, is fully compliant to the PCI Express Base Specification revision 1.0a.

The MCP51G Southbridge is a highly integrated media and communications processor (MCP) with up to 1.0 GHz HyperTransport link interface. It supports two PCI slots which are PCI 2.3 compliant. With the integrated SATA II controller onboard, this motherboard supports two (up to four) drives up to 3.0 Gb/s per direction per channel. USB 2.0 Enhanced Host Controller Interface (EHCI) provides up to 8 USB 2.0 ports. The MCP51G supports advanced system and power management features with integrated system power sequencing support.

There is an advanced full set of I/O ports in the rear panel, including PS/2 mouse and keyboard connectors, LPT1, four USB ports at the rear I/O, one optional LAN port, one VGA port, and audio jacks for microphone, line-in, and line-out.

## Feature

### Processor

This motherboard uses a Socket AM2 that carries the following features:

- Accommodates AMD Sempron/Athlon 64/Athlon 64 X2 Dual-Core/Athlon 64 FX processors
- Supports high-performance HyperTransport CPU interface

HyperTransport™ Technology is a point-to-point link between two devices, it enables integrated circuits to exchange information at much higher speeds than currently available interconnect technologies.

### Chipset

The nVIDIA C51G Northbridge (NB) and nVIDIA MCP51G Southbridge (SB) chipset is based on an innovative and scalable architecture with proven reliability and performance.

- |                        |  |
|------------------------|--|
| <b>C51G<br/>(NB)</b>   | <ul style="list-style-type: none"> <li>• Primary HyperTransport Link to the AMD Sempron/Athlon 64/Athlon 64 X2 Dual-Core/Athlon 64 FX 940-pin CPUs</li> <li>• Two separate PCI Express controllers with 17 total lanes configured as one x16 and one x1 PCI Express lanes</li> <li>• DirectX 9.0c Shader Model 3.0 graphics processing unit</li> <li>• Full NVIDIA® nView™ multi-display technology capability, independent display controllers for the CRT</li> <li>• Supports instantly available PC (IAPC), ACPI 2.0, and PCI PM 1.1 system and power management</li> </ul> |
| <b>MCP51G<br/>(SB)</b> | <ul style="list-style-type: none"> <li>• HyperTransport x4/x8 up and down links, at up to 1.0 GHz</li> <li>• PCI 2.3 interface supporting up to five PCI slots at 33 MHz</li> <li>• One SATA II controller with an integrated 3.0 Gb/s PHY, supporting two drives in master mode</li> <li>• Fast ATA-133 IDE controller</li> <li>• USB 2.0 Controller, supporting up to 8 USB 2.0 ports</li> </ul>   |

### Memory

- Supports DDR2 800/667/533/400 memory types with Dual-Channel architecture
- Accommodates two unbuffered DIMMs up to 16 GB maximum memory size

### Audio

- |  |
|--|
| <ul style="list-style-type: none"> <li>• Compliant with AC'97 v2.3 CODEC</li> <li>• Supports 6-channel audio CODEC designed for PC multimedia systems</li> <li>• Provides three analog line-level stereo inputs with 5-bit volume control: Line-in, CD, AUX</li> <li>• Meets Microsoft WHQL/WLP 2.0 audio requirements</li> </ul>  |
| <ul style="list-style-type: none"> <li>• 8 channels of DAC support 24/20/16-bit PCM format for 7.1 audio solution</li> <li>• Supports 192K/96K/48K/44.1KHz DAC sample rate</li> <li>• Power support: Digital: 3.3V; Analog: 3.5V~5.25V</li> <li>• Meets Microsoft WHQL/WLP 2.x audio requirements</li> <li>• Direct Sound 3D™ compatible</li> <li>• Dolby® Digital Encoder output for consumer electronic application</li> </ul> |

**Introducing the Motherboard**

## Onboard LAN (optional)

The onboard LAN provides the following features:

<ul style="list-style-type: none"> <li>• 10/100 Mbps N-way Auto-negotiation operation</li> <li>• Half/Full duplex capability</li> <li>• Supports Wake-On-LAN(WOL) function and remote wake-up</li> </ul>
<ul style="list-style-type: none"> <li>• Integrated 10/100/1000 transceiver</li> <li>• PCI v2.3, 32-bit, 33/66 MHz</li> <li>• Fully compliant with IEEE 802.3, IEEE802.3u and IEEE802.3ab</li> </ul>
<ul style="list-style-type: none"> <li>• 10BASE-T/100BASE-TX IEEE 802.3u fast Ethernet transceiver</li> <li>• MII and 7-wire SNI (Serial Network Interface)</li> <li>• Integrated voltage regulator to allow operation from a single 3.3/2.5V supply source</li> </ul>

## Expansion Options

The motherboard comes with the following expansion options:

- One PCI Express x16 slot
- One PCI Express x1 slot
- Two 32-bit PCI slots at 33 MHz
- Two IDE connectors which support four IDE devices
- One floppy disk drive interface
- Two 7-pin SATA connectors

This motherboard supports Ultra DMA bus mastering with transfer rates of 133/100/66 MB/s.

## Integrated I/O

The motherboard has a full set of I/O ports and connectors:

- Two PS/2 ports for mouse and keyboard
- One serial port
- One parallel port
- Four USB ports
- One VGA port
- One LAN port (optional)
- Audio jacks for microphone, line-in and line-out

## BIOS Firmware

The motherboard uses AWARD BIOS that enables users to configure many system features including the following:

- Power management
- Wake-up alarms
- CPU parameters
- CPU and memory timing

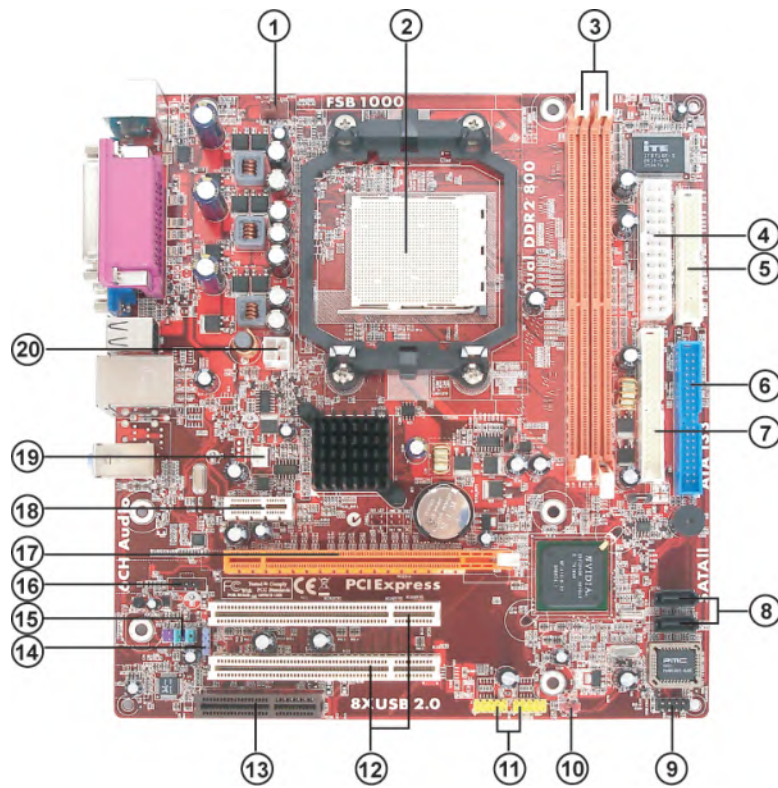
The firmware can also be used to set parameters for different processor clock speeds.



*Some hardware specifications and software items are subject to change without prior notice.*

## Introducing the Motherboard

## Motherboard Components



## Introducing the Motherboard

**Table of Motherboard Components**

<b>LABEL</b>	<b>COMPONENT</b>
1 CPU_FAN	CPU cooling fan connector
2 CPU Socket	Socket AM2 for AMD Sempron/Athlon 64/Athlon 64 X2 Dual-Core/Athlon 64 FX processors
3 DIMM1~2	240-pin DDR2 SDRAM slots
4 ATX_POWER	Standard 24-pin ATX power connector
5 FDD	Floppy disk drive connector
6 IDE1	Primary IDE connector
7 IDE2	Secondary IDE connector
8 SATA1~2	Serial ATA connectors
9 PANEL1	Front Panel switch/LED header
10 CLR_CMOS	Clear CMOS jumper
11 USB3~4	Front Panel USB headers
12 PCI1~2	32-bit add-on card slots
13 CNR1*	Communications Networking Riser slot
14 SPDIF01*	SPDIF out header
15 AUDIO1	Front panel audio header
16 CD_IN	Analog audio input connector
17 PCIEX16	PCI Express slot for graphics interface
18 PCIEX1	PCI Express x1 Slot
19 SYS_FAN1	System cooling fan connector
20 ATX12V	4-pin +12V power connector

“\*” stands for optional components.

This concludes Chapter 1. The next chapter explains how to install the motherboard.

## Introducing the Motherboard

**6**

***Memo***

**Introducing the Motherboard**

## **Chapter 2**

### ***Installing the Motherboard***

---

#### **Safety Precautions**

- Follow these safety precautions when installing the motherboard
- Wear a grounding strap attached to a grounded device to avoid damage from static electricity
- Discharge static electricity by touching the metal case of a safely grounded object before working on the motherboard
- Leave components in the static-proof bags they came in
- Hold all circuit boards by the edges. Do not bend circuit boards

#### **Choosing a Computer Case**

There are many types of computer cases on the market. The motherboard complies with the specifications for the Micro-ATX system case. First, some features on the motherboard are implemented by cabling connectors on the motherboard to indicators and switches on the system case. Make sure that your case supports all the features required. Secondly, this motherboard supports one or two floppy diskette drives and four enhanced IDE drives. Make sure that your case has sufficient power and space for all drives that you intend to install.

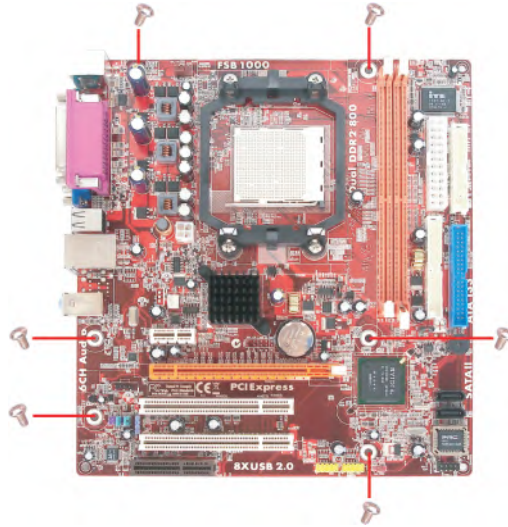
Most cases have a choice of I/O templates in the rear panel. Make sure that the I/O template in the case matches the I/O ports installed on the rear edge of the motherboard.

This motherboard carries a Micro-ATX form factor of 244 x 224 mm. Choose a case that accommodates this form factor.

#### **Installing the Motherboard in a Case**

Refer to the following illustration and instructions for installing the motherboard in a case. Most system cases have mounting brackets installed in the case, which correspond the holes in the motherboard. Place the motherboard over the mounting brackets and secure the motherboard onto the mounting brackets with screws.

Ensure that your case has an I/O template that supports the I/O ports and expansion slots on your motherboard.



*Do not over-tighten the screws as this can stress the motherboard.*

## Checking Jumper Settings

This section explains how to set jumpers for correct configuration of the motherboard.

### *Setting Jumpers*

Use the motherboard jumpers to set system configuration options. Jumpers with more than one pin are numbered. When setting the jumpers, ensure that the jumper caps are placed on the correct pins.

The illustrations show a 2-pin jumper. When the jumper cap is placed on both pins, the jumper is **SHORT**. If you remove the jumper cap, or place the jumper cap on just one pin, the jumper is **OPEN**.



**SHORT**



**OPEN**

This illustration shows a 3-pin jumper. Pins 1 and 2 are **SHORT**.

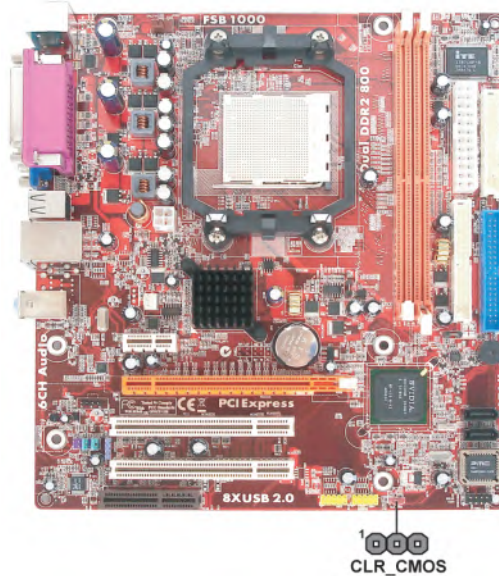


## Installing the Motherboard



### Checking Jumper Settings

The following illustration shows the location of the motherboard jumpers. Pin 1 is labeled.



### Jumper Settings

Jumper	Type	Description	Setting (default)
CLR_CMOS	3-pin	CLEAR CMOS	1-2: NORMAL 2-3: CLEAR CMOS Before clearing the CMOS, make sure to turn off the system.

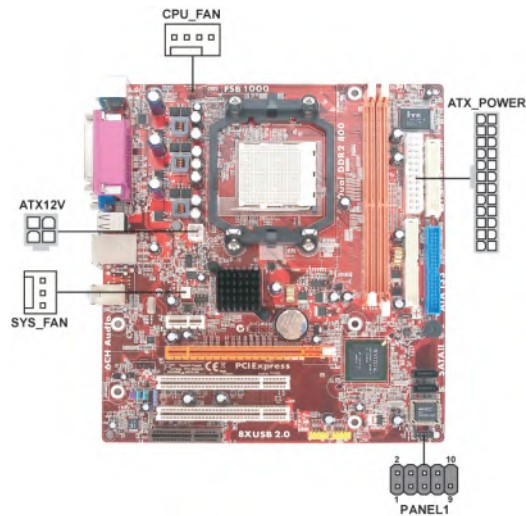


## Installing the Motherboard

## Connecting Case Components

After you have installed the motherboard into a case, you can begin connecting the motherboard components. Refer to the following:

- 1 Connect the CPU cooling fan cable to **CPU\_FAN**.
- 2 Connect the system cooling fan connector to **SYS\_FAN1**.
- 3 Connect the case switches and indicator LEDs to the **PANEL1**.
- 4 Connect the standard power supply connector to **ATX\_POWER**.
- 5 Connect the auxiliary case power supply connector to **ATX12V**.



### Connecting 20/24-pin power cable

User please note that the 20-pin and 24-pin power cables can both be connected to the ATX\_POWER connector. With the 20-pin power cable, just align the pin 1 of the ATX\_POWER connector. However, using 20-pin power cable may cause the system to become unbootable or unstable because of insufficient electricity. A minimum power of 300W is recommended for a fully-configured system.



20-pin power cable

With ATX v1.x power supply, user please note that when installing 20-pin power cable, the latch of power cable falls on the left side of the ATX\_POWER connector latch, just as the picture shows.



24-pin power cable

With ATX v2.x power supply, user please note that when installing 24-pin power cable, the latch of power cable clings the right side of the ATX\_POWER connector latch.

## Installing the Motherboard

**CPU\_FAN: Cooling FAN Power Connectors**

Pin	Signal Name	Function
1	GND	System Ground
2	+12V	Power +12V
3	Sense	Sensor
4	PWM	FAN control PWM



*Users please note that the fan connector supports the CPU cooling fan of 1.1A~2.2A (26.4W max.) at +12V.*

**SYS\_FAN: FAN Power Connectors**

Pin	Signal Name	Function
1	GND	System Ground
2	+12V	Power +12V
3	Sense	Sensor

**ATX\_POWER: ATX 24-pin Power Connector**

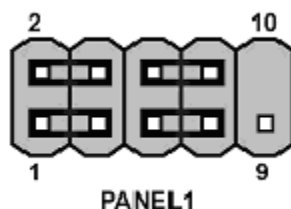
Pin	Signal Name	Pin	Signal Name
1	+3.3V	13	+3.3V
2	+3.3V	14	-12V
3	GND	15	GND
4	+5V	16	PS_ON
5	GND	17	GND
6	+5V	18	GND
7	GND	19	GND
8	PWRGD	20	-5V
9	+5VSB	21	+5V
10	+12V	22	+5V
11	+12V	23	+5V
12	+3.3V	24	GND

**ATX12V: ATX 12V Power Connector**

Pin	Signal Name
1	Ground
2	Ground
3	+12V
4	+12V

### Front Panel Header

The front panel header (PANEL1) provides a standard set of switch and LED headers commonly found on ATX or micro-ATX cases. Refer to the table below for information:



Pin	Signal	Function	Pin	Signal	Function
1	HD_LED_P	Hard disk LED(+)	2	FPPWR/SLP	*MSG LED(+)
3	HD_LED_N	Hard disk LED(-)	4	FP PWR/SLP	*MSG LED(-)
5	RST_SW_N	Reset Switch(-)	6	PWR_SW_P	Power Switch(+)
7	RST_SW_P	Reset Switch(+)	8	PWR_SW_N	Power Switch(-)
9	RSVD	Reserved	10	Key	No pin

\* MSG LED (Dual color or single color)

#### Hard Drive Activity LED

Connecting pins 1 and 3 to a front panel mounted LED provides visual indication that data is being read from or written to the hard drive. For the LED to function properly, an IDE drive should be connected to the onboard IDE interface. The LED will also show activity for devices connected to the SCSI (hard drive activity LED) connector.

#### Power/Sleep/Message waiting LED

Connecting pins 2 and 4 to a single or dual-color, front panel mounted LED provides power on/off, sleep, and message waiting indication.

#### Reset Switch

Supporting the reset function requires connecting pin 5 and 7 to a momentary-contact switch that is normally open. When the switch is closed, the board resets and runs POST.

#### Power Switch

Supporting the power on/off function requires connecting pins 6 and 8 to a momentary-contact switch that is normally open. The switch should maintain contact for at least 50 ms to signal the power supply to switch on or off. The time requirement is due to internal debounce circuitry. After receiving a power on/off signal, at least two seconds elapses before the power supply recognizes another on/off signal.

## Installing the Motherboard

## Installing Hardware

### *Installing the Processor*



*Caution: When installing a CPU heatsink and cooling fan make sure that you DO NOT scratch the motherboard or any of the surface-mount resistors with the clip of the cooling fan. If the clip of the cooling fan scrapes across the motherboard, you may cause serious damage to the motherboard or its components.*

*On most motherboards, there are small surface-mount resistors near the processor socket, which may be damaged if the cooling fan is carelessly installed.*

*Avoid using cooling fans with sharp edges on the fan casing and the clips. Also, install the cooling fan in a well-lit work area so that you can clearly see the motherboard and processor socket.*

### **Before installing the Processor**

This motherboard automatically determines the CPU clock frequency and system bus frequency for the processor. You may be able to change these settings by making changes to jumpers on the motherboard, or changing the settings in the system Setup Utility. We strongly recommend that you do not over-clock processors or other components to run faster than their rated speed.



*Warning: Over-clocking components can adversely affect the reliability of the system and introduce errors into your system. Over-clocking can permanently damage the motherboard by generating excess heat in components that are run beyond the rated limits.*

This motherboard has an AM2 Socket processor. When choosing a processor, consider the performance requirements of the system. Performance is based on the processor design, the clock speed and system bus frequency of the processor, and the quantity of internal cache memory and external cache memory.

## Installing the Motherboard

## CPU Installation Procedure

The following illustration shows CPU installation components.

1. Install your CPU. Pull up the lever away from the socket and lift up to 90-degree angle.
2. Locate the CPU cut edge (the corner with the pin hold noticeably missing). Align and insert the CPU correctly.
3. Press the lever down and apply thermal grease on top of the CPU
4. Put the CPU Fan down on the retention module and snap the four retention legs of the cooling fan into place.
5. Flip the levers over to lock the heat sink in place and connect the CPU cooling Fan power cable to the CPU\_FAN connector. This completes the installation.



*To achieve better airflow rates and heat dissipation, we suggest that you Use a high quality fan with 4800 rpm at least. CPU fan and heatsink installation procedures may vary with the type of CPU fan/heatsink supplied. The form and size of fan/heatsink may also vary.*

## Installing Memory Modules

This motherboard accommodates two 240-pin unbuffered DDR2 SDRAM (Synchronous Dynamic Random Access Memory) modules. It can support DDR2 800/667/533/400 memory types and its total maximum memory size is 16 GB.

### DDR2 SDRAM memory module table

Memory module	Memory Bus
<b>DDR2 400</b>	<b>200 MHz</b>
<b>DDR2 533</b>	<b>266 MHz</b>
<b>DDR2 667</b>	<b>333 MHz</b>
<b>DDR2 800</b>	<b>400 MHz</b>



*Do not remove any memory module from its antistatic packaging until you are ready to install it on the motherboard. Handle the modules only by their edges. Do not touch the components or metal parts. Always wear a grounding strap when you handle the modules.*

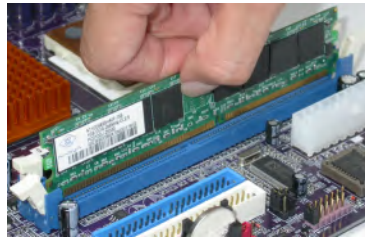
- Note:**
1. When running dual channel mode, install only same (same density, DRAM technology and DRAM bus width) module for each channel.
  2. Please note that those types not in the **TableB (p.17)** will not boot up.

## Installing the Motherboard

## Installation Procedure

Refer to the following to install the memory modules.

- 1 This motherboard supports unbuffered DDR2 SDRAM only.
- 2 Push the latches on each side of the DIMM slot down.
- 3 Align the memory module with the slot. The DIMM slots are keyed with notches and the DIMMs are keyed with cutouts so that they can only be installed correctly.
- 4 Check that the cutouts on the DIMM module edge connector match the notches in the DIMM slot.
- 5 Install the DIMM module into the slot and press it firmly down until it seats correctly. The slot latches are levered upwards and latch on to the edges of the DIMM.



## Installing the Motherboard

**Table A: DDR2 (memory module) QVL (Qualified Vendor List)**

The following DDR2 memory modules have been tested and qualified for use with this motherboard.

Type	Size	Vendor	Module Name	
DDR2 400	256MB	SAMSUNG	K4T56083QF-GCCC	
		SAMSUNG	K4T5163QB-ZCCC	
	512MB	SAMSUNG	K4T51083QB-GCCC	
DDR2 533	256 MB	AENEON	AET560UD00-370A98X	
		AENEON	AET560UD00-370A98Z	
		CORSAIR	4PB11D9CHM	
		ELPIDA	04180WB00	
		Kingmax	HY5PS121621	
		Kingston	HYB18T512260AF-3.7	
		Nanya	NT5TU32M16AG-37B	
		Ramaxel	E5116AF-5C-E	
	512 MB	A-DATA	E5108AE-6E-E	
		AENEON	AET660UD00-370A98X	
		AENEON	AET660UD00-370A98Z	
		CORSAIR	K4T510830B-GCD5	
		CORSAIR	K4T51083QF-ZCD5	
		CORSAIR	4PB11D9CHM	
		ELPIDA	04180WB01	
		Infineon	HY818T512800AF373346778	
		Kingston	hynix HY5PS12821	
		Kingston	hynix HY5PS56821	
		Kingston	HY818T512	
		TwinMOS	Elpida 8D22JB-ED	
		TwinMOS	Hynix 8D22JB-HX	
		1 GB	Apacer	E5108AB-5C-E
			GEIL	AG8AKT5H120004
			Infineon	HY818T512800AF3733344539
Kingmax	KKEA88E4AAKKG-37			
Kingston	NANYA NT5TU64MBAE-			
DDR2 667	256 MB	Infineon	HYS64T325001HU-3-A	
	512 MB	A-DATA	AD29608A88-3EG	
		CORSAIR	VALUESELECT 32M8CEC	
		GEIL	GL2L64M088BA18W	
		Infinity	0547W64M8	
		Kingston	D6408TE8EWL3	
		SAMSUNG	K4T51083QC	
		SAMSUNG	K4T56083QF-ZCE6	
		SIS	SLX264M8-T6E	
		SyncMAX	E5108AB-5C-E	
		Transcend	K4T51083QC	
	TwinMOS	TMM6208G8M30B		
	1 GB	Apacer	E5108AE-6E-E	
		Infineon	HYB18T512800AF3S	
		Kingston	D6408TE8EWL3	
	DDR2 800	1 GB	Infineon	HYB18T256 800AF25
			Kingston	KHX6400D2
SyncMAX			R050075B	

## Installing the Motherboard



Table B: Unbuffered DIMM Support for AM2 CPU

DRAM Speed	DIMM1 <sup>1</sup>	DIMM2 <sup>1</sup>	Timing Mode	Address Timing Control Register	Output Driver Compensation Control Register
DDR2-400	-	Any	1T	002F_2F2Fh	X011_1222h
DDR2-400	Any	Any	2T	002F_2F2Fh	X011_1322h
DDR2-533	-	Any	1T	002F_2F2Fh	X011_1222h
DDR2-533	SRx16	SRx16	2T	002F_2F2Fh	X011_1322h
	SRx16	SRx8			
	SRx8	SRx16			
DDR2-533	SRx8	SRx8	2T	0000_2F2Fh	X011_1322h
DDR2-533	DRx8	DRx8	2T	0034_2F2Fh	X011_1322h
DDR2-533	DRx8	SRx16	2T	0038_2F2Fh	X011_1322h
	SRx16	DRx8			
DDR2-533	DRx8	SRx8	2T	0037_2F2Fh	X011_1322h
	SRx8	DRx8			
DDR2-667	-	Any	1T	0020_2020h	X011_1222h
DDR2-667	SRx16	SRx16	2T	0020_2020h	X011_1322h
	SRx16	SRx8			
	SRx8	SRx16			
DDR2-667	SRx8	SRx8	2T	0030_2020h	X011_1322h
DDR2-667	DRx8	DRx8	2T	002B_2020h	X011_1322h
DDR2-667	DRx8	SRx16	2T	002C_2020h	X011_1322h
	SRx16	DRx8			
DDR2-667	DRx8	SRx8	2T	002A_2020h	X011_1322h
	SRx8	DRx8			
DDR2-800	-	Any	2T	0020_2520h	X011_3222h
DDR2-800	Any	Any	2T	0020_2520h	X011_3222h
1. SRx16=Single Rank x16 DIMM SRx8=Single Rank x8 DIMM DRx16=Dual Rank x16 DIMM DRx8=Dual Rank x8 DIMM					

## Installing a Hard Disk Drive/CD-ROM

This section describes how to install IDE devices such as a hard disk drive and a CD-ROM drive.

### About IDE Devices

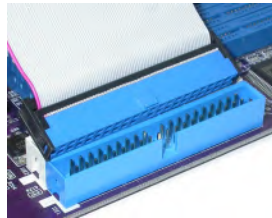
Your motherboard has a primary and secondary IDE channel interface (IDE1 and IDE2). An IDE ribbon cable supporting two IDE devices is bundled with the motherboard.



*You must orient the cable connector so that the pin 1 (color) edge of the cable corresponds to the pin 1 of the I/O port connector.*

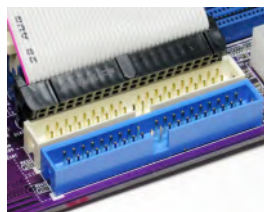
### IDE1: Primary IDE Connector

The first hard drive should always be connected to IDE1.



### IDE2: Secondary IDE Connector

The second drive on this controller must be set to slave mode. The configuration is the same as IDE1.



IDE devices enclose jumpers or switches used to set the IDE device as MASTER or SLAVE. Refer to the IDE device user's manual. Installing two IDE devices on one cable, ensure that one device is set to MASTER and the other device is set to SLAVE. The documentation of your IDE device explains how to do this.

### About UltraDMA

This motherboard supports UltraDMA 133/100/66. UDMA is a technology that accelerates the performance of devices in the IDE channel. To maximize performance, install IDE devices that support UDMA and use 80-pin IDE cables that support UDMA 133/100/66.

## Installing the Motherboard

### About SATA Connectors

Your motherboard features two or four SATA connectors supporting a total of two or four drives. SATA refers to Serial ATA (Advanced Technology Attachment) is the standard interface for the IDE hard drives which are currently used in most PCs. These connectors are well designed and will only fit in one orientation. Locate the SATA connectors on the motherboard and follow the illustration below to install the SATA hard drives.

### Installing Serial ATA Hard Drives

To install the Serial ATA (SATA) hard drives, use the SATA cable that supports the Serial ATA protocol. This SATA cable comes with an SATA power cable. You can connect either end of the SATA cable to the SATA hard drive or the connector on the motherboard.



**SATA cable** (optional)



**SATA power cable** (optional)

Refer to the illustration below for proper installation:

- 1 Attach either cable end to the connector on the motherboard.
- 2 Attach the other cable end to the SATA hard drive.
- 3 Attach the SATA power cable to the SATA hard drive and connect the other end to the power supply.



## Installing the Motherboard

### ***Installing a Floppy Diskette Drive***

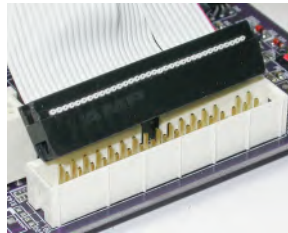
The motherboard has a floppy diskette drive (FDD) interface and ships with a diskette drive ribbon cable that supports one or two floppy diskette drives. You can install a 5.25-inch drive and a 3.5-inch drive with various capacities. The floppy diskette drive cable has one type of connector for a 5.25-inch drive and another type of connector for a 3.5-inch drive.



*You must orient the cable connector so that the pin 1 (color) edge of the cable corresponds to the pin 1 of the I/O port connector.*

### **FDD: Floppy Disk Connector**

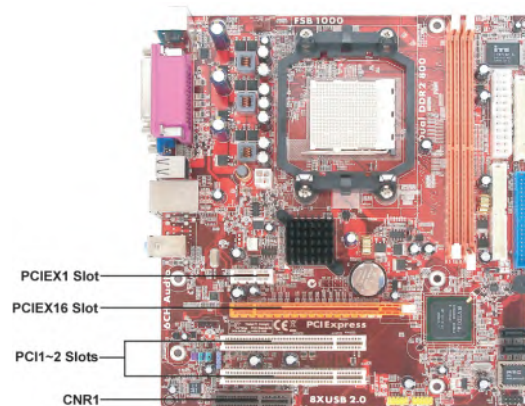
This connector supports the provided floppy drive ribbon cable. After connecting the single end to the onboard floppy connector, connect the remaining plugs on the other end to the floppy drives correspondingly.



## **Installing the Motherboard**

### *Installing Add-on Cards*

The slots on this motherboard are designed to hold expansion cards and connect them to the system bus. Expansion slots are a means of adding or enhancing the motherboard's features and capabilities. With these efficient facilities, you can increase the motherboard's capabilities by adding hardware that performs tasks that are not part of the basic system.



**PCIEX1 Slot** The PCI Express x1 slot is fully compliant to the PCI Express Base Specification revision 1.0a.

**PCIEX16 Slot** The PCI Express X16 slot is used to install an external PCI Express graphics card that is fully compliant to the PCI Express Base Specification revision 1.0a.

**PCI1~2 Slots** This motherboard is equipped with two standard PCI slots. PCI stands for Peripheral Component Interconnect and is a bus standard for expansion cards, which for the most part, is a supplement of the older ISA bus standard. The PCI slots on this board are PCI v2.3 compliant.

**CNR Slot (Optional)** The slot is used to insert CNR card with Modem functionality.

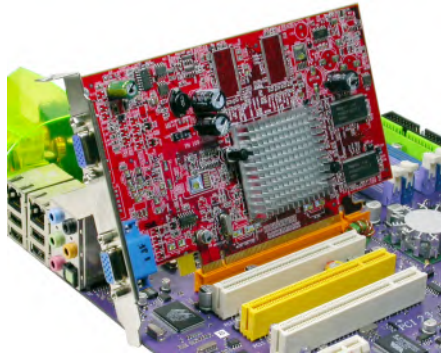


*Before installing an add-on card, check the documentation for the card carefully. If the card is not Plug and Play, you may have to manually configure the card before installation.*

## **Installing the Motherboard**

Follow these instructions to install an add-on card:

- 1 Remove a blanking plate from the system case corresponding to the slot you are going to use.
- 2 Install the edge connector of the add-on card into the expansion slot. Ensure that the edge connector is correctly seated in the slot.
- 3 Secure the metal bracket of the card to the system case with a screw.

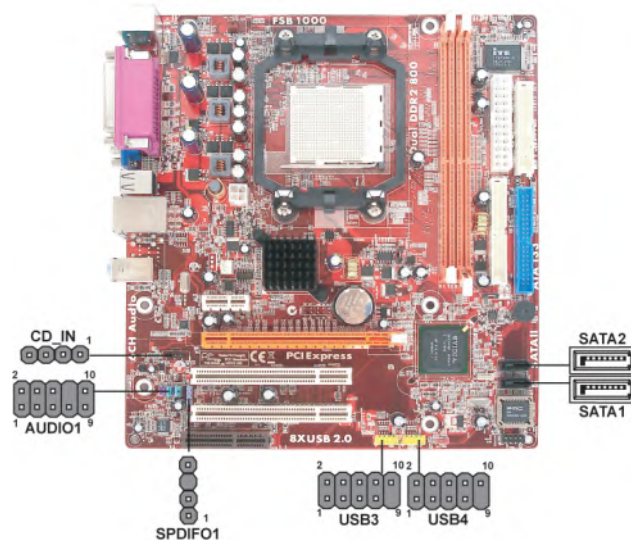


*For some add-on cards, for example graphics adapters and network adapters, you have to install drivers and software before you can begin using the add-on card.*

## Installing the Motherboard

### Connecting Optional Devices

Refer to the following for information on connecting the motherboard's optional devices:



#### AUDIO1: Front Panel Audio header

This header allows the user to install auxiliary front-oriented microphone and line-out ports for easier access.

Pin	Signal Name	Function
1	AUD_MIC	Front Panel Microphone input signal
2	AUD_GND	Ground used by Analog Audio Circuits
3	AUD_MIC_BIAS	Microphone Power
4	AUD_VCC	Filtered +5V used by Analog Audio Circuits
5	AUD_F_R	Right Channel audio signal to Front Panel
6	AUD_RET_R	Right Channel Audio signal to Return from Front Panel
7	REVD	Reserved
8	Key	No Pin
9	AUD_F_L	Left Channel audio signal to Front Panel
10	AUD_RET_L	Left Channel Audio signal to Return from Front Panel

#### SPDIF01: SPDIF out header (Optional)

This is an optional header that provides an S/PDIF (Sony/Philips Digital Interface) output to digital multimedia device through optical fiber or coaxial connector.

Pin	Signal Name	Function
1	SPDIF	SPDIF digital output
2	+5VA	5V analog power
3	Key	No pin
4	GND	Ground

### USB3~4: Front Panel USB headers

The motherboard has four USB ports installed on the rear edge I/O port array. Additionally, some computer cases have USB ports at the front of the case. If you have this kind of case, use auxiliary USB connector to connect the front-mounted ports to the motherboard.

Pin	Signal Name	Function
1	USBPWR	Front Panel USB Power
2	USBPWR	Front Panel USB Power
3	USB_FP_P0-	USB Port 0 Negative Signal
4	USB_FP_P1-	USB Port 1 Negative Signal
5	USB_FP_P0+	USB Port 0 Positive Signal
6	USB_FP_P1+	USB Port 1 Positive Signal
7	GND	Ground
8	GND	Ground
9	Key	No pin
10	NC	Not Connected



Please make sure that the USB cable has the same pin assignment as indicated above. A different pin assignment may cause damage or system hang-up.

### SATA1~2: Serial ATA connectors

These connectors are used to support the new Serial ATA devices for the highest data transfer rates (3.0 Gb/s), simpler disk drive cabling and easier PC assembly. It eliminates limitations of the current Parallel ATA interface. But maintains register compatibility and software compatibility with Parallel ATA.

Pin	Signal Name	Pin	Signal Name
1	Ground	2	TX+
3	TX-	4	Ground
5	RX-	6	RX+
7	Ground	-	-

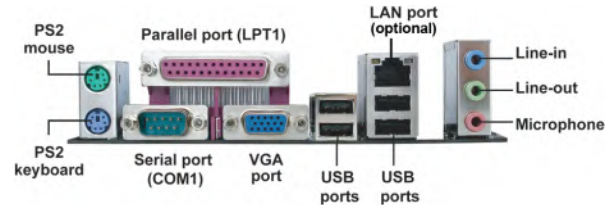
### CD\_IN: Analog Audio Input connector

Pin	Signal Name	Function
1	CD in_L	CD In left channel
2	GND	Ground
3	GND	Ground
4	CD in_R	CD In right channel



## Connecting I/O Devices

The backplane of the motherboard has the following I/O ports:



- PS2 Mouse** Use the upper PS/2 port to connect a PS/2 pointing device.
- PS2 Keyboard** Use the lower PS/2 port to connect a PS/2 keyboard.
- Parallel Port (LPT1)** Use LPT1 to connect printers or other parallel communications devices.
- Serial Port (COM1)** Use the COM port to connect serial devices such as mice or fax/modems. COM1 is identified by the system as COM1/3.
- VGA Port** Connect your monitor to the VGA port.
- LAN Port (optional)** Connect an RJ-45 jack to the LAN port to connect your computer to the Network.
- USB Ports** Use the USB ports to connect USB devices.
- Audio Ports** Use the three audio ports to connect audio devices. The first jack is for stereo line-in signal. The second jack is for stereo line-out signal. The third jack is for microphone.

This concludes Chapter 2. The next chapter covers the BIOS.

## Installing the Motherboard

## Installing the Motherboard

## Chapter 3

### *Using BIOS*

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#### **About the Setup Utility**

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

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

The BIOS Setup Utility enables you to configure:

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

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

This chapter provides explanations for Setup Utility options.

#### ***The Standard Configuration***

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

This Setup Utility should be used:

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

#### ***Entering the Setup Utility***

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

**Press DEL to enter SETUP**

Press the delete key to access the BIOS Setup Utility.

Phoenix-Award Workstation BIOS CMOS Setup Utility

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

***BIOS Navigation Keys***

The BIOS navigation keys are listed below:

KEY	FUNCTION
←↑↓→	Move
<b>Enter</b>	Select
+/-/PU/PD	Value
<b>ESC</b>	Exit
<b>F1</b>	General Help
<b>F2</b>	Item Help
<b>F5</b>	Previous Values
<b>F6</b>	Fail-Safe Defaults
<b>F7</b>	Optimized Defaults
<b>F10</b>	Save

**Using BIOS**

### ***Updating the BIOS***

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

- 1 If your motherboard has a BIOS protection jumper, change the setting to allow BIOS flashing.
- 2 If your motherboard has an item called Firmware Write Protect in Advanced BIOS features, disable it. (Firmware Write Protect prevents BIOS from being overwritten.)
- 3 Create a bootable system disk. (Refer to Windows on-line help for information on creating a bootable system disk.)
- 4 Download the Flash Utility and new BIOS file from the manufacturer's Web site. Copy these files to the system diskette you created in Step 3.
- 5 Turn off your computer and insert the system diskette in your computer's diskette drive. (You might need to run the Setup Utility and change the boot priority items on the Advanced Setup page, to force your computer to boot from the floppy diskette drive first.)
- 6 At the A:\ prompt, type the Flash Utility program name and press <Enter>.
- 7 Type the filename of the new BIOS in the "File Name to Program" text box. Follow the onscreen directions to update the motherboard BIOS.
- 8 When the installation is complete, remove the floppy diskette from the diskette drive and restart your computer. If your motherboard has a Flash BIOS jumper, reset the jumper to protect the newly installed BIOS from being overwritten. The computer will restart automatically.

### **Using BIOS**

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

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

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

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

## **Using BIOS**

### Standard CMOS Features

This option displays basic information about your system.

Phoenix - Award Workstation BIOS CMOS Setup Utility  
Standard CMOS Features

Date (mm:dd:yy)	Fri, Jan 3 2006	Item Help
Time (hh:mm:ss)	0 : 3 : 51	
▶ IDE Channel 0 Master	[ None]	Menu Level ▶  Change the day, month, year and century
▶ IDE Channel 0 Slave	[ None]	
▶ IDE Channel 1 Master	[ None]	
▶ IDE Channel 1 Slave	[ None]	
▶ IDE Channel 2 Master	[None]	
▶ IDE Channel 3 Master	[None]	
Drive A	[1.44M, 3.5 in.]	
Floppy 3 Mode Support	[Disabled]	
Halt On	[All Errors]	
Base Memory	640K	
Extended Memory	260096K	
Total Memory	261120 K	

↑↓ → ← : Move Enter: Select +/-/PU/PD:Value ESC:Exit F1: General Help F2: Item Help  
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults F10: Save

### Date and Time

The Date and Time items show the current date and time on the computer. If you are running a Windows OS, these items are automatically updated whenever you make changes to the Windows Date and Time Properties utility.

### ▶ IDE Devices

Your computer has two IDE channels and each channel can be installed with one or two devices (Master and Slave). In addition, this motherboard supports two SATA channels and each channel allows one SATA device to be installed. Use these items to configure each device on the IDE channel.

Press <Enter> to display the submenu:

Phoenix-Award Workstation BIOS CMOS Setup Utility  
IDE Channel 0 Master

IDE HDD Auto-Detection	[ Press Enter]	Item Help
IDE Channel 0 Slave	[ Auto]	Menu Level ▶▶  To auto-detect the HDD' size, head... on this channel
Access Mode	[ Auto]	
Capacity	0 MB	
Cylinder	0	
Head	0	
Precomp	0	
Landing Zone	0	
Sector	0	

↑↓ → ← : Move Enter: Select +/-/PU/PD:Value ESC:Exit F1: General Help F2: Item Help  
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults F10: Save

## Using BIOS

**IDE HDD Auto-Detection**

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



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

**IDE Channel 0/1 Master/Slave Drives & Extended IDE Drive (Auto)**

Leave this item at Auto to enable the system to automatically detect and configure IDE device on the channel. If it fails to find a device, change the value to Manual and then manually configure the drive by entering the characteristics of the drive in the items described below. Please noted that if you choose IDE Channel 2/3 Master, the item may change to Extended IDE Drive.

Refer to your drive's documentation or look on the drive casing if you need to obtain this information. If no device is installed, change the value to None.



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

**Access Mode (Auto)**

This item defines ways that can be used to access IDE hard disk such as LBA (Large Block Addressing). Leave this value at Auto and the system will automatically decide the fastest way to access the hard disk drive. If you choose IDE Channel 2/3 Master, the item only have Large and Auto.

Press <Esc> to return to the Standard CMOS Feature page.

**Drive A (1.44M, 3.5 in.)**

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

**Floppy 3 Mode Support (Disabled)**

Floppy 3 mode refers to a 3.5-inch diskette with a capacity of 1.2 MB. Floppy 3 mode is sometimes used in Japan.

**Halt On (All Errors)**

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

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

These items are automatically detected by the system at start up time. These are display-only fields. You cannot make changes to these fields.

**Advanced BIOS Features**

This option defines advanced information about your system.

Phoenix - Award Workstation BIOS CMOS Setup Utility  
Advanced BIOS Features

▶ CPU Feature	[Press Enter]	▲                                       ▼	Item Help
▶ Removable Device Priority	[Press Enter]		Menu Level ▶
▶ Hard Disk Boot Priority	[Press Enter]		
▶ Network Boot Priority	[Press Enter]		
CPU Internal Cache	[Enabled]		
External Cache	[Enabled]		
Quick Power On Self Test	[Enabled]		
First Boot Device	[Removable]		
Second Boot Device	[Hard Disk]		
Third Boot Device	[CDROM]		
Boot Other Device	[Enabled]		
Boot Up Floppy Seek	[Disabled]		
Boot Up NumLock Status	[On]		
Typematic Rate Setting	[Disabled]		
x Typematic Rate (Chars/Sec)	6		
x Typematic Delay (Msec)	250		
Security Option	[Setup]		
OS Select For DRAM > 64MB	[Non-OS2]		
HDD S.M.A.R.T. Capability	[Disabled]		

↑↓ → ← : Move Enter: Select +/-/PU/PD:Value ESC:Exit F1: General Help F2: Item Help  
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults F10: Save

**▶ CPU Feature (Press Enter)**

Scroll to this item and press <Enter> to view the following screen:

Phoenix-Award Workstation BIOS CMOS Setup Utility  
CPU Feature

NPT Fid control	[Auto]	Item Help
NPT Vid control	[Auto]	

↑↓ → ← : Move Enter: Select +/-/PU/PD:Value ESC:Exit F1: General Help F2: Item Help  
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults F10: Save

**NPT Fid control (Auto)**

This item allows users to adjust the CPU frequency; the range will be varied according to different CPUs. We strongly recommend you leave this item at its default value.

**NPT Vid control (Auto)**

This item allows users to adjust the CPU voltage. We strongly recommend you leave this item at its default value

Press <Esc> to return to the Advanced BIOS Features page.

**Using BIOS**



### ► Removable Device Priority (Press Enter)

Scroll to this item and press <Enter> to view the following screen:

Phoenix-Award Workstation BIOS CMOS Setup Utility  
Removable Device Priority

1. Floppy Disks	<p style="text-align: center;">Item Help</p> <p>Menu Level ►►</p> <p>Use &lt;↑&gt; or &lt;↓&gt; to select a device, then press &lt;+&gt; to move it up, or &lt;-&gt; to move it down the list. Press &lt;ESC&gt; to exit this menu.</p>
-----------------	---

↑↓ → ← : Move Enter: Select +/-/PU/PD: Value ESC: Exit F1: General Help F2: Item Help  
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults F10: Save

Press <Esc> to return to the Advanced BIOS Features page.

### ► Hard Disk Boot Priority (Press Enter)

Scroll to this item and press <Enter> to view the following screen: Use this table to decide the disk boot priority.

Phoenix - Award Workstation BIOS CMOS Setup Utility  
Hard Disk Boot Priority

1. Bootable Add-in Cards	<p style="text-align: center;">Item Help</p> <p>Menu Level ►►</p> <p>Use &lt;↑&gt; or &lt;↓&gt; to select a device, then press &lt;+&gt; to move it up, or &lt;-&gt; to move it down the list. Press &lt;ESC&gt; to exit this menu.</p>
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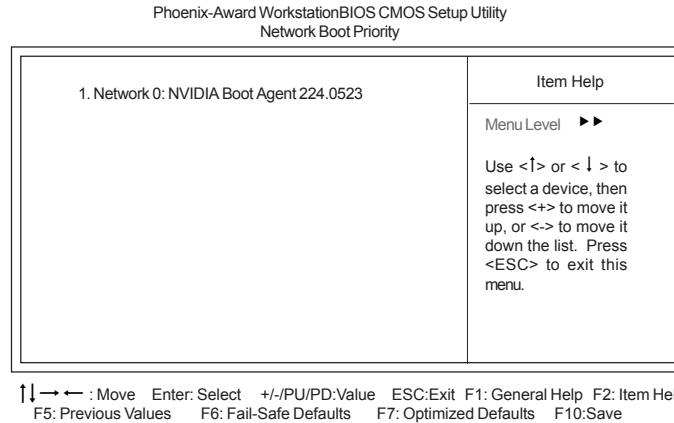
↑↓ → ← : Move Enter: Select +/-/PU/PD: Value ESC: Exit F1: General Help F2: Item Help  
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults F10: Save

Press <Esc> to return to the Advanced BIOS Features page.

## Using BIOS

### ► Network Boot Priority (Press Enter)

Scroll to this item and press <Enter> to view the following screen:



Press <Esc> to return to the Advanced BIOS Features page.

### CPU Internal Cache (Enabled)

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

### External Cache (Enabled)

Most processors that can be installed in this system use external level 2 (L2) cache memory to improve performance. Leave this item at the default value for better performance.

### Quick Power On Self Test (Enabled)

Enable this item to shorten the power on testing (POST) and have your system start up faster. You might like to enable this item after you are confident that your system hardware is operating smoothly.

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

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

### Boot Other Device (Enabled)

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

### Boot Up Floppy Seek (Disabled)

If this item is enabled, it checks the size of the floppy disk drives at start-up time. You don't need to enable this item unless you have a legacy diskette drive with 360K capacity.

### Boot Up NumLock Status (On)

This item defines if the keyboard Num Lock key is active when your system is started.

## Using BIOS

### Typematic Rate Setting (Disabled)

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

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

### Security Option (Setup)

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

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

This item is only required if you have installed more than 64 MB of memory and you are running the OS/2 operating system. Otherwise, leave this item at the default.

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

The S.M.A.R.T. (Self-Monitoring, Analysis, and Reporting Technology) system is a diagnostics technology that monitors and predicts device performance. S.M.A.R.T. software resides on both the disk drive and the host computer.

The disk drive software monitors the internal performance of the motors, media, heads, and electronics of the drive. The host software monitors the overall reliability status of the drive. If a device failure is predicted, the host software, through the Client WORKS S.M.A.R.T applet, warns the user of the impending condition and advises appropriate action to protect the data.

## Advanced Chipset Features

These items define critical timing parameters of the motherboard. You should leave the items on this page at their default values unless you are very familiar with the technical specifications of your system hardware. If you change the values incorrectly, you may introduce fatal errors or recurring instability into your system.

Phoenix - Award WorkstationBIOS CMOS Setup Utility  
Advanced Chipset Features

Onboard GPU	[Enable If No Ext GPU]	Item Help
Frame Buffer Size	[64M]	
CPU Frequency	[200.0]	
▶ DRAM Configuration	[Press Enter]	Menu Level ▶
CPU Spread Spectrum	[Center]	
PCIE Spread Spectrum	[Disabled]	
SATA Spread Spectrum	[Disabled]	
HT Spread Spectrum	[Center]	
System BIOS Cacheable	[Disabled]	

↑↓ → ← : Move Enter: Select +/-/PU/PD:Value ESC:Exit F1: General Help F2: Item Help  
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults F10: Save

## Using BIOS

**Onboard GPU (Enable If No Ext GPU)**

This item enables the onboard GPU function. Disable this item if you are going to install an external GPU.

**Frame Buffer Size (64M)**

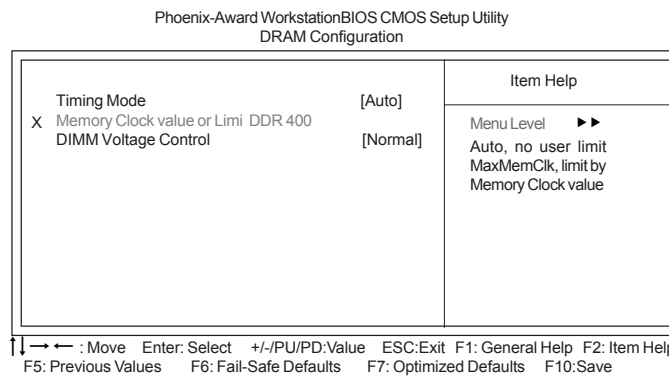
This item enables users to specify the Onboard VGA share memory size.

**CPU Frequency (200.0)**

This item enables users to manually over-clock the CPU frequency, ranging from 200.0 to 300.0.

**► DRAM Configuration (Press Enter)**

Scroll to this item and press <Enter> to view the following screen:

**Timing Mode (Auto)**

This item enables you to specify the DRAM timing mode to be configured automatically or manually.

- **Memory Clock value or Limi DDR 400:** This item is used to set the Memory Clock value or Limi DDR 400.

**DIMM Voltage Control (Normal)**

This item is used to control the voltage of the DIMM.

Press <Esc> to return to the Advanced Chipset Features page.

**CPU Spread Spectrum (Center)**

This item, when enabled, can significantly reduce the EMI (Electromagnetic Interference) generated by the CPU.

**PCIe Spread Spectrum (Disabled)**

This item, when enabled, can significantly reduce the EMI (Electromagnetic Interference) generated by the PCIe.

**SATA Spread Spectrum (Disabled)**

This item, when enabled, can significantly reduce the EMI (Electromagnetic Interference) generated by the SATA.

**HT Spread Spectrum (Center)**

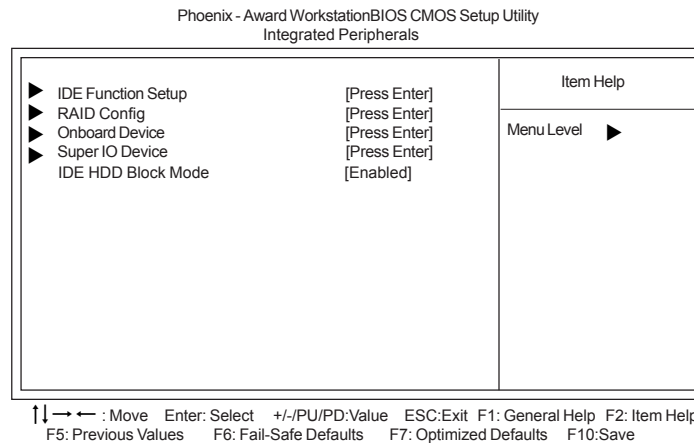
This item, when enabled, can significantly reduce the EMI (Electromagnetic Interference) generated by the HT.

**System BIOS Cacheable (Disabled)**

This item enables users to enable or disable the system BIOS cache.

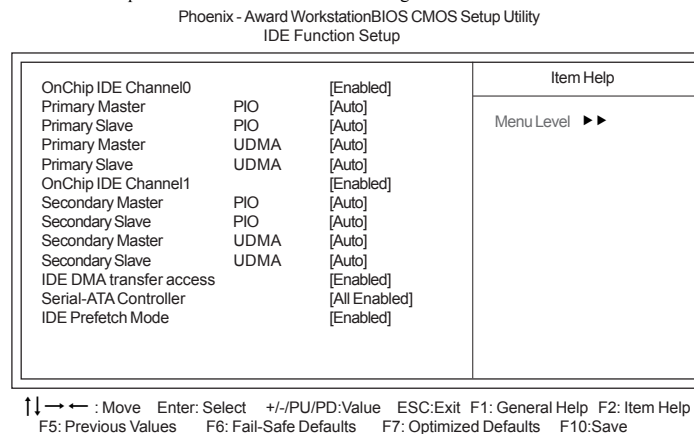
### ***Integrated Peripherals***

These options display items that define the operation of peripheral components on the system's input/output ports.



### **▶IDE Function Setup (Press Enter)**

Scroll to this item and press <Enter> to view the following screen:



### **On-Chip IDE Channel 0/1 (Enabled)**

Use these items to enable or disable the PCI IDE channels that are integrated on the motherboard.

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

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

## **Using BIOS**

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

Each IDE channel supports a master device and a slave device. This motherboard supports UltraDMA technology, which provides faster access to IDE devices.

If you install a device that supports UltraDMA, change the appropriate item on this list to Auto. You may have to install the UltraDMA driver supplied with this motherboard in order to use an UltraDMA device.

**OnChip IDE Channel 1 (Enabled)**

This item allows you to enable or disable the onboard IDE devices.

**IDE DMA transfer access (Enabled)**

This item allows you to enable the transfer access of the IDE DMA then burst onto the PCI bus and nonburstable transactions do not.

**Serial-ATA Controller (All Enabled)**

This item allows you to enable or disable the onboard SATA devices.

**IDE Prefetch Mode (Enabled)**

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

Press <Esc> to return to the Integrated Peripherals page.

**►RAID Config (Press Enter)**

Scroll to this item and press <Enter> to view the following screen:

Phoenix - Award Workstation BIOS CMOS Setup Utility  
RAID Config

			Item Help
RAID Enable		[Disabled]	
X SATA 1 Primary RAID		Disabled	Menu Level ►►
X SATA 2 Secondary RAID		Disabled	

↑↓ → ← : Move Enter: Select +/-/PU/PD: Value ESC: Exit F1: General Help F2: Item Help  
 F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults F10: Save

**RAID Enable (Disabled)**

This item allows you to enable or disable the onboard RAID function of RAID supporting devices.

**SATA Primary/Secondary RAID (Disabled)**

These two items enable or disable the SATA Primary/Secondary RAID.

Press <Esc> to return to the Integrated Peripherals page.

## Using BIOS

### ► Onboard Device (Press Enter)

Scroll to this item and press <Enter> to view the following screen:

Phoenix - Award WorkstationBIOS CMOS Setup Utility  
Onboard Device

		Item Help
OnChip USB	[V1.1+V2.0]	
USB Legacy Support	[Enabled]	Menu Level ►►
USB Mouse Support	[Enabled]	
AC97/HD Audio	[Auto]	
MC97 Modem	[Auto]	
Onboard Lan	[Enabled]	
Onboard 1394 Device	[Enabled]	

↑↓→← : Move Enter: Select +/-/PU/PD:Value ESC:Exit F1: General Help F2: Item Help  
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults F10: Save

#### **Onchip USB (V1.1+V2.0)**

This item enables users to enable or disable the onchip USB function, setting it to be USB1.1 or USB2.0 compatible.

#### **USB Legacy Support (Enabled)**

Use this item to enable or disable support for legacy USB devices. Setting to Auto allows the system to detect the presence of USB devices at startup. If detected, the USB controller legacy mode is enabled. If no USB device is detected, the legacy USB support is disabled.

#### **USB Mouse Support (Enabled)**

Enable this item if you plan to use a mouse connected through the USB port in a legacy operating system (such as DOS) that does not support Plug and Play.

#### **AC97/HD Audio (Auto)**

This item allows you to control the Onboard AC 97 audio. Disable this item if you are going to install a PCI audio add-on card.

#### **MC97 Modem (Auto)**

Enables or disables the MC97 Modem function.

#### **Onboard Lan (Enabled)**

Enables or disables the Onboard LAN function.

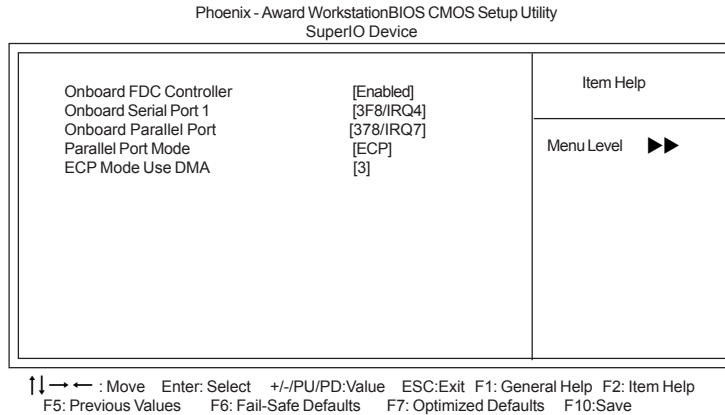
#### **Onboard 1394 Device (Enabled)**

Enables or disables the Onboard 1394 Device function.

Press <Esc> to return to the Integrated Peripherals page.

### ► Super IO Device (Press Enter)

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



#### **Onboard FDC Controller (Enabled)**

This option enables the Onboard Floppy Disk drive Controller.

#### **Onboard Serial Port 1 (3F8/IRQ4)**

This option is used to assign the I/O address and interrupt request (IRQ) for the Onboard Serial Port 1.

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

This option is used to assign the I/O address and interrupt request (IRQ) for the onboard parallel port.

#### **Parallel Port Mode (ECP)**

Enables you to set the data transfer protocol for your parallel port. There are four options: SPP (Standard Parallel Port), EPP (Enhanced Parallel Port), ECP (Extended Capabilities Port), and ECP+EPP.

SPP allows data output only. Extended Capabilities Port (ECP) and Enhanced Parallel Port (EPP) are bidirectional modes, allowing both data input and output. ECP and EPP modes are only supported with EPP- and ECP-aware peripherals.

#### **ECP Mode Use DMA (3)**

When the onboard parallel port is set to ECP mode, the parallel port can use DMA3 or DMA1.

Press <Esc> to return to the Integrated Peripherals page.

#### **IDE HDD Block Mode (Enabled)**

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

## Using BIOS



### Power Management Setup

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

The power-saving modes can be controlled by time-outs. If the system is inactive for a time, the time-outs begin counting. If the inactivity continues so that the time-out period elapses, the system enters a power-saving mode. If any item in the list of Reload Global Timer Events is Enabled, then any activity on that item will reset the time-out counters to zero.

If the system is suspended or has been powered down by software, it can be resumed by a wake up call that is generated by incoming traffic to a modem, a LAN card, a PCI card, or a fixed alarm on the system realtime clock.

Phoenix - Award Workstation BIOS CMOS Setup Utility  
Power Management Setup

		Item Help
ACPI Suspend Type	[S3 (STR)]	
Video Off Method	[DPMS Support]	
HDD Power Down	[Disabled]	
Soft-Off by PBTN	[Instant-Off]	
Resume By PCI PME	[Enabled]	
Resume By Ring	[Disabled]	
Resume By USB (S3)	[Disabled]	
x Power-On by Alarm	[Disabled]	
x Day of Month Alarm	0	
Time (hh:mm:ss) Alarm	0 : 0 : 0	
Resume By PS2 MS (S3)	[Disabled]	
x Resume By PS2 KB (S3)	[Disabled]	
Hot Key Power ON	Ctrl-F1	
Power on After Power fail	[off]	
		Menu Level ▶

↑↓ → ← : Move Enter: Select +/-/PU/PD:Value ESC:Exit F1: General Help F2: Item Help  
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults F10: Save

#### ACPI Suspend Type (S3(STR))

Use this item to define how your system suspends. In the default, S1 (POS), the suspend mode is equivalent to a software power down. If you select S3 (STR), the suspend mode is suspend to RAM, i.e., the system shuts down with the exception of a refresh current to the system memory.

**Video Off Method (DPMS Support)**

This item defines how the video is powered down to save power. This item is set to DPMS (Display Power Management Software) by default.

**HDD Power Down (Disabled)**

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

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

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

**Resume by PCI PME (Enabled)**

This item specifies whether the system will be awakened from power saving modes when activity or input signal of the specified hardware peripheral or component is detected.

**Resume by Ring (Disabled)**

An input signal on the serial Ring indicator (RI) line (in other words, an incoming call on the modem) awakens the system from a soft off state.

**Resume By USB (S3) (Disabled)**

This item allows the activity of the USB device to wake up the system from S3 sleep state.

**Power-On by Alarm (Disabled)**

This item allows users to enable or disable the alarm to wake up the system. If set to Enabled, users can specify the specific day of month and the exact time to power up the system.

**Resume By PS2 MS (S3) (Disabled)**

This item allows the activity of the PS2 mouse device to wake up the system from S3 sleep state.

**Resume By PS2 KB (S3) (Disabled)**

This item allows the activity of the PS2 keyboard device to wake up the system from S3 sleep state.

**Hot Key Power ON (Ctrl+F1)**

Use this item to allocate the hot key to wake up the system.

**Power on After Power fail (off)**

This item enables your computer to automatically restart.

## PnP/PCI Configurations

This section describes configuring the PCI bus system. PCI (Peripheral Component Interconnect) is a system, which allows I/O devices to operate at speeds nearing CPU's when they communicate with own special components. All the options describes in this section are important and technical and it is strongly recommended that only experienced users should make any changes to the default settings.

Phoenix - Award Workstation BIOS CMOS Setup Utility  
PnP/PCI Configurations

		Item Help
Init Display First	[PCI Slot]	Menu Level ►
Reset Configuration Data	[Disabled]	
Resources Controlled By	[Auto(ESCD)]	
IRQ Resources	Press Enter	
PCI/VGA Palette Snoop	[Disabled]	
Assign IRQ For USB	[Enabled]	
** PCI Express relative items**		
Maximum Payload Size	[4096]	

↑↓ → ← : Move Enter: Select +/-/PU/PD:Value ESC:Exit F1: General Help F2: Item Help  
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults F10: Save

### Init Display First (PCI Slot)

This item allows you to choose the primary display card.

### Reset Configuration Data (Disabled)

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

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

You should leave this item at the default Auto (ESCD). Under this setting, the system dynamically allocates resources to Plug and Play devices as they are required.

If you cannot get a legacy ISA (Industry Standard Architecture) expansion card to work properly, you might be able to solve the problem by changing this item to Manual, and then opening up the IRQ Resources submenu.

- **IRQ Resources:** In the IRQ Resources submenu, if you assign an IRQ to Legacy ISA, then that Interrupt Request Line is reserved for a legacy ISA expansion card. Press <Esc> to close the IRQ Resources submenu.

In the Memory Resources submenu, use the first item Reserved Memory Base to set the start address of the memory you want to reserve for the ISA expansion card. Use the section item Reserved Memory Length to set the amount of reserved memory. Press <Esc> to close the Memory Resources submenu.

### PCI/VGA Palette Snoop (Disabled)

This item is designed to overcome problems that can be caused by some non-standard VGA cards. This board includes a built-in VGA system that does not require palette snooping so you must leave this item disabled.

### Assign IRQ For USB (Enabled)

This item enables or disables the function of assigning IRQ for USB devices.

### Maximum Payload Size (4096)

This item specifies the maximum payload size for the PCI Express function.

## Using BIOS

**PC Health Status**

On motherboards that support hardware monitoring, this item lets you monitor the parameters for critical voltages, critical temperatures, and fan speeds.

Phoenix - Award Workstation BIOS CMOS Setup Utility  
PC Health Status

<ul style="list-style-type: none"> <li>▶ <b>Smart Fan Function</b> [Press Enter]</li> <li>Shutdown Temperature [Disabled]</li> <li>Warning Temperature [Disabled]</li> <li>CPU Tcontrol 62 °C</li> <li>System Temperature 34 °C</li> <li>CPU Fan Speed 0 RPM</li> <li>System Fan Speed 2755 RPM</li> <li>CPU Vcore 1.39V</li> <li>VDIMM 1.77V</li> </ul>	<p style="text-align: center;">Item Help</p> <hr/> <p>Menu Level ▶</p>
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↑↓ → ← : Move Enter: Select +/-/PU/PD:Value ESC:Exit F1: General Help F2: Item Help  
 F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults F10: Save

**▶ Smart Fan Function (Press Enter)**

Scroll to this item and press <Enter> to view the following screen:

Phoenix-Award Workstation BIOS CMOS Setup Utility  
Smart Fan Function

<ul style="list-style-type: none"> <li>Smart Fan Control [Disabled]</li> <li>X FAN1 START PWM VALUE 0</li> <li>X FAN1 START Temp °C 0</li> <li>X FAN1 Limit Temp °C 0</li> <li>X FAN1 Slope Select PWM/°C 0</li> </ul>	<p style="text-align: center;">Item Help</p> <hr/> <p>Menu Level ▶▶</p>
--	---

↑↓ → ← : Move Enter: Select +/-/PU/PD:Value ESC:Exit F1: General Help F2: Item Help  
 F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults F10: Save

**Smart Fan Control (Disabled)**

This item allows you to enable/disable the control of the system fan speed by changing by changing the fan voltage.

- **FAN1 START PWM VALUE**: This item is used to set the start PWM value of the smart fan.
- **FAN1 START Temp °C**: This item is used to set the start temperature of the smart fan.
- **FAN1 Limit Temp °C**: This item is used to set the limit temperature of the smart fan.
- **FAN1 Slope Select PWM/°C**: This item is used to set the Slope Select PWM of the smart fan.

Press <Esc> to return to the PC Health Status page.

#### **Shutdown Temperature (Disabled)**

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

#### **Warning Temperature (Disabled)**

This item enables or disables the warning temperature function.

#### **System Component Characteristics**

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

- CPU Tcontrol
- System Temperature
- CPU Fan Speed
- System Fan Speed
- CPU Vcore
- VDIMM

#### ***Load Fail-Safe Defaults***

This option opens a dialog box that lets you install fail-safe defaults for all appropriate items in the Setup Utility:

Press <Y> and then <Enter> to install the defaults. Press <N> and then <Enter> to not install the defaults. The fail-safe defaults place no great demands on the system and are generally stable. If your system is not functioning correctly, try installing the fail-safe defaults as a first step in getting your system working properly again. If you only want to install fail-safe defaults for a specific option, select and display that option, and then press <F6>.

### ***Load Optimized Defaults***

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



User please remain the factory BIOS default setting of “Load Optimized Defaults” when installing Operation System onto your system.

### ***Set Supervisor/User Password***

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

#### **ENTER PASSWORD**

Type the password, up to eight characters, and press <Enter>. The password typed now will clear any previously entered password from CMOS memory. You will be asked to confirm the password. Type the password again and press <Enter>. You may also press <Esc> to abort the selection.

To disable password, just press <Enter> when you are prompted to enter password. A message will confirm the password being disabled. Once the password is disabled, the system will boot and you can enter BIOS Setup freely.

#### **PASSWORD DISABLED**

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

If you have selected “Setup” at “Security Option” from “BIOS Features Setup” menu, you will be prompted for the password only when you enter BIOS Setup.

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

### ***Save & Exit Setup***

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

### ***Exit Without Saving***

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



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

This concludes Chapter 3. Refer to the next chapter for information on the software supplied with the motherboard.

## **Using BIOS**

## Chapter 4

### ***Using the Motherboard Software***

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#### **About the Software CD-ROM**

The support software CD-ROM that is included in the motherboard package contains all the drivers and utility programs needed to properly run the bundled products. Below you can find a brief description of each software program, and the location for your motherboard version. More information on some programs is available in a README file, located in the same directory as the software.



*Never try to install all software from folder that is not specified for use with your motherboard.*

Before installing any software, always inspect the folder for files named README.TXT, INSTALL.TXT, or something similar. These files may contain important information that is not included in this manual.

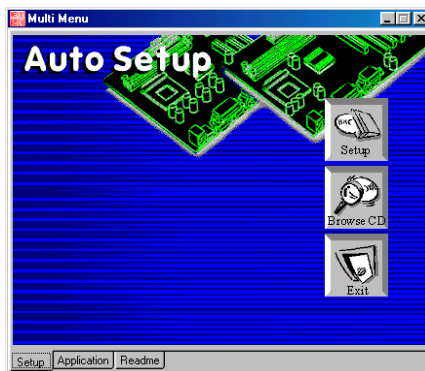
#### **Auto-installing under Windows 2000/XP**

The Auto-install CD-ROM makes it easy for you to install the drivers and software for your motherboard.



*If the Auto-install CD-ROM does not work on your system, you can still install drivers through the file manager for your OS (for example, Windows Explorer). Refer to the Utility Folder Installation Notes later in this chapter.*

The support software CD-ROM disc loads automatically under Windows 2000/XP. When you insert the CD-ROM disc in the CD-ROM drive, the autorun feature will automatically bring up the install screen. The screen has three buttons on it, Setup, Browse CD and Exit.



*If the opening screen does not appear; double-click the file "setup.exe" in the root directory.*

### **Using the Motherboard Software**

### Setup Tab

<b>Setup</b>	Click the <b>Setup</b> button to run the software installation program. Select from the menu which software you want to install.
<b>Browse CD</b>	<p>The <b>Browse CD</b> button is the standard Windows command that allows you to open Windows Explorer and show the contents of the support CD.</p> <p>Before installing the software from Windows Explorer, look for a file named README.TXT, INSTALL.TXT or something similar. This file may contain important information to help you install the software correctly.</p> <p>Some software is installed in separate folders for different operating systems.</p> <p>In install the software, execute a file named SETUP.EXE or INSTALL.EXE by double-clicking the file and then following the instructions on the screen.</p>
<b>Exit</b>	The <b>EXIT</b> button closes the Auto Setup window.

### Application Tab

Lists the software utilities that are available on the CD.

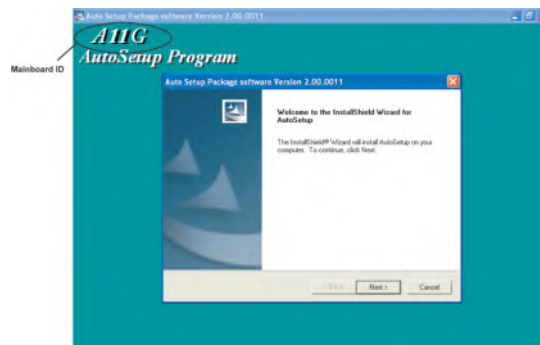
### Read Me Tab

Displays the path for all software and drivers available on the CD.

### Running Setup

Follow these instructions to install device drivers and software for the motherboard:

1. Click **Setup**. The installation program begins:



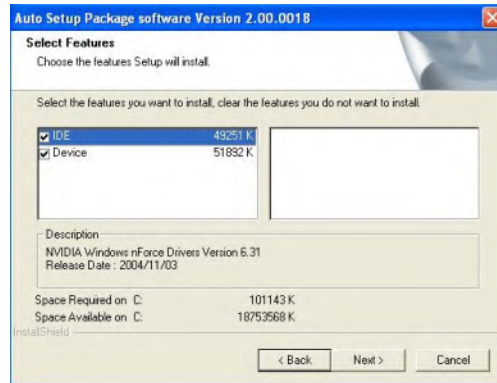
*The following screens are examples only. The screens and driver lists will be different according to the motherboard you are installing.*

The motherboard identification is located in the upper left-hand corner.

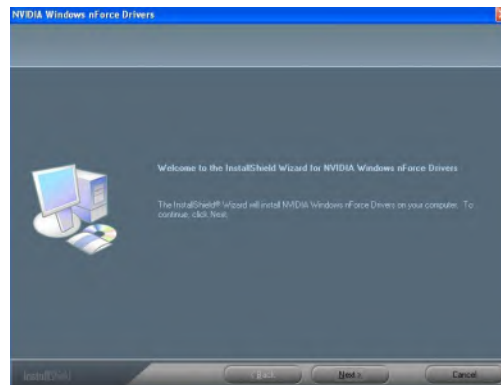
## Using the Motherboard Software



2. Click **Next**. The following screen appears:



3. Check the box next to the items you want to install. The default options are recommended.
4. Click **Next** run the Installation Wizard. An item installation screen appears:



5. Follow the instructions on the screen to install the items.

Drivers and software are automatically installed in sequence. Follow the onscreen instructions, confirm commands and allow the computer to restart a few times to complete the installation.

## Using the Motherboard Software

## Manual Installation

Insert the CD in the CD-ROM drive and locate the PATH.DOC file in the root directory. This file contains the information needed to locate the drivers for your motherboard.

Look for the chipset and motherboard model; then browse to the directory and path to begin installing the drivers. Most drivers have a setup program (SETUP.EXE) that automatically detects your operating system before installation. Other drivers have the setup program located in the operating system subfolder.

If the driver you want to install does not have a setup program, browse to the operating system subfolder and locate the readme text file (README.TXT or README.DOC) for information on installing the driver or software for your operating system.

## Utility Software Reference

All the utility software available from this page is Windows compliant. They are provided only for the convenience of the customer. The following software is furnished under license and may only be used or copied in accordance with the terms of the license.



*These software(s) are subject to change at anytime without prior notice. Please refer to the support CD for available software.*

### ***AMI/AWARD Flash Utility***

This utility lets you erase the system BIOS stored on a Flash Memory chip on the motherboard, and lets you copy an updated version of the BIOS to the chip. Proceed with caution when using this program. If you erase the current BIOS and fail to write a new BIOS, or write a new BIOS that is incorrect, your system will malfunction. Refer to Chapter 3, *Using BIOS* for more information.

### ***WinFlash Utility***

The WinFlash utility is a Windows version of the DOS BIOS flash writer utility. The utility enables you to flash the system BIOS stored on a Flash Memory chip on the motherboard while in a Windows environment. This utility is currently available for WINXP\2000. To install the WinFlash utility, run AFUWIN.EXE (AMI) or WINFLASH.EXE (Award) from the following directory: \UTILITY\WINFLASH AMI or Award.

This concludes Chapter 4.

## Using the Motherboard Software