Preface

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Version 4.0

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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.

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 Réglement sur le matériel brouilieur du Canada.

About the Manual

The manual consists of the following:

TABLE OF CONTENTS

Chapter 1
Introducing the Motherboard

Introduction

Thank you for choosing the GeForce6100PM-M2 motherboard. This motherboard is a high performance, enhanced function motherboard that supports socket for AMD Phenom™ II/Phenom™ processor (socket AM2+)/AMD Athlon™ 64 X2 Dual-Core/Athlon™ 64/Sempron™ processors for high-end business or personal desktop markets.

This motherboard is based on NVIDIA® MCP61 Premium media and communications processor (MCP) for best desktop platform solution. MCP61P is a single-chip, highly integrated, high performance HyperTransport peripheral controller, unmatched by any other single chip-device controller. The memory controller supports DDR2 memory DIMM frequencies of 800/667/533/400. It supports two DDR2 sockets with maximum memory size of 16 GB. High resolution graphics via one PCI Express x16 slot, one PCI Express x1 slot, 10 USB 2.0 ports (4 USB ports and 3 USB 2.0 headers support additional 6 USB ports) and SATA support with RAID function.

There is an advanced full set of I/O ports in the rear panel, including PS/2 mouse and keyboard connectors, COM1, LPT (optional), VGA1, four USB ports, one LAN port and audio jacks for microphone, line-in and 6/8-channel (optional) line-out. This motherboard is designed in a Micro ATX form factor using a four-layer printed circuit board and measures 244 mm x 214 mm.

Due to the DRAM maximum size is 4 GB at present, the memory maximum size we have tested is 8 GB.

Feature

Processor

This motherboard uses a socket AM2+/AM2 that carries the following features:

- Accommodates AMD Phenom™ II/Phenom™ processor (socket AM2+) AMD Athlon™ 64 X2 Dual-Core/Athlon™ 64/Sempron™ processors
- Supports up to 2000 MT/s HyperTransport™ (HT) interface Speeds

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.

This board supports CPU up to 95W TDP only.

Chipset

The NVIDIA® MCP61P is a single-chip with proven reliability and performance.

- 1 GHz HyperTransport x16 up and down links to the AMD socket AM2+/AM2 CPUs
- PCI Express 16 lane link interface for external graphics processors
- PCI v2.3 interface at 33 MHz
- Integrated SATA 3.0 Gb/s Host Controller
- Ten USB 2.0 ports supported
- Fast ATA-133 IDE controller

Memory

- DDR2 800/667/533/400 DDR2 SDRAM with Dual Channel supported
- Accommodates two unbuffered DIMMs
- 2 x 240-pin DDR2 DIMM sockets support up to 16 GB

Audio (optional)

The onboard Audio provides the following features:

• 7.1+2 Channel High Definition Audio Codec • All DACs support 192K/96K/48K/44.1KHz DAC sample rate • Software selectable 2.5V/3.75V VREFOUT • Meets Microsoft WHQL/WLP 2.x audio requirements • Direct Sound 3D™ compatible
• 7.1 Channel High Definition Audio Codec • ADC support 48K/96K sample rate • High quality differential CD input • Power Support: Digital: 3.3V; Analog: 5.0V • Meets Microsoft WHQL/WLP 2.0 audio requirements • Direct Sound 3D™ compatible
• 5.1 Channel High Definition Audio Codec • ADCs support 44.1/48k/96k sample rate • Meets Microsoft WHQL/WLP 3.0x audio requirements • Direct Sound 3D™ compatible
• 5.1 Channel High Definition Audio Codec • ADCs support 44.1/48k/96k sample rate • Meets Microsoft WLP 3.08 Vista premium and mobile PCs audio requirements • Direct Sound 3D™ compatible

Introducing the Motherboard

Onboard LAN

The onboard LAN provides the following features:

- 10BASE-T/100BASE-TX IEEE 802.3u fast Ethernrt transceiver
- Low-power mode
- MII and 7-wire serial interface

Expansion Options

The motherboard comes with the following expansion options:

- One PCI Express x16 slot for Graphics Interface
- One PCI Express x1 slot
- Two 32-bit PCI v2.3 compliant slots
- One IDE connector supporting up to two IDE devices
- One floppy disk drive interface
- Four 7-pin SATA connectors

This motherboard supports Ultra DMA bus mastering with transfer rates of 133/100/66/33 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 parallel port (optional)
- One serial port
- One VGA port
- Four USB ports
- One LAN port
- Audio jacks for microphone, line-in and 6/8-channel (optional) line-out

BIOS Firmware

The motherboard uses Phoenix-Award Workstation 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.

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

2. Due to chipset limitation, we recommend that motherboard be operated in the ambiance between 0 to 50 °C.

Introducing the Motherboard

Motherboard Components
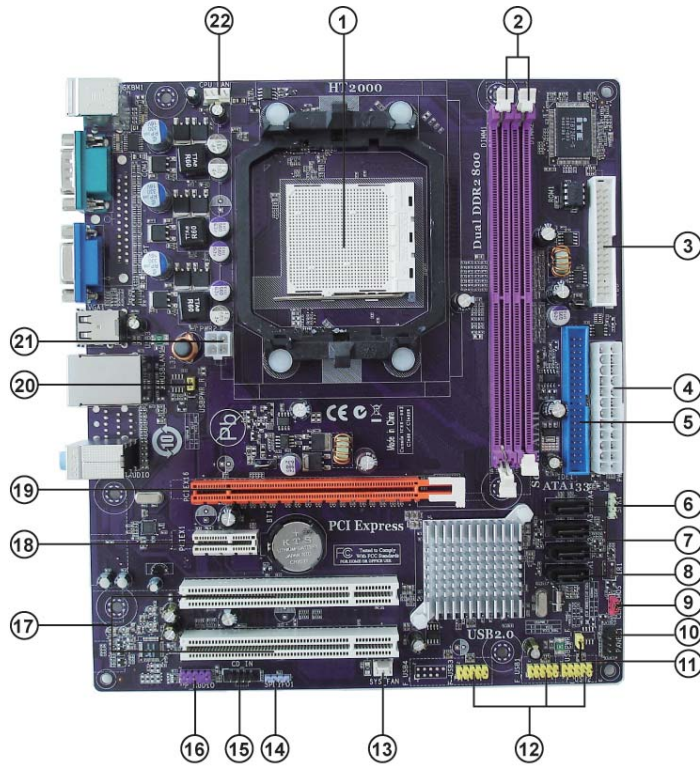
Table of Motherboard Components

LABEL	COMPONENTS
1. CPU Socket	Socket for AMD Phenom™ II/Phenom™ processor (socket AM2+)/ AMD Athlon™ 64 X2 Dual-Core/Athlon™ 64/Sempron™ processors
2. DIMM1~2	240-pin DDR2 SDRAM slots
3. FDD	Floppy disk drive connector
4. PWR1	Standard 24-Pin ATX Power connector
5. IDE1	Primary IDE connector
6. SPK1	Speaker header
7. SATA1~4	Serial ATA connectors
8. IR1*	Infrared header
9. CLR_CMOS	Clear CMOS jumper
10. PANEL1	Front Panel Switch/LED header
11. USBPWR_F	Front Panel USB Power Select jumper
12. F_USB1~3	Front Panel USB headers
13. SYS_FAN	System cooling fan connector
14. SPDIFO1	SPDIF out header
15. CD_IN	Analog Audio Input header
16. F_AUDIO	Front Panel Audio header
17. PCI1~2	32-bit add-on card slots
18. PCIEX1	PCI Express x1 slot
19. PCIEX16	PCI Express x16 graphics card slot
20. USBPWR_R	Rear USB/PS2 Power Select jumper
21. PWR2	4-pin +12V power connector
22. CPU_FAN	CPU cooling fan connector

* stands for optional components

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

Introducing the Motherboard

Memo

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. Firstly, 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 floppy diskette drive and two 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 an Micro ATX form factor of 244 x 214 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

Checking Jumper Settings

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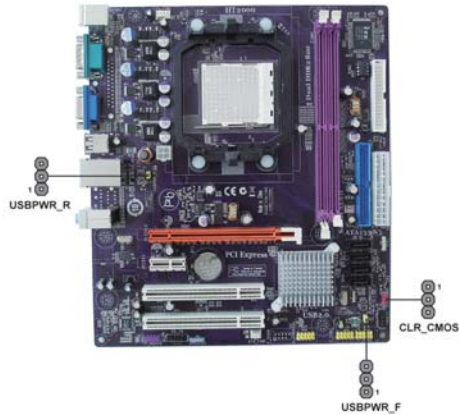
Jumper Settings

Jumper	Type	Description	Setting (default)	
CLR_CMOS	3-pin	CLEAR CMOS	1-2: NORMAL 2-3: CLEAR Before clearing the CMOS, make sure to turn the system off.	
USBPWR_R	3-pin	Rear USB/PS2 Power Select Jumper	1-2: VCC5 2-3: VCC5_DUAL	
USBPWR_F	3-pin	Front Panel USB Power Select Jumper	1-2: VCC5 2-3: VCC5_DUAL	

1. *To avoid the system instability after clearing CMOS, we recommend users to enter the main BIOS setting page to "Load Optimized Defaults" and then "Save & Exit Setup".*

2. *Make sure the power supply provides enough VCC5_DUAL voltage before selecting the VCC5_DUAL function.*

3. *It is required that users place the USBPWR_F & USBPWR_R cap onto 2-3 pin rather than 1-2 pin as default if you want to wake up the computer by USB/PS2 KB/Mouse.*

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:
1. 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.

2. Always remove the AC power by unplugging the power cord from the power outlet before installing or removing the motherboard or other hardware components.

This motherboard has a socket AM2+/AM2 processor socket. 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.

CPU Installation Procedure

The following illustration shows CPU installation components.

1 Unhook the locking lever of the CPU socket. Pull the locking lever away from the socket and raising it to the upright position.
2 Match the pin1 corner marked as the beveled edge on the CPU with the pin1 corner on the socket. Insert the CPU into the socket. Do not use force.
3 Push the locking lever down and hook it under the latch on the edge of socket.
4 Apply thermal grease to the top of the CPU.
5 Install the cooling fan/heatsink unit onto the CPU, and secure them all onto the socket base.
6 Plug the CPU fan power cable into the CPU fan connector (CPU_FAN) on the motherboard.
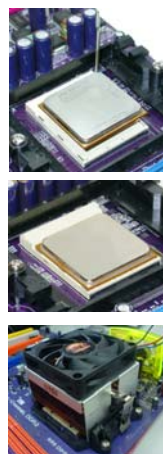
To achieve better airflow rates and heat dissipation, we suggest that you use a high quality fan with 4800 rpm at least. CPU fan and heatsink installation procedures may vary with the type of CPU fan/heatsink supplied. The form and size of fan/heatsink may also vary.

Installing the Motherboard

Installing Memory Modules

This motherboard accommodates two 240-pin unbuffered DIMMs and supports DDR2 800/667/533/400 DDR2 SDRAM. You must install at least one module in any of the two slots. The total memory capacity is up to 16 GB.

DDR2 SDRAM memory module table

Memory module	Memory Bus
DDR2 400	200 MHz
DDR2 533	266 MHz
DDR2 667	333 MHz
DDR2 800	400 MHz

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.

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.
6. Install any remaining DIMM modules.

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 533	512 MB	Samsung	PC2-4200U-4444-10-B1
	1 GB	A-DATA	A-DATA/Vitesta/1GB/DS
DDR2 667	512 MB	Apacer	78.91G92.9K5
		Micron	MT4HTF6464AY-667E1
		PSC	AL6E8E63J-6E1
		Ramxel	RML1520M38D6F-667
		Samsung	PC2-5300U-555-12-D3
	1 GB	Apacer	AU01GE667C5KBGC
			78.01G9O.9K5
		Corsair	VS1GB667D2
		Hexon	HYNT7AUDR-30M48
		Kingston	KVR667D2N5
		PSC	AL7E8E63B-6E1T
			AL7E8F73C-6E1
			AL7E8F63J-6E1
		Samsung	GOLD BAR M378T2863DZS 0742
	2 GB	Aeneon	AET860UD00-30DB08X
		Apacer	78.A1G9O.9K4
		Hynix	HYMP125U64AP8-Y5 AB-A 0623
		Hexon	HYNT8AUDR-30M88
		Kingston	KVR667D2N5/2G
		LeadMax	PC2-5300U
		PSC	AL8E8F73C-6E1
		Qimonda	HYS64T256020EU-3S-C2
	4 GB	Aeneon	AET960UD00-30D

Installing the Motherboard

Type	Size	Vendor	Module Name
DDR2 800	512 MB	Kingston	KVR800D2N5/512 1.8V 9905315-019.A02LF
		Micron	MT8HTF6464AY-80ED4
		Qimonda	HYS72T64000HU-2.5-B
	1 GB	A-DATA	M2GVD6G3I41P0U1E5E
		Aeneon	AET760UD00-30DB97X
			AET760UD00-25DC08X
		Apacer	AU01GE800C5KBGC
			78.01GAO.9K5
			78.01GA0.9L5
		APOGEE	AU1G082-800P000
		Geil	GEIL MILLENARY/Geil/GL2L64M088BA18H
		Infinity	04701G16CZ5U2G
		Kingston	KVR800D2N5/1G 1.8V 9905316-054.A01LF
		KingMax	KLDD48F-B8KU5NGES
		Nanya	NT1GT64U88D0BY-AD
		PSC	AL7E8F73C-8E1
		Ramaxel	RML1320EH38D7F-800
		Samsung	GOLD BAR M378T2953EZ3-CE7 0726
			M378T2863EHS-CF7 0849
		Silicon Power	SP001GBLRU800S01
		Transcend	507301-1571
		Unifosa	GU341G0ALEPR6B2C6CE
	2 GB	A-DATA	RED A-DATA M2OMI6H3J4720L1C5Z
		Apacer	78.A1GAO.9K4
		Aeneon	AET860UD00-25DC08X
		CORSAIR	CM2X2048-6400C5
		Geil	GEIL PLATINUM EDITION/Geil/BOXED
		Hexon	ELPT8AUDR-25M88
		Kingston	KVR800D2N5/2G
			KVR800D2N6/2G-SP
		KingMax	KLDE88F-B8KU5NHES
		Micron	MT16HTF25664AY-800E1
		Nanya	NT2GT64U8HD0BY-AD
		PSC	AL8E8F73C-8E1
		Qimonda	HYS64T256020EU-25F-C2
		Silicon Power	SP002GBLRU800S01
		Samsung	M378T5663EH3-CF7 0849
			M378T5663QZ3-CF7
		Unifosa	GU342G0ALEPR692C6CE
	4 GB	Aeneon	AET960UD00-25D
		Samsung	M378T5263AZ3-CF7 0819
DDR2 1066	1 GB	Micron	MT8HTF12864AY-1GAE1
		Kingston	KVR1066D2N7/1G 1.8V/9905316-106.A01LF
		Qimonda	HYS64T128020EU-19F-C
	2 GB	Micron	MT16HTF25664AY-1GAE1

Users please be noted that DDR2 1066 MHz is validated to run at 800 MHz only.

Installing the Motherboard

Expansion Slots

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.
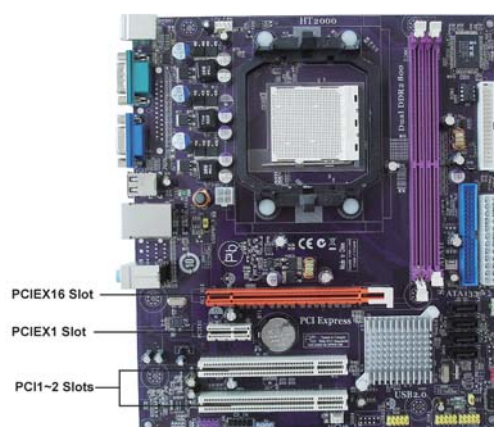
PCIEX16 Slot   The PCI Express x16 slot is used to install an external PCI Express graphics card that is fully compliant to the PCI Express Base Specification revision 1.1.

PCIEX1 Slot   The PCI Express x1 slot is fully compliant to the PCI Express Base Specification revision 1.1 as well.

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.

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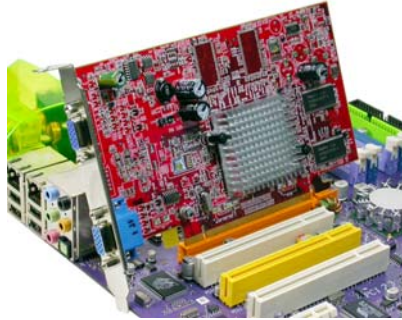
For some add-on cards, for example graphics adapters and network adapters, you have to install drivers and software before you can begin using the add-on card.

Connecting Optional Devices

Refer to the following for information on connecting the motherboard's optional devices:
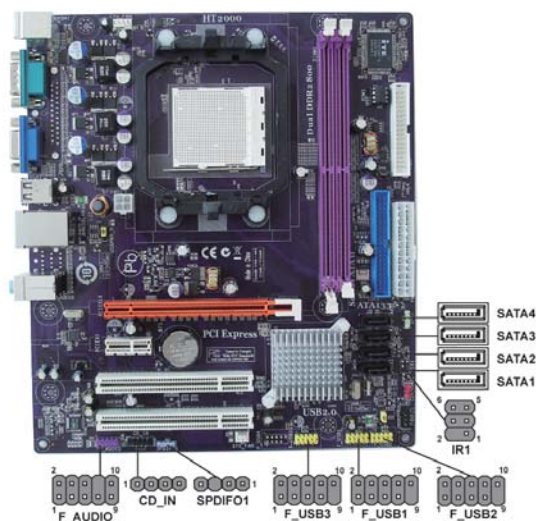
F_AUDIO: Front Panel Audio header (optional)

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

Pin	Signal Name	Pin	Signal Name
1	PORT 1L	2	AUD_GND
3	PORT 1R	4	PRESENCE#
5	PORT 2R	6	SENSE1_RETURN
7	SENSE_SEND	8	KEY
9	PORT 2L	10	SENSE2_RETURN

SATA1~4: Serial ATA connectors

These connectors are used to support the new Serial ATA devices for the highest date 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	-	-

Installing the Motherboard

IR1: Infrared header (optional)

The motherboard supports an Infrared (IR1) data port. Infrared ports allow the wireless exchange of information between your computer and similarly equipped devices such as printers, laptops, Personal Digital Assistants (PDAs), and other computers.

Pin	Signal Name	Function
1	Not Assigned	Not assigned
2	Key	No pin
3	+5V	IR Power
4	GND	Ground
5	IR_TX	IrDA serial output
6	IR_RX	IrDA serial input

F_USB1~3: 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.

SPDIFO1: SPDIF out header

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

Installing the Motherboard

CD_IN: Analog Audio Input connector

Pin	Signal Name	Function
1	CD_L	CD In left channel
2	GND	Ground
3	GND	Ground
4	CD_R	CD In right channel

Installing a Hard Disk Drive/CD-ROM/SATA Hard Drive

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 one IDE interface.

IDE1: IDE Connector

This motherboard supports four high data transfer SATA ports with each runs up to 3.0 Gb/s. To get better system performance, we recommend users connect the CD-ROM to the IDE channel, and set up the hard drives on the SATA ports.

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 SATA Connectors

Your motherboard features four SATA connectors supporting a total of 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.

This motherboard does not support the "Hot-Plug" function.

Installing a Floppy Diskette Drive

FDD: Floppy Disk Connector

Connect the single end of the floppy connector to the onboard floppy connector firstly, and then connect the remaining plugs on the other end to the floppy drives correspondingly.

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.

Installing the Motherboard

Connecting I/O Devices

The backplane of the motherboard has the following I/O ports:
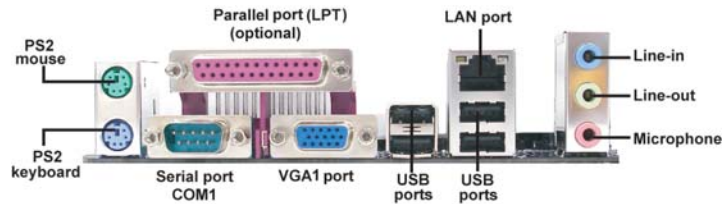
PS2 Mouse	Use the upper PS/2 port to connect a PS/2 pointing device.
PS2 Keyboard	Use the lower PS/2 port to connect a PS/2 keyboard.
Parallel Port (LPT) (optional)	Use LPT to connect printers or other parallel communications devices.
Serial Port (COM1)	Use the COM port to connect serial devices such as mice or fax/modems.
VGA1 Port	Connect your monitor to the VGA port.
USB Ports	Use the USB ports to connect USB devices.
LAN Port	Connect an RJ-45 jack to the LAN port to connect your computer to the Network.
Audio Ports (optional)	Use the three audio jacks 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.
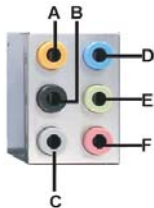
This motherboard may adopt 8-channel audio ports that correspond to the A,B, C, and E port respectively. In addition, all of the 3 ports, B, C, and E provide users with both right & left channels individually. Users please refer to the following note for specific port function definition.

A: Center & Woofer	D: Line-in
B: Back Surround	E: Front Out
C: Side Surround	F: Mic_in Rear

The above port definition can be changed to audio input or audio output by changing the driver utility setting.

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_FAN**.
3   Connect the standard power supply connector to **PWR1**.
4   Connect the auxiliary case power supply connector to **PWR2**.
5   Connect the case switches and indicator LEDs to the **PANEL1**.
6   Connec the case speaker cable to **SPK1**.
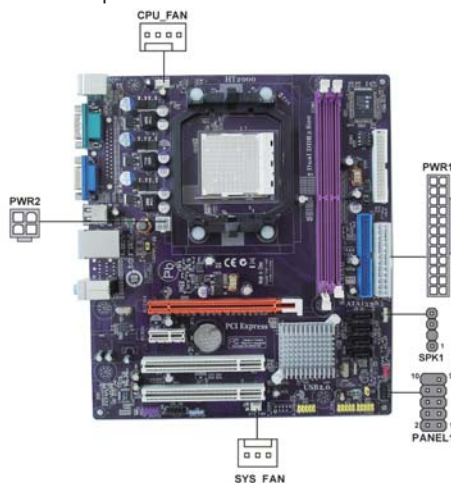
Connecting 24-pin power cable

Users please note that the 24-pin power cable can be connected to the PWR1 connector.
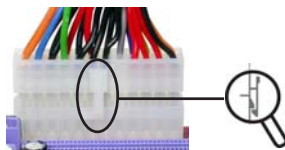
With ATX v2.x power supply, users please note that when installing 24-pin power cable, the latches of power cable and the PWR1 match perfectly.

24-pin power cable

Connecting 4-pin power cable

The PWR2 power connector is used to provide power to the CPU.
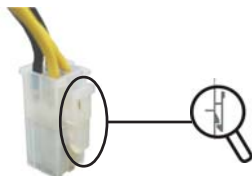
When installing 4-pin power cable, the latches of power cable and the PWR2 match perfectly.

4-pin power cable

Installing the Motherboard

CPU_FAN: FAN Power Connector

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

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

SYS_FAN: System Cooling FAN Power Connector

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

PWR1: ATX 24-pin Power Connector

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

PWR2: ATX 12V Power Connector

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

SPK1: Internal speaker header

Pin	Signal Name
1	VCC
2	Key
3	GND
4	Signal

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:
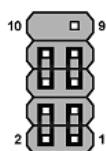
PANEL1

Pin	Signal	Function	Pin	Signal	Function
1	HD_LED_P	Hard disk LED (+)	2	FP PWR/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 de-bounce circuitry. After receiving a power on/off signal, at least two seconds elapses before the power supply recognizes another on/off signal.

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

Installing the Motherboard

Memo

Chapter 3

Using BIOS

About the Setup Utility

The computer uses the latest "American Megatrends Inc." 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.

CMOS Setup Utility -- Copyright (C) 1985-2005, American Megatrends, Inc.

▶ Standard CMOS Setup	▶ Frequency/Voltage Control
▶ Advanced Setup	Load Default Settings
▶ Advanced Chipset Setup	▶ Supervisor Password
▶ Integrated Peripherals	▶ User Password
▶ Power Management Setup	Save & Exit Setup
▶ PCI/PnP Setup	Exit Without Saving
▶ PC Health Status	

↑↓ → ← :Move   Enter : Select   +/-/: Value   F10: Save   ESC: Exit
F1:General Help   F9: Optimized Defaults

v02.67 (C)Copyright 1985-2009, American Mega trends, Inc.
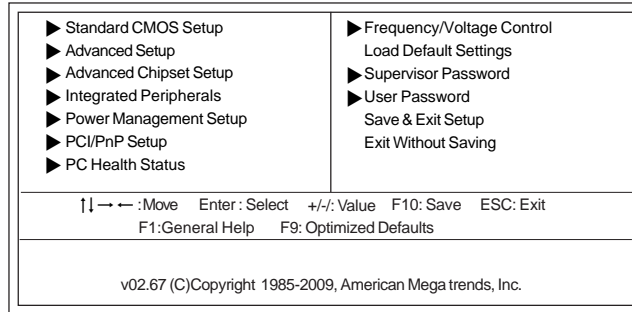
Resetting the Default CMOS Values

When powering on for the first time, the POST screen may show a "CMOS Settings Wrong" message. This standard message will appear following a clear CMOS data at factory by the manufacturer. You simply need to Load Default Settings to reset the default CMOS values.

Note: Changes to system hardware such as different CPU, memories, etc. may also trigger this message.


```
Auto-Detecting 4th Slave...IDE Hard Disk
4th Slave  : ST3120827AS  3.42
               Ultra DMA Mode-5, S.M.A.R.T. Capable and Status
CMOS Settings Wrong
CMOS Date/Time Not Set
Press F1 to Run SETUP
```

CMOS Setup Utility -- Copyright (C) 1985-2005, American Megatrends, Inc.

▶ Standard CMOS Setup	▶ Frequency/Voltage Control
▶ Advanced Setup	Load Default Settings
▶ Advanced Chipset Setup	▶ Supervisor Password
▶ Integrated Peripherals	sword
▶ Power Management Setu	Save & Exit Setup? xit Setup
▶ PCI/PnP Setup	[OK] [Cancel] ut Saving
▶ PC Health Status	

↑↓ → ← :Move   Enter : Select   +/-/: Value   F10: Save   ESC: Exit
F1:General Help   F9: Optimized Defaults

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Using BIOS

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 ▶.

The default BIOS setting for this motherboard apply for most conditions with optimum performance. We do not suggest users change the default values in the BIOS setup and take no responsibility to any damage caused by changing the BIOS settings.

BIOS Navigation Keys

The BIOS navigation keys are listed below:

KEY	FUNCTION
ESC	Exits the current menu
↑↓ → ←	Scrolls through the items on a menu
+/-/	Modifies the selected field's values
Enter	Select
F9	Loads an optimized setting for better performance
F10	Saves the current configuration and exits setup
F1	Displays a screen that describes all key functions

For the purpose of better product maintenances, we reserve the right to change the BIOS items presented in the manual. The BIOS setup screens shown in this chapter are for reference only. Please visit our website for updated manual.

Standard CMOS Setup

This option displays basic information about your system.

```
          CMOS Setup Utility -- Copyright (C) 1985-2005, American Megatrends, Inc.
                              Standard CMOS Setup
  ┌──────────────────────────────────────────────────┬──────────────────────┐
  │  Date                      Wed 04/22/2009         │      Help Item       │
  │  Time                      00 : 02 : 16           │                      │
  │                                                   │  User [Enter], [TAB] │
  │  ► Primary IDE Master      Not Detected           │  or [SHIFT-TAB] to   │
  │  ► Primary IDE Slave       Not Detected           │  select a field.     │
  │  ► SATA 1                  Hard Disk              │                      │
  │  ► SATA 2                  Not Detected           │  Use [+] or [-] to   │
  │  ► SATA 3                  Not Detected           │  configure system Date. │
  │  ► SATA 4                  Not Detected           │                      │
  │                                                   │                      │
  │  IDE BusMaster             Enabled                │                      │
  │                                                   │                      │
  │  Drive A:                  1.44 MB 3¹/₂"          │                      │
  │                                                   │                      │
  └──────────────────────────────────────────────────┴──────────────────────┘
       ↑↓ → ←: Move   Enter : Select   +/-/: Value   F10: Save   ESC: Exit
                F1: General Help   F9: Optimized Defaults
```

Date & 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.

▶ **Primary IDE Master/Slave, SATA 1~4**

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

CMOS SETUP UTILITY – Copyright (C) 1985-2005, American Megatrends, Inc.
Primary IDE Master

Primary IDE Master	Help Item
Device : Not Detected	
Type	Auto	Select the type of device connected to the system.
LBA/Large Mode	Auto	
Block (Multi-Sector Transfer	Auto	
PIO Mode	Auto	
DMA Mode	Auto	
S.M.A.R.T	Auto	
32Bit Data Transfer	Enabled	

↑↓ → ←:Move   Enter : Select   +/-/: Value   F10: Save   ESC: Exit
F1: General Help   F9: Optimized Defaults

Type (Auto)

Use this item to configure the type of the IDE device that you specify. If the feature is enabled, it will enhance hard disk performance by reading or writing more data during each transfer.

LBA/Large Mode (Auto)

Use this item to set the LAB/Large mode to enhance hard disk performance by optimizing the area the hard disk is visited each time.

Block (Multi-Sector Transfer) (Auto)

If the feature is enabled, it will enhance hard disk performance by reading or writing more data during each transfer.

PIO Mode (Auto)

Use this item to set the PIO mode to enhance hard disk performance by optimizing the hard disk timing.

DMA Mode (Auto)

DMA capability allows user to improve the transfer-speed and data-integrity for compatible IDE devices.

S.M.A.R.T. (Auto)

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.

32Bit Data Transfer (Enabled)

Use this item to enable or disable the 32Bit Data Transfer.

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

Using BIOS

IDE BusMaster (Enabled)

This item enables or disables the DMA under DOS mode. We recommend you to leave this item at the default value.

Drive A (1.44 MB 3$^1/_2$")

This item defines the characteristics of any diskette drive attached to the system. Only one diskette drive is supported.

Press <Esc> to return to the main menu setting page.

Advanced Setup

This page sets up more advanced information about your system. Handle this page with caution. Any changes can affect the operation of your computer.

CMOS Setup Utility - Copyright (C) 1985-2005, American Megatrends, Inc.
Advanced Setup

		Help Item
HT Frequency	Auto	
AMD C&Q	Enabled	
Quick Power on Self Test	Enabled	SouthBrigde to K8(CPU)
Boot Up Numlock Status	On	frequency selection
APIC Mode	Enabled	by CPU capability
1st Boot Device	Hard Drive	
2nd Boot Device	CD/DVD	
3rd Boot Device	1st FLOPPY DRIVE	
▶ Hard Disk Drives	Press Enter	
▶ Removable Drives	Press Enter	
Boot Other Device	Yes	

↑↓ → ←:Move   Enter : Select   +/-/: Value   F10: Save   ESC: Exit
F1:General Help   F9: Optimized Defaults

HT Frequency (Auto)

This item enables users to manually set up the HyperTransport frequency. If Manual, the HT Frequency Value will display, and the options are 200 MHz, 400 MHz, 600 MHz, 800 MHz and 1000 MHz.

AMD C&Q (Enabled)

This item helps the system to lower the frequency when CPU idles. When the frequency decreases, the temperature will drop automatically as well.

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.

Boot Up Numlock Status (On)

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

APIC Mode (Enabled)

This item allows you to enable or disable the APCI (Advanced Programmable Interrupt Controller) mode. APIC provides symmetric multi-processing (SMP) for systems, allowing support for up to 60 processors.

1st/2nd/3rd Boot Device (Hard Drive/CD/DVD/1st FLOPPY DRIVE)

Use this item to determine the device order the computer used to look for an operating system to load at start-up time. The devices showed here will be different depending on the exact devices installed on your motherboard.

Using BIOS

▶ Hard Disk Drives (Press Enter)

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

CMOS Setup Utility - Copyright (C) 1985-2005, American Megatrends, Inc.
Hard Disk Drives

Hard Disk Drives	Help Item
1st Drive　　　　　ST340824A	Specifies the boot sequence from the available devices.

↑↓→←:Move　Enter : Select　+/-/: Value　F10: Save　ESC: Exit
F1:General Help　　　　F9: Optimized Defaults

Press <Esc> to return to the Advanced setup page.

▶ Removable Drives (Press Enter)

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

CMOS Setup Utility - Copyright (C) 1985-2005, American Megatrends, Inc.
Removable Drives

Removable Drives	Help Item
1st Drive　　　　　1st FLOPPY DRIVE	Specifies the boot sequence from the available devices.

↑↓→←:Move　Enter : Select　+/-/: Value　F10: Save　ESC: Exit
F1:General Help　　　　F9: Optimized Defaults

Press <Esc> to return to the Advanced setup page.

Boot Other Device (Yes)

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.

Using BIOS

Press <Esc> to return to the main menu setting page.

Advanced Chipset Setup

This page sets up more advanced information about your system. Handle this page with caution. Any changes can affect the operation of your computer.

CMOS Setup Utility - Copyright (C) 1985-2005, American Megatrends, Inc.
Advanced Chipset Setup

Dram Frequency	Auto	Help Item
Dram Timing	Auto	Options
DCT Unganged Mode	Always	
VGA Share Memory	Auto	
VGA Share Memory Value	32MB	Auto
		Limit
		Manual

↑↓ → ←:Move   Enter : Select   +/-/: Value   F10: Save   ESC: Exit
F1:General Help   F9: Optimized Defaults

Dram Frequency (Auto)

This item enables users to adjust the DRAM frequency. The default setting is auto and we recommend users leave the setting unchanged. Modify it at will may cause the system to be unstable.

DRAM Timing (Auto)

This item allows you to enable or disable the DRAM timing defined by the Serial Presence Detect electrical. Users please note that if setting this item to auto, the following two items are not available.

DCT Unganged Mode (Always)

This item is used to select the DCT mode (DRAM Controller mode).

VGA Share Memory (Auto)

This item lets you allocate a portion of the main memory for the onboard VGA display application.

VGA Share Memory Value (32MB)

This item displays the VGA Share Memory Value.

Press <Esc> to return to the main menu setting page.

Integrated Peripherals

This page sets up some parameters for peripheral devices connected to the system.

CMOS Setup Utility - Copyright (C) 1985-2005, American Megatrends, Inc.
Integrated Peripherals

		Help Item
Onboard IDE Controller	Enabled	
Serial-ATA 0	Enabled	
SATA Mode Select	SATA Mode	DISABLED: disables the
		integrated IDE Control-
▶ nVidia RAID Setup	Press Enter	ler.
		PRIMARY: enables only
Onboard AUDIO Function	Auto	the Primary IDE Control-
Onboard LAN Function	Auto	ler.
Onboard LAN Boot ROM	Disabled	SECONDARY: enables
Serial Port1 Address	3F8/IRQ4	only the Secondary IDE
Legacy USB Support	Enabled	Controller.
USB Controller	Enabled	BOTH: enables both IDE
		Controllers.

↑↓→←:Move   Enter : Select   +/-/: Value   F10: Save   ESC: Exit
F1:General Help   F9: Optimized Defaults

OnBoard IDE Controller (Enabled)

Use this item to enable or disable the onboard IDE interface.

Serial-ATA 0 (Enabled)

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

SATA Mode select (SATA Mode)

Use this item to select the mode of the Serial ATA.

▶ **nVidia RAID Setup (Press Enter)**

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

CMOS Setup Utility - Copyright (C) 1985-2005, American Megatrends, Inc.
nVidia RAID Setup

RAID Setup	Help Item

↑↓→←:Move   Enter : Select   +/-/: Value   F10: Save   ESC: Exit
F1:General Help   F9: Optimized Defaults

Using BIOS

Onboard AUDIO Function (Auto)

Use this item to enable or disable the onboard audio device.

OnBoard LAN Function (Auto)

Use this item to enable or disable the onboard LAN function.

OnBoard LAN Boot ROM (Disabled)

Use this item to enable or disable the booting from the onboard LAN or a network add-in card with a remote boot ROM installed.

Serial Port1 Address (3F8/IRQ4)

Use this item to enable or disable the onboard COM1 serial port, and to assign a port address.

Legacy USB 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 device at startup. If detected, the USB controller legacy mode is enabled. If no USB device is detected, the legacy USB support is disabled.

USB Controller (Enabled)

This item enables the USB controller. Leave this at the default "Enabled" if you want to connect USB devices to your computer.

Press <Esc> to return to the main menu setting page.

Power Management Setup

This page sets up some parameters for system power management operation.

CMOS Setup Utility - Copyright (C) 1985-2005, American Megatrends, Inc.
Power Management Setup

		Help Item
ACPI Suspend Type	S3 (STR)	
PWRON After PWR-Fail	Power Off	
Soft-off by PWR-BTTN	Instant Off	Select the ACPI
Resume By Ring	Disabled	state used for
Resume By PCI/PCI-E/Lan PME	Disabled	System Suspend.
Resume By USB (S3)	Disabled	
Resume By PS2 KB (S3)	Disabled	
Resume By PS2 MS (S3)	Disabled	
Resume By RTC Alarm	Disabled	

↑↓→←:Move   Enter : Select   +/-/: Value   F10: Save   ESC: Exit
F1:General Help   F9: Optimized Defaults

Using BIOS

ACPI Suspend Type (S3(STR))

Use this item to define how your system suspends. In the default, S3, the suspend mode is a suspend to RAM, i.e, the system shuts down with the exception of a refresh current to the system memory.

PWRON After PWR-Fail (Power Off)

This item enables your computer to automatically restart or return to its operating status.

Soft-Off By PWR-BTTN (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 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 PCI/PCI-E/Lan PME (Disabled)

These items specify 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 USB (S3) (Disabled)

This item allows you to enable/disable the USB device wakeup function from S3 mode.

Resume By PS2 KB (S3) (Disabled)

This item enable or disable you to allow keyboard activity to awaken the system from power saving mode.

Resume By PS2 MS (S3) (Disabled)

This item enable or disable you to allow mouse activity to awaken the system from power saving mode.

Resume By RTC Alarm (Disabled)

The system can be turned off with a software command. If you enable this item, the system can automatically resume at a fixed time based on the system's RTC (realtime clock). Use the items below this one to set the date and time of the wake-up alarm. You must use an ATX power supply in order to use this feature.

Press <Esc> to return to the main menu setting page.

Using BIOS

PCI / PnP Setup

This page sets up some parameters for devices installed on the PCI bus and those utilizing the system plug and play capability.

```
         CMOS Setup Utility - Copyright (C) 1985-2005, American Megatrends, Inc.
                                    PCI / PnP Setup
┌────────────────────────────────────────────────────┬─────────────────────┐
│                                                     │      Help Item      │
│   Init Display First                      PCI       │                     │
│   Allocate IRQ to PCI VGA                 Yes       │       Options       │
│                                                     │                     │
│                                                     │  Onboard            │
│                                                     │  PCI                │
│                                                     │  PCI Express        │
│                                                     │                     │
│                                                     │                     │
│                                                     │                     │
│                                                     │                     │
│                                                     │                     │
│                                                     │                     │
│                                                     │                     │
└────────────────────────────────────────────────────┴─────────────────────┘
        ↑↓→←:Move   Enter : Select   +/-/: Value   F10: Save    ESC: Exit
              F1:General Help         F9: Optimized Defaults
```

Init Display First (PCI)

Use this item to select which graphics controller to use as the primary boot devices.

Allocate IRQ to PCI VGA (Yes)

If this item is enabled, an IRQ will be assigned to the PCI VGA graphics system. You set this value to No to free up an IRQ.

Press <Esc> to return to the main menu setting page.

PC Health Status

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

```
         CMOS Setup Utility - Copyright (C) 1985-2005, American Megatrends, Inc.
                                   PC Health Status
┌────────────────────────────────────────────────────┬─────────────────────┐
│                                                     │      Help Item      │
│       -=- System Hardware Monitor-=-                │                     │
│   ▶ Smart Fan Function            Press Enter       │                     │
│   Shutdown Temperature            Disabled          │                     │
│   CPU Core                        :1.338V           │                     │
│   VDIMM                           :1.888V           │                     │
│   CPU Fan Speed                   :0 RPM            │                     │
│   CPU Tcontrol                    :40°C/104°F        │                     │
│   System Temperature              :33°C/91°F         │                     │
│                                                     │                     │
│                                                     │                     │
│                                                     │                     │
│                                                     │                     │
│                                                     │                     │
│                                                     │                     │
└────────────────────────────────────────────────────┴─────────────────────┘
        ↑↓→←:Move   Enter : Select   +/-/: Value   F10: Save   ESC: Exit
              F1:General Help         F9: Optimized Defaults
```

Using BIOS

▶ **Smart Fan Function**

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

CMOS Setup Utility - Copyright (C) 1985-2005, American Megatrends, Inc.
Smart Fan Function

		Help Item
SMART Fan Control	Enabled	
SMART Fan Start PWM value	40	
SMART Fan start TEMP. (°C)	50	Options
DeltaT	+3	
SMART Fan Slope PWM value	4 PWM value/°C	Disabled
		Enabled

↑↓ → ←:Move   Enter : Select   +/-/: Value   F10: Save   ESC: Exit
F1:General Help   F9: Optimized Defaults

SMART Fan Control (Enabled)

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

SMART Fan start PWM value (40)

This item is used to set the start PWM value of the smart fan.

SMART Fan start TEMP. (50)

This item is used to set the start temperature of the smart fan.

DeltaT (+3)

This item specifies the range that controls CPU temperature and keeps it

from going so high or so low when smart fan works.

Smart FAN Slope PWM value (4 PWM value)

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)

This item nables you to set the maximum temperature the system can reach before powering down.

Using BIOS

System Component Characteristics

These items display the monitoring of the overall inboard hardware health events, such as System & CPU temperature, CPU & DIMM voltage, CPU & system fan speed,...etc.

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

Press <Esc> to return to the main menu setting page.

Frequency/Voltage Control

This page enables you to set the clock speed and system bus for your system. The clock speed and system bus are determined by the kind of processor you have installed in your system.

CMOS Setup Utility - Copyright (C) 1985-2005, American Megatrends, Inc.
Frequency/Voltage Control

Auto Detect DIMM/PCI CIK	Enabled	Help item
		Options
		Disabled
		Enabled

↑↓ → ←:Move   Enter : Select   +/-/: Value   F10: Save   ESC: Exit
F1:General Help   F9: Optimized Defaults

Auto Detect DIMM/PCI Clk (Enabled)

When this item is enabled, BIOS will disable the clock signal of free DIMM/PCI slots.

Press <Esc> to return to the main menu setting page.

Using BIOS

Load Default Settings

This option opens a dialog box to ask if you are sure to install optimized defaults or not. You select [OK], and then <Enter>, the Setup Utility loads all default values; or select [Cancel], and then <Enter>, the Setup Utility does not load default values.

Supervisor Password

This page helps you install or change a password.

```
              CMOS Setup Utility - Copyright (C) 1985-2005, American Megatrends, Inc.
                                    Supervisor Password
```

Supervisor Password :Not Installed	Help item
Change Supervisor Password Press Enter	Install or Change the password.

```
          ↑↓ → ←:Move   Enter : Select   +/-/: Value    F10: Save    ESC: Exit
                     F1:General Help          F9: Optimized Defaults
```

Supervisor Password (Not Installed)

This item indicates whether a supervisor password has been set. If the password has been installed, *Installed* displays. If not, *Not Installed* displays.

Change Supervisor Password (Press Enter)

You can select this option and press <Enter> to access the sub menu. You can use the sub menu to change the supervisor password.

Press <Esc> to return to the main menu setting page.

Using BIOS

User Password

This page helps you install or change a password.

```
           CMOS Setup Utility - Copyright (C) 1985-2005, American Megatrends, Inc.
                                 User Password
  ┌─────────────────────────────────────────────────┬──────────────────────┐
  │                                                   │                      │
  │  User Password         : Not Installed            │     Help item        │
  │                                                   │                      │
  │  Change User Password          Press Enter        │  Install or Change the│
  │                                                   │  password.           │
  │                                                   │                      │
  │                                                   │                      │
  │                                                   │                      │
  │                                                   │                      │
  │                                                   │                      │
  │                                                   │                      │
  │                                                   │                      │
  └─────────────────────────────────────────────────┴──────────────────────┘
         ↑↓ → ←:Move  Enter : Select  +/-/: Value   F10: Save   ESC: Exit
                   F1:General Help       F9: Optimized Defaults
```

User Password (Not Installed)

This item indicates whether a user password has been set. If the password has been installed, *Installed* displays. If not, *Not Installed* displays.

Change User Password (Press Enter)

You can select this option and press <Enter> to access the sub menu. You can use the sub menu to change the supervisor password.

Press <Esc> to return to the main menu setting page.

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, select [OK] to save and exit, or select [Cancel] 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, select [OK] to discard changes and exit, or select [Cancel] 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 select [OK] to discard any changes you have made.

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   Prepare a bootable device or create a bootable system disk. (Refer to Windows online 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 bootable device.
5   Turn off your computer and insert the bootable device in your computer. (You might need to run the Setup Utility and change the the boot priority items on the Advanced BIOS Features Setup page, to force your computer to boot from the bootable device first.)
6   At the C:\ or A:\ prompt, type the Flash Utility program name and the file name of the new BIOS and then press <Enter>. Example: AFUDOS.EXE 040706.ROM
7   When the installation is complete, remove the bootable device from the computer 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.

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

About the Software DVD-ROM/CD-ROM

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

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

2. *The notice of Intel HD audio installation (optional): The Intel High Definition audio functionality unexpectedly quits working in Windows Server 2003 Service Pack 1 or Windows XP Professional x64 Edition. Users need to download and install the update packages from the Microsoft Download Center "before" installing HD audio driver bundled in the Driver disk. Please log on to http://support.microsoft.com/default.aspx?scid=kb;en-us;901105#appliesto for more information.*

Auto-installing under Windows XP/Vista/7

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

If the Auto-install DVD-ROM/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 DVD-ROM/CD-ROM disc loads automatically under Windows XP/Vista/7. When you insert the DVD-ROM/CD-ROM disc in the DVD-ROM/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.

Drivers Tab

Setup	Click the **Setup** button to run the software installation program. Select from the menu which software you want to install.
Browse CD	The **Browse CD** button is the standard Windows command that allows you to open Windows Explorer and show the contents of the support disk.
	Before installing the software from Windows Explorer, look for a file named README.TXT or something similar. This file may contain important information to help you install the software correctly.
	Some software is installed in separate folders for different operating systems, such as Windows XP/Vista/7. Always go to the correct folder for the kind of OS you are using.
	In install the software, execute a file named SETUP.EXE by double-clicking the file and then following the instructions on the screen.
Exit	The **EXIT** button closes the Auto Setup window.

Utilities Tab

Lists the software utilities that are available on the disk.

Information Tab

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

Running Setup

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

    1.   *Click **Setup**. The installation program begins:*
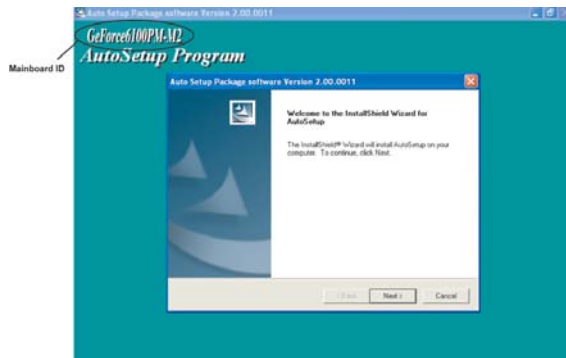
    The following screens are examples only. The screens and driver lists will be different according to the motherboard you are installing.

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

2. *Click **Next.** The following screen appears:*
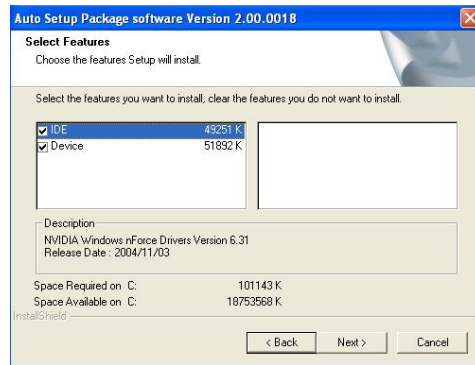
3. *Check the box next to the items you want to install. The default options are recom mended.*

4. *Click **Next** run the Installation Wizard. An item installation screen appears:*
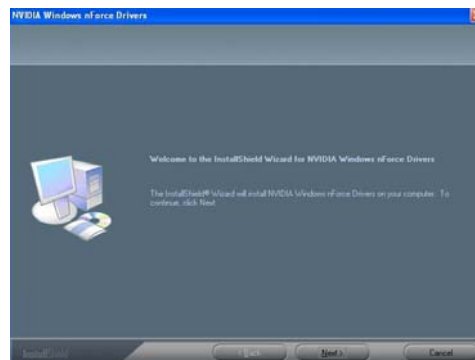

5. *Follow the instructions on the screen to install the items.*

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

Windows Vista/7 will appear below UAC (User Account Control) message after the system restart. You must select "Allow" to install the next driver. Continue this process to complete the drivers installation.
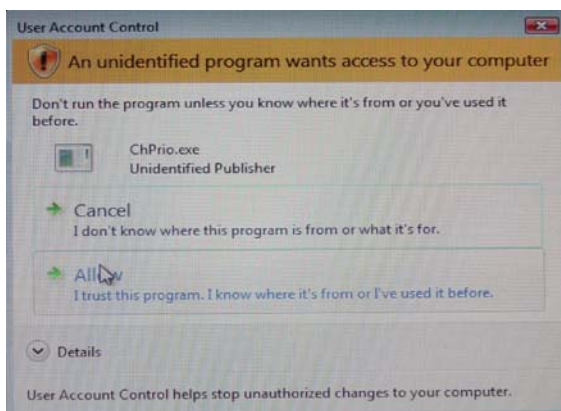
Manual Installation

Insert the disk in the DVD-ROM/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.

1. These software(s) are subject to change at anytime without prior notice. Please refer to the support disk for available software.
2. Please go to ECS website to download AMD Cool'n'Quiet^{TM} technology.

This concludes chapter 4.

Chapter 5
Setting Up NVIDIA RAID Configuration

There are two ways to setup NVIDIA RAID Configuration: one is to create a RAID 1 Array for backup or a RAID 0 Array for increased performance just by adding additional disk array without changing the original OS (Non-Bootable RAID Array); while the other is to configure the RAID Array disks when reinstalling the OS (Bootable RAID Array).

Setting Up a Non-Bootable RAID Array

RAID arrays can be created/deleted using both MediaShield RAID BIOS and the MediaShield RAID Manager from Windows. This section only covers basic BIOS setup required for non-bootable array. See the section "Setting Up a Bootable RAID Array" for instructions on configuring the RAID array in BIOS. See sections on using the MediaShield RAID Manager for details on configuring non-bootable RAID from Windows.

Setting Up the BIOS

1   Start your computer, then press Delete to enter the BIOS setup.

   The BIOS CMOS Setup Utility window appears.

   Figure 1.1   BIOS CMOS Setup Utility Main Window

2   Use the arrow keys to select Integrated Peripherals (see Figure 1.1), then press Enter.
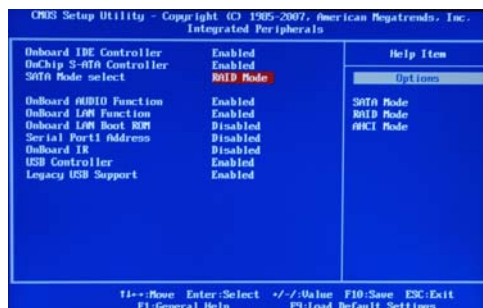
   The Integrated Peripherals window appears.

   Figure 1.2   Integrated Peripherals Window

NVIDIA RAID Configuration

3   From the Integrated Peripherals Window, globally set SATA Mode select to RAID Mode (see Figure 1.2).

4   Press F10 to save the configuration and exit (F10 is the navigation key to save the current configuration and exit setup in BIOS setting).

The PC reboots.

Installing the NVIDIA RAID Software Under Windows

This section describes how to run the setup application and install the RAID software.
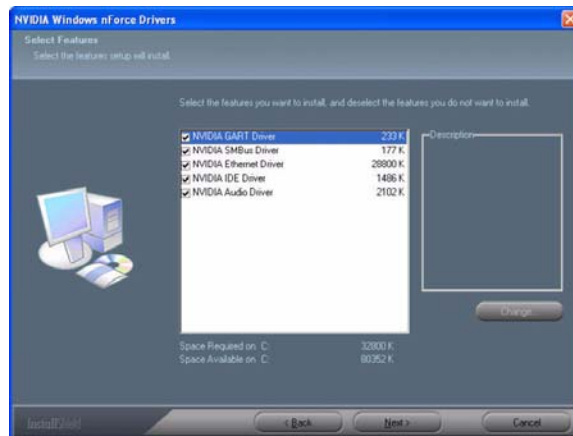
1   Start the nForce Setup program to open the NVIDIA Windows nForce Drivers page.

Figure 1.3   nForce Driver Installation Window

2   Select the modules that you want to install.
Make sure that the "NVIDIA IDE Driver" is selected.

3   You must install the NVIDIA IDE driver in order to enable NVIDIA RAID. If you do not install the NVIDIA IDE driver, NVIDIA RAID will not be enabled.

4   Click Next and then follow the instructions.After the installation is completed, be sure to reboot the PC.

5   After the reboot, initialize the newly created array.

NVIDIA RAID Configuration

Setting Up a Bootable RAID Array

This section explains how to configure a bootable NVIDIA RAID array.

Setting Up the BIOS

1   Start your computer, then press Delete to enter the BIOS setup.
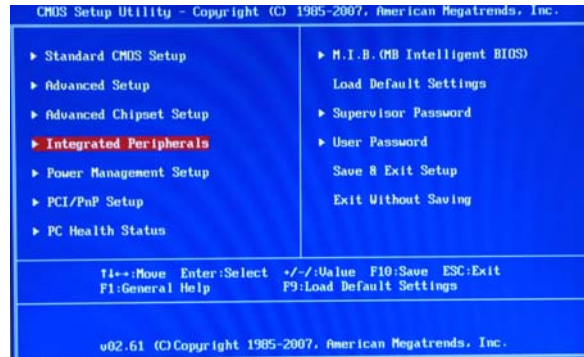
The BIOS CMOS Setup Utility screen appears.

Figure 1.4   BIOS CMOS Setup Utility Main Screen

2   Use the arrow keys to select Integrated Peripherals (see Figure 1.4), then press Enter.

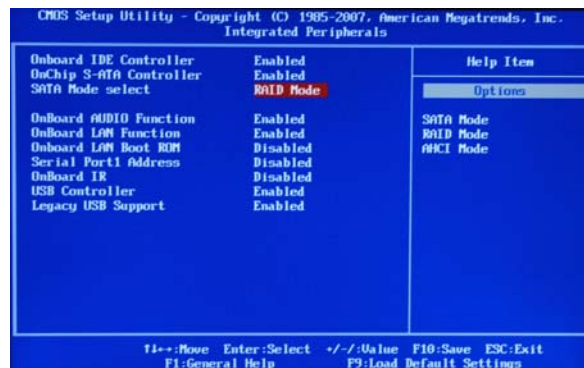The Integrated Peripherals screen (or a screen similar to it) appears.

Figure 1.5   Integrated Peripherals Screen

3   From the Integrated Peripherals Window, globally set SATA Mode select to RAID Mode (see Figure 1.5).

NVIDIA RAID Configuration

6   Press F10 to save the configuration and exit.

       The PC reboots.

7   Enter the RAID BIOS Setup by pressing F10 when prompted, and proceed to set up the NVIDIA RAID BIOS as described in the next section.

Configuring the NVIDIA RAID BIOS

The NVIDIA RAID BIOS set up lets you choose the RAID type and which hard drives you want to make part of the array.

Entering the RAID BIOS Setup:

1   Wait until you see the RAID software prompting you to press F10.

       The RAID prompt appears as part of the system POST and boot process prior to loading of the OS. You have a few seconds to press F10 before the screen disappears (see Figure 1.6).
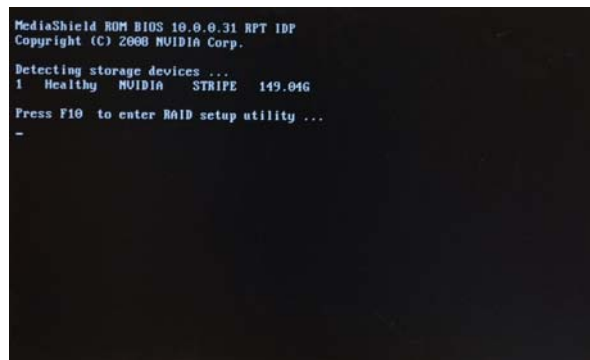


```
MediaShield ROM BIOS 10.0.0.31 RPT IDP
Copyright (C) 2008 NVIDIA Corp.

Detecting storage devices ...
1   Healthy  NVIDIA   STRIPE   149.04G

Press F10  to enter RAID setup utility ...
_
```

Figure 1.6

2   Press F10 to enter Define a New Array page.

NVIDIA RAID Configuration

The NVIDIA RAID Utility—Define a New Array screen appears (Figure 1.7).

Figure 1.7   MediaShield BIOS

By default, RAID Mode is set to Mirroring and Striping Block is set to Optimal.

Using the Define a New Array Screen

If necessary, press the tab key to move from field to field until the appropriate field is highlighted.

- **Selecting the RAID Mode**

  By default, this is set to Mirroring. To change to a different RAID mode, press the down arrow key until the mode that you want appears in the RAID Mode box—either Mirroring, Striping, Spanning, Stripe Mirroring or RAID 5.

  Note: Not all RAID levels are supported on all platforms. And enough Hard disks are required to complete the RAID configuration.

- **Selecting the Strping Block Size**

  Striping block size is given in kilobytes, and affects how data is arranged on the disk. It is recommended to leave this value at the default Optimal, which is 64KB, but the values can be between 4 KB and 128 KB (4, 8, 16, 32, 64, and 128 KB)

Assigning the Disks

The disks that you enabled from the RAID Config BIOS setup page appear in the Free Disks block. These are the drives that are available for use as RAID array disks.

To designate a free disk to be used as a RAID array disk,

1   Tab to the Free Disks section.

    The first disk in the list is selected

2   Move it from the Free Disks block to the Array Disks block by pressing the right-arrow key (—>).

    The first disk in the list is moved, and the next disk in the list is selected and ready to be moved.

3   Continue pressing the right-arrow key (—>) until all the disks that you want to use as RAID array disks appear in the Array Disks block.

NVIDIA RAID Configuration

Figure 1.8 illustrates the Define a New Array screen after one disk have been assigned as RAID 0 array disk.
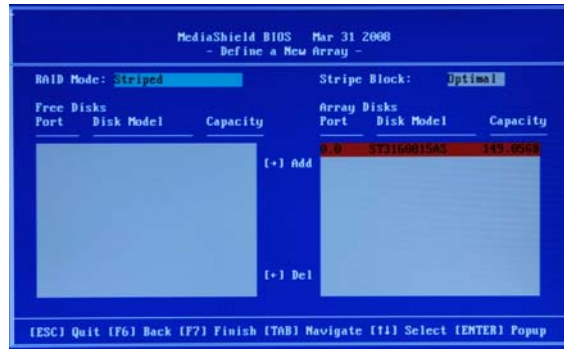

Figure 1.8   MediaShield BIOS—Array Disks Assigned

Completing the RAID BIOS Setup

1   After assigning your RAID array disk, press F7.

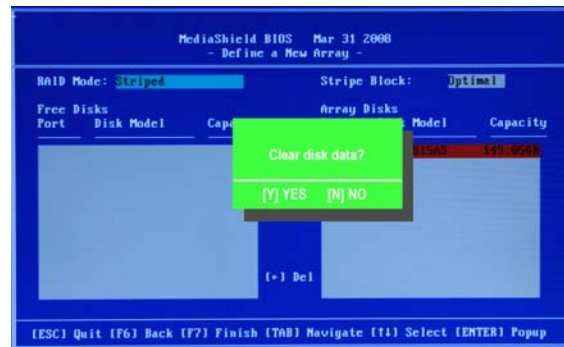The Clear disk array prompt appears.

Figure 1.9   Clear Disk Data Prompt

NVIDIA RAID Configuration

2   Press Y to clear the disk data.

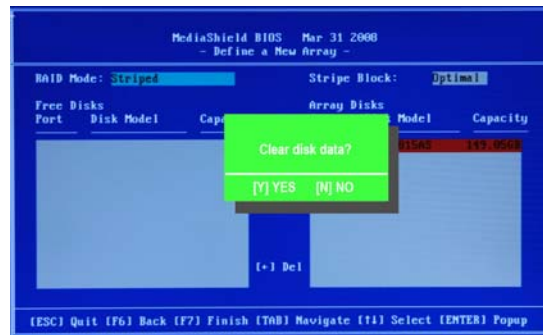The Array List screen appears, where you can review the RAID arrays that you have set up.

Figure 1.10   Array List Window

3   Use the arrow keys to select the array that you want to set up, then press B to specify the array as bootable.

4   Press Enter to view and verify details.

The Array Detail screen shows various information about the array that you selected, such as Striping Block used, RAID Mode, Striping Width, Disk Model Name, and disk capacity.

5   If you want to mark this disk as empty and wipe out all its contents, press C.

6   At the prompt, press Y to wipe out all the data, otherwise press N.

7   Press Enter again to go back to the previous screen and then press F10 to exit the RAID setup.

NVIDIA RAID Configuration

Installing the RAID Drivers

Your system may come with a Windows install CD that already includes NVIDIA RAID drivers. If so, then this section is not relevant.

If that is not the case (or you are trying to install a new version of Windows), then you will need an NVIDIA RAID driver F6 install floppy. Check to see if one came with your system. If not, you can create one by downloading the appropriate driver package and following the steps in this section.

1   Copy all files in "…\IDE\WinXP\sataraid" to a floppy disk. (For Windows 2000, substitute "Win2K" in the path.)

2   After you complete the RAID BIOS setup, boot from the Windows CD.

   The Windows Setup program starts.

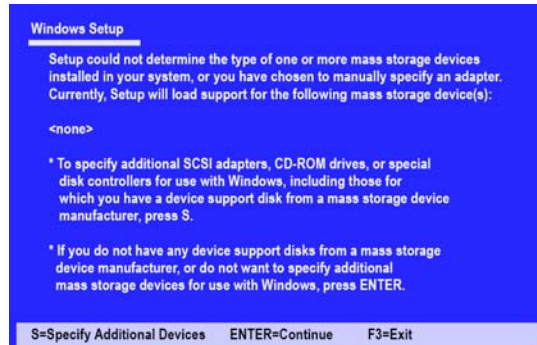3   Press F6 and wait a few moments for the Windows Setup screen to appear.

Figure 1.11   Windows Setup—Specify Devices

4   Specify the NVIDIA drivers.

   a   Insert the floppy that has the RAID driver, press S, then press Enter.
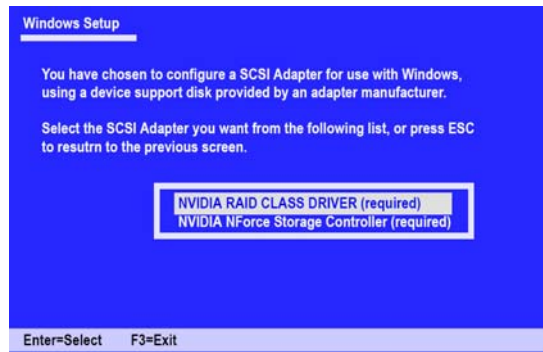
The following Windows Setup screen appears:

Figure 1.12   Windows Setup—Selected SCSI Adapter

NVIDIA RAID Configuration

b   Select "NVIDIA RAID CLASS DRIVER (required)" and then press Enter.

c   Press S again at the Specify Devices screen, then press Enter.

d   Select "NVIDIA NForce Storage Controller (required)" and then press Enter.

The following Windows Setup screen appears listing both drivers:.

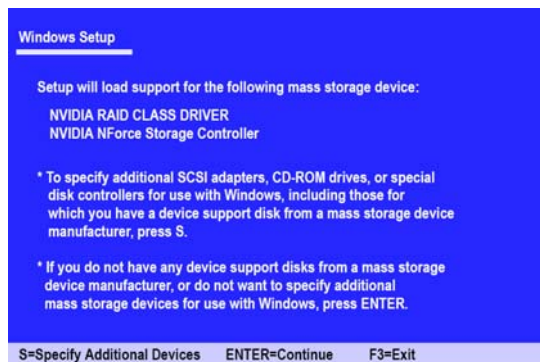
Figure 1.13   Windows Setup—NVIDIA drives listed

5   Press Enter to continue with Windows XP Installation.

Be sure to leave the floppy disk inserted in the floppy drive until the blue screen portion of Windows XP installation is completed, then take out the floppy.

6   Follow the instructions on how to install Windows XP.

After Windows XP is completely installed, it is recommended that you install the ForceWare software in order to access the MediaShield RAID Management tool.

Note: Each time you add a new hard drive to a RAID array, the RAID driver will have to be installed under Windows once for that hard drive. After that, the driver will not have to be installed.

This concludes chapter 5.

NVIDIA RAID Configuration

Memo

Chapter 6
Trouble Shooting

Start up problems during assembly

After assembling the PC for the first time you may experience some start up problems. Before calling for technical support or returning for warranty, this chapter may help to address some of the common questions using some basic troubleshooting tips.

a) System does not power up and the fans are not running.

1.Disassemble the PC to remove the VGA adaptor card, DDR memory, LAN, USB and other peripherals including keyboard and mouse. Leave only the motherboard, CPU with CPU cooler and power supply connected. Turn on again to see if the CPU and power supply fans are running.

2. Make sure to remove any unused screws or other metal objects such as screwdrivers from the inside PC case. This is to prevent damage from short circuit.

3. Check the CPU FAN connector is connected to the motherboard.

4. For Intel platforms check the pins on the CPU socket for damage or bent. A bent pin may cause failure to boot and sometimes permanent damage from short circuit.

5. Check the 12V power connector is connected to the motherboard.

6. Check that the 12V power & ATX connectors are fully inserted into the motherboard connectors. Make sure the latches of the cable and connector are locked into place.

b) Power is on, fans are running but there is no display

1. Make sure the monitor is turned on and the monitor cable is properly connected to the PC.
2. Check the VGA adapter card (if applicable) is inserted properly.
3. Listen for beep sounds. If you are using internal PC speaker make sure it is connected.
   a. continuous 3 short beeps : memory not detected
   b. 1 long beep and 8 short beeps : VGA not detected

c) The PC suddenly shuts down while booting up.

1. The CPU may experience overheating so it will shutdown to protect itself. Ensure the CPU fan is working properly.
2. From the BIOS setting, try to disable the Smartfan function to let the fan run at default speed. Doing a Load Optimised Default will also disable the Smartfan.

Start up problems after prolong use

After a prolong period of use your PC may experience start up problems again. This may be caused by breakdown of devices connected to the motherboard such as HDD, CPU fan, etc. The following tips may help to revive the PC or identify the cause of failure.

1. Clear the CMOS values using the CLR_CMOS jumper. Refer to CLR_CMOS jumper in Chapter 2 for Checking Jumper Settings in this user manual. When completed, follow up with a Load Optimised Default in the BIOS setup.

2. Check the CPU cooler fan for dust. Long term accumulation of dust will reduce its effectiveness to cool the processor. Clean the cooler or replace a new one if necessary.

3. Check that the 12V power & ATX connectors are fully inserted into the motherboard connectors. Make sure the latches of the cable and connector are locked into place.

4. Remove the hard drive, optical drive or DDR memory to determine which of these component may be at fault.
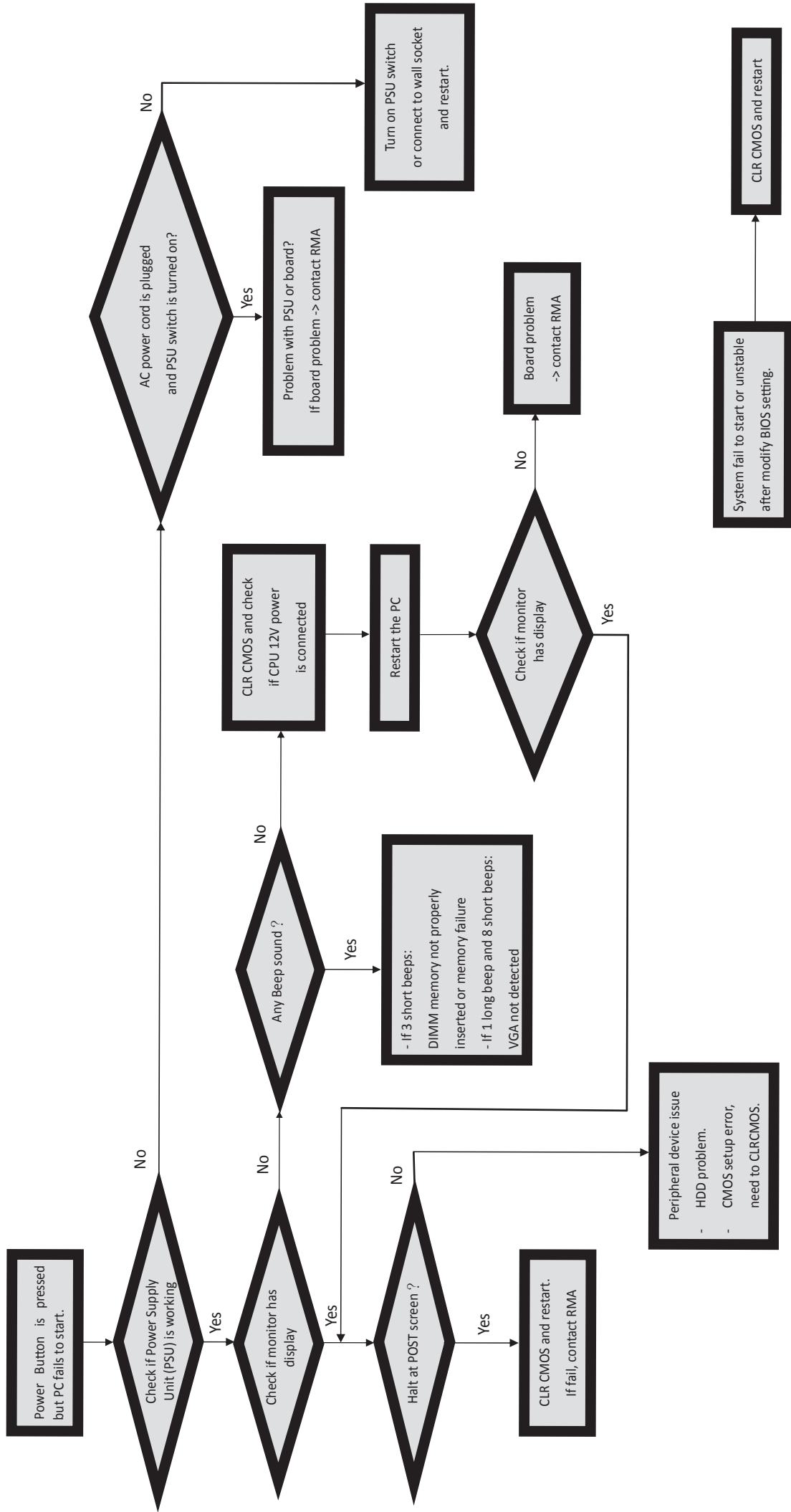
Maintenance and care tips

Your computer, like any electrical appliance, requires proper care and maintenance. Here are some basic PC care tips to help prolong the life of the motherboard and keep it running as best as it can.

1. Keep your computer in a well ventilated area. Leave some space between the PC and the wall for sufficient airflow.

2. Keep your computer in a cool dry place. Avoid dusty areas, direct sunlight and areas of high moisture content.

3. Routinely clean the CPU cooler fan to remove dust and hair.

4. In places of hot and humid weather you should turn on your computer once every other week to circulate the air and prevent damage from humidity.

5. Add more memory to your computer if possible. This not only speeds up the system but also reduces the loading of your hard drive to prolong its life span.

6. If possible, ensure the power cord has an earth ground pin directly from the wall outlet. This will reduce voltage fluctuation that may damage sensitive devices.

Basic Troubleshooting Flowchart

Power Button is pressed but PC fails to start.

→ **Check if Power Supply Unit (PSU) is working**

No → **AC power cord is plugged and PSU switch is turned on?**

- No → **Turn on PSU switch or connect to wall socket and restart.**
- Yes → **Problem with PSU or board? If board problem -> contact RMA**

Yes → **Check if monitor has display**

No → **Any Beep sound?**

- Yes → **- If 3 short beeps: DIMM memory not properly inserted or memory failure - If 1 long beep and 8 short beeps: VGA not detected**
- No → **CLR CMOS and check if CPU 12V power is connected** → **Restart the PC** → **Check if monitor has display**
  - No → **Board problem -> contact RMA**
  - Yes → (to Peripheral device issue)

Yes → **Halt at POST screen?**

- Yes → **CLR CMOS and restart. If fail, contact RMA**
- No → **Peripheral device issue - HDD problem. - CMOS setup error, need to CLRCMOS.**

System fail to start or unstable after modify BIOS setting. → **CLR CMOS and restart**

Memo

Trouble Shooting