Certificate HK07/01191.00

The management system of

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No.20 & No.26 (Except 1F, 2F&3F) Free Trade Zone, Shatoujiao, Shenzhen City, Guangdong Province, China

has been assessed and certified as meeting the requirements of

ISO 9001:2000

For the following activities

Design and Sales of Mainboards, Personal Computers, Notebooks, and Peripheral Cards;
Design and Manufacturing of Mainboards and Peripheral Cards.

Further clarifications regarding the scope of this certificate and the applicability of ISO 9001:2000 requirements may be obtained by consulting the organization

This certificate is valid from 16 March 2007 until 15 March 2010
Issue 1. Certified with SGS since March 2007

Multiple certificates have been issued for this scope
The main certificate is numbered HK07/01191.00

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Certificate No.

PRC-HSPM-1172

Issued:	July 10, 2007
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IECQ Certificate of Hazardous Substance Process Management (HSPM)

applicable to the European Directive 2002/95/EC ("RoHS") requirements.

The Supervising Inspectorate (SGS-CSTC Standards Technical Services Co., Ltd.), sponsored by the United States National Authorized Institution, ECCB certify that

ECS Manufacturing (Shenzhen) Co., Ltd.

No. 20 & 26 (except 1F, 2F & 3F),
Free Trade Zone, Shatoujiao,
Shenzhen, Guangdong Province, P.R. China

Has developed and implemented Hazardous Substances Process Management, procedures, and related processes in compliance with the applicable requirements for HSPM organization approval which is in accordance with the Basic Rules IECQ-01 and Rules of Procedure QC 001002-5 "IECQ Hazardous Substance Process Management" of the IEC Quality Assessment System for Electronic Components (IECQ), and with respect to the Specification QC 080000 IECQ HSPM.

This certification is applicable to all electronic components and related materials and processes for the

Design and manufacture of Mainboards and Peripheral Cards.

Issued by Certification Authorities:

Electronic Component Certification Board

Signed:

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The validity of this certificate is maintained through on-going surveillance inspections.

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Preface

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Version 1.0b

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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:

Chapter 1

Introducing the Motherboard

Describes features of the motherboard.

Go to ⇨ page 1

Chapter 2

Installing the Motherboard

Describes installation of motherboard components.

Go to ⇨ page 7

Chapter 3

Using BIOS

Provides information on using the BIOS Setup Utility.

Go to ⇨ page 27

Chapter 4

Using the Motherboard Software

Describes the motherboard software

Go to ⇨ page 45

Chapter 5

Setting Up NVIDIA RAID Configuration

Provides information about SATA RAID Setup

Go to ⇨ page 51

Chapter 6

NVIDIA® Hybrid SLI® Technology Support

Provides information about Hybrid SLI technology

Go to ⇨ page 61

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Chapter 1
Introducing the Motherboard

Introduction

Thank you for choosing the GF8100VM-M3 motherboard. This motherboard is a high performance, enhanced function motherboard that supports socket for AMD 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® GeForce8100 (MCP78V) Premium media and communications processor (MCP) for best desktop platform solution. GeForce8100 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 1066*[1] (AM2+)/ 800/667/533/400. It supports four DDR2 sockets with maximum memory size of 32 GB*[2]. High resolution graphics via one PCI Express x16 slot, two PCI Express x1 slots, 12 USB 2.0 ports (6 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, COM, one VGA port, one optional DVI port, six USB ports, one LAN port and audio jacks for microphone, line-in and 6/8-ch (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 244 mm.

** 1. Due to the limitation of AMD CPU spec, please refer to Memory QVL for more information.*

2. Due to the DRAM maximum size (2 GB per dimm) 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™ processor (socket AM2+)
  AMD Athlon™ 64 X2 Dual-Core/Athlon™ 64/Sempron™ processors
- Supports HyperTransport™ (HT) 3.0 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® GeForce8100 is a single-chip with proven reliability and performance.

- HyperTransport 3.0 x16 up and down links to the AMD socket AM2+/AM2 CPU
- PCI Express 16-lane link interface for external graphics processors
- PCI Express Generation 2.0 compatible
- Integrated NVIDIA GeForce® Series DirectX 10 Vertex Shader 4.0 graphics processor
- Compliant with PCI v2.3 interface at 33 MHz
- Integrated SATA 3.0 Gb/s Host Controller
- Twelve USB 2.0 ports supported
- Fast ATA-133 IDE controller
- NVIDIA® MediaShield™ RAID with support for RAID 0, RAID 1, RAID 0+1, RAID 5, and JBOD
- Integrated Hybrid SLI technology, NVIDIA® UltraShadow™ technology, full NVIDIA® nView® multi-display technology capability

There are three Hybrid SLI modes for you to select: Save Power, Boost Performance and Additional Displays.

Memory

- Supports DDR2 1066 (AM2+)/800/667/533/400 DDR2 SDRAM with Dual-channel architecture
- Accommodates four unbuffered DIMMs
- Up to 8 GB per DIMM with maximum memory size up to 32 GB*

Audio (Optional)

The onboard Audio provides either of the following features:

• 5.1 Channel High Definition Audio Codec • DACs Support 96K/48K/44.1KHz DAC sample rate • Power support: Digital:3.3V; Analog:5.0V • WOW™ and Tru Surround™ from SRS • Provides single ended CD input with DRM solutions and legacy OS issues
• 7.1 Channel High Definition Audio Codec • SPDIF In/Out supports 96K/48K/44.1KHz plus SPDIF OUT supports 88.2 KHz • Power support: Digital:3.3V; Analog:5.0V • MAxx Player™ from Waves • Provides single ended CD input with DRM solutions and legacy OS issues

Onboard LAN (Optional)

The onboard LAN provides either of the following features:

• Compliant with 1000Base-T IEEE 802.3ab, 100Base-TX IEEE 802.3u • Supports half/full duplex operation • IEEE 802.3 compliant RGMII/MII
• 10/100 full/half duplex operation • Supports RMII mode, MII, and 7-wire SNI (Serial Network Interface) • IEEE 802.3/802.3u compliant

Expansion Options

The motherboard comes with the following expansion options:

- One PCI Express x16 slot for Graphics Interface
- Two PCI Express x1 slots
- One 32-bit PCI v2.3 compliant slot
- One IDE connector supporting up to two IDE devices
- One floppy disk drive interface
- Six 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 serial port
- One VGA port
- One optional DVI port
- Six USB ports
- One LAN port
- Audio jacks for microphone, line-in and 6/8-ch (optional) line-out

BIOS Firmware

The motherboard uses AMI 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 and 50 °C.

Motherboard Components

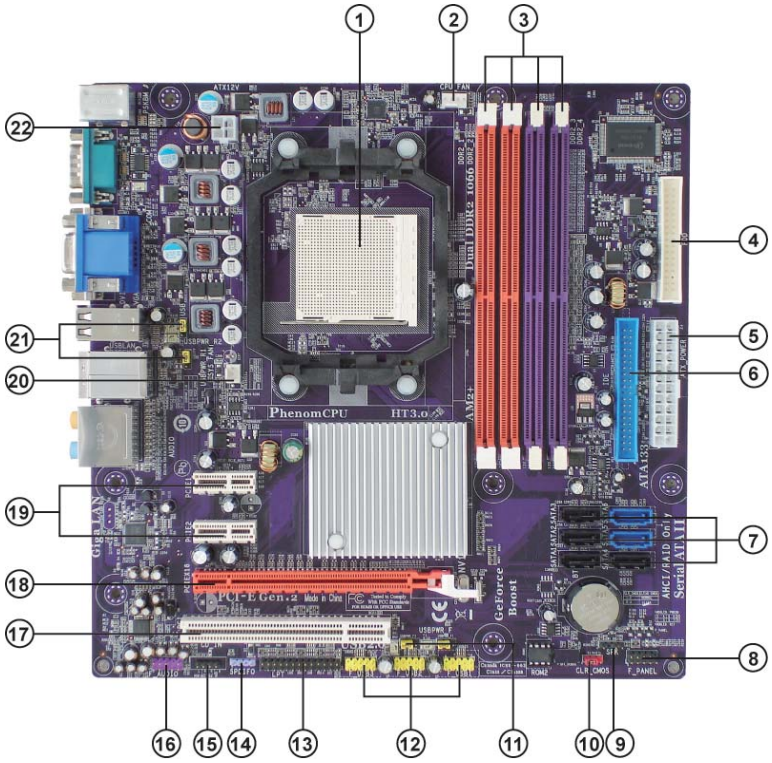


Table of Motherboard Components

LABEL	COMPONENTS
1. CPU Socket	Socket for AMD Phenom™ processor (socket AM2+)/AMD Athlon™ 64 X2 Dual-Core/Athlon™ 64/Sempron™ processors
2. CPU_FAN	CPU cooling fan connector
3. DDR2_1~4	240-pin DDR2 SDRAM slots
4. FDD	Floppy disk drive connector
5. ATX_POWER	Standard 24-pin ATX power connector
6. IDE	Primary IDE connector
7. SATA1~6	Serial ATA connectors
8. F_PANEL	Front Panel Switch/LED header
9. SPK	Speaker header
10. CLR_CMOS	Clear CMOS jumper
11. USBPWR_F1~2	Front Panel USB Power Select jumper
12. F_USB1~3	Front Panel USB headers
13. LPT	Parallel port header
14. SPDIFO	SPDIF out header
15. CD_IN	Analog Audio Input connector
16. F_AUDIO	Front Panel Audio header
17. PCI	32-bit add-on card slots
18. PCIEX16	PCI Express x16 graphics card slot
19. PCIE1~2	PCI Express x1 slots
20. SYS_FAN	System Fan connector
21. USBPWR_R1~2	Rear USB/PS2 Power Select jumper
22. ATX12V	4-pin +12V power connector

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

Chapter 2
Installing the Motherboard

Safety Precautions

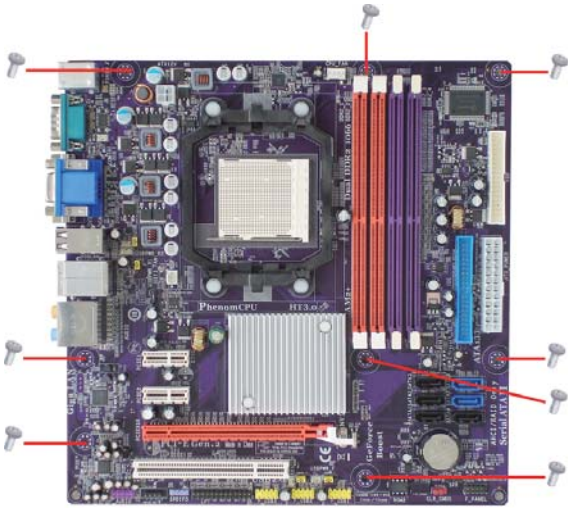
- Follow these safety precautions when installing the motherboard
- Wear a grounding strap attached to a grounded device to avoid damage from static electricity
- Discharge static electricity by touching the metal case of a safely grounded object before working on the motherboard
- Leave components in 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. 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 a Micro ATX form factor of 244 x 244 mm. Choose a case that accommodates this form factor.



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

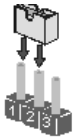
Use the motherboard jumpers to set system configuration options. Jumpers with more than one pin are numbered. When setting the jumpers, ensure that the jumper caps are placed on the correct pins.

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

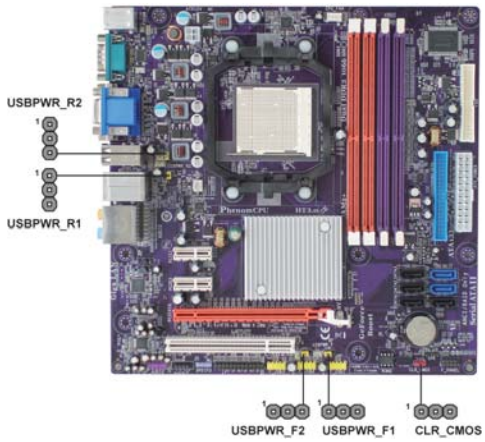
OPEN

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.	 1 **CLR_CMOS**
USBPWR_R1~2	3-pin	Rear USB/PS2 Power Select Jumper	1-2: VCC5 2-3: VCC5_DUAL	 1 **USBPWR_R1~2**
USBPWR_F1~2	3-pin	Front Panel USB Power Select Jumper	1-2: VCC5 2-3: VCC5_DUAL	 1 **USBPWR_F1~2**

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 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 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:

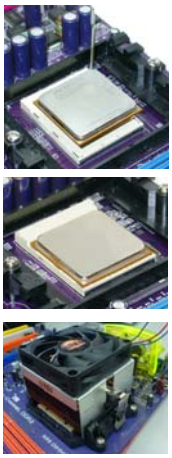
1. Over-clocking components can adversely affect the reliability of the system and introduce errors into your system. Over-clocking can permanently damage the motherboard by generating excess heat in components that are run beyond the rated limits.

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 Memory Modules

This motherboard accommodates four memory modules. It can support four 240-pin DDR2 1066 (AM2+)/800/667/533/400. The total memory capacity is 32 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***
DDR2 1066	***533 MHz***

You must install at least one module in any of the four slots. Each module can be installed with 8 GB of memory; total memory capacity is 32 GB*.

The four DDR2 memory sockets (DDR2_1, DDR2_2, DDR2_3, DDR2_4) are divided into two channels and each channel has two memory sockets as following:

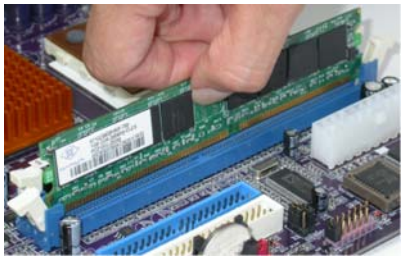
- Channel 0: DDR2_1, DDR2_2
- Channel 1: DDR2_3, DDR2_4

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.



For best performance and compatibility, we recommend that users install DIMMs in the sequence of DIMM3, DIMM4, DIMM1 and DIMM2.

Recommend configuration for best performance and compatibility

Number of DIMMs	DIMM 1	DIMM 2	DIMM 3	DIMM 4	AM2	AM2+ *
1					Single Channel	Unganged Mode
2					Dual Channel	Ganged Mode
3					Single Channel	Unganged Mode
4					Dual Channel	Ganged Mode

:operation with normal performance

:operation with the best performance

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

The following DDR2 1066 (AM2+)/800/667/533/400 memory modules have been tested and qualified for use with this motherboard.

Type	Size	Vendor	Module Name
DDR2 400	256 MB	Samsung	M378T3354BZ0-CCC K4T51163QB-ZCCC
	512 MB	Samsung	M378T6553BG0-CCC K4T51083QB-GCCC
		TwinMos	Samsung K4T51083QB-GCCC
DDR2 533	256 MB	Corsair	VC256MB533D2 4PB11D9CHM
		Elpida	Japan E2508AA-T7F-E
		Kingmax	Hynix HY5PS121621
		Nanya	Nanya NT5TU32M16AG-37B
		Ramaxel	5PB42 D9DCD
			Elpida D5116AF-5C-E
	512 MB	Aeneon	AET93F370 SS
			AET94F370 DS
		Corsair	Samsung K4T51083QB-ZCD5
			VS512MB533D2 64M8CEC
		Elpida	Elpida 04180WB01
		Hynix	Hynix HY5PS12821
		Infineon	HY818T512800AF37 33346778
		Kingston	Hynix HY5PS12821
			Nanya NT5TU64M8AE-37B
		Ramaxel	5PB32 D9DCN
			6AD11 D9GCT
			Elpida E5108AG-5C-E
		Samsung	PC2-4200U-4444-10-B1 K4T51083QF-ZCD5
			PC2-4200U-4444-12-DS K4T51083QC
		TwinMos	Elpida E5108AB-5C-E
			Samsung 8D22JB-KM
	1 GB	Apacer	Elpida E5108AB-5C-E
		GEIL	A016E2864T2AG8AKT5H120001
		Infineon	HY818T512800AF37 33344539
		Kingmax	KKEA88E4AAKG-37
		UMAX	U2S12D30TP-5C

Type	Size	Vendor	Module Name
DDR2 667	256 MB	Ramaxel	5NB31 D9DCG
	512 MB	A-DATA	AD29608A88-3EG
		Corsair	VALUESELECT 32M8CEC
		GEIL	GL2L64M088BA18W
		Ramxel	5LB31 D9DCL
		Samsung	K4T51083QC
			PC35300U-25331-Z K4T56083QF-ZCE6
		Sync MAX	04400WB01 R050008A
		Transcend	JetRam J12Q3AB-6
		Twinmos	TMM6208G8M30B
	1 GB	Kingston	KVR667D2N5/1G
		Samsung	K4T51083QC
		UMAX	U2S12030TP-6E TBF614-L93G
DDR2 800	512 MB	Infineon	Infineon HYB18T256 800AF25
		Infinity	04751208CZ5U2D
		Kingston	KVR800D2N5/512
	1 GB	Apacer	Apacer AM4B5708BPJS8E0634E
		Infinity	04701G16CZ5U2G
		Kingston	KVR800D2N5/1G
		UMAX	U2S12D30TP-8E

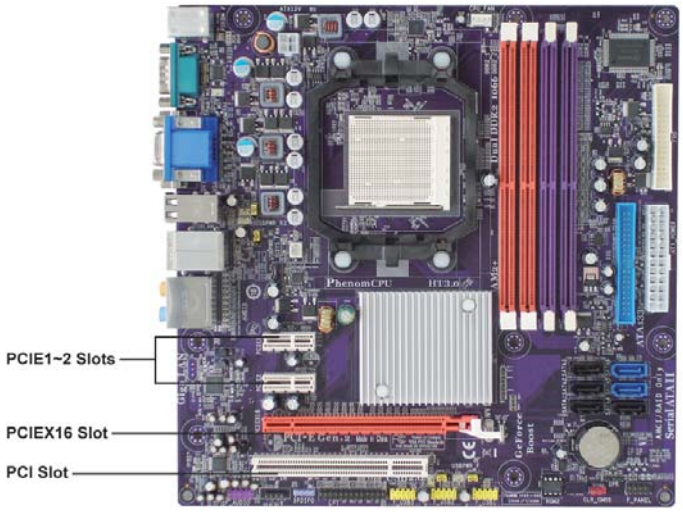
Type	Size	Vendor	Module Name	Memory Recommend Volt
DDR2 1066	512 MB	Kingston	KVR1066D2N7/512 1.8V / 9905315-094.A00LF	1.8 V
	1 GB	Apacer	78.0AG9S.9K4	1.9 V
		Kingston	KVR1066D2N7/1G 1.8V / 9905316-106.A01LF	1.8 V
		Micron	MT8HTF12864AY-1GAE1	1.9 V
		OCZ	OCZ2RPR10662GK	1.9 V ~ 2.3 V
		Qimonda	HYS64T128020EU-19F-C	1.9 V
	2 GB	Apacer	78.AAGAL.9KF	1.9V
		Micron	MT16HTF25664AY-1GAE1	1.9 V

Due to the Phenom CPU and memory module limitation, the DRAM may need to adjust the voltage for supporting DDR2 1066. The memory modules which can be used stably are listed in the above QVL table for reference.

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 2.0.

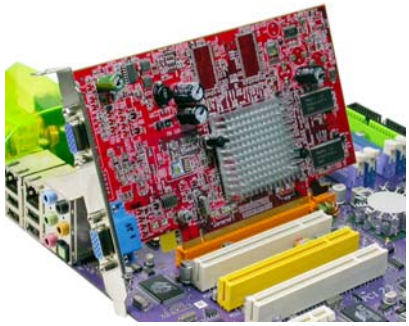
PCIE1~2 Slots The PCI Express x1 slots are fully compliant to the PCI Express Base Specification revision 1.1 as well.

PCI Slot This motherboard is equipped with one standard PCI slot. 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 slot on this board is 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.

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.



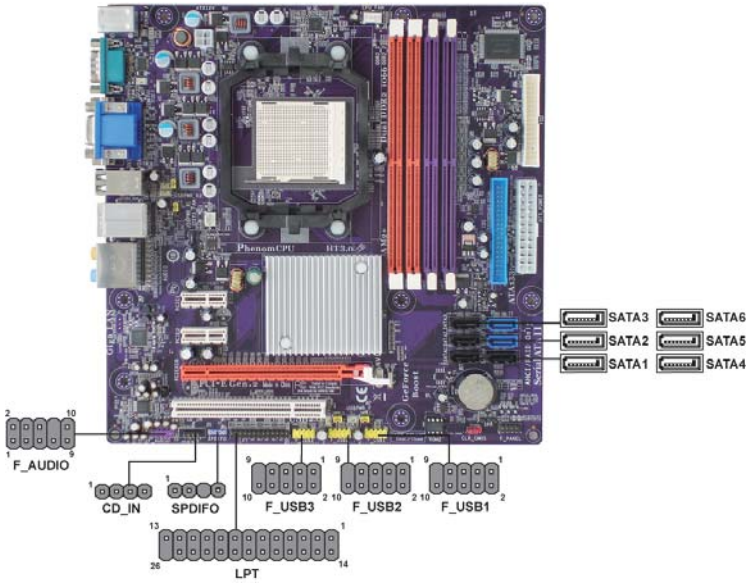
For some add-on cards, for example graphics adapters and network adapters, you have to install drivers and software before you can begin using the add-on card.

Table B: Supported VGA Card List for Hybrid SLI Technology

GPUs	Hybrid SLI Technology	
	Hybrid Power	GeForce Boost
GeForce 9800 GX2	Yes	No
GeForce 8500 GT	No	Yes
GeForce 8400 GS	No	Yes

Connecting Optional Devices

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



F_AUDIO: 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	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

SPDIFO: 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

F_USB1~3: Front Panel USB headers

The motherboard has six 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.

SATA1~6: 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	-	-

Due to the limitation of NVIDIA chipset, SATA 5~6 support AHCI/RAID Mode only.

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

LPT: LPT header

Pin	Signal Name	Function	Pin	Signal Name	Function
1	STB#	Strobe	2	D0	Data 0
3	D1	Data 1	4	D2	Data 2
5	D3	Data 3	6	D4	Data 4
7	D5	Data 5	8	D6	Data 6
9	D7	Data 7	10	ACK#	Acknowledge
11	BUSY	Busy	12	PE	Paper End
13	SLCT	Select	14	AFD#	Auto Feed
15	ERR#	Error	16	INIT#	Initialize
17	SLIN#	Select In	18	GND	Chassis Ground
19	GND	Chassis Ground	20	GND	Chassis Ground
21	GND	Chassis Ground	22	GND	Chassis Ground
23	GND	Chassis Ground	24	GND	Chassis Ground
25	GND	Chassis Ground	26	NC	No pin

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. An IDE ribbon cable supporting two IDE devices is bundled with the motherboard.

You must orient the cable connector so that the pin1 (color) edge of the cable corresponds to the pin 1 of the I/O port connector.

IDE: IDE Connector

This motherboard supports five 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 six SATA connectors supporting a total of six 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 a 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 supports the "Hot-Plug" function.

Installing a Floppy Diskette Drive

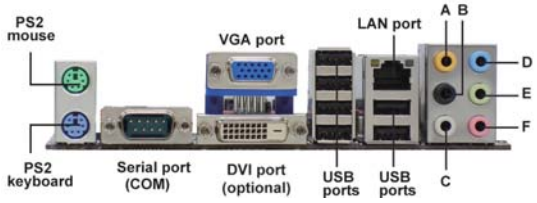
FDD: Floppy Disk Connector

This connector supports the 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.

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.

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.

Serial Port (COM) Use the COM port to connect serial devices such as mouse or fax/modems.

VGA Port Connect your monitor to the VGA port.

DVI Port (Optional) Use the DVI port to connect the monitor.

USB Ports Use the USB ports to connect USB devices.

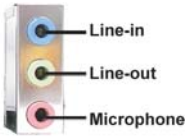
LAN Port Connect an RJ-45 jack to the LAN port to connect your computer to the network.

Audio Ports (Optional) Use the audio jacks to connect audio devices. The D port is for stereo line-in signal, while the F port is for microphone in signal. This motherboard supports 8-channel audio devices 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.

This motherboard may adopt 6-channel audio ports.

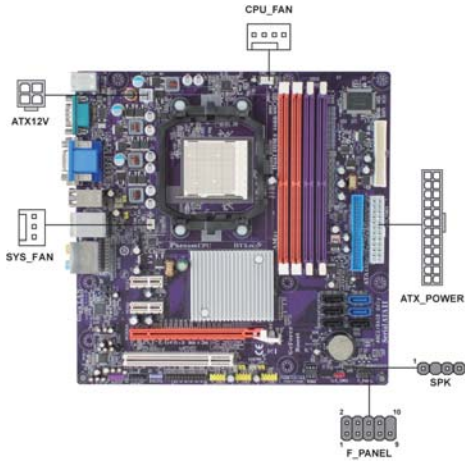


Use the three audio ports to connect audio devices. The first jack is for stereo line-in signal. The second jack is for stereo line-out signal. The third jack is for microphone.

Connecting Case Components

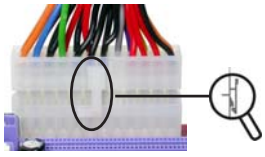
After you have installed the motherboard into a case, you can begin connecting the motherboard components. Refer to the following:

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 **ATX_POWER**.
4 Connect the auxiliary case power supply connector to **ATX12V**.
5 Connect the case switches and indicator LEDs to the **F_PANEL**.
6 Connec the case speaker cable to **SPK**.



Connecting 24-pin power cable

The ATX_POWER 24-pin connector allows you to connect to ATX v2.x power supply.

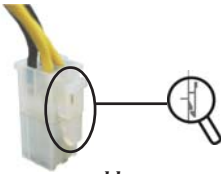


With ATX v2.x power supply, users please note that when installing 24-pin power cable, the latches of power cable and the ATX_POWER match perfectly.

24-pin power cable

Connecting 4-pin power cable

The ATX12V power connector is used to provide power to the CPU.



When installing 4-pin power cable, the latches of power cable and the ATX12V match perfectly.

4-pin power cable

CPU_FAN: CPU cooling 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: 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	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

ATX12V: ATX 12V Power Connector

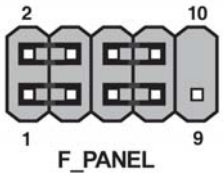
Pin	Signal Name
1	Ground
2	Ground
3	+12V
4	+12V

SPK: Internal speaker header

Pin	Signal Name
1	VCC
2	Key
3	GND
4	Signal

Front Panel Header

The front panel header (F_PANEL) 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	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.

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:

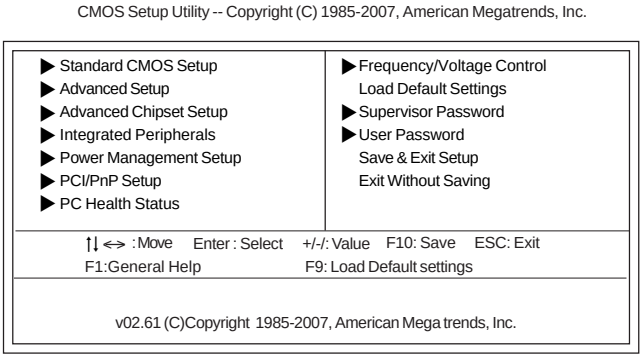
- when changing the system configuration
- when a configuration error is detected and you are prompted to make changes to the Setup Utility
- when trying to resolve IRQ conflicts
- when making changes to the Power Management configuration
- when changing the password or making other changes to the Security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



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 applies for most conditions with optimum performance. It is not suggested to change the default values in the BIOS setup and the manufacture takes no responsibility to any damage caused by changing the BIOS settings.

BIOS Navigation Keys

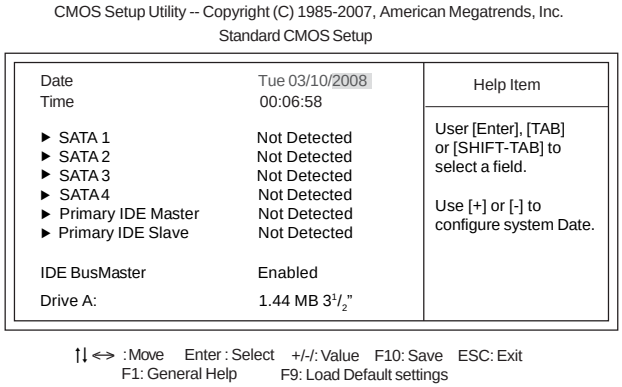
The BIOS navigation keys are listed below:

KEY	FUNCTION
ESC	Exits the current menu
↑↓ <->	Scrolls through the items on a menu
+/-/PU/PD	Modifies the selected field's values
Enter	Select
F9	Load a default optimized setting
F10	Saves the current configuration and exits setup
F1	Displays a screen that describes all key functions

For the purpose of better product maintenance, the manufacture reserves the right to change the BIOS items presented in this manual. The BIOS setup screens shown in this chapter are for reference only and may differ from the actual BIOS. Please visit the manufacture's website for updated manual.

Standard CMOS Setup

This option displays basic information about your system.

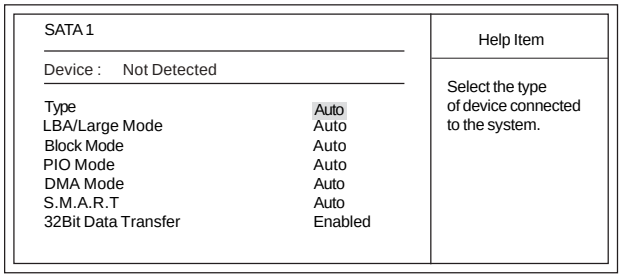


Date & Time

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.

► SATA 1~4/Primary IDE Master/Slave

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



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 Mode (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 32Bit Data Transfer.

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

IDE BusMaster (Enabled)

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

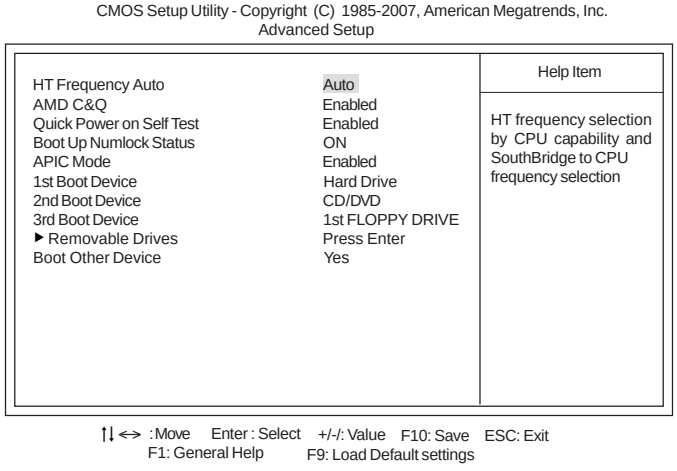
Drive A: (1.44 MB $3^1/_2$")

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

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.



HT Frequency Auto (Anto)

This item enables users to manually set up the HyperTransport frequency, ranging from Auto, 1x, to 5x.

AMD C&Q (Enaled)

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)

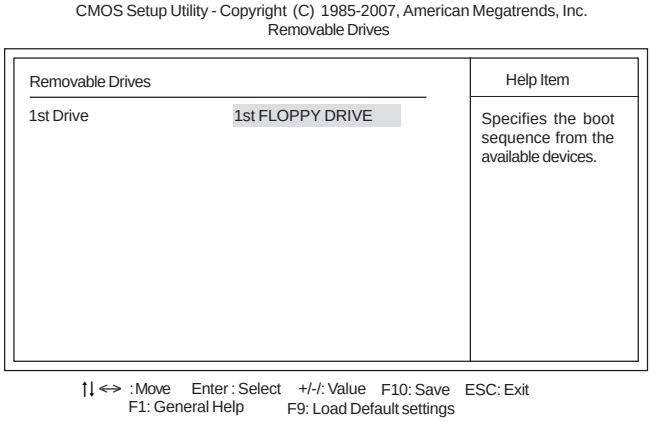
This item allows you to enable or disable the APCI (Advanced Programmable Interrupt Controller) mode. APIC provides symmetric multi-processing (SMP) for systems, allowing support for up to 60 processors.

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.

▶Removable Drives (Press Enter)

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



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

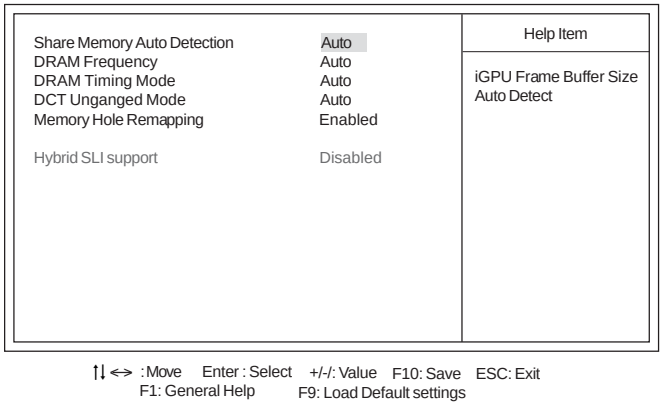
Boot Other Device (Yes)

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.

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.



Share Memory Auto Detection (Auto)

Disable this item to set the Share Memory Size. And if the item is set to Auto, Share Memory Size can be controlled according to the dram size. When the dram size is less than 512 MB, Share Memory Size should be set to 64 MB. While between 512 MB and 1 GB, it should be set to 128 MB. When more than 1 GB, it should be set to 256 MB.

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 Mode (Auto)

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

DCT Unganged Mode (Auto)

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

Memory Hole Remapping (Enabled)

This item allows users to enable or disable memory hole remapping.

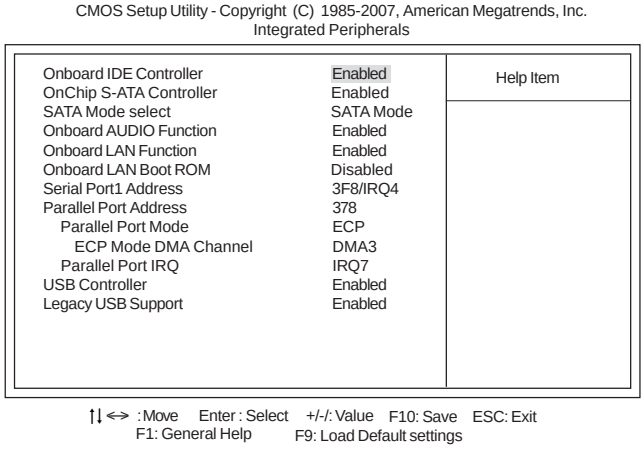
Hybrid SLI support (Disabled)

This item allows users to enable or disable the NVIDIA® Hybrid SLI technology.

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.



OnBoard IDE Controller (Enabled)

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

Onboard S-ATA Controller (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.

OnBoard AUDIO Function (Enabled)

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

OnBoard LAN Function (Enabled)

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.

Parallel Port Address (378)

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

Parallel Port Mode (ECP)

Use this item to select the parallel port mode. You can select Normal (Standard Parallel Port), ECP (Extended Capabilities Port), EPP (Enhanced Parallel Port), or BPP (Bi-Directional Parallel Port).

ECP Mode DMA Channel (DMA3)

Use this item to assign the DMA Channel under ECP Mode function.

Parallel Port IRQ (IRQ7)

Use this item to assign IRQ to the parallel port.

USB Controller (Enabled)

Use this item to enable or disable the USB function.

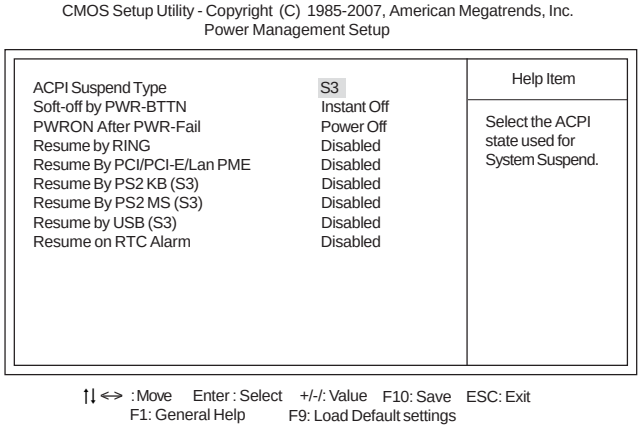
Legacy USB Support (Enabled)

Use this item to enable or disable support for legacy USB devices.

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

Power Management Setup

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



ACPI Suspend Type (S3)

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.

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.

PWRON After PWR-Fail (Power Off)

This item enables your computer to power off, automatically restart or return to its previous status after abnormal power lost.

Resume By RING (Disabled)

The system can be turned off with a software command. If you enable this item, the system can automatically resume if there is an incoming call on the Modem. You must use an ATX power supply in order to use this feature.

Resume By PCI/PCI-E/Lan PME (Disabled)

The system can be turned off with a software command. If you enable this item, the system can automatically resume if there is an incoming call on the PCI Modem or PCI LAN card. You must use an ATX power supply in order to use this feature. Use this item to do wake-up action if inserting the PCI card.

Resume By PS2 KB (S3) (Disabled)

This item enables or disables you to allow keyboard activity to awaken the system from S3 mode.

Resume By PS2 MS (S3) (Disabled)

This item enables or disables you to allow mouse activity to awaken the system from S3 mode.

Resume By USB (S3) (Disabled)

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

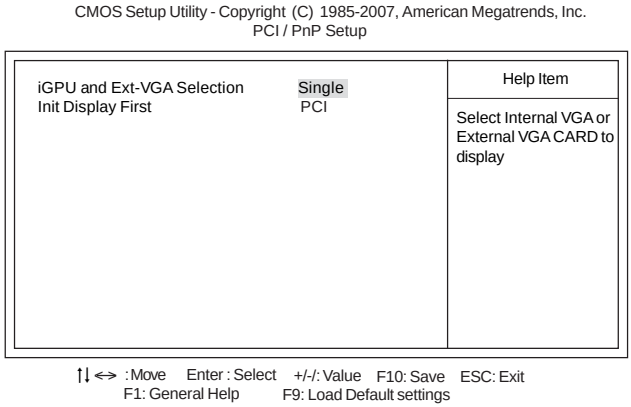
Resume on RTC Alarm (Disabled)

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.

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.



iGPU and Ext-VGA Selection (Single)

Use this item to select internal VGA or external VGA card to display.

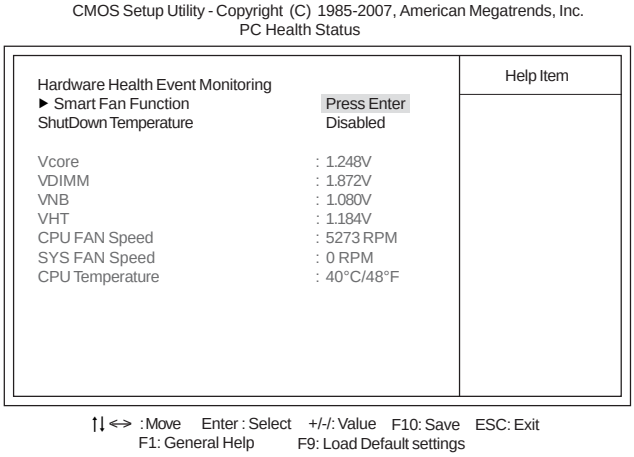
Init Display First (PCI)

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

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

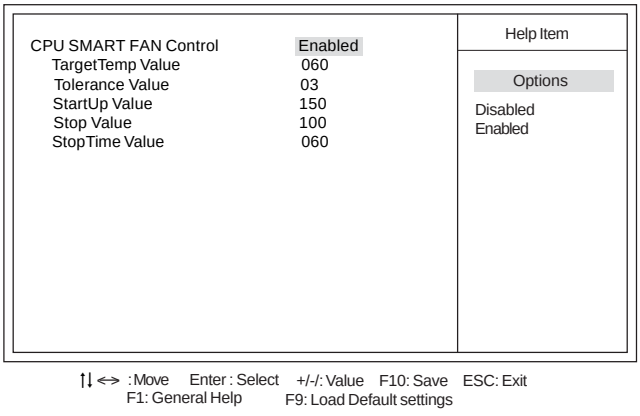
PC Health Status

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



► Smart Fan Function

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



CPU SMART FAN Control (Enabled)

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

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

ShutDown Temperature (Disabled)
Enable you to set the maximum temperature the system can reach before powering down.

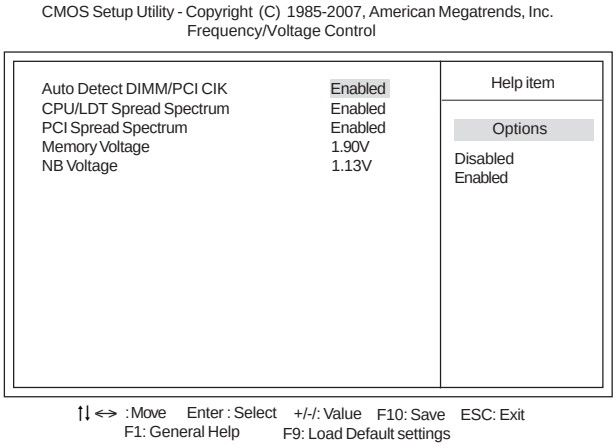
System Component Characteristics
These items display the monitoring of the overall inboard hardware health events, such as System & CPU temperature, CPU & DIMM voltage, CPU & system fan speed,...etc.

- Vcore
- VDIMM
- VNB
- VHT
- CPU FAN Speed
- SYS FAN Speed
- CPU 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.



Auto Detect DIMM/PCI Clk (Enabled)

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

CPU/LDT Spread Spectrum (Enabled)

If you enable spread spectrum, it can significantly reduce the EMI (Electro-Magnetic Interference) generated by CPU/LDT.

PCI Spread Spectrum (Enabled)

If you enable spread spectrum, it can significantly reduce the EMI (Electro-Magnetic Interference) generated by PCI.

Memory Voltage (1.90V)

This item allows users to adjust the DDR memory voltage.

NB Voltage (1.13V)

This item allows users to adjust the Northbridge voltage.

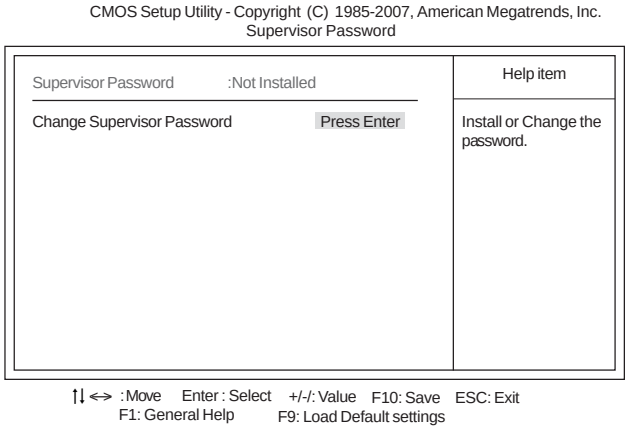
Press <Esc> to return to the main menu setting page.

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.



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.

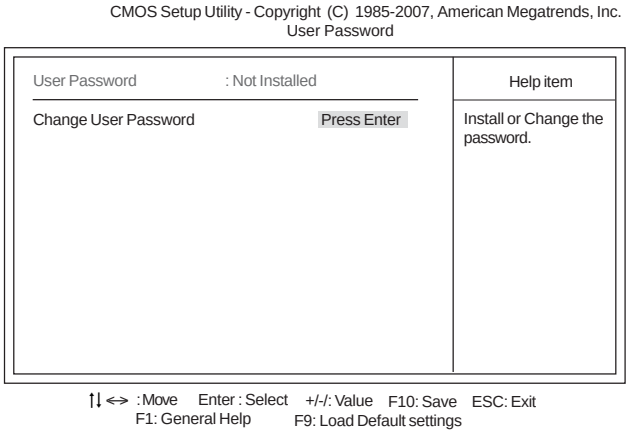
Change Supervisor Password (Press Enter)

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.

User Password

This page helps you install or change a password.



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 user password. This item will show if the supervisor password is set.

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.

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 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 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 BIOS Features 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 the file name of the new bios and then press <Enter>. Example: AMINF340.EXE 040706.ROM
7. 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.

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

Memo

Chapter 4
Using the Motherboard Software

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. 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.

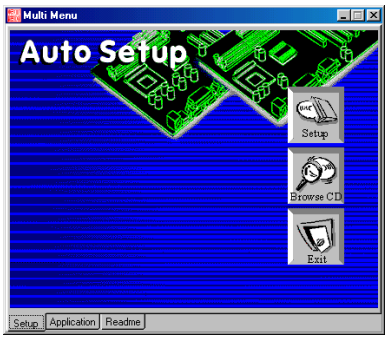
1. *Never try to install all software from folder that is not specified for use with your motherboard.*
2. *The notice of Intel HD audio installation (optional): The Intel High Definition audio functionality unexpectedly quits working in Windows Server 2003 Service Pack 1 or Windows XP Professional x64 Edition. Users need to download and install the update packages from the Microsoft Download Center "before" installing HD audio driver bundled in the Driver CD. 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

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 XP/Vista. 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.

Setup 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 CD. 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. Some software is installed in separate folders for different operating systems, such as Windows XP/Vista. Always go to the correct folder for the kind of OS you are using. 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.
Exit	The **EXIT** button closes the Auto Setup window.

Application Tab

Lists the software utilities that are available on the CD.

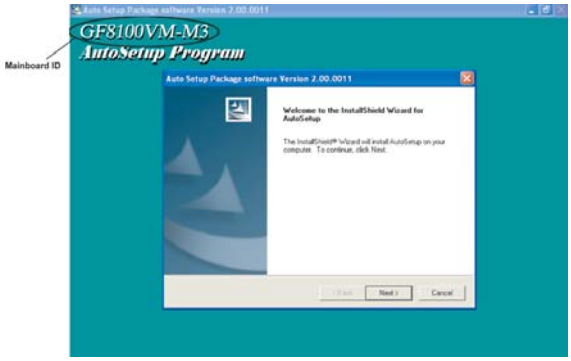
Read Me Tab

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:

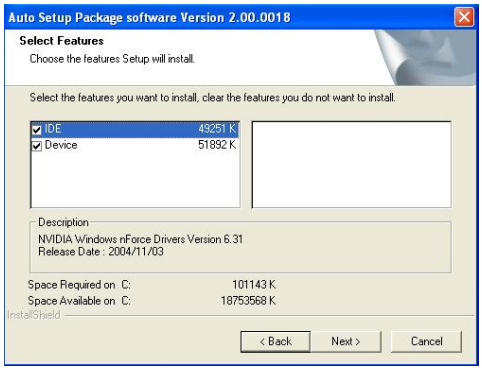
1. *Click **Setup**. The installation program begins:*



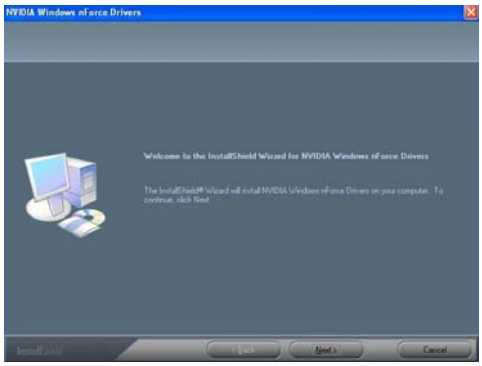
The following screens are examples only. The screens and driver lists will be different according to the motherboard you are installing.

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

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:*



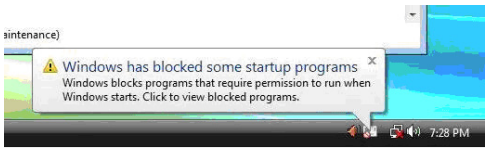
5. *Follow the instructions on the screen to install the items.*

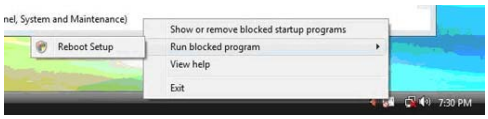
1. Drivers and software are automatically installed in sequence. Follow the onscreen instructions, confirm commands and allow the computer to restart a few times to complete the installation.

2. During the Windows Vista Driver Auto Setup Procedure, users should use one of the following two methods to install the driver after the system restart.

Method 1. Run Reboot Setup

Windows Vista will block startup programs by default when installing drivers after the system restart. You must select taskbar icon **Run Blocked Program** and run **Reboot Setup** to install the next driver, until you finish all drivers installation.





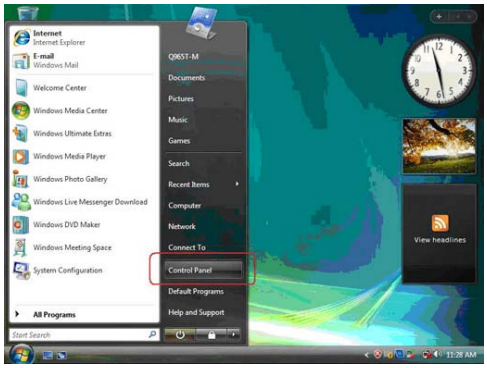
Method 2. Disable UAC (User Account Control)

* For administrator account only. Standard user account can only use Method 1.

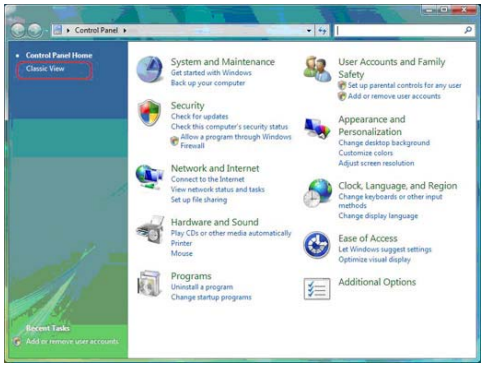
Disable Vista UAC function before installing drivers, then use CD driver to install drivers, it will continue to install drivers after system restart without running blocked programs.

Follow these instructions to Disable Vista UAC function:

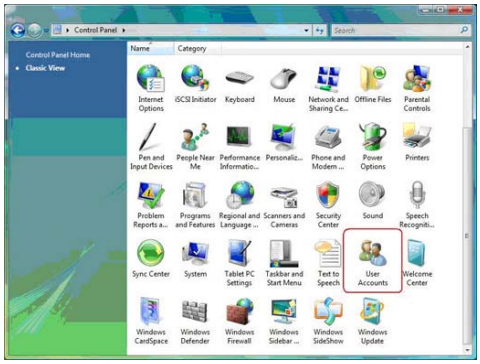
1. *Go to* ***Control Panel****.*



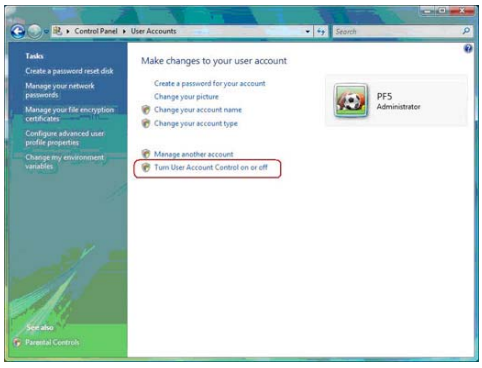
2. *Select* ***Classic View***.



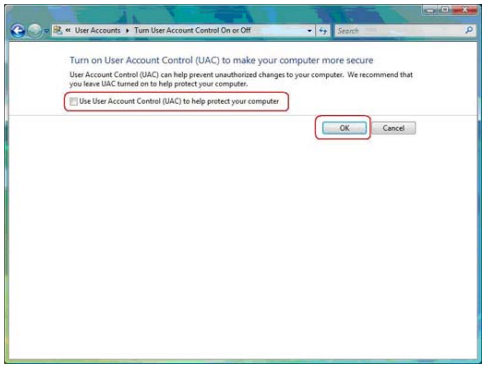
3. *Set* ***User Account***.



4. *Select* ***Turn User Account Control on or off*** *and press* ***Continue***.



5. *Disable* ***User Account Control (UAC) to help protect your computer*** *item and press* ***OK****, then press* ***Restart Now****. Then you can restart your computer and continue to install drivers without running blocked programs.*



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.

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

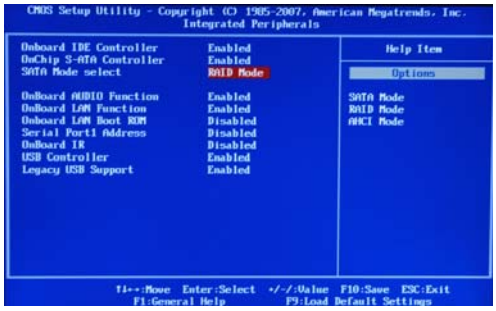


Figure 1.2 Integrated Peripherals Window

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.

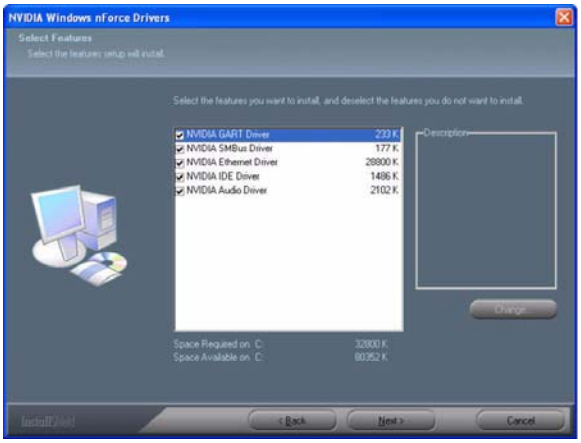


Figure 1.3 nForce Driver Installation Window

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.

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.

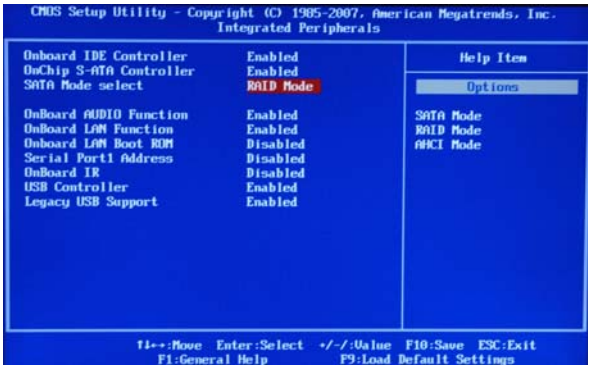


Figure 1.5 Integrated Peripherals Screen

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

4 Press F10 to save the configuration and exit.

The PC reboots.

5 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).

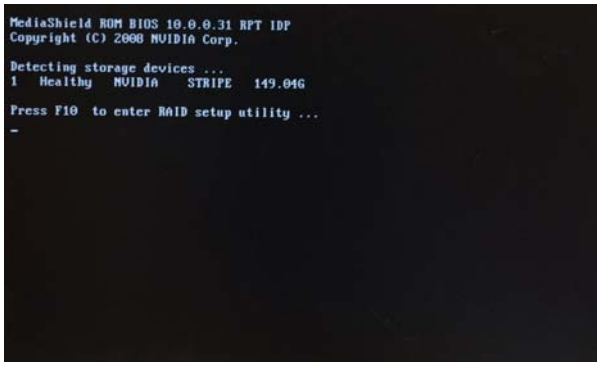


Figure 1.6

2 Press F10 to enter Define a New Array page.

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

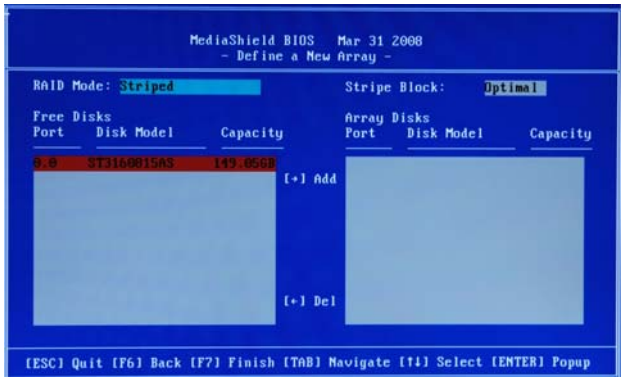


Figure 1.7 MediaShield BIOS

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 Striping 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.

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

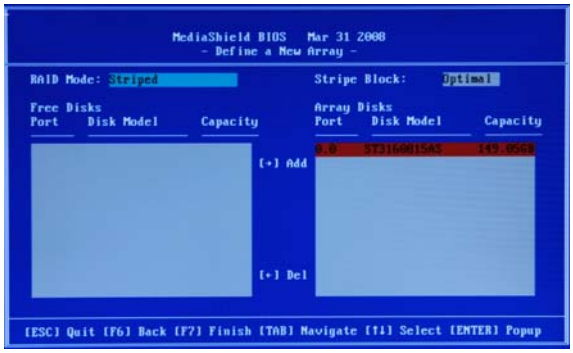


Figure 1.8 MediaShield BIOS—Array Disks Assigned

Completing the RAID BIOS Setup

1 After assigning your RAID array disk, press F7.

The Clear disk array prompt appears.

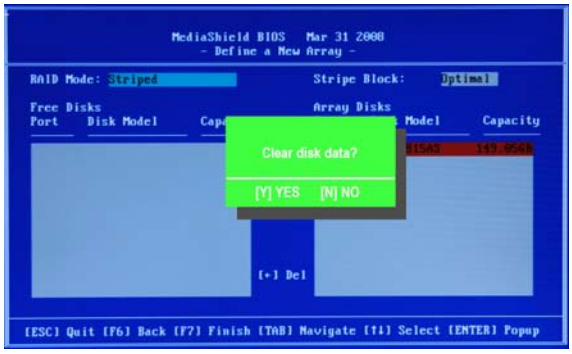


Figure 1.9 Clear Disk Data Prompt

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.

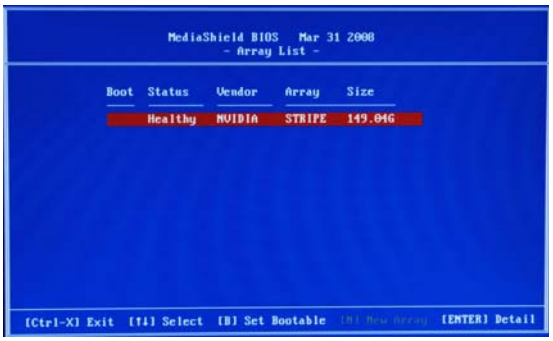


Figure 1.10 Array List Window

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.

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.

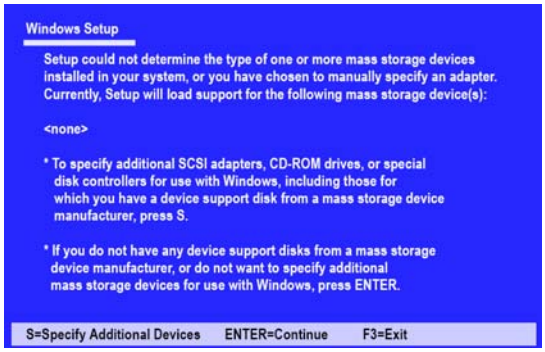


Figure 1.11 Windows Setup—Specify Devices

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:

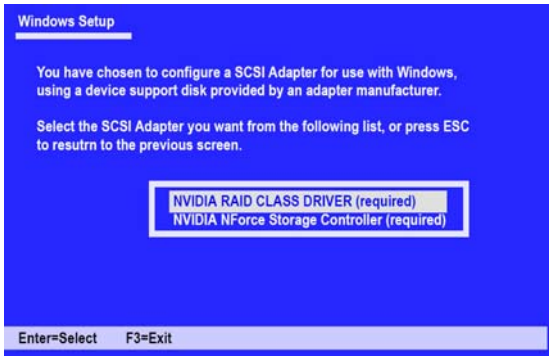


Figure 1.12 Windows Setup—Selected SCSI Adapter

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:.

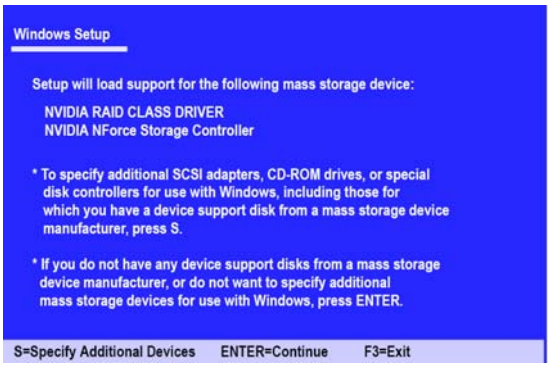


Figure 1.13 Windows Setup—NVIDIA drives listed

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.

Memo

Chapter 6

NVIDIA® Hybrid SLI® Technology Support

This motherboard supports the NVIDIA® Hybrid SLI® Technology.

Hybrid SLI® technology, based on NVIDIA's industry-leading SLI technology, delivers multi-GPU (graphics processing unit) benefits when an NVIDIA® motherboard GPU is combined with an NVIDIA discrete GPU. Follow the installation procedure in this section.

Key Features

Hybrid SLI increases graphics performance with GeForce Boost® and provides intelligent power management with HybridPower™.

GeForce Boost

GeForce Boost turbocharges the performance of NVIDIA discrete GPUs when combined with NVIDIA motherboard GPUs. Plug any NVIDIA Hybrid SLI-enabled GPU into any NVIDIA Hybrid SLI-enabled motherboard to enjoy additive performance and more for your money.

Users always insert the external graphics card to boost the display efficiency when using the motherboard with onboard VGA and leave the onboard VGA unused. Hybrid SLI technology enables the inserted graphics card to operate SLI together with the onboard VGA to avoid only having efficiency of one graphics card.

HybridPower

HybridPower™ unleashes graphics performance when needed and switches to quiet, low-power quiet operation for everyday computing. Plug any NVIDIA Hybrid SLI-enabled GPU into any NVIDIA Hybrid SLI-enabled motherboard for the ultimate control. Dial up performance for demanding 3D games and applications; reduce noise and power consumption for everyday computing tasks like browsing the Web, word processing, or watching HD videos.

1. HybridPower will unleash adequately when the system needs high graphics performance and reduce noise and power consumption automatically when the system switches to low-power quiet operation.

2. The HybridPower is supported when it connected to onboard display.

Hybrid SLI products

Hybrid SLI Enabled Motherboard

GPUs	Hybrid Power Technology	GeForce Boost Technology
GeForce 8300	Yes	Yes
GeForce 8200	Yes	Yes
GeForce 8100	Yes	Yes
nForce 730a	Yes	Yes
nForce 720a	Yes	Yes

For reference only

Hybrid SLI Enabled Graphics Card

GPUs	Hybrid SLI Technology	
	Hybrid Power	GeForce Boost
GeForce 9800 GX2	Yes	No
GeForce 9800 GTX	Yes	No
GeForce 8500 GT	No	Yes
GeForce 8400 GS	No	Yes

Reference Website
http://www.nvidia.com/object/hybrid_sli.html.

Hybrid Requirements and Constraints

1 You should have a Hybrid SLI Enabled Motherboard and Hybrid SLI Enabled Graphics Card.

2 Hybrid SLI is only supported with the Vista operating system.

3 GeForce Boost mode allows up to two displays to be connected to either mGPU or to the dGPU. When displays are connected to both adapters, hybrid mode is disabled and multi adapter extended desktop mode is enabled. In the multi-adapter extended desktop mode, up to four displays could be connected (up to two displays driven by mGPU and up to two displays by dGPU).

4 HybridPower mode requires displays to be connected to the mGPU. HybridPower cannot be enabled when displays are driven through the dGPU.

5 Hybrid SLI requires at least 256 MB of frame buffer carve out for the motherboard GPU. Hybrid SLI will not work if the frame buffer size is set to be less than 256 MB.

6 For best GeForce Boost performance, the following minimum system configuration is recommended:

- AMD Phenom CPU or Intel CPU run-ning at FSB 1333 MHz
- 2 × 1024 MB of DDR2-800 DRAM
- Discrete GPU recommended for GeForce Boost

7 Visit the ECS website (www.ecs.com.tw) for for more information of this motherboard.

8 Make sure that your graphics card driver supports the NVIDIA® Hybrid SLI® Technology. Download the latest driver from the NVIDIA website (www.nvidia.com). Or visit this website (http://www.nvidia.com/object/hybrid_sli.html) for more Hybrid SLI information.

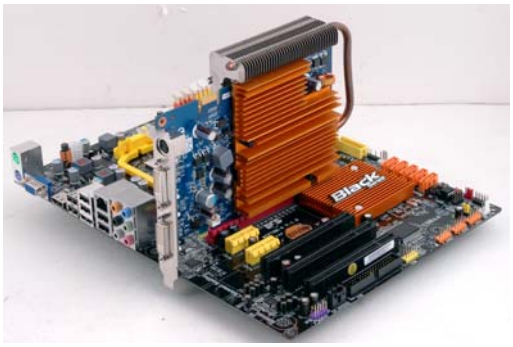
9 Make sure that your power supply unit (PSU) can provide at least the minimum power required by your system.

10 NVIDIA requires that customers update their current inventory and future builds of GeForce 8400 GS / 8400 cards using VBIOS version 62.98.29.00.00 or later.

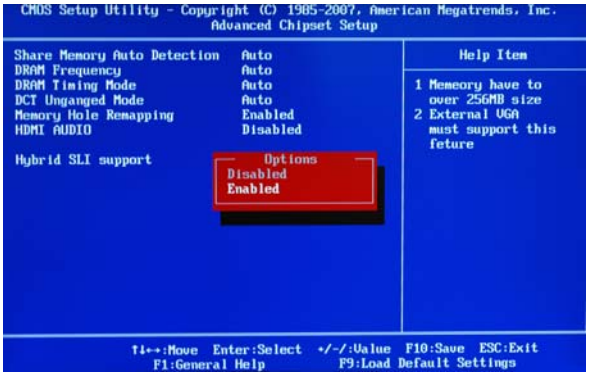
Installation and Use

1. Prepare one Hybrid SLI enabled graphics card.

2. Insert the Hybrid SLI enabled graphics card into the **PCIEX16** Slot on the motherboard.



3. Start your computer, then press Delete to enter the BIOS setup; use the arrow keys to select Advanced Chipset Setup, then press Enter; set the item *Hybrid SLI supprt* to *Enabled*.



4. Press F10 to save the configuration and exit the BIOS.

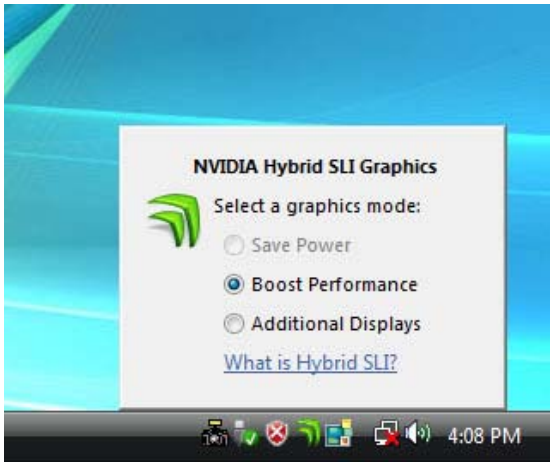
5. Enter Window Vista to install the latest driver which supports the NVIDIA Hybrid SLI technology.

6. Restart your computer after installing the driver. You can see the green icon of NVIDIA Hybrid SLI in the bottom right-hand corner while accessing the Windows Vista again.

7. Click the green Hybrid SLI icon, then the choosing menu appears.

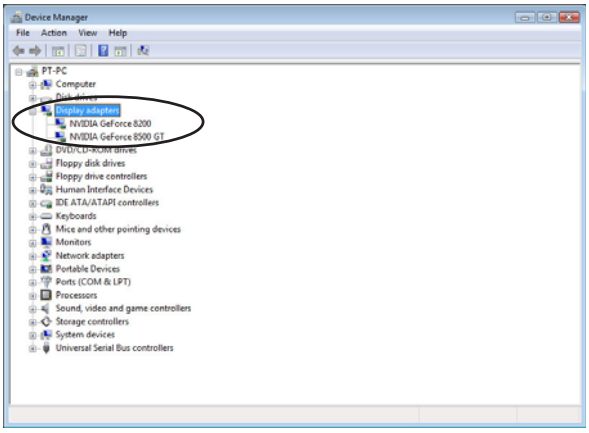
   Select a graphics mode.

   There are three SLI modes for you to select: Save Power, Boost Performance and Additional Displays.



Whether the Save Power and Boost Performace can be used depends on the graphics card being inserted.

8. Click with your right mouse button on *My Computer*, then click the option *Manage* and choose the *Device Manager,* finally, click the *Display Adapters*. The following screen appears.



All in all, the NVIDIA SLI technology works.

This concludes Chapter 6.