Destroyer Motherboard

User's Manual

FOXCONN®

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Version:

User's Manual V1.0 for Destroyer motherboard.
P/N: 3A220UY00-000-G

Symbol description:

⚠ Caution: refers to important information that can help you to use motherboard better, and tells you how to avoid problems.

💣 Warning: indicating a potential risk of hardware damage or physical injury may exist.

🗑 WEEE:

The use of this symbol indicates that this product may not be treated as household waste. By ensuring this product is disposed of correctly, you will help prevent potential negative consequences for the environment and human health, which could otherwise be caused by inappropriate waste handling of this product. For more detailed information about recycling of this product, please contact your local city office, your household waste disposal service or the shop where you purchased this product.

More information:

If you want more information about our products, please visit Foxconn's website: http://www.foxconnchannel.com

Declaration of conformity

$$\mathsf{C}\,\mathsf{E}$$

HON HAI PRECISION INDUSTRY COMPANY LTD
66 , CHUNG SHAN RD., TU-CHENG INDUSTRIAL DISTRICT,
TAIPEI HSIEN, TAIWAN, R.O.C.

declares that the product

Motherboard Destroyer

is in conformity with
(reference to the specification under which conformity is declared in
accordance with 89/336 EEC-EMC Directive)

■ EN 55022:1998/A2:2003 Limits and methods of measurements of radio
disturbance characteristics of information technology
equipment
■ EN 61000-3-2/:2000 Electromagnetic compatibility (EMC)
Part 3: Limits
Section 2: Limits for harmonic current emissions
(equipment input current <= 16A per phase)
■ EN 61000-3-3/A1:2001 Electromagnetic compatibility (EMC)
Part 3: Limits
Section 2: Limits of voltage fluctuations and flicker in low
voltage supply systems for equipment with rated current
<= 16A
■ EN 55024/A2:2003 Information technology equipment-Immunity
characteristics limits and methods of measurement

Signature :   *James Liang*   Place / Date : TAIPEI/2008

Printed Name : James Liang

Declaration of conformity

Trade Name:	FOXCONN
Model Name:	Destroyer
Responsible Party:	PCE Industry Inc.
Address:	458 E. Lambert Rd.
	Fullerton, CA 92835
Telephone:	714-738-8868
Facsimile:	714-738-8838
Equipment Classification:	FCC Class B Subassembly
Type of Product:	Motherboard
Manufacturer:	HON HAI PRECISION INDUSTRY
	COMPANY LTD
Address:	66 , CHUNG SHAN RD., TU-CHENG
	INDUSTRIAL DISTRICT, TAIPEI HSIEN,
	TAIWAN, R.O.C.

Supplementary Information:

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions : (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Tested to comply with FCC standards.

Signature :   *James Liang*   Date :   2008

Installation Precautions

- Electrostatic discharge (ESD) is the sudden and momentary electric current that flows between two objects at different electrical potentials. Normally it comes out as a spark which will quickly damage your electronic equipment. Please wear an electrostatic discharge (ESD) wrist strap when handling components such as a motherboard, CPU or memory.
- Ensure that the DC power supply is turned off before installing or removing CPU, memory, expansion cards or other peripherals. It is recommended to unplug the AC power cord from the power supply outlet. Failure to unplug the power supply cord may result in serious damage to your system.

Please carefully read the following procedures to install your computer :
- It is suggested to select high-quality, certified fans in order to avoid damage to the motherboard and CPU due to high temperature. Never turn on the computer if the CPU fan is not properly installed.
- We cannot guarantee that your system can operate normally when your CPU is overclocked. Normal operation depends on the overclocking capacity of your device.
- If there is any, when connecting USB, audio, 1394a, RS232 COM, IrDA or S/PDIF cables to the internal connectors on the motherboard, make sure their pinouts are matching with the connectors on the motherboard. Incorrect connections might damage the motherboard.
- When handling the motherboard, avoid touching any metal leads or connectors.
- If there is a PCI Express x16 graphics card installed in your system, we recommend using a 24-pin ATX power supply to get the best performance.
- Before turning on the power, please make sure the power supply AC input voltage setting has been configured to the local standard.
- To prevent damage to the motherboard, do not allow screws to come in contact with the motherboard circuit or its components. Also, make sure there are no leftover screws or metal components placed on the motherboard or within the computer casing.
- If you are uncertain about any installation steps or have a problem related to the use of the product, please consult a certified computer technician.

Technical Support :

Support

Website :
http://www.foxconnchannel.com

Support Website :
http://www.foxconnsupport.com

Worldwide online contact Support :
http://www.foxconnchannel.com/support/online.aspx

CPU, Memory, VGA Compatibility Supporting Website :
http://www.foxconnchannel.com/product/Motherboards/compatibility.aspx

Thank you for buying Foxconn Quantum Force series motherboard-Destroyer. Foxconn Quantum Force products are engineered to maximize computing power, providing only what you need for breakthrough performance.

With advanced overclocking capability and a range of connectivity features for today multi-media computing requirements, Destroyer enables you to unleash more power from your computer.

This chapter includes the following information:
- Package List
- Product Specifications
- Layout
- Back Panel Connectors

Package List

Check your product package for the following items:

Motherboard	Foxconn Destroyer motherboard
I/O modules	1 x USB 2.0 x 2 ports and 1 x 1394a module 1 x SPDIF Out module
Cables	4 x SATA power and signal cables 2 x SATA power and signal cables right angle 1 x Ultra DMA 133/100/66 cable 1 x Floppy disk drive cable
Accessory	15 x Cable tie 1 x I/O shield 1 x Heat-Pipe expansion module 1 x Quantum Flow-GPU blower 1 x 2-way SLI bridge 1 x 3-way SLI bridge 1 x 3-way SLI plus bridge 1 x PCB tray 1 x 50k variable resistor 1 x 20k variable resistor Copper column bolt
Application CD	Foxconn motherboard support CD
Documentation	User's manual Quick installation guide Registration card Quantum Force sticker Quantum Force tattoos Quantum Force dogtag

! CAUTION

Before your purchase, if any of the above items is damaged or missing, please contact your retailer. Accessories are not in the warranty, only motherboard is.

1-1 Product Specifications

CPU	Support AMD socket AM2+ Phenom™ FX / Phenom™ series processors
	Support AMD socket AM2 series processors :
	Athlon™ 64 FX / Athlon™ 64X2 Dual-Core / Athlon™ X2 Dual-Core /
	Athlon™ 64 / Sempron™
HyperTransport	2000/1600MT/s for AM2 CPU
	Up to 5200MT/s (HT3.0) for AM2+ CPU
Chipset	NVIDIA nForce 780a SLI
Memory	4 x 240-pin DDR2 DIMM sockets
	Support up to 8GB of system memory
	Dual channel DDR2 1066*(oc*)/800/667/533MHz architecture
	*DDR2 1066 is only supported by some AM2+ CPU
	(oc*: Overclock)
Audio	Realtek 8-channel audio chip
	High Definition Audio
	2/4/5.1/7.1-channel
	Support for S/PDIF Out
	Support Jack-Sensing function
LAN	Broadcom 5786 Gigabit LAN chip
	Broadcom 5788 Gigabit LAN chip
Expansion Slots	4 x PCI Express x16 slots
	1 x PCI Express x1 slot
	1 x PCI slot
Onboard Serial ATA	6 x SATA connectors (Controlled by nForce 780a SLI)
	300MB/s data transfer rate
	Support hot plug and NCQ (Native Command Queuing)
	Support RAID 0, RAID 1, RAID 5, RAID 0+1
USB	Support hot plug
	Support up to 12 x USB 2.0 ports (6 rear panel ports, 3 onboard USB
	headers supporting 6 extra ports)
	Supports USB 2.0 protocol up to 480Mb/s
Internal Connectors	1 x 24-pin ATX main power connector
	1 x 8-pin ATX 12V power connector
	1 x Floppy disk drive connector
	1 x IDE connector (Conrtolled by nForce 780a SLI)
	6 x SATA connectors
	3 x USB 2.0 connectors (supporting 6 x USB devices)
	1 x CPU fan header (4-pin)
	2 x System fan headers (3-pin)
	2 x Power fan headers (3-pin)(FAN1, FAN2)
	1 x Front panel connector
	1 x CD_IN connector
	1 x Front Audio connector
	1 x Speaker connector

	1 x COM1 connector
	1 x IrDA connector
	1 x Chassis intrusion alarm header (INTR)
	1 x S/PDIF Out connector
	1 x 1394a connector
Back Panel Connectors	1 x PS/2 keyboard port
	1 x VGA port
	1 x DVI-D port
	1 x 1394a port
	2 x External SATA ports (Controlled by JMicron JMB362)
	6 x USB 2.0 ports
	2 x RJ-45 LAN ports
	8-channel Audio ports
Hardware Monitor	System voltage detection
	CPU/System temperature detection
	CPU/System/Power fan speed detection
	System voltage warning
	CPU/System overheating warning
	CPU/System/Chipset fan speed control
Onboard 1394a	Support hot plug
	400Mb/s transmission rate
	Support 2 independent 1394a units synchronously at most
PCI Express x1	Support 250MB/s (500MB/s concurrent) bandwidth
	Low power consumption and power management features
PCI Express x16 Gen2	PCI-E1_16X and PCI-E3_16X support 8GB/s (16GB/s concurrent) bandwidth
	PCI-E2_16X and PCI-E4_16X support 4GB/s (8GB/s concurrent) bandwidth
	Low power consumption and power management features
Green Function	Support ACPI (Advanced Configuration and Power Interface)
	Support S0 (normal), S1 (power on suspend), S3 (suspend to RAM), S4 (suspend to disk), and S5 (soft - off)
Bundled Software	AEGIS PANEL
	FOX LiveUpdate
	FOX DMI
	FOX LOGO
Operating System	Support for Microsoft® Windows® Vista/XP/2000
Form Factor	ATX Form Factor, 12 inches x 9.6 inches (30.5cm x 24.4cm)

4

1-2 Layout
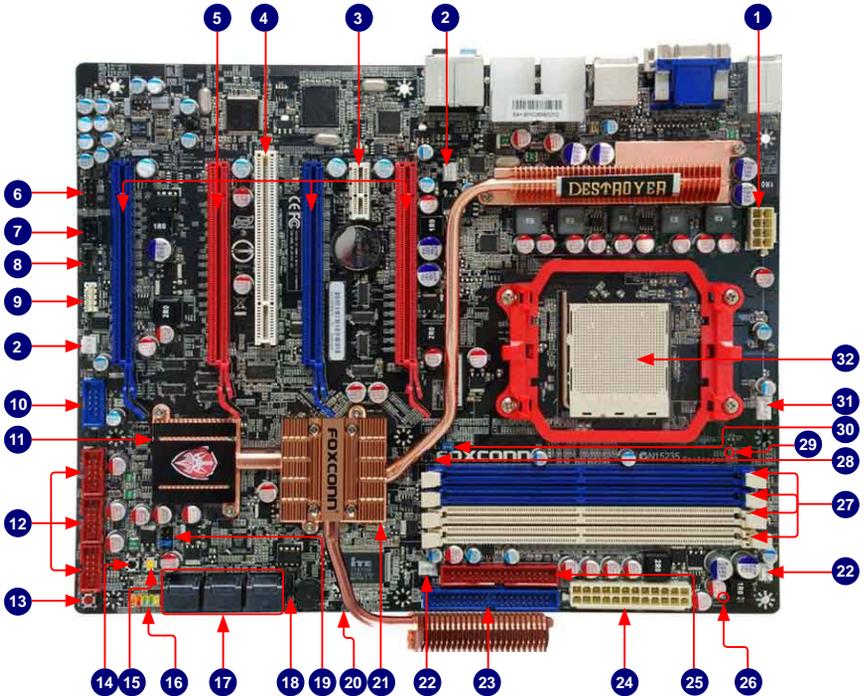
1. 8-pin ATX 12V Power Connector
2. SYS_FAN Headers
3. PCI Express x1 Slot
4. PCI Slot
5. PCI Express x16 Slots
6. Front Audio Connector
7. CD_IN Connector
8. S/PDIF Out Connector
9. COM1 Connector
10. 1394a Connector
11. Chipset: NVIDIA nForce 200
12. Front USB Connectors
13. Power On Button
14. Reset Button
15. Clear CMOS Button
16. Front Panel Connector
17. SATA Connectors
18. Speaker Connector
19. BIOS_SELECT Jumper
20. IrDA Connector
21. Chipset: NVIDIA nForce 780a SLI
22. Power FAN Headers
23. IDE Connector
24. 24-pin ATX Power Connector
25. Floppy Connector
26. +5V Standby LED
27. DDR2 DIMM Slots
28. Chassis Intrution Alarm Header
29. DRAM Power LED
30. Clear CMOS Jumper
31. CPU_FAN Header
32. CPU Socket

Note : The above motherboard layout is for reference only, please refer to the physical
motherboard for detail.

1-3 Back Panel Connectors

PS/2 Keyboard Port   VGA Port   1394a Port   LAN Ports

Line Out
Line In
Rear Speaker
Subwoofer
Side Speaker
Microphone

USB Ports   DVI-D Port   External SATA Ports   USB Ports   Audio Ports
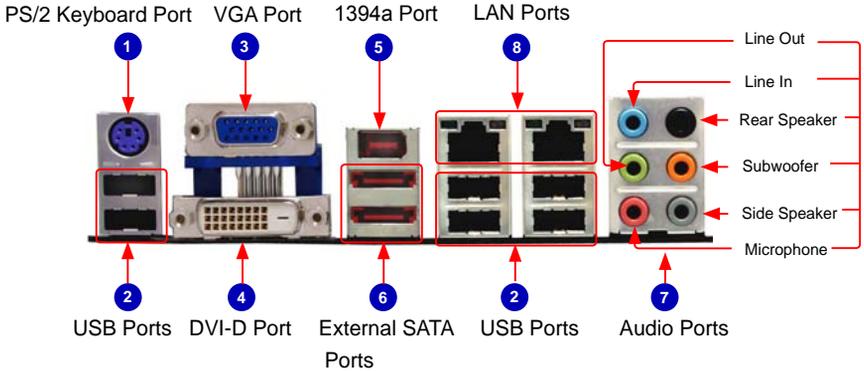
1. PS/2 Keyboard Port

Use the upper port (Purple) to connect a PS/2 keyboard.

2. USB Ports

The USB port supports the USB 2.0/1.1 specification. Use this port to connect a USB device such as a USB keyboard/mouse, USB printer, USB flash drive and etc.

3. VGA Port

To connect with external display device, such as a monitor or LCD display.

4. DVI-D Port

The DVI-D port supports DVI-D specification. Connect a monitor that supports DVI-D connection to this port.

5. 1394a Port

This port is used to connect a 1394a device.

6. External SATA Ports

To connect external SATA device(s) to your system by expanding the internal SATA port(s) to the chassis back panel. External SATA device shall provide power by its own.

7. Audio Connectors

For the definition of each audio port, please refer to the table below :

Port	2-channel	4-channel	5.1-channel	7.1-channel
Blue	Line In	Line In	Line In	Line In
Green	Line Out	Front Speaker Out	Front Speaker Out	Front Speaker Out
Pink	Microphone In	Microphone In	Microphone In	Microphone In
Orange	-	-	Center/Subwoofer Out	Center/Subwoofer Out
Black	-	Rear Speaker Out	Rear Speaker Out	Rear Speaker Out
Grey	-	-	-	Side Speaker Out

8. RJ-45 LAN Ports

The Ethernet LAN port provides Internet connection at up to 10/100/1000Mb/s data rate.

LAN Type	Left: Active		Right: Link	
	Status	Description	Status	Description
1000M	Off	No Link	Off	No Link
	Green Blinking	Data Activity	Off	10Mb/s Connection
			Green	100Mb/s Connection
			Orange	1000Mb/s Connection

Active LED   Link LED

2

This chapter introduces the hardware installation process, including the installation of the CPU, memory, power supply, slots, pin headers and the mounting of jumpers. Caution should be exercised during the installation of these modules. Please refer to the motherboard layout prior to any installation and read the contents in this chapter carefully.

This chapter includes the following information :
- ■ Install the CPU and CPU Cooler
- ■ Install the Memory
- ■ Install an Expansion Card
- ■ Install other Internal Connectors
- ■ Install the Optional Accessory
- ■ Jumpers
- ■ Onboard Button
- ■ Onboard LED

Please visit this website for more supporting information about CPU, Memory and VGA for your motherboard :
http://www.foxconnchannel.com/product/Motherboards/compatibility.aspx

2-1 Install the CPU and CPU Cooler

Install the CPU
Locate the Pin-1 CPU triangle mark and the Pin-1 corner of the CPU socket.

Pin-1 corner of the CPU socket

Pin-1 triangle marking of CPU

1. Release the CPU socket lever.

2. Align pin one of the CPU with the CPU socket, and gently put the CPU onto the socket.

3. When CPU is properly seated, push the CPU socket lever back to its locked position.

Install the CPU Cooler

Follow the steps below to correctly install the CPU cooler.
(The following procedures use Foxconn cooler as the example.)

1. Apply and spread an even thermal grease on the surface of CPU.

2. Buckle the heatsink firmly at one side of the stand.

3. Buckle the heatsink at another side, and press the fasten lever down to tightly seat the cooler.
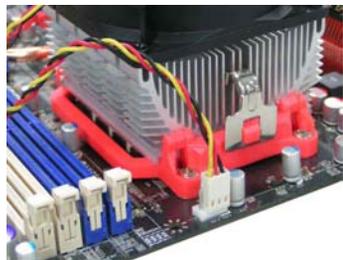
4. Attach the 3-wire CPU cooler connector to the CPU fan header on the motherboard.

⚠ CAUTION

Use extreme care when removing the CPU cooler because the thermal grease may adhere to the CPU. Inadequately removing the CPU cooler may damage the CPU.

2-2 Install the Memory

2

Dual Channel Memory Configuration

This motherboard provides four DDR2 memory sockets and supports Dual Channel Technology. When memory is installed, the BIOS will automatically check the memory in your system.

Four DDR2 memory sockets are divided into two channels :

Channel 0 : DIMM1, DIMM3
Channel 1 : DIMM2, DIMM4

The combinations of DIMM modules are :

	DIMM1	DIMM2	DIMM3	DIMM4
Single Channel	DS/SS	-	-	-
Single Channel	DS/SS	-	DS/SS	-
Single Channel	-	-	DS/SS	-
Single Channel	-	DS/SS	-	DS/SS
Dual Channel	DS/SS	DS/SS	-	-
Dual Channel	-	-	DS/SS	DS/SS
Dual Channel	DS/SS	DS/SS	DS/SS	DS/SS

(DS : Dual Side, SS : Single Side, - : No Memory)

Installing a Memory

!

Before installing a memory module, make sure to turn off the computer and unplug the power cord from the power outlet to prevent damage to the memory module. Be sure to install DDR2 DIMMs on this motherboard.

128-Pin   112-Pin
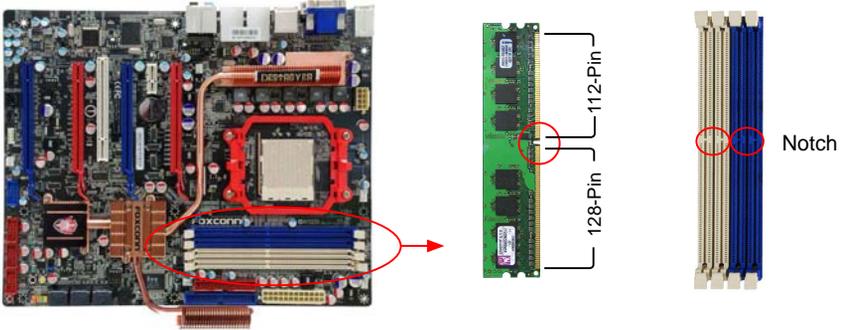
Notch

If you take a look at front side of memory module, it has asymmetric pin counts on both sides separated by a notch in the middle, so it can only fit in one direction. Follow the steps below to correctly install your memory modules into the sockets.

Step 1:
Spread the clips at both ends of the memory socket. Place the memory module onto the socket, then put your fingers on top edge of the module, and push it down firmly and seat it vertically into the memory socket.
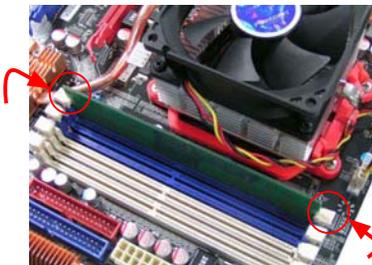
Step 2:
The clips at both ends of the socket will snap into place when the memory module is securely inserted.

2-3 Install an Expansion Card

■ Make sure the motherboard supports the expansion card. Carefully read the manual that came with your expansion card.

■ Always turn off the computer and unplug the power cord from the power outlet before installing an expansion card to prevent hardware damage.

2
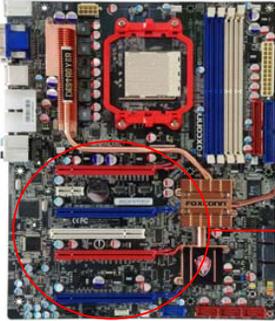
PCI Express x1

PCI Express x16 (PCI-E x16 mode)

PCI Express x16 (PCI-E x8 mode)

PCI

Follow the steps below to correctly install your expansion card in the expansion slot.

1. Locate an expansion slot that supports your card. Remove the metal slot cover from the chassis back panel.
2. Align the card with the slot, and press down on the card until it is fully seated in the slot.
3. Make sure the metal contacts on the card are completely inserted into the slot.
4. Secure the card's metal bracket to the chassis back panel with a screw.
5. After installing all expansion cards, replace the chassis cover.
6. Turn on your computer. If necessary, go to BIOS Setup to make any required BIOS changes for your expansion card(s).
7. Install the driver provided with the expansion card in your operating system.

Installing and Removing a PCI Express x16 Graphics Card :

• Installing a Graphics Card:
Gently insert the graphics card into the PCI Express x16 slot. Make sure the graphics card is locked by the latch at the end of the PCI Express x16 slot.

• Removing the Card:
Push the latch at the end of the PCI Express x16 slot to release the card and then pull the card straight up from the slot.

2-4 Install other Internal Connectors

Power Connectors
This motherboard uses an ATX power supply. In order not to damage any device, make sure all the devices have been installed properly before applying the power supply.

24-pin ATX power connector : PWR1
PWR1 is the ATX power supply connector. Make sure that the power supply cable and pins are properly aligned with the connector on the motherboard. Firmly plug the power supply cable into the connector and make sure it is secure.
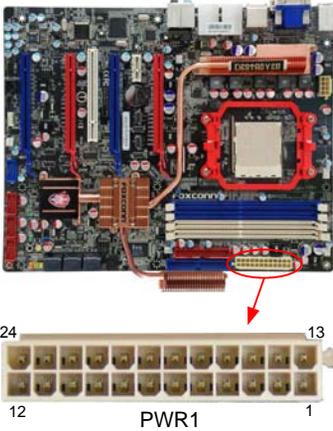
Pin #	Definition	Pin #	Definition
1	3.3V	13	3.3V
2	3.3V	14	-12V
3	GND	15	GND
4	+5V	16	PS_ON(Soft On/Off)
5	GND	17	GND
6	+5V	18	GND
7	GND	19	GND
8	Power Good	20	NC
9	+5V SB(Stand by +5V)	21	+5V
10	+12V	22	+5V
11	+12V	23	+5V
12	3.3V	24	GND

24   13

12   PWR1   1

Pin No. 24

CAUTION

! We recommend you using a 24-pin power supply. If you are using a 20-pin power supply, you need to align the ATX power connector according to the picture.
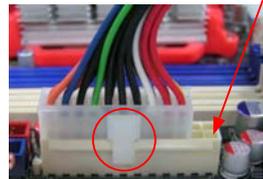
20-Pin Power

8-pin ATX 12 V Power Connector : PWR2
The 8-pin ATX 12V power supply connects to PWR2 and provides power to the CPU.

5   1

+12V —   — GND

8   4
PWR2
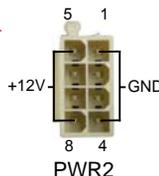
Pin #	Definition	Pin #	Definition
1	GND	5	+12V
2	GND	6	+12V
3	GND	7	+12V
4	GND	8	+12V

Connect a 4-pin power plug

!
CAUTION

We recommend you using an 8-pin ATX 12V power supply. If you are using a 4-pin power supply, you need to align the ATX power connector according to the picture on the right.

Front Panel Connector : FP1

This motherboard includes one connector for connecting the front panel switch and LED Indicators.

```
            1   2
HDD-LED  +       +  PWR-LED
RESET-SW            PWR-SW
NC                  EMPTY
            9   10
           FP1
```

Hard Disk LED Connector (HDD-LED)

Connect to the chassis front panel IDE indicator LED. It indicates the active status of the hard disks. This 2-pin connector is directional with +/- sign.

Reset Switch (RESET-SW)

Attach the connector to the Reset switch on the front panel of the case; the system will restart when the switch is pressed.

Power LED Connector (PWR-LED)

Connect to the power LED indicator on the front panel of the chassis. The Power LED indicates the system's status. When the system is in operation (S0 status), the LED is on. When the system gets into sleep mode (S1) , the LED is blinking; When the system is in S3/S4 sleep state or power off mode (S5), the LED is off. This 2-pin connector is directional with +/- sign.

Power Switch Connector (PWR-SW)

Connect to the power button on the front panel of the chassis. Push this switch allows the system to be turned on and off rather than using the power supply button.

IDE Connector : PIDE

With the provided Ultra DMA IDE ribbon cable, you can connect to any IDE type of hard disk and CD/DVD ROM/RW drive.

Floppy Disk Drive Connector : FLOPPY

This motherboard includes a standard floppy disk drive (FDD) connector, supporting 360KB, 720KB,1.2MB, 1.44MB, and 2.88MB FDDs.
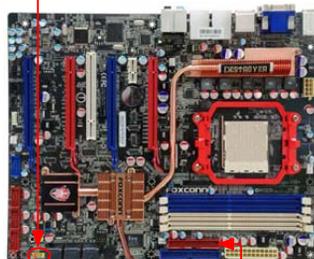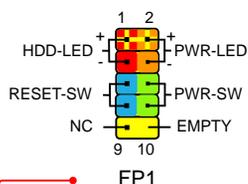
COM Connector : COM1

This motherboard supports one serial RS232 COM port for legacy compatibility. User must purchase another RS232 cable with a 9-pin D-sub connector at one end to connect with the external RS232 device and another end with 10-pin female connector to connect with COM1 connector in the motherboard.

	1	2	
RLSD			SIN
SOUT			DTR
GND			DSR
RTS			CTS
RI			EMPTY
	9	10	

COM1
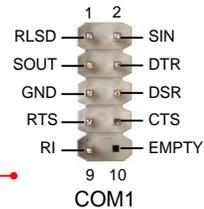
1394a Connector : F_1394

The 1394a expansion cable can be connected to either the front (provided that the front panel of your chassis is equipped with the appropriate interface) or real panel of the chassis.

	1	2	
TPA+			TPA-
GND			GND
TPB+			TPB-
+12V			+12V
EMPTY			GND
	9	10	

F_1394
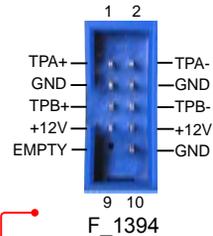
USB Connectors : F_USB1/2/3

In addition to the six USB ports on the rear panel, this product also provides three 10-pin USB headers on its motherboard. By connecting through USB cables with them, user can quickly expand another six USB ports on the front panel.

	1	2	
5V_DUAL			5V_DUAL
D-			D-
D+			D+
GND			GND
EMPTY			NC
	9	10	

F_USB 1/2/3
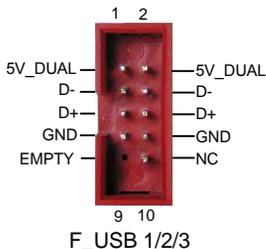
Serial ATA Connectors : SATA_1/2/3

The Serial ATA connector is used to connect with SATA Hard Disk or CD devices which supporting this feature. The current Serial ATA II interface allows up to 300MB/s data transfer rate.

GND TX-   RX-   GND
TX+ GND RX+

SATA_1/2/3
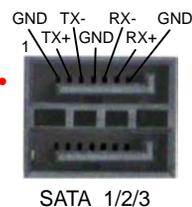
IrDA Connector : IR

This connector supports infrared wireless transmitting and receiving device.

1	+5V
2	EMPTY
3	IRRX
4	GND
5	IRTX

IR
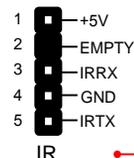
Chassis Intrusion Alarm Header : INTR

The connector can be connected to a security switch on the chassis. The system can detect the chassis intrusion through the function of this connector. If eventually the chassis was closed, the system will send a message out.

	1	2	
INTRUDERJ			GND

INTR
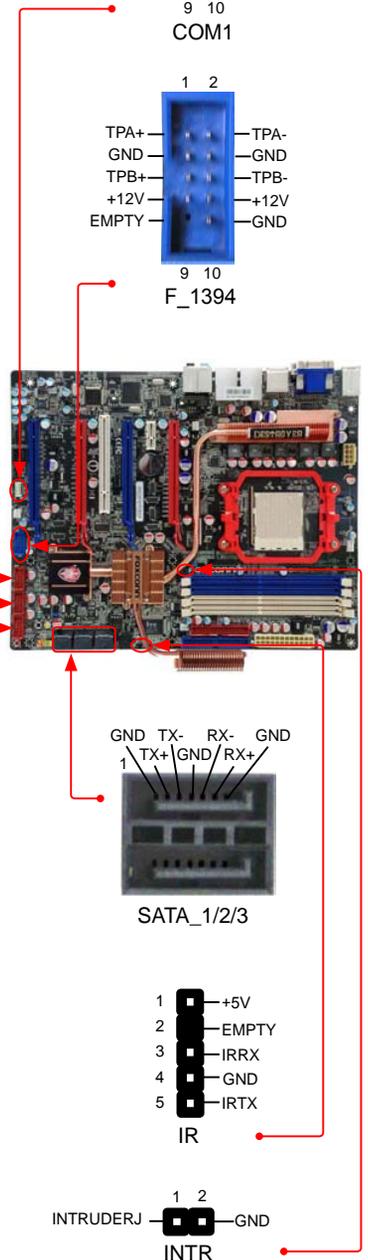
Audio Connector : F_AUDIO

The audio connector supports HD Audio standard.
It provides the Front Audio output choice.

```
           1  2
PORT1_L ──        ── AUD_GND
PORT1_R ──        ── PRESENCE_J
PORT2_R ──        ── SENSE1_RETURN
SENSE_SEND ──     ── EMPTY
PORT2_L ──        ── SENSE2_RETURN
           9 10
```
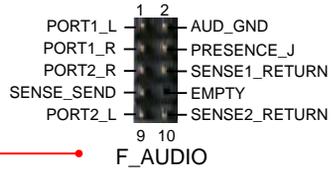
F_AUDIO

Audio Connector : CD_IN

CD_IN is a Sony standard audio connector, it can be
connected to a CD/DVD-ROM drive through a CD/DVD
audio cable.

```
CD_L  GND  CD_R
```

CD_IN
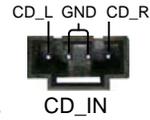
S/PDIF Out Connector : SPDIF_OUT1

The connector is used for S/PDIF output.

```
    +5V ──   1
  EMPTY ──   2
SPDIF_OUT ── 3
    GND ──   4
```

SPDIF_OUT1

Fan Headers : CPU_FAN, SYS_FAN1,
SYS_FAN2, FAN1, FAN2

There are five main fan headers on this motherboard.
The fan speed can be controlled and monitored in "PC
Health Status" section of the BIOS Setup. These fans
can be automatically turned off after the system enters
S3, S4 and S5 sleeping states.

```
1 ── GND        1 ── GND        1 ── GND
  ── POWER        ── +12V         ── +12V
  ── SENSE        ── SENSE        ── SENSE
  ── CONTROL
  CPU_FAN        SYS_FAN1/2      FAN1/2
```

Speaker Connector : SPEAKER

The speaker connector is used to connect speaker of
the chassis.

```
  SPKJ ──   1
 EMPTY ──   2
    NC ──   3
  SPKJ ──   4
```

SPEAKER
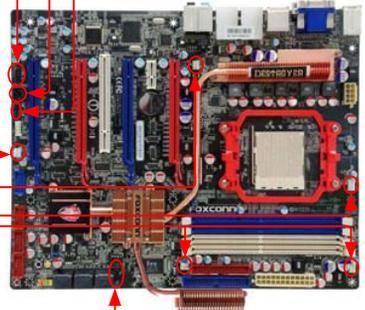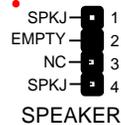
2-5 Install the Optional Accessory

Install Heat-Pipe Expansion Module
1. Find the chipset heatsink, take off the removable piece in its groove.
2. Find the Heat-Pipe expansion module, remove the protected film from its surface.
3. Place the Heat-pipe onto the heatsink, and fasten four screws to fix it.
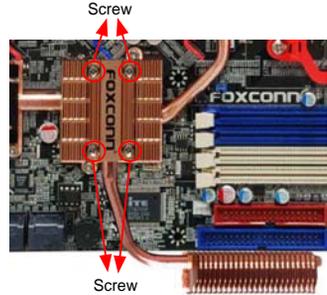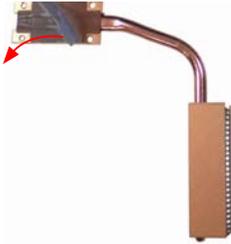
Screw

Screw

Install Quantum Flow-GPU Blower
This 120mm fan can provide good cooling for the graphics card, especially in multi-GPU setups. You can easily use the accompanied screws to fix it on the graphics card, then attach the 3-wire fan connector to the fan header on the motherboard.

Screw
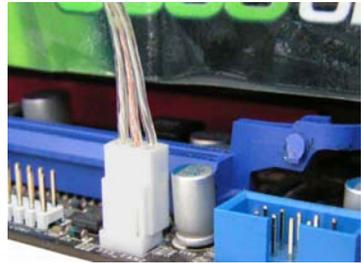
PCB Tray
If you choose not to use the chassis, you can use the plastic tray and copper bars to assemble the motherboard in an open environment as depicted.

Note: The PCB or plastic tray (in the package) is assembled under the motherboard.

2-6 Jumpers

For some features needed, users can change the jumper settings on this motherboard to modify them. This section explains how to use the various functions of this motherboard by changing the jumper settings. Users should read the following content carefully prior to modifying any jumper setting.

Description of Jumpers

1. For any jumper on this motherboard, pin 1 can be identified by the bold silkscreen next to it. However, in this manual, pin 1 is simply labeled as "1".
2. The following table explains different types of the jumper settings. "Closed" means placing a jumper cap on the two pins to temporarily short them. The shorting can also be done by touching two pins by a screwdriver for a few seconds, but using jumper cap is recommended. It can prevent hazardous ESD (Electrical Static Discharge) problem.

Jumper	Diagram	Definition	Description
1 □ □ □	1 ■■ □	1-2	Set Pin 1 and Pin 2 closed
	1 □ ■■	2-3	Set Pin 2 and Pin 3 closed
1 □ □	1 ■■	Closed	Set two pins closed
	1 □ □	Opened	Set two pins opened

Clear CMOS Jumper: CLR_CMOS

The motherboard uses CMOS RAM to store the basic hardware information (such as BIOS data, date, time information, hardware password...etc.). Clear CMOS data is the fast way to go back to factory default when the BIOS settings were mistakenly modified.

The steps to clear CMOS data are :

1. Turn off the computer, unplug the power cord from the power outlet.
2. Remove jumper cap from pins 2-3, put it onto pins 1-2 to short them. This will clear CMOS data.
3. Return the setting to its original with pins 2-3 closed.
4. Plug in the power cord to your computer and turn it on.
5. Go to BIOS Setup to configure new system as described in next chapter.

Clear

Normal
(Default)

CLR_CMOS
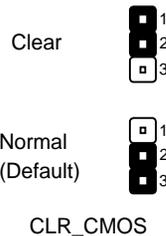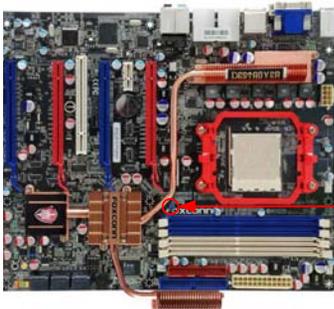
BIOS Select Jumper: BIOS_SELECT

This motherboard provides two BIOS ROMs, and user can easily select one of them for operation. The selection of BIOS ROM can be done by hardware jumper fix or by software BIOS configuration.

The jumper is used to select the booting from BIOS ROM 1 or BIOS ROM 2. You can refer to the following table for the setting.
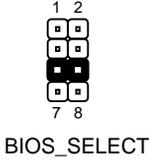
BIOS ROM 2
BIOS ROM 1

1 2

7 8

BIOS_SELECT

Definition	Description	Function
1-2	Set Pin 1 and Pin 2 closed	Force BIOS ROM 1
3-4	Set Pin 3 and Pin 4 closed	Force BIOS ROM 2
5-6 (default)	Set Pin 5 and Pin 6 closed	BIOS select, default is BIOS ROM 1
7-8	Set Pin 7 and Pin 8 closed	BIOS select, default is BIOS ROM 2

WARNING!

- Disconnect the power cable before adjusting the jumper settings.
- Do not clear the CMOS while the system is turned on.

2-7 Onboard Button

Power on Button: POWER_ON
Push the power on button to power on the system.

Reset Button: RESET
Push the reset button to reboot the system.

Clear CMOS Button: CLR_CMOS1
Turn off the AC power supply, push the CLR_CMOS1 button and hold there for a couple of seconds to clear CMOS.
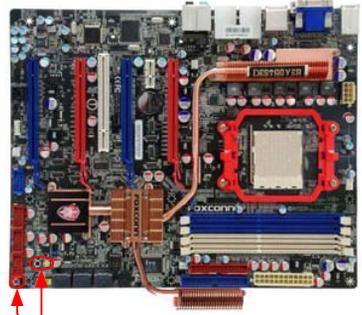
POWER_ON   RESET   CLR_CMOS1

!CAUTION

■ Make sure the power supply is turned off before pressing the CLR_CMOS1 button to clear CMOS.

■ Push down the CLR_CMOS1 button and hold it there for a couple of seconds to clear the CMOS completely, then release.

2-8 Onboard LED

DRAM Power LED: (Red)
The LED lights up indicating the system is on or the system is staying at S1 or S3 sleeping state.

+5V Standby LED: (Blue)
It will light whenever the power supply that connected to the motherboard is switched on.

WARNING!

Do not remove or plug in any device when the onboard LED is lighting on.

3

This chapter tells how to change system settings through the BIOS Setup menus. Detailed descriptions of the BIOS parameters are also provided.

You have to run the Setup Program when the following cases occur:

1. An error message appears on the screen during the system Power On Self Test (POST) process.
2. You want to change the default CMOS settings.

This chapter includes the following information :

- ■ Enter BIOS Setup
- ■ Main Menu
- ■ System Information
- ■ Advanced BIOS Features
- ■ Advanced Chipset Features
- ■ Integrated Peripherals
- ■ Power Management Setup
- ■ PC Health Status
- ■ Quantum BIOS
- ■ Load Optimized Defaults
- ■ Set Supervisor Password
- ■ Set User Password
- ■ Save & Exit Setup
- ■ Exit Without Saving

Since BIOS could be updated some other times, the BIOS information described in this manual is for reference only. We do not guarantee the content of this manual will remain consistent with the newly released BIOS at any given time in the future. Please visit our website for updated manual if it is available.

Enter BIOS Setup

The BIOS is the communication bridge between hardware and software, correctly setting up the BIOS parameters is critical to maintain optimal system performance. Power on the computer, when the message "**Press TAB to show POST screen, DEL to enter SETUP**" appears at the bottom of the screen, you can press <Del> key to enter Setup.

CAUTION
⚠

We do not suggest that you change the default values in the BIOS Setup, and we shall not be responsible for any damage which resulted from the change you made.

Main Menu

The main menu allows you to select from a list of setup functions together with two exit choices. Use the arrow keys to select a specific item and press <Enter> to go to the sub-menu. Each item in the main menu is explained below:

```
            Phoenix - AwardBIOS CMOS Setup Utility

    ► System Information        ► Quantum BIOS

    ► Advanced BIOS Features       Load Optimized Defaults

    ► Advanced Chipset Features     Set Supervisor Password

    ► Integrated Peripherals       Set User Password

    ► Power Management Setup       Save & Exit Setup

    ► PC Health Status          Exit Without Saving


    Esc : Quit                ↑↓←→     : Select Item
    F10 : Save & Exit Setup

            Time, Date, Hard Disk Type...
```

► **System Information**

It displays the basic system configuration, such as BIOS version, system date, time and floppy drive. They all can be set up through this menu.

► **Advanced BIOS Features**

The advanced system features can be set up through this menu.

► **Advanced Chipset Features**

The values for the chipset can be changed through this menu, and the system performance can be optimized.

► **Integrated Peripherals**

All onboard peripherals can be set up through this menu. There are IDE devices, Super I/O devices such as Serial I/O, and other USB ports...etc.

► **Power Management Setup**

All the items related with Green function features can be set up through this menu.

► **PC Health Status**

This setup enables you to read/change Fan speeds, and displays temperatures and voltages of your CPU/System.

► **Quantum BIOS**

Some special proprietary features (such as overclocking) can be set up through this menu.

► **Load Optimized Defaults**

The optimal performance settings can be loaded through this menu. However, it may offer better performance in some ways (such as less I/O cards, less memory ...etc.), still, it may cause problem if you have more memory or I/O cards installed. It means, if your system loading is heavy, set to optimal default may sometimes come out an unstable system. What you need now is to adjust BIOS setting one by one, trial and error, to find out the best setting for your current system.

► **Set Supervisor Password**

The supervisor password can be set up through this menu.

► **Set User Password**

The user password can be set up through this menu.

► **Save & Exit Setup**

Save setting values to CMOS and exit.

► **Exit Without Saving**

Do not change anything and exit the setup.

When we talk about <+> and <-> keys in this manual, they are the single-keypad keys of the numeric keypad which is located at the right hand side of your desktop keyboard. They are not the combination keys made by pressing and holding down <Shift> key first, then press <+ => or <-_> key the next.

System Information

```
          Phoenix - AwardBIOS CMOS Setup Utility
                    System Information

   Date (mm:dd:yy)          Sat, Apr 23 2008    ▲        Item Help
   Time (hh:mm:ss)          17 : 44 : 13
                                                     Menu Level  ▶
 ▶ IDE Channel Master       [HDS728080PLAT20]
 ▶ IDE Channel Slave        [ None]                 Press [Enter] to enter
 ▶ SATA Channel 1 Master    [ None]                 next page for detail
 ▶ SATA Channel 2 Msater    [ None]                 hard drive settings.
 ▶ SATA Channel 3 Master    [ None]
 ▶ SATA Channel 4 Master    [ None]
 ▶ ESATA Channel 1 Master   [ None]
 ▶ ESATA Channel 2 Master   [ None]

   Drive A                  [1.44M, 3.5 in.]
   Halt On                  [All , But Keyboard]

   Model Name:              Destroyer
   BIOS Version:            D18
   Memory:                  1024M
   BCM5788 MAC Address      00 1C 25 3B CC AF   ▼

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

This submenu is used to set up the standard BIOS features, such as the date, time, floppy drive and so on. Use the arrow up/down keys to select an item, then use the <+> or <-> keys to change the setting.

► **Date -** <weekday><month><date><year> format

Day—weekday from Sun. to Sat., automatically displayed by BIOS (Read Only).

Month—month from 1 to 12.

Date—date from 1st to 31st.

Year—year, set up by users.

Use <Enter>, <Tab> keys to select a field. Use <+>, <->, <PageUp> or <PageDown> to select a value.

► **Time -** <hour> : <minute> : <second> format

This item allows you to configure the desired time. Use <Enter>, <Tab> to move forward and select a field. Directly input a value or use <PageUp>, <PageDown>, <+> or <-> to select a value.

► **IDE Channel Master / Slave**

These categories identify the hard disks connected to the PATA port in the system.

In each channel's display, you can press [Enter] to go to its submenu. You can further configure specific drive settings. [None] and [Auto] settings allow you to enable or disable this drive. [None] means no HDD is installed or set, and [Auto] means the system can auto-detect the hard disk when booting up. In Access Mode setting, selections of [CHS], [LBA], [Large] and [Auto] can help you to select hard drive for legacy compatibility.

Award (Phoenix) BIOS can support 3 HDD modes: CHS, LBA and Large.

CHS	For HDD <528MB
LBA	For HDD >528MB & Supporting LBA (Logical Block Addressing)
Large	For HDD>528MB but not supporting LBA

Note: Set to [Auto] , the system can detect the hard disk and select the HDD mode automatically. Suggest you select this option.

► **SATA Channel 1/2/3/4 Master / ESATA channel 1/2 Master**

When SATA Operation Mode is set to [IDE], These items will appear. The relationships between SATA channels and SATA ports on the motherboard are :

SATA Channel 1 Master is the lower SATA port of SATA_1 on the motherboard.

SATA Channel 2 Master is the lower SATA port of SATA_2 on the motherboard.

SATA Channel 3 Master is the upper SATA port of SATA_1 on the motherboard.

SATA Channel 4 Master is the upper SATA port of SATA_2 on the motherboard.

ESATA Channel 1 Master is the upper ESATA port of the rear panel.

ESATA Channel 2 Master is the lower ESATA port of the rear panel.

⚠ CAUTION

SATA_3 ports on the motherboard are working under RAID mode, AHCI mode or Linux AHCI mode. In IDE mode, these two SATA ports do not function.

► **Drive A**

This option allows you to select which kind of the Floppy Disk Drive is installed in your system. It can be [None], [360KB, 5.25 in], [1.2MB, 5.25 in], [720KB, 3.5 in], [1.44MB, 3.5 in] and [2.88 MB, 3.5in].

► **Halt On**

This category determines whether or not the computer will stop if an error is detected during powering up.

All Errors	Whenever the BIOS detects a nonfatal error, the system will stop and you will be prompted.
No Errors	The system boot will not stop for any errors that may be detected.
All, But Keyboard	The system boot will not stop for a keyboard error; but it will stop for all other errors.
All, But Diskette	The system boot will not stop for a diskette error; but it will stop for all other errors.
All, But Disk/Key	The system boot will not stop for a keyboard or disk error, but it will stop for all other errors.

► **Model Name**

This item shows the model name.

► **BIOS Version**

This item shows the BIOS version.

► **Memory**

These are Display-Only information of the system memory, determined by POST(Power On Self Test) of the BIOS.

► **BCM5788 / BCM5786 MAC Address**

This item shows the onboard LAN MAC address.

► **CPU Name**

This item shows the CPU name installed in your system.

Advanced BIOS Features

```
              Phoenix - AwardBIOS CMOS Setup Utility
                    Advanced BIOS Features

  ►  Removable Device Priority      [Press Enter]    |      Item Help
  ►  Hard Disk Boot Priority        [Press Enter]    |
  ►  CD-ROM Boot Priority           [Press Enter]    | Menu Level  ►
     First Boot Device              [Hard Disk]      |
     Second Boot Device             [CDROM]          | Select Removable Boot
     Third Boot Device              [Removable]      | Device Priority
     Boot Other Device              [Enabled]        |
     Boot Up Floppy Seek            [Disabled]       |
     Boot Up NumLock Status         [On]             |
     Security Option                [Setup]          |
     Full Screen Logo Show          [Enabled]        |



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

► **Removable Device Priority**

This option is used to select the priority for removable device.

► **Hard Disk Boot Priority**

This option is used to select the priority for HDD startup. After pressing [Enter], you can select the HDD using the Up/Down arrow keys, and change the HDD priority using [PageUp]/ [PageDown]; you can exit this menu by pressing [Esc].

► **CD-ROM Boot Priority**

This option is used to select the priority for CD-ROM startup. After pressing [Enter], you can select the CD-ROM using the Up/Down arrow keys, and change the CD-ROM priority using [PageUp]/[PageDown]; you can exit this menu by pressing [Esc].

► **First / Second / Third Boot Device**

These three options allow you to select the priority of boot sequence from different devices.

► **Boot Other Device**

With this function set to enable, the system will boot from some other devices provided that the first/second/third boot devices failed.

► **Boot Up Floppy Seek**

This item controls whether the BIOS will check for a floppy drive while booting up. If it cannot detect one (either due to improper configuration or physical unavailability), it will appear an error message. Disabling this function, then POST will not detect the floppy.

► **Boot Up NumLock Status**

This item defines if the keyboard Num Lock key is active when your system is started. The available settings are: On (default) and Off.

► **Security Option**

When it is set to "Setup", a password is required to enter the CMOS Setup screen. When it is set to "System", a password is required not only to enter CMOS Setup, but also to start up your PC.

► **Full Screen Logo Show**

This item allows you to enable or disable full screen customer's logo.

Advanced Chipset Features

```
          Phoenix - AwardBIOS CMOS Setup Utility
                  Advanced Chipset Features
┌─────────────────────────────────────────────┬──────────────────────┐
│ x  Hybrid SLI              Disabled          │     Item Help        │
│ x  Display Detection       Enabled           ├──────────────────────┤
│    iGPU Frame Buffer Control [Auto]          │  Menu Level  ►       │
│ x  Frame Buffer Size       64M               │                      │
│    OnBoard GPU             [Enable If NO Ext GPU]                    │
│    Init Display First      [PCIEx]           │                      │
│                                              │                      │
│                                              │                      │
│                                              │                      │
│                                              │                      │
│                                              │                      │
│                                              │                      │
│                                              │                      │
│                                              │                      │
│                                              │                      │
└─────────────────────────────────────────────┴──────────────────────┘
 ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value   F10:Save   ESC:Exit  F1:General Help
          F5: Previous Values            F7: Optimized Defaults
```
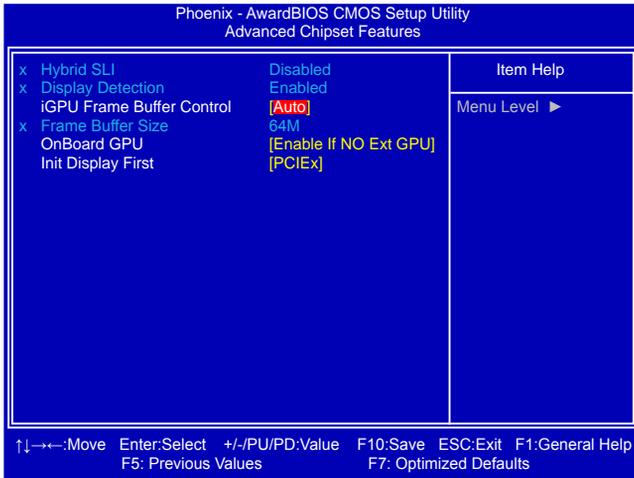
► Hybrid SLI

Hybrid SLI Support is based on NVIDIA's industry-leading SLI technology, delivers multi-GPU
benefits when an NVIDIA® motherboard GPU is combined with an NVIDIA discrete GPU.
Hybrid SLI increases graphics performance with **GeForce® Boost** and provides intelligent
power management with **Hybrid Power™**. When the display card supports Hybrid SLI
technology and the system memory size is 2GB or above, this option is supported. You can
select [Auto] to let the system control, or select [Manual] to configure the Frame Buffer Size
manually.

You can ignore this setting if this option is not supported due to memory size is small or CPU is
not AM2+ or display card does not support Hybrid SLI technology.

For more updated information about Hybrid SLI Technology, please visit NVIDIA's Website.

► Display Detection

When Hybrid SLI feature is turned on, it means you already have two graphics GPUs installed.
You must decide which one is the primary adapter, and this option will automatically select the
one with display monitor attached as the primary graphics adapter.

If both two graphics ports are connected to monitors, then you must use one more option "Init
Display First" to select.

If none of the monitor is connected, then the "Init Display First" setting defines which one is the
primary.

► iGPU Frame Buffer Control

This item is used to control the "Frame Buffer Size" setting. Select [Auto], BIOS will automati-
cally reserve some of the system memory as video memory. Select [Manual], you can set the
size of video memory manually.

► Frame Buffer Size

Allocates system memory for use as video memory to ensure the most efficient use of avail-
able resources for maximum 2D/3D graphics performance.

This is a memory allocation method addition to the Unified Memory Architecture (UMA)
concept, wherein a static amount of page-locked graphics memory is allocated during driver

initialization. This fixed amount of memory will provide the user with a guaranteed graphics memory at all times, and will no longer be available to the OS.

► **OnBoard GPU**

This item is used to set whether to enable the onboard GPU (Graphic Processor Unit) in the North Bridge. [Enable If No Ext GPU] means if there is no external graphics card on the motherboard, the onboard GPU will be enabled. [Always Enable] means the onboard GPU is always enabled.

► **Init Display First**

Select PCI-Express graphics card as the default first display device.

This option is used to select the source of primary display device.

Integrated Peripherals

```
           Phoenix - AwardBIOS CMOS Setup Utility
                  Integrated Peripherals

  ► OnChip IDE Devices      [Press Enter]          Item Help
  ► MCP SATA Mode           [Press Enter]
  ► OnBoard Devices         [Press Enter]      Menu Level  ►
  ► SuperIO Devices         [Press Enter]
  ► USB Devices             [Press Enter]




  ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
          F5:Previous Values          F7:Optimized Defaults
```
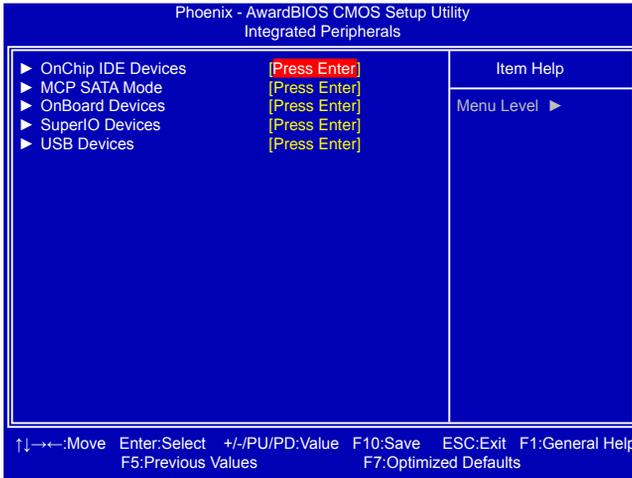
► **OnChip IDE Devices / MCP SATA Mode / OnBoard Devices / SuperIO Devices / USB Devices**

  Press [Enter] to go to each submenu.

OnChip IDE Devices

```
           Phoenix - AwardBIOS CMOS Setup Utility
                   OnChip IDE Devices

  OnChip IDE Channel        [Enabled]              Item Help
  SATA Controller           [Enabled]
                                              Menu Level  ►




  ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
          F5:Previous Values          F7:Optimized Defaults
```
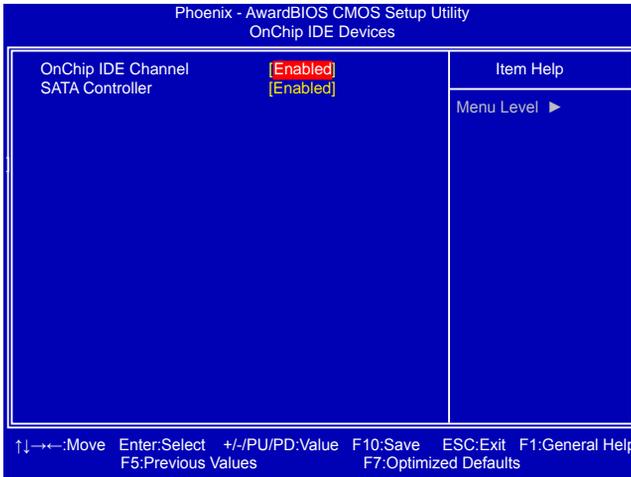
► **OnChip IDE Channel**

  This option is used to enable/disable function of IDE drives connected to the PATA interface.

► **SATA Controller**

  This option is used to enable/disable function of SATA drives connected to the SATA ports.

MCP SATA Mode

```
                    Phoenix - AwardBIOS CMOS Setup Utility
                              MCP SATA Mode

     SATA Operation Mode        [IDE]                    Item Help
   x SATA Pri-Master RAID       Disabled
   x SATA Pri-Slave RAID        Disabled             Menu Level  ►
   x SATA Sec-Master RAID       Disabled
   x SATA Sec-Slave RAID        Disabled
   x SATA Thi-Master RAID       Disabled
   x SATA Thi-Slave RAID        Disabled












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

3

► SATA Operation Mode

This item is used to set the operating mode of your SATA ports. The available options are:

[IDE] - This configures the SATA ports to support legacy PATA mode or SATA mode.

[AHCI] - The Advanced Host Controller Interface (AHCI) specification describes the register level interface for a Host Controller for Serial ATA. The specification includes a description of the hardware/software interface between system software and the host controller hardware. AHCI provides more advanced features including SATA features, but some SATA drives may not support AHCI, unless they are labeled with AHCI support in its specification.

If your motherboard supporting AHCI, and you have a SATA device, which also supports AHCI, then you can select IDE option to have fair performance (only PATA, SATA level), or you can select AHCI to get its best performance.

[Linux AHCI] - For advanced Linux system if it supports AHCI, then you can select this optiion.

[RAID] - When you enable RAID, it means all your SATA drives must also support AHCI.

31

► **SATA Pri-Master RAID / SATA Pri-Slave RAID / SATA Sec-Master RAID / SATA Sec-Slave RAID / SATA Thr-Master RAID / SATA Thr-Slave RAID**

These items are valid only when "SATA Operation Mode" is set to RAID. They are used to enable or disable the RAID function of each SATA port on the motherboard.

The relationships between RAID settings and SATA ports on the motherboard are :

SATA Pri-Master RAID is the lower SATA port of SATA_1 on the motherboard.

SATA Pri-Slave RAID is the lower SATA port of SATA_2.

SATA Sec-Master RAID is the upper SATA port of SATA_1.

SATA Sec-Slave RAID is the upper SATA port of SATA_2.

SATA Thr-Master RAID is the lower SATA port of SATA_3.

SATA Thr-Slave RAID is the upper SATA port of SATA_3.

OnBoard Devices

```
          Phoenix - AwardBIOS CMOS Setup Utility
                   OnBoard Devices

  OnBoard JMB362 Controller    [IDE Mode]          Item Help
  OnBoard Audio Controller     [Auto]
  OnBoard BCM5788 Controller   [Enabled]        Menu Level  ►
  OnBoard BCM5786 Controller   [Enabled]
  OnBoard 1394 Controller      [Enabled]
  BCM5788 LAN Boot ROM         [Disabled]
  BCM5786 LAN Boot ROM         [Disabled]




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

► **OnBoard JMB362 Controller**

This item is used to set the operating mode of your eSATA ports. The available options are:

[Disabled] - Select this will turn off the eSATA function.

[IDE Mode] - This configures the eSATA ports to support legacy PATA mode or SATA mode.

[AHCI Mode] - The Advanced Host Controller Interface (AHCI) specification describes the register level interface for a Host Controller for Serial ATA. The specification includes a description of the hardware/software interface between system software and the host controller hardware. AHCI provides more advanced features including SATA features, but some SATA drives may not support AHCI, unless they are labeled with AHCI support in its specification.

If your motherboard supporting AHCI, and you have a eSATA device, which also supports AHCI, then you can select IDE option to have fair performance (only PATA, SATA level), or you can select AHCI to get its best performance.

[RAID Mode] - You can configure RAID by using the eSATA ports. When you enable RAID, it means all your SATA drives must also support AHCI.

► **OnBoard Audio Controller**

This item is used to enable or disable the onboard audio controller.

► **OnBoard BCM5788 / BCM5786 Controller**

This item is used to enable or disable the onboard LAN controller.

► **OnBoard 1394 Controller**

This item is used to enable or disable the onboard 1394 controller.

► **BCM5788 / BCM5786 LAN Boot ROM**

This item is used to enable or disable the onboard LAN boot optional ROM. A LAN boot ROM lets you set up a diskless workstation on the network. By installing a boot ROM in the network board, you can enable a client PC system on the network to be booted remotely.

SuperIO Devices
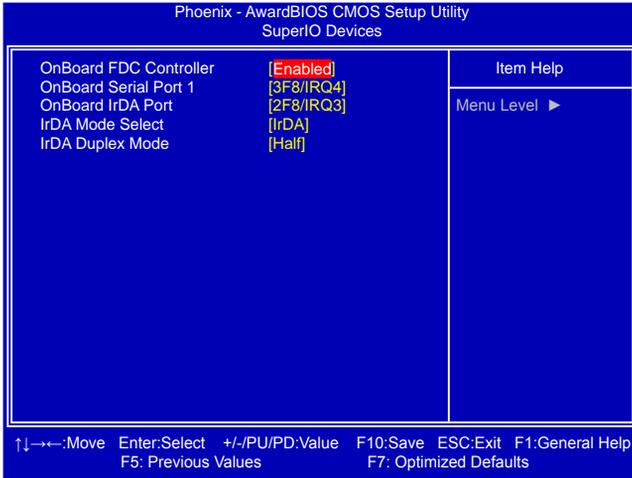
► **OnBoard FDC Controller**

This item is used to enable or disable the onboard FDC controller.

► **OnBoard Serial Port 1**

This item is used to assign the I/O address and interrupt request (IRQ) for the onboard serial port COM1.

► **OnBoard IrDA Port**

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

► **IrDA Mode Select**

This item is used to configure IrDA port mode:

[IrDA]: An IrDA device for maximum baud rate of 115200 bit/s.

[ASKIR]: A faster IrDA for 1152000 bit/s.

► **IrDA Duplex Mode**

This item enables you to determine the transfer mode of the onboard infrared chip.

USB Devices

```
              Phoenix - AwardBIOS CMOS Setup Utility
                          USB Devices

   USB 1.1 Controller            [Enabled]            Item Help
   USB 2.0 Controller            [Enabled]
   USB Operation Mode            [High Speed]      Menu Level  ►
   USB Keyboard Support          [Enabled]
   USB Mouse Support             [Enabled]         [Enable] or [Disable]
   USB Storage Support           [Enabled]         Open Host Controller
                                                   Interface for Universal
   ***USB Mass Storage Device Boot Settinf***      Serial Bus.

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

► **USB 1.1 Controller**

This item is used to enable or disable the Universal Host Controller Interface for USB.

► **USB 2.0 Controller**

This item is used to enable or disable the Enhanced Host Controller Interface for USB.

► **USB Operation Mode**

This item is used to set the USB operation mode. If you select the [High Speed], then the USB operation mode is determined by the USB device; select [Full/Low Speed], the USB device operates on full/low speed.

► **USB Keyboard Support**

This item is used to enable the support for USB keyboard on legacy OS. If you have a USB keyboard, set to enabled.

► **USB Mouse Support**

This item is used to enable the support for USB mouse on legacy OS. If you have a USB mouse, set to enabled.

► **USB Storage Support**

This option is used to set whether the USB Mass Storage controller is enabled in a legacy operating system (such as DOS).

USB Mass Storage Device Boot Setting

BIOS auto detects the presence of USB Mass Storage Devices, you can configure the Boot setting mode for the detected USB MSD. Setting Options: [Auto]; [FDD Mode]; [HDD Mode].

Power Management Setup

```
                Phoenix - AwardBIOS CMOS Setup Utility
                      Power Management Setup

  ACPI Function              [Enabled]          Item Help
  ACPI Suspend Type          [S3(STR)]
  Power Button               [Instant-Off]      Menu Level ►
  PWRON After PWR-Fail       [Off]
  HPET Support               [Enabled]

  ** Power Management Events **
  Resume by PCI/PCIE PME     [Disabled]
  USB KB/MS Resume from S3   [Disabled]
  Resume by Alarm            [Disabled]
x Date of Month Alarm          0
x Time(hh:mm:ss) Alarm         0 : 0 : 0
x Power On by Button           Enabled
  PS/2 KB Resume from S3     [Disabled]
x KB Resume Password           Enter
x Hot Key Resume               Ctrl-F1


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

ACPI (Advanced Configuration and Power Interface) is an open industry standard that defines power and configuration management interfaces between an operating system and the BIOS. In other words, it is a standard that describes how computer components work together to manage system hardware. In order to use this function the ACPI specification must be supported by the OS (for example, Windows2000 or WindowsXP).

ACPI defines five sleeping states, they are :

S1 - The S1 sleeping state is a low wake latency sleeping state. In this state, no system context is lost (CPU or chip set) and hardware maintains all system context. (also called **Power On Suspend**)

S2 - The S2 sleeping state is a low wake latency sleeping state. This state is similar to the S1 sleeping state except that the CPU and system cache context is lost (the OS is responsible for maintaining the caches and CPU context). Control starts from the processor's reset vector after the wake event.

S3 - The S3 sleeping state is a low wake latency sleeping state where all system context is lost except system memory. CPU, cache, and chip set context are lost in this state. Hardware maintains memory context and restores some CPU and L2 configuration context. Control starts from the processor's reset vector after the wake event. (also called **Suspend to RAM**)

S4 - The S4 sleeping state is the lowest power, longest wake latency sleeping state supported by ACPI. In order to reduce power to a minimum, it is assumed that the hardware platform has powered off all devices. Platform context is maintained. (also called **Suspend to Disk**)

S5 - The S5 state is similar to the S4 state except that the OS does not save any context. The system is in the "soft" off state and requires a complete boot when it wakes. Software uses a different state value to distinguish between the S5 state and the S4 state to allow for initial boot operations within the BIOS to distinguish whether or not the boot is going to wake from a saved memory image.

3

► **ACPI Function**

This item is used to enable or disable the ACPI function.

► **ACPI Suspend Type**

This item is used to set the energy saving mode of the ACPI function. When you select "S1 (POS)" mode, the power is always on and computer can be resumed at any time. When you select "S3 (STR)" mode, the power will be down after a period of time. The status of the computer before it entering STR will be saved in memory, and the computer can quickly return to previous state when the STR function wakes.

► **Power Button**

This item is used to set the power down method. This function is only valid for systems using an ATX power supply. When set to [Delay 4 Sec.], the power button will put the system in Suspend mode if you push the power button in less than 4 Second then release. If set to [Instant-Off], the PC powers off immediately when the power button is pressed.

► **PWRON After PWR-Fail**

This item is used to set which state the PC will take with when it resumes after an AC power loss.

► **HPET Support**

HPET stands for High Precision Even Timer. If you have the HPET disabled, then windows does not have access to it and therefore falls back to less accurate timing methods. This item is used to enable or disable the HPET Support.

** Power Management Events **

► **Resume by PCI/PCIE PME**

This item is used to enable/disable PCI/PCIE PME# event to generate a wake up. PME# is a signal which can be triggered from a PCI/PCIE card. It represents Power Management Event.

► **USB KB/MS Resume from S3**

This item is used to set the system to be waken up by USB keyboard or mouse when it is staying at S3 (Suspend to RAM) state.

► **Resume by Alarm**

This item is used to set the timing of the start-up function. In order to use this function, the start-up password function must be disabled. Also, the PC power source must not be turned off.

► **Date of Month Alarm**

When "Resume by Alarm" is set to "Enabled", this item can be modified. It is used to set the timing for the start-up date.

► **Time (hh:mm:ss) Alarm**

When "Resume by Alarm" is set to "Enabled", this item can be modified. It is used to set the timing for the start-up time.

► **Power On by Button**

This feature is valid only when "PS/2 KB Resume from S3" is set to Password, Hot key or Keyboard 98. Enabling this feature allows normal powering on by pressing power button, while disabling it then pressing power button has no function.

► **PS/2 KB Resume from S3**

This item allows you to use the PS/2 keyboard to wake up the system from S3 mode. This feature requires an ATX power supply. The setting values: [Disabled]; [Password]; [Hot KEY]; [Any KEY], and [Keyboard 98].

► **KB Resume Password**

Wen "PS/2 KB Resume from S3" is set to [Password], this item allows you to input a password to wake up the system from S3 mode.

► **Hot Key Resume**

Wen "PS/2 KB Resume from S3" is set to [Hot KEY], this item allows you to press a [Ctrl] + Function key to wake up the system from S3 mode.

PC Health Status

```
           Phoenix - AwardBIOS CMOS Setup Utility
                    PC Health Status

   Case Open Warning          [Disabled]      │      Item Help
   Shutdown Temperature       [Disabled]      │
   CPU Vcore                  1.36V           │   Menu Level  ►
   + 5V                       5.08V           │
   + 3.3V                     3.23V           │
   +12V                       12.37V          │
   DDR2(V)                    1.80V           │
   5VSB(V)                    5.14V           │
   Voltage of Battery         3.05V           │
   CPU Temperature            38ºC            │
   System Temperature         32ºC            │
   CPU Fan Speed              4272RPM         │
   System Fan 1 Speed         5818RPM         │
   System Fan 2 Speed         3821RPM         │
   Fan 1 Speed                4096RPM         │
   Fan 2 Speed                2312RPM         │

   CPU Smart Fan Control      [Disabled]      │
 x Start PWM Temperature      40              ▼

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

► **Case Open Warning**

This item is used to enalbe or disable case open warning function.

► **Shutdown Temperature**

This item is used to set the system temperature upper limit. When the temperature exceeds the set value, the system will shut down automatically.

► **CPU Vcore/+5V/+ 3.3V/+12V/DDR2(V)/5VSB(V)/Voltage of Battery**

The current voltages are automatically detected and displayed by the system.

► **CPU/System Temperature**

The CPU/System temperature are automatically detected and displayed by the system.

► **CPU Fan/System Fan 1/System Fan 2/Fan 1/Fan 2 Speed**

The fan speed are automatically detected and displayed by the system.

► **CPU Smart Fan Control**

This option is used to enable or disable CPU smart fan function. Only when this option is enabled, you can set some correlative parameters.

► **Start PWM Temperature**

It allows you set a temperature value from which smart fan starts its operation.

► **Start PWM Value**

It allows you to set an initial PWM value to drive the fan when the temperature reaches Start PWM value and smart fan begins its operation. The higher PWM value can achieve the faster fan speed.

► **Slope PWM Value**

When temperature changes one degree celsius, the PWM will be increased or decreased by a step value accordingly.

Quantum BIOS

```
             Phoenix - AwardBIOS CMOS Setup Utility
                         Quantum BIOS

 ► CPU Feature                  [Press Enter]        │        Item Help
 ► Memory Timing Setting        [Press Enter]        │
 ► All Voltage Control          [Press Enter]        │  Menu Level   ►
 ► OC Gear                      [Press Enter]        │
   Over Clock Phase Select      [O.C. Disabled]      │
   ****Ratio and Clock Setting****                   │
 x CPU Clock Ratio              Auto                 │
 x CPU Frequency                200                  │
   Target CPU Core Speed        2000MHz              │
 x CPU And NB HT Speed          Auto                 │
 x Memory Speed Value           Auto                 │
   System Memory Speed          400MHz               │
 x PCIE Clock                   100                  │
   *******Miscellaneous*******                       │
   Auto Detect PCI Clk          [Enabled]            │
   CPU Spread Spectrum          [Disabled]           │
   PCI Spread Spectrum          [Disabled]           │
   iGPU Spread Spectrum         [Disabled]           │
   Dual BIOS Select             [SPI 1]              │

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

► **CPU Feature / Memory Timing Setting / All Voltage Control / OC Gear**

Press [Enter] to get into each submenu.

► **Over clock Phase Select**

It allows you to select the over clock phase. Setting value: [O.C. Disabled]; [Manual O.C.]; [Instant O.C.].

Ratio and Clock Setting

All the usable items can be valid only when the "Over Clock Phase Select" is set to [Manual O.C.].

► **CPU Clock Ratio**

This item is used to set the Ratio of CPU. Using different CPU, the setting values are different.

► **CPU Frequency**

This item allows you to adjust the CPU clock.

► **Target CPU Core Speed**

This item shows the target CPU Core speed.

► **CPU And NB HT Speed**

HT stands for HyperTransport bus. The CPU<->NB HT Speed option controls the physical speed of the CPU to Northbridge HT link. The settings are [Auto], [1x], [2x], [3x], [4x] and [5x].

► **Memory Speed Value**

This item is used to set the memory speed value. The settings are [Auto]; [DDR 400]; [DDR 533]; [DDR 667]; [DDR 800]; [DDR 1066].

► **System Memory Speed**

This item shows the system memory speed.

► **PCIE Clock**

This item allows you to adjust the PCI Express bus clock.

*******Miscellaneous*******

► **Auto Detect PCI Clk**

This option is used to auto detect PCI slots. When enabled, the system will turn off clock of the empty PCI slot to reduce EMI (Electromagnetic Interference).

► **CPU Spread Spectrum**

This option is used to enable or disable clock generator spread spectrum. If you enabled this function, it can significantly reduce the EMI (Electromagnetic Interference) generated by the system, so to comply with FCC regulation. But if overclocking is activated, you had better disable it.

► **PCI Spread Spectrum**

This option is used to enable or disable the PCI spread spectrum function. If you enabled this function, it can significantly reduce the EMI (Electromagnetic Interference) generated by the system, so to comply with FCC regulation. Setting values: [Disabled]; [Down Spread].

► **iGPU Spread Spectrum**

This option is used to enable or disable the iGPU spread spectrum function. If you enabled this function, it can significantly reduce the EMI (Electromagnetic Interference) generated by the system, so to comply with FCC regulation. Setting values: [Disabled]; [1%]; [2%]; [3%]; [5%].

► **Dual BIOS Select**

This motherboard provides two BIOS ROMs, and user can easily select one of them for operation. The selection of BIOS ROM can be done by hardware jumper fix or by software BIOS configuration. you can refer to chapter 2 - BIOS Select Jumper for detail.

CPU Feature

```
              Phoenix - AwardBIOS CMOS Setup Utility
                          CPU Feature

   AMD C1E Support              [Disabled]         Item Help
   AMD K8 Cool&Quiet Control    [Auto]
   CPU And NB HT Width          [Auto]         Menu Level    ►
   AMD Family 10h Down Core     [Auto]




↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
          F5:Previous Values              F7:Optimized Defaults
```
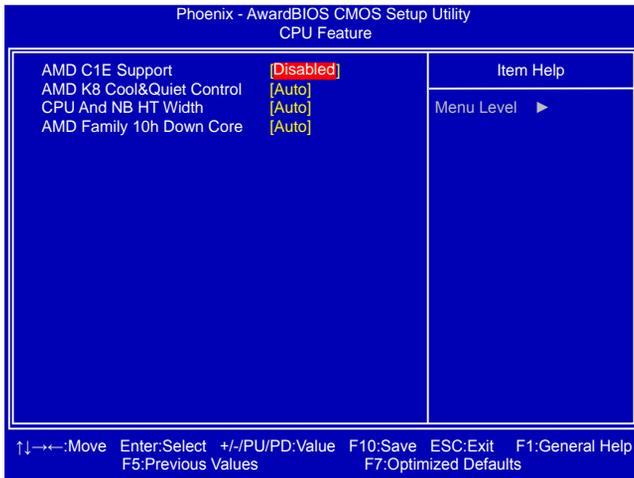
► **AMD C1E Support**

C1E represents Enhanced HALT State. It is a feature which CPU uses to reduce power consumption when in halt state. C1E drops the CPU's multiplier and voltage to lower levels when a HLT (halt) command is issued. This item is used to enable/disable the C1E support.

► **AMD K8 Cool&Quiet Control (Appears only when CPU support)**

This option helps lowering down the CPU frequency and voltage when system is idling. When the CPU speed is slowing down, the temperature will drop as well. This option will be displayed only if your CPU is supporting this feature.

► **CPU And NB HT Width**

The CPU<->NB HT Width controls the CPU to Northbridge link bandwidth, it is highly recommended to set to [Auto] for overall performance.

► **AMD Family 10h Down Core (Appears only when CPU support)**

At this moment, AMD family 10 series is equivalent to AM2+, and most CPU in this series are Quad Cores. This option enables shutting down portions of the circuits in core when not in load, it is a new feature of AM2+ CPU. This option will be displayed only if your CPU is supporting this feature.

[Auto] : Enable entire cores, [Single Core] : Enable 1 core, Dual Core] : Enable 2 cores,

[Tri Core] : Enable 3 cores, [Quad Core] : Enable 4 cores.

Memory Timing Setting

```
            Phoenix - AwardBIOS CMOS Setup Utility
                    Memory Timing Setting

   SLI-Ready Memory            [Disabled] Not Detect ▲    Item Help
   SPD Checksum Restart        [Ignore]
   CKE Based Power Down Mode   [Disabled]            Menu Level  ►
   CKE Based Power Down        [Per Channel]
   Memclock Tri-stating        [Disabled]            "CPUOC MAX" realizes
   Memory Hole Remapping       [Enabled]             the complete optimized
   Auto Optimize Bottom IO     [Enabled]             memory settings when
 x Bottom of [31:24] IO Space  C0                     SLI-Ready memory is
   Bottom of UMA DRAM [31:24]  [FC]                   installed
   DRAM Timing Selectable      By SPD
 x 1T/2T Memory Timing         Auto                  Optimize memory
 x CAS# Latency (tCL)          Auto                  settings by allowing X
 x RAS to CAS Delay (tRCD)     Auto                  % CPU overclocking
 x Row Precharge Time (tRP)    Auto
 x Min RAS Active Time (tRAS)  Auto                  CPU overclocking may
 x Write Recovery Time (tWR)   Auto                  require manual
 x Write to Read Delay (tWTR)  Auto                  overvoltaging of the
 x RAS to RAS Delay (tRRD)     Auto                  CPU to improve system
 x Read to Precharge (tRTP)    Auto            ▼     stability

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

► **SLI-Ready Memory**

Memory modules all have a programmable ROM chip that stores the SPD (Serial Presence Detect) information. The function of SPD is to hold the performance capabilities of the memory. This information is typically the optimal memory frequency and timings. Only one set of memory information can be stored on the SPD ROM because of JEDEC specifications. Developed as an extension to the traditional Serial Presence Detect (SPD) found on today's high-performance DIMMS, Enhanced Performance Profiles (EPP) allow memory manufacturers to integrate additional module performance data in the unused portion of the JEDEC standard SPD, allowing compatible motherboards to read and take advantage of added performance capabilities. Enhanced Performance Profiles are useful for JEDEC specified modules as manufacturers can have two predefined profiles for the memory modules—conservative and aggressive timings.SLI-Ready Memory settings become available when SLI-Ready/EPP memory modules are detected by the BIOS. The settings include CPUOC 0% to CPUOC 13% and CPUOC MAX. The various settings tells the BIOS the user wants to run the memory modules at the higher speed, and it is alright to overclock the processor by the selected percentage. With the selected option the BIOS will automatically drop the multiplier and increase the Hyper Transport reference clock accordingly. The only thing the BIOS can't do is adjust the CPU voltage so if it goes too high you may run into stability problems if the CPU voltage isn't increased. While memory modules with Enhanced Performance Profiles will work on any motherboard, only motherboards equipped with properly-designed BIOSes, such as those designed for NVIDIA nForce® SLI media and communications processors (MCPs), will detect the presence of these

new capabilities and prompt the user to set PC boot parameters for guaranteed optimized settings.

AM2+ CPU - Select [Disabled] to turn off SLI-Memory feature. Select [CPUOC 0%] to enable using SLI-Memory SPD data to run your system. If overclock is needed, you have to adjust memory or CPU clocks from other BIOS options to overclock your system manually.

AM2 CPU - Select [Disabled] to turn off SLI-Memory feature. Select any [CPUOC] item will enable SLI-Memory feature.

Choose [CPUOC 0%] to use SLI-Memory SPD data to run your system. In addition, you can further select from [CPUOC 1%] to [CPUOC MAX] to overclock CPU and the memory speed will change accordingly.

► **SPD Checksum Restart**

The Serial Presence Detect (SPD) device is a small EEPROM chip, mounted on a DDR memory module. This item allows you to check if the memory fails when booting. Select [Ignore], the system will not check memory module. Select [Exit], system will check, report error if there is any, then stop booting.

► **CKE Based Power Down Mode**

This item allows you to enable or disable the CKE base power down mode.

► **CKE Based Power Down**

CKE power down mode selection.

► **Memclock Tri-stating**

Enables the DDR memory clocks to be tristated when alternate VID mode is enabled.

► **Memory Hole Remapping**

This item is used to enable/disable memory remapping around memory hole. PCI doesn't actually care much which addresses are used, but by convention the PC platform puts them at the top of the 32-bit address space. For many years it wasn't possible or practical to put that much RAM into a PC. But now it is, so it's up to the memory controller and host bridge to figure out what to do. Many systems cause that high RAM to simply be ignored, resulting in the loss of effective RAM. More complex systems will take the RAM that would occupy that 3.5-4GB address space and re-map it into the 4.0-4.5 address space. The RAM doesn't care because it's just an array of storage cells, it's up to the memory controller to associate addresses with those storage cells. Of course, that only works if you're using a 64-bit (or 32-bit physical address extension (PAE) enabled) OS that can deal with physical addresses larger than 32 bits. Once this option is enabled, the BIOS can see 4096MB of memory.

► **Auto Optimize Bottom IO**

Auto optimize maximum DRAM size when kernel assigns PCI resources done.

► **Bottom of [31:24] IO Space**

Select bottom of [31:24] IO space manually when "Auto Optimize Bottom IO" option is disabled.

► **Bottom of UMA DRAM [31:24]**

This is a memory allocation method addition to the Unified Memory Architecture (UMA) concept. Normally, select the default value.

► **DRAM Timing Selectable**

This item is used to enable/disable provision of DRAM timing by SPD device. The Serial Presence Detect (SPD) device is a small EEPROM chip, mounted on a DDR3 memory module. It contains important information about the module's speed, sizze, addressing mode and various other pa-

rameters, so that the motherboard memory controller (chipset) can better access the memory. This item can be valid only when the "Over Clock Phase Select" is set to [Manual O.C.].

The following items can be valid only when the "DRAM Timing Selectable" is set to [Manual].

► **1T/2T Memory Timing**

This item is used for memory timing. 1T/2T timing setup is a memory optimizing technology, it can improve the memory performance by reducing the read delay of memory controller.

► **CAS# Latency Time (tCL)**

The number of memory clocks it takes a DRAM to return data after the read CAS_L is asserted depends on the memory clock frequency. The value that BIOS programs into the memory controller is a function of the target clock frequency. The target clock frequency is determined from the supported CAS latencies at given clock frequencies of each DIMM.

► **RAS to CAS Delay (tRCD)**

This item allows you to select a delay time (in clock cycles) between the CAS and RAS strobe signals.

► **Row Precharge Time (tRP)**

This item allows you to select the DRAM RAS precharge time (in clock cycles).

► **Min RAS Active Time (tRAS)**

This item allows you to set the minimum RAS# active time (in clock cycles).

► **Write Recovery Time (tWR)**

This item allows you to select the write recovery time (in clock cycles).

► **Write to Read Delay (tWTR)**

This item allows you to select a delay time (in clock cycles) between sending the last data from a write operation to the memory and issuing a read command.

► **RAS to RAS Delay (tRRD)**

This item allows you to select a delay time (in clock cycles) between the RAS and RAS strobe signals.

► **Read to Precharge (tRTP)**

Internal READ Command to PRECHARGE Command delay (in clock cycles).

► **Row Cycle Time (tRC)**

This item allows you to set the row cycle time (in clock cycles). tRC = tRAS + tRP.

► **Trfc0/1/2/3 for DIMM0/1/2/3**

Refresh to Refresh or Refresh to Active command interval.

Trfc0: auto-refresh row cycle time for logical DIMM 0.

Trfc1: auto-refresh row cycle time for logical DIMM 1.

Trfc2: auto-refresh row cycle time for logical DIMM 2.

Trfc3: auto-refresh row cycle time for logical DIMM 3.

All Voltage Control

```
            Phoenix - AwardBIOS CMOS Setup Utility
                    All Voltage Control
 ┌──────────────────────────────────────┬──────────────────────┐
 │ x  CPU Target Voltage       1.3500V   │      Item Help       │
 │    CPU Current Voltage      1.2960V   │                      │
 │    CPU Default Voltage      1.3500V   │  Menu Level    ►     │
 │ x  CPU HT Voltage Setting   1.2000V   │                      │
 │ x  DRAM Voltage Multiplier  Default   │                      │
 │ x  DRAM Voltage Setting     1.8267V   │                      │
 │    DRAM Target Voltage      1.8267V   │                      │
 │    DRAM Current Voltage     1.8240V   │                      │
 │ x  Chipset Voltage Setting  1.1000V   │                      │
 │                                       │                      │
 │                                       │                      │
 │                                       │                      │
 │                                       │                      │
 │                                       │                      │
 │                                       │                      │
 ├───────────────────────────────────────┴──────────────────────┤
 │ ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help │
 │           F5: Previous Values            F7: Optimized Defaults               │
 └──────────────────────────────────────────────────────────────┘
```

All the useable items can be valid only when the "Over Clock Phase Slect" is set to [Manual O.C.].

► **CPU Voltage Setting**

This item is used to change the CPU voltage in a step of 0.025V. The voltage can be incremented from 0.7500V to 1.8000V. According to the installed CPU the default value is different.

► **CPU Current / Default Voltage**

These items show the Target/Current/Default CPU Voltage.

► **CPU HT Voltage Setting**

This item is used to change the CPU HT voltage in a step of 0.03V. The voltage can be incremented from 1.1100V to 1.5600V. The default voltage is 1.2000V.

► **DRAM Voltage Multiplier**

This item allows you to set the DRAM voltage multiplier. The voltage multiplier can be incremented from +1 step to +15 step.

► **DRAM Voltage Setting**

This item is used to set DRAM voltage. The default voltage is 1.8267V. The voltage can be incremented from 1.6897V to 2.3747V.

► **DRAM Target / Current Voltage**

These items show the Target/Current DRAM Voltage.

► **Chipset Voltage Setting**

This item is used to set Chipset voltage in a step of 0.04V. The default voltage is 1.1000V. The voltage can be incremented from 0.9800V to 1.5800V.

OC Gear

```
          Phoenix - AwardBIOS CMOS Setup Utility
                        OC Gear
┌─────────────────────────────────────────┬──────────────────────┐
│ *************** OC Gear ***************   │      Item Help       │
│ Current Storage Gear       [Not Use It]  ├──────────────────────┤
│ x  Store My Setting        Store         │ Menu Level  ►        │
│ x  Restore My Setting      Restore       │                      │
│ x  Clear My Setting        Clear         │ Choose storage section│
│                                          │ 1 or 2 or 3 or 4 to  │
│ ********** Foxconn Function **********    │ store your over clock│
│ Super BIOS Protect         [Disabled]    │ setting. If you store│
│ Smart Boot Menu            [Disabled]    │ your setting to Current│
│ Smart Power LED            [Enabled]     │ Storage Gear         │
│                                          │ successfully, then the│
│                                          │ Storage Gear will turn│
│                                          │ to Green color If you│
│                                          │ clear the Current    │
│                                          │ Storage Gear         │
│                                          │ successfully, then the│
│                                          │ color will turn back │
│                                          │ to normal.           │
├─────────────────────────────────────────┴──────────────────────┤
│ ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help │
│          F5:Previous Values            F7:Optimized Defaults    │
└─────────────────────────────────────────────────────────────────┘
```

**************OC Gear**************

► Current Storage Gear

We have more spaces in CMOS to allow you to store up to 8 sets of BIOS configuration data. You can change any setting of BIOS, including the overclocking information, and save the whole BIOS settings to one of eight storage area. Later, you can retrieve BIOS settings by restore it. This item is used to choose storage section to store your BIOS settings. Setting values: [Not Use It]; [Storage Gear 1]; [Storage Gear 2]; [Storage Gear 3]; [Storage Gear 4]; [Storage Gear 5]; [Storage Gear 6]; [Storage Gear 7]; [Storage Gear 8].

► Store/Restore/Clear My Setting

This item allows you to Store/Restore/Clear the BIOS settings. See the help string in "Item Help" table for detail.

********Foxconn Function*******

► Super BIOS Protect

To protect the system BIOS from virus attack, there is a BIOS write-protection mechanism provided. Super BIOS Protect function protects your BIOS from being affected by viruses, e.g. CIH.

► Smart Boot Menu

When PC starts, if [Enabled] is selected, a Boot Menu will be automatically displayed to inform you to select a boot device. If no device is selected, the first device will be used. If [Disabled] is selected, then PC will ask you to press [Esc] key to get into Boot Menu. This setting simplifies multiple boot devices user from pressing [Esc] key to enter boot menu.

► Smart Power LED

Smart Power LED is a feature built on your motherboard to indicate different states during Power On Self Test (POST). The LED is located at the front panel, and it displays POST state by different long-short blinking intervals. You can always leave this state enabled.

System Status	Power LED Status	Stop Blinking Condition
Normal	Always On	Always On
No Memory	Continue blinking On (1sec.), Off (1sec.)	Reboot & Memory OK
No Display	Continue blinking On (2sec.), Off (2sec.)	Reboot & Display OK
Post Error Message	Quick blinking twice (1/3sec. On, 1/3sec. Off), one long On (1sec.), continuously.	Enter Setup or Skip
No CPU Fan	Continue blinking On (1/2sec.), Off (1/2sec.)	Reboot & Fan OK

Load Optimized Defaults

Select this option and press <Enter>. A dialogue pops out, select <Y> then press <Enter> to load the defaults; press <N> to skip. By this default, BIOS have set the optimized performance parameters of system to improve the performances of system components. But if the optimized performance parameters to be set

Load Optimized Defaults (Y/N)? N

cannot be supported by your hardware devices, the system may fail to work. It may happen on when you installed too many add-on cards on your system, or overloaded the hardware until it can not afford.

Set Supervisor Password

The access rights and permissions associated with the Supervisor password are higher than those of a regular User password. The Supervisor password can be used to start the system or modify the CMOS settings, while User password can only be used to start the system, view the CMOS settings, but modify CMOS settings is not allowable.

When you select the Set Supervisor/User Password option, the Enter Password message will appear :

Enter Password:

The supervisor password can be set up through this menu. Key in a password, not exceeding 8 characters, save the change and exit. The next time, when you enter the BIOS, it will ask you to input this password to confirm your access right. After you get

PASSWORD DISABLED !!!
Press any key to continue...

the right to access the BIOS, you then can select this setting again, and press <Enter> to disable this function or input a new password to replace the original one.

If you select "System" for the Security Option in "Advanced BIOS Features" menu, then you will be asked to enter a password when the system is started or when you try to enter the CMOS setting program. If an incorrect password is entered, you will be hold there.
If you select "Setup" for the Security Option in "Advanced BIOS Features" menu, you will be asked to enter a password only when you enter the CMOS setting program.

Set User Password

The user password can be set up through this menu. Only when there exists a Supervisor password, then this setting can be activated.

Save & Exit Setup

When you select this option and press <Enter>,
Select <Y> to save your changes to CMOS and exit the program;
Select <N> or <ESC> to return to the main menu.

SAVE to CMOS and EXIT (Y/N)? Y

Exit Without Saving

If you select this option and press <Enter>,
Select <Y> to exit CMOS without saving your modifications;
Select <N> or <ESC> to return to the main menu.

Quit Without Saving (Y/N)? N

4

The utility CD that came with the motherboard contains useful software and several utility drivers that enhance the motherboard features.

This chapter includes the following information:
- Utility CD content
- Install driver and utility
- FOX ONE
- FOX LiveUpdate
- FOX DMI
- FOX LOGO

Note : Because each module is independent, so the section number will be reorganized and unique to each module, please understand.

Utility CD introduction

This motherboard comes with a Utility CD. To begin with, simply insert the CD into your DVD-ROM. The CD will automatically run and display the main menu on the screen.

1. Install Driver
Click on "**Install Driver**", then use these options to install all the necessary drivers for your motherboard. You need to restart your computer after finishing all the installations of drivers.

Chipset driver
Use it to install the chipset driver.

Realtek Audio drivers
Use it to install Realtek Audio driver.

Broadcom LAN driver
Use it to install Broadcaom LAN driver.

JMicron Raid drivers
Use it to install JMicron RAID driver. JMircon provides two external SATA ports. Due to limitation of RAID interface on JMircon, we recommend you building RAID system by using onboard SATA

ports instead of JMicron.

Microsoft DirectX 9.0C
Use it to install Microsoft DirectX 9.0C driver.

Hybrid Driver
Use it to install Hybrid driver.

2. Software
Use these options to install additional software programs.

AEGIS PANEL
Foxconn new utility software for monitoring system information. See "AEGIS PANEL" for details.

FOX LiveUpdate
The Fox LiveUpdate allows you to backup or update the system BIOS, drivers and utilities in Windows® environment. See "Fox LiveUpdate" for details.

FOX DMI
The FOX DMI is a full Desktop Management Interface viewer, and it provides three DMI data formats. See "FOX DMI" for details.

Adobe Reader
Installs Adobe® Acrobat® Reader that is used for viewing and printing the PDF document.

FOX LOGO
The FOX LOGO is a simple and useful utility to backup, change and delete the boot time Logo. See "FOX LOGO" for details.

Norton Internet Security
Installs Norton® Internet Security to protect your PC from being affected by viruses.

3. Create RAID Driver Floppy
When you are establishing a brand new Windows XP operating system on a new RAID system, during installation, Windows XP needs a RAID driver in floppy drive to help the installation.
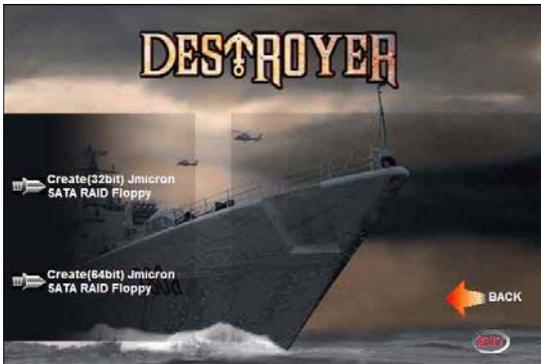
The two items listed in this section is used for Jmicron SATA RAID, for the NVIDIA SATA RAID Driver Floppy, please go to chapter 5 "5-1 Create RAID Driver Diskette" for details. You need to create this diskette from another PC.
Depending on different 32-bit/64-bit Windows platforms you are using, you can choose appropriate driver for the diskette.

Create (32bit) Jmicron SATA RAID Floppy
Allows you to create (32bit) JMicron SATA RAID Floppy.

Create (64bit) Jmicron SATA RAID Floppy
Allows you to create (64bit) JMicron SATA RAID Floppy.

For the usage of the created RAID driver floppy, please go to Chapter 5, "5-4 Creating a Bootable Array-Install a New Windows XP" for more detail.

4. Foxconn Website
Click it to visit Foxconn's Website.

5. Browse CD
Click it to browse the CD content.

AEGIS PANEL

This is Foxconn's new utility software. Aegis Panel is a Windows innovation tool to provide fan control, alarm function and system monitoring information such as fan speed, temperature, voltage and CPU clock etc..

The powerful features are:

> Overclocking (OC)
> HWM INFO. (Hardware Monitor Information)
> ALARM
> CONFIG

Supported Operating Systems :
> -Windows 2000
> -Windows XP (32-bit and 64-bit)
> -Windows 2003 (32-bit and 64-bit)
> -Windows Vista (32-bit and 64-bit)

Using AEGIS PANEL:

1. Main Panel

Hazard Light

Open/Close main panel to view CPU clock

Open/Close the right panel

Open/Close the left panel

Open/Close control panel for detail operation

Minimize Aegis Panel to taskbar

Hide Aegis Panel and put it to the System Tray

Visit Foxconn's website

Get help
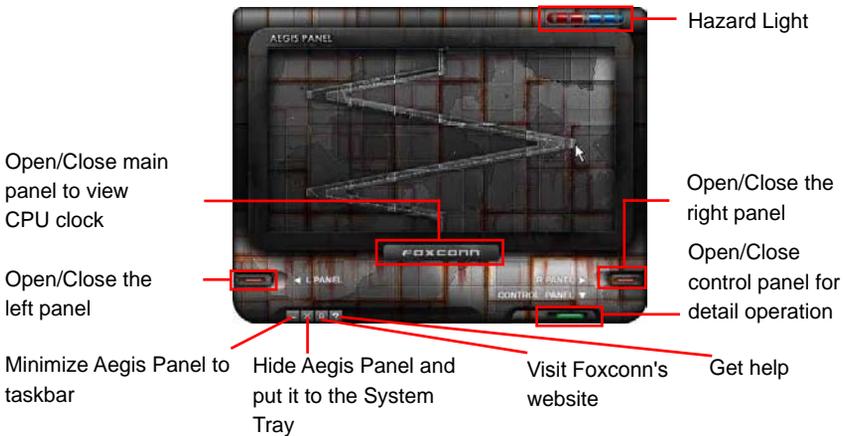
Aegis is a very important system monitoring program, so when you click cross icon on it, Aegis only goes to notification area of the system tray, but does not stop running. If you really want to close it, you must right click on it on the notification area, and select exit to make it.

Open :   Open Aegis Panel main panel on the screen.
Configure :   Open Aegis Panel and directly enter configure mode.
Exit :   Close Aegis program.

2. Overclocking

Click on "Foxconn" button to open/close the display screen. The information of CPU, memory, and PCIE clocks are displayed.

Open/Close screen

Click on Control Panel button, and its panel appears. Then click on OC button to visit Overclocking menu which allows you to overclock your CPU and PCIE bus manually.
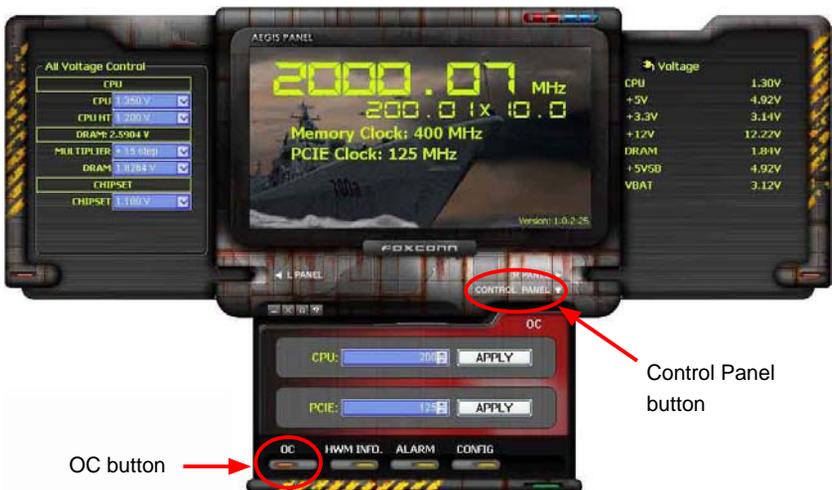
Control Panel button

OC button

3. HWM INFO. (Hardware Monitor Information)

Click on "HWM INFO." button to display the fan's information. In this fan control panel, you can configure five different fan's speeds.
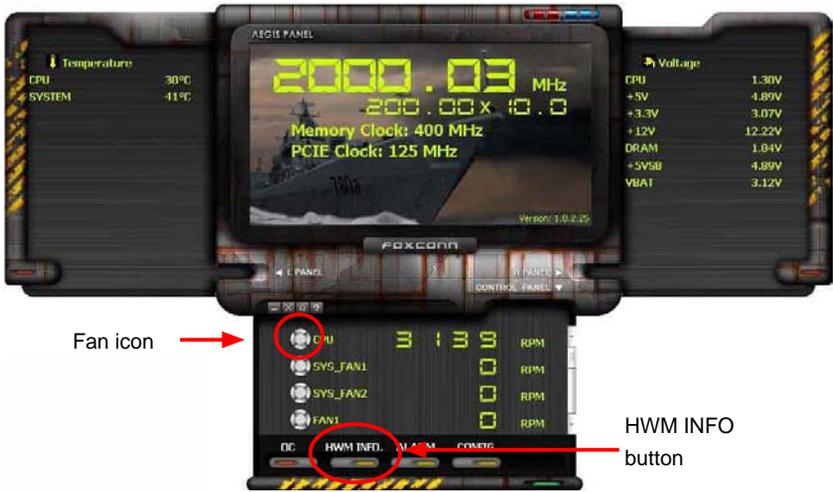
Fan icon

HWM INFO button

Fan Operations

⚠️ CAUTION

The Smart CPU Fan Feature only works with a cooler which accompanies 4-wire cable.

Click on fan icon to configure each fan's function.

Close this page

ON/OFF Mode:

Only ON/OFF is available for fan speed choice.

SmartGuardian Mode :

Software: You can set the fan's speed by adjusting a PWM Value. This value can be selected from 0 to 127.

Automatic: The fan operates by following the below defined values.

Start Temperature:

It allows you set a value from which the smart fan starts its operation.

Start PWM Value:

It allows you to set an initial PWM value to drive the fan when the Start Temperature value is reached and smart fan begins its operation. The higher the PWM value can achieve the faster fan speed.

Full-Speed Temperature:

When the temperature gets over this value, the fan will run at its full speed.

Slope PWM Value:
To define the slope of PWM when the temperature changes. The higher the slope is, the faster the fan speed changes.

FAN1 and FAN2 only copy their working models from one of CPU FAN, SYS_FAN1 and SYS_FAN2, and they do not own their detailed settings.

4. ALARM

Click "ALARM" button to trigger the warning events. It allows you to set the low/high limits of the monitoring sensors. You can select a particular sensor to be watched carefully, or choose them all.

ALARM button

If the monitoring value is lower than the low limit or higher than the high limit, and the Action item in the CONFIG menu is set to "Ask Me", then you can hear a buzzer sounds and the hazard light is blinking. Click OK/Cancel button in the popped up HMW Alarm screen to acknowledge/cancel the warning. If OK is pressed, the relative item will be displayed by red on the "HWM INFO" screen.

Hazard light

5. CONFIG

Go to System Tray
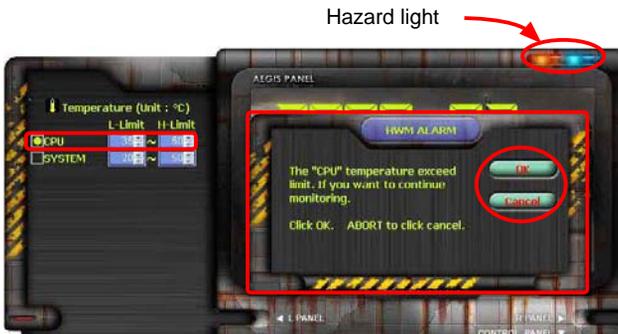
CONFIG button

Click "CONFIG" button to configure Aegis function. (Recommend using default values if possible).

Fahrenheit / Celsius scales :
You can select temperature scales between them.

External / OnBoard Speaker :
It allows you to choose the warning tone devices.

Refresh Interval :
It is used to select the interval of refreshing the current monitoring information such as the CPU clock, temperature, voltage etc.. (Unit: second per times)

Action when exceed the limitations :
It provides you four action items to handle events.

    Ask Me : Default. Pop out HWM Alarm screen, and red mark item on HWM INFO. display.
    Ignore : Just red mark current item, no HMW Alarm screen is displayed.
    Disable : No HMW Alarm screen and no red mark.
    Shutdown : The computer will be shut down after 10 seconds if selected.

Launch "Aegis Panel" on startup :
The Aegis Panel will be automatically started after the Windows operating system is activated.

Hidden tray icon :
Hide Aegis from the system tray display.

FOX LiveUpdate

FOX LiveUpdate is a useful utility to backup and update your system BIOS, drivers and utilities by local or online.

Supporting Operating Systems :
- ■   Windows 2000
- ■   Windows XP (32-bit and 64-bit)
- ■   Windows 2003 (32-bit and 64-bit)
- ■   Windows Vista (32-bit and 64-bit)

Using FOX LiveUpdate :

1. Local Update

1-1 Local Update - BIOS Information
This page lets you know your system BIOS information.
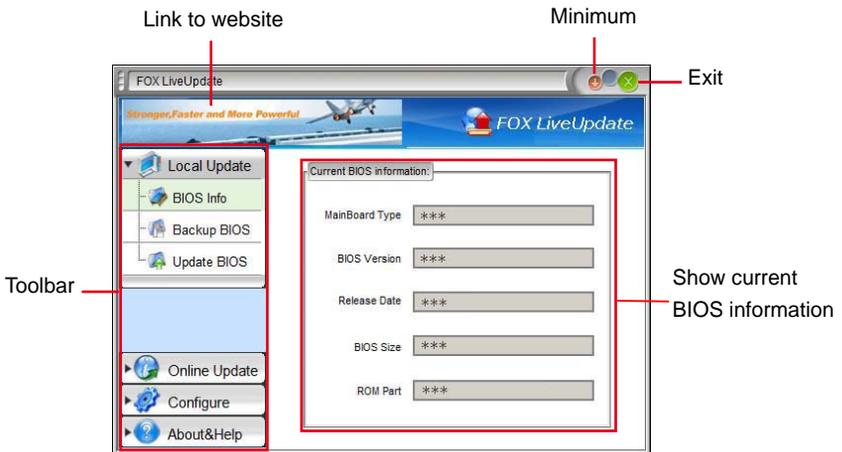
*** : please refer to the physical motherboard for detail.

1-2 Local Update - Backup

This page can backup your system BIOS. You can click "Backup", and key in a file name, then click "Save" to finish the backup operation. The extension of this backup file is ".BIN" for Award BIOS and ".ROM" for AMI BIOS. Default directory is "C:\Desktop\My Documents" in Windows XP and "Documents" in Vista. Make sure you can remember the file name together with the directory which it is stored, prevented that you may need them to recover your BIOS later.
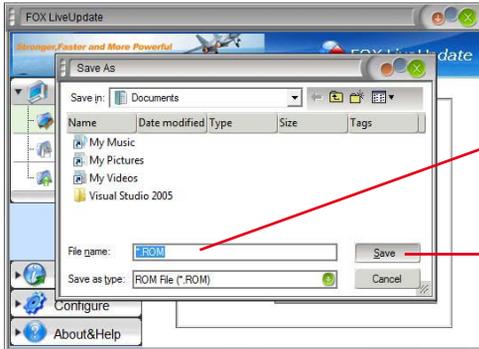
Key in a BIOS name

Click here

1-3 Local Update - Update

This page helps you to update your BIOS from a local file. After click "Update", An alert message will be displayed to ensure if you really want to continue, click "Yes" to confirm. A setup wizard will guide you to load a local BIOS file to finish the operation. You must remember from which directory to load your new BIOS file (with an extension of ".BIN" for Award BIOS, ".ROM" for AMI BIOS) before the setup wizard starts.
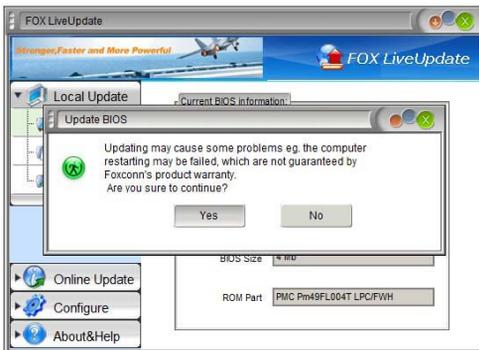
FOX LiveUpdate can automatically backup old BIOS before update. This feature can be enabled in the "Configure-System" setup. Please refer to "Configure-System" section for more detail. The default backup directory is C:\LiveUpdate_Temp, but the backup file name will be automatically generated. It is hard to find it out from a backup directory, and we recommend you using Explorer to check date/time message of this backup file to find it out and write its name down to remember it.

2. Online Update

2-1 Online Update - Update BIOS

This page lets you update your system BIOS from Internet. Click "start", it will search the new BIOS from Internet. Then follow the wizard to finish the update operation.

Click here

Current information

Search new BIOS from Internet

Select BIOS to update

Browse detailed information

Update BIOS

Close the window
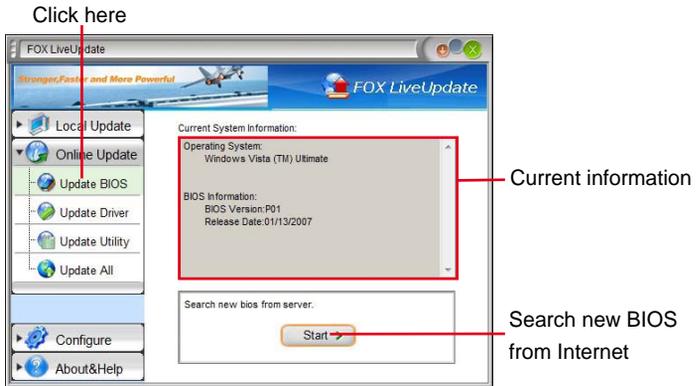
2-2 Online Update - Update Driver

This page lets you update your system drivers from Internet. Click "start", it will search the new drivers from Internet. Then follow the wizard to finish the update operation.

Click here

Current information

Search new drivers from Internet
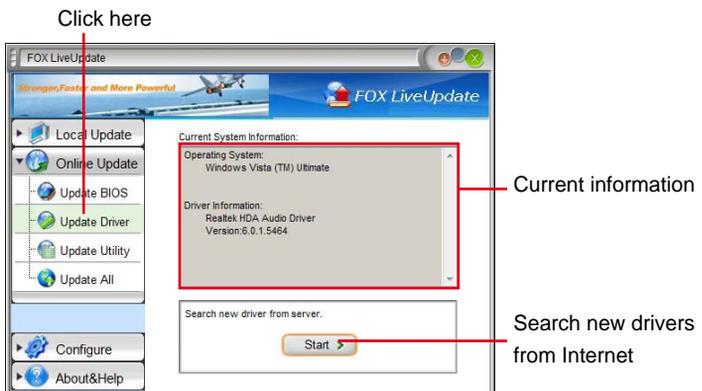
Select the driver to update

Browse detailed information

Install the selected driver

Close the window

the latest driver (only list the latest driver).
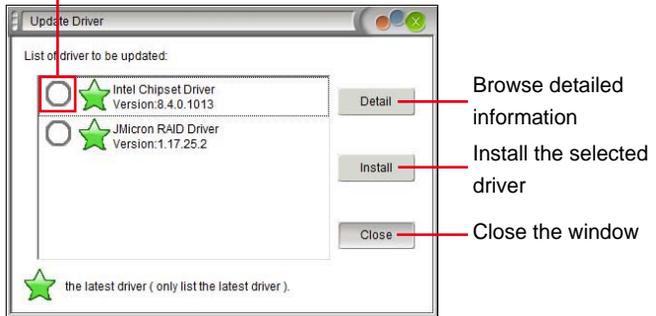
2-3 Online Update - Update Utility

This page lets you update utilities from Internet. Click "start", it will search the new utilities from Internet. Then follow the wizard to finish the update operation.

Click here

Current information

Search new utilities from Internet
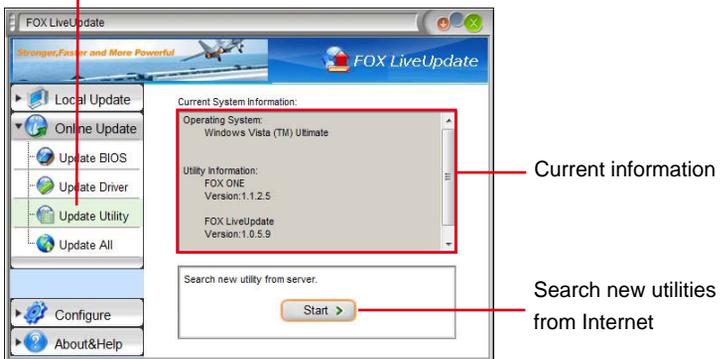
Select the utility to update

Browse detailed information

Install the selected utility

Close the window

the latest utility (only list the latest utility)
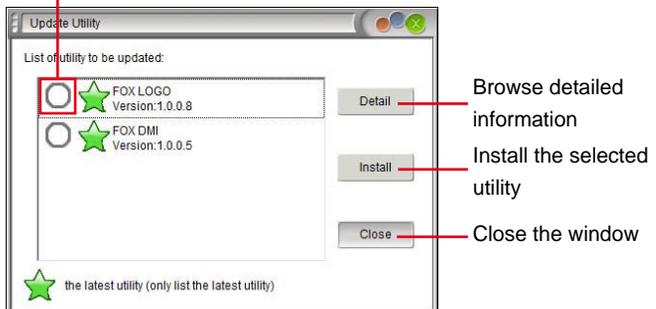
2-4 Online Update - Update All

This page lets you update your system drivers from Internet. Click "start", it will search all new BIOS/drivers/utilities from Internet. Then follow the wizard to finish the update operation.

Click here

Current information

Search all new BIOS/ drivers/utilities from Internet

Browse detailed BIOS information

Browse detailed driver information

Browse detailed utility information
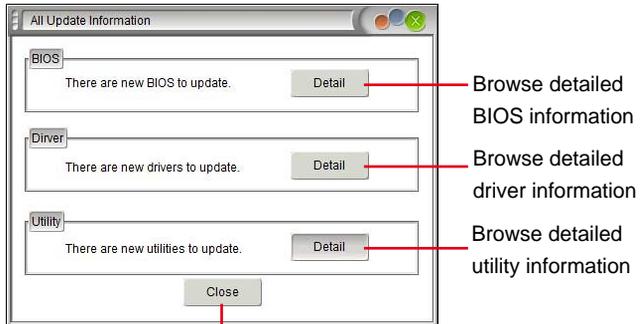
Close the window

3. Configure

3-1 Configure - option

This page lets you set auto search options. After you enable the auto search function, FOX LiveUpdate will start its searching from Internet and if any qualified item found, it will pop out a message on the task bar to inform you to do the next step.

Click here

Set auto search options

Set auto search the latest FOX LiveUpdate

Select search which kind of versions

Apply the changes   Reset to default value
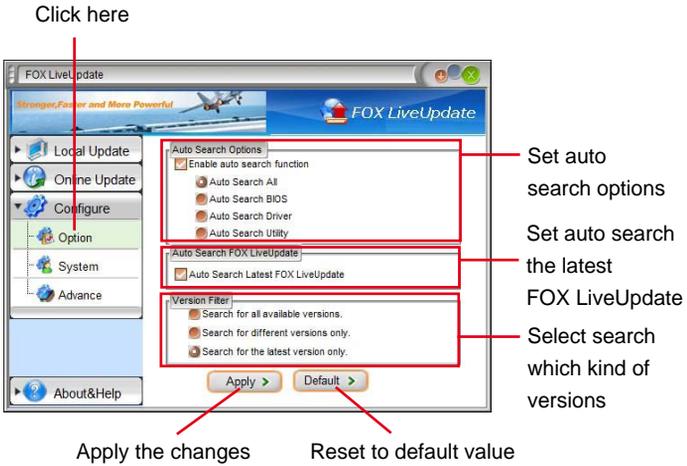
Double click on the icon as show below, you can see the detailed information.

Double click here
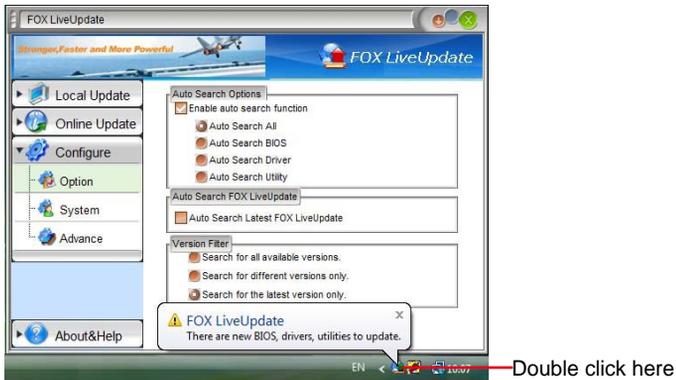
When you enable "Auto Search FOX LiveUpdate", if your FOX LiveUpdate version is older, it will auto search from internet and prompt you to install the new version.
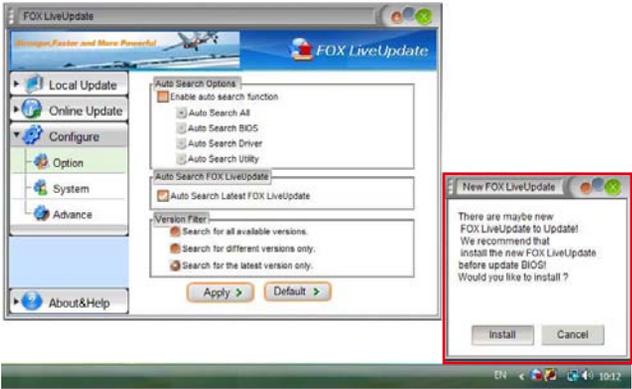
Prompt you to install the new FOX LiveUpdate

3-2 Configure - System

This page lets you set the backup BIOS location and change different skin of the FOX LiveUpdate utility.

Click here
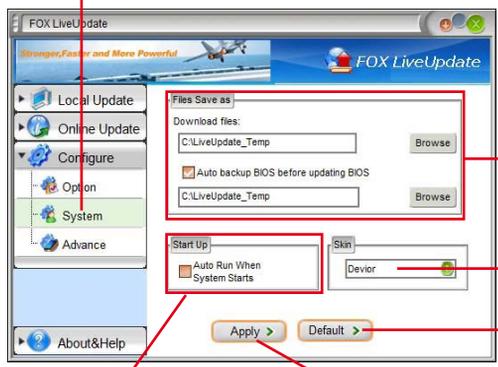
Set the location of download files or auto backup BIOS

Select different skin of the software

Reset to default value

Determine if the FOX LiveUpdate can auto run when the system starts up

Apply the changes

3-3 Configure - Advance

This page lets you select to flash BIOS / Boot Block and clear CMOS. If you choose Flash Boot Block, it means BIOS is not protective, and you must make sure the flash process is continuous and without any interruption.

Click here
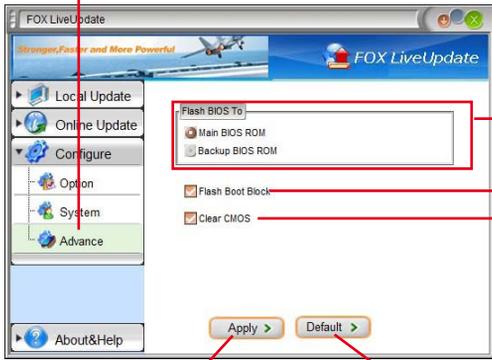
Select which BIOS ROM to flash(Only available to motherboard with backup BIOS ROM)

Select to flash Boot Block

Select to clear CMOS

Apply the changes   Reset to default value

CAUTION

! We recommend that you should better keep the default setting unchanged to avoid any damage.

4. About & Help

This page shows some information about FOX LiveUpdate.

Click here
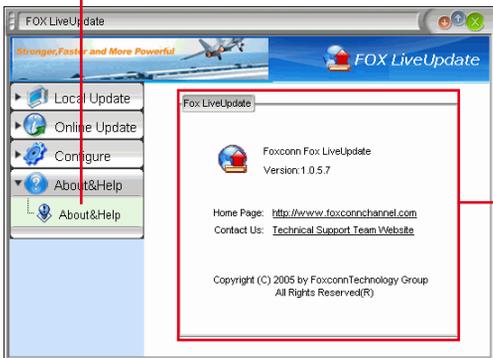
Show information about FOX LiveUpdate

FOX DMI

FOX DMI is a full Desktop Management Interface viewer, and it provides three DMI data formats : Report, Data Fields and Memory Dump.
With DMI information, system maker can easily analyze and troubleshoot your motherboard if there is any problem occurred.

Supporting Operating Systems :

- ■ Windows 2000
- ■ Windows XP (32-bit and 64-bit)
- ■ Windows 2003 (32-bit and 64-bit)
- ■ Windows Vista (32-bit and 64-bit)

Using FOX DMI:

Please operate this utility as the comments shows.

Click here to select the type you want to view.

Click here to select the DMI Data format you need
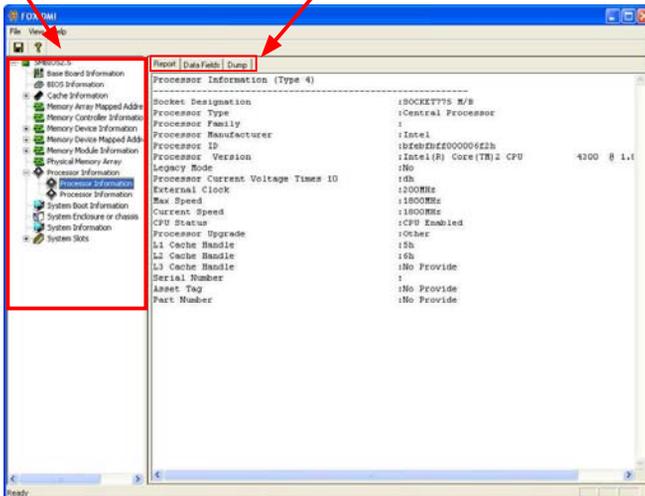
FOX LOGO

FOX LOGO is a simple and useful utility to backup, change and delete the boot time Logo. The boot Logo is the image that appears on screen during POST (Power-On Self-Test).

You can prepare a JPG image (1024x768) file, then use FOX LOGO to open it and change the boot time Logo. Boot time Logo will be displayed if you enable the BIOS "Full Screen Logo Show" setting in "Advanced BIOS Features" menu.

Supporting Operating Systems :
■　　Windows 2000
■　　Windows XP (32-bit and 64-bit)
■　　Windows 2003 (32-bit and 64-bit)
■　　Windows Vista (32-bit and 64-bit)

Using FOX LOGO:

Main Page

> **WARNING!**
> When you change Logo or delete current Logo, the system will flash BIOS file automatically. During this time, please DO NOT shut down the application and the system, or the motherboard will be damaged seriously.

5

This chapter will cover two topics :

- Creating a Bootable Array - Installing a new Windows XP (Vista) in a brand new RAID system.
- Creating a Non-Bootable Array - Existing Windows XP (Vista) system with new RAID built as data storage.

It includes the following information :

- RAID Configuration Introduction
- NVIDIA MediaShield Driver
- Create RAID Driver Diskette
- RAID Enable in BIOS
- Select a RAID Array for Use
- Install a New Windows XP
- Setting Up a Non-Bootable RAID Array

The RAID BIOS Setup pictures shown in this chapter are for reference only, please refer to the practical screen.

Creating a Bootable Array - Installing a new Windows XP (or Vista) in

a brand new RAID system.

1. Follow 5-1 to create RAID driver diskette.
2. Follow 5-2 to set RAID enabled in BIOS.
3. Follow 5-3 to select a RAID array for use.
4. Follow 5-4 to Install a new Windows Operating System.

What kinds of hardware and software you need here :
1. A floppy drive.
2. A DVD-ROM drive.
3. Several SATA hard disks.
4. Two RAID driver diskettes. (Can be created by using motherboard driver CD)
5. A motherboard driver CD.
6. Windows XP or Vista Install CD.

Creating a Non-Bootable Array - Existing Windows XP (or Vista)

system with new RAID built as data storage.

Follow 5-5 to go through the processes to build a new RAID array in your existing
Windows XP system, it includes :
1. Set RAID enabled in BIOS.
2. Follow 5-3 to select a RAID array for use.
3. Run setup program to install NVIDIA RAID driver into your current Windows XP
   system.
4. Use Administrative Tools in Control Panel to format new RAID array.

What kinds of hardware and software you need here :
1. A DVD-ROM drive.
2. Several SATA hard disks.
3. A motherboard driver CD.

RAID Configuration Introduction

RAID (Redundant Array of Independent Disks) is a method for computer data storage schemes that divide and/or replicate data among multiple hard drives. RAID can be designed to provide increased data reliability (fault tolerance) or increased I/O (input/ output) performance, or both. The following RAID configurations are provided for users.

There are three major key concepts in RAID:
1. Mirroring : The copying of data to more than one disk;
2. Striping : The splitting of data across more than one disk;
3. Error correction : Where redundant data is stored to allow problems to be detected and possibly fixed (known as fault tolerance).

Different RAID levels use one or more of these techniques, depending on the system requirements. The main aims of using RAID are to improve reliability, important for protecting information that is critical to a business, for example a database of customer orders; or where speed is important, for example a system that delivers video on demand TV programs to many viewers.

The configuration affects reliability and performance in different ways. The problem with using more disks is that it is more likely that one will go wrong, but by using error checking the total system can be made more reliable by being able to survive and repair the failure. Basic mirroring can speed up reading data as a system can read different data from both the disks, but it may be slow for writing if it insists that both disks must confirm that the data is correctly written. Striping is often used for performance, where it allows sequences of data to be read off multiple disks at the same time. Error checking typically will slow the system down as data needs to be read from several places and compared. The design of RAID systems is therefore a compromise and understanding the requirements of a system is important. Modern disk arrays typically provide the facility to select the appropriate RAID configuration.

RAID is often used in high availability systems, where it is important that the system keeps running as much of the time as possible.

RAID 0 (Striped)

RAID 0 reads and writes sectors of data interleaved among multiple drives. If any disk member fails, it affects the entire array. The disk array data capacity is equal to the number of drive members times the capacity of the smallest member. RAID 0 does not support fault tolerance.

RAID 1 (Mirror)

RAID 1 writes duplicate data onto a pair of drives and reads both sets of data in parallel. If one of the mirrored drives suffers a mechanical failure or does not respond, the remaining drive will continue to function. Due to redundancy, the drive capacity of the array is the capacity of the smallest drive.

RAID 5 (Parity)

RAID 5 provides data striping at the byte level and also stripes error correction information. This results in excellent performance and good fault tolerance. Level 5 is one of the most popular implementations of RAID.

RAID 0+1 (Striped Mirror)

RAID 10 is a combination of striping and mirroring. This configuration provides optimal speed and reliability, but you need four SATA hard disks.

Spanning (JBOD)

JBOD stands for "Just a Bunch of Disks". Each drive is accessed as if it were on a standard SCSI host bus adapter. This is useful when a single drive configuration is needed, but it offers no speed improvement or fault tolerance. A spanned volume is a formatted partition which data is stored on more than one hard disk, yet appears as one volume. Unlike RAID, spanned volumes have no fault-tolerance, so if any disk fails, the data on the whole volume could be lost. Additionally, the system or boot partitions cannot be included in a spanned volume. FAT16/32 and NTFS file systems may be used, and the volume can span up to 32 hard disks.

Comparison Table :

Solution	Hard Disks No.	Capacity	Performance	Reliability	Application
RAID0	>=2	All	Highest	Dangerous	Look for speed
RAID1	2	50%	Read faster	Excellent	100% Data backup
RAID5	>=3	N-1	Read faster Write slower	Good	Limited budget
RAID0+1	>=4 (Even number)	Smallest *2	High	Excellent	Unlimited budget
Span	>=1	All	none	Dangerous	Big disk space

NVIDIA® MediaShield Driver

The NVIDIA® MediaShield driver supports RAID 0, RAID 1, RAID 5, and RAID 0+1 functions. It allows you to get high performance with fault tolerance, big capacity, or data safety provided by different RAID functions.

Here, we will use four SATA hard disks as an example to guide you how to select your RAID system. Assume four hard disks are connected to the motherboard :
Lower SATA port of SATA_1 - WDC WD1200JD-98HBBO, 111.79GB
Lower SATA port of SATA_2 - Hitachi HDT725025VLA, 232.88GB
Upper SATA port of SATA_1 - HDS728080PLA380, 76.69GB
Upper SATA port of SATA_2 - ST3320620AS, 298.09GB

The relationships between RAID settings and SATA ports on the motherboard are :
SATA Pri-Master RAID is the lower SATA port of SATA_1 on the motherboard.
SATA Pri-Slave RAID is the lower SATA port of SATA_2.
SATA Sec-Master RAID is the upper SATA port of SATA_1.
SATA Sec-Slave RAID is the upper SATA port of SATA_2.
SATA Thr-Master RAID is the lower SATA port of SATA_3.
SATA Thr-Slave RAID is the upper SATA port of SATA_3.
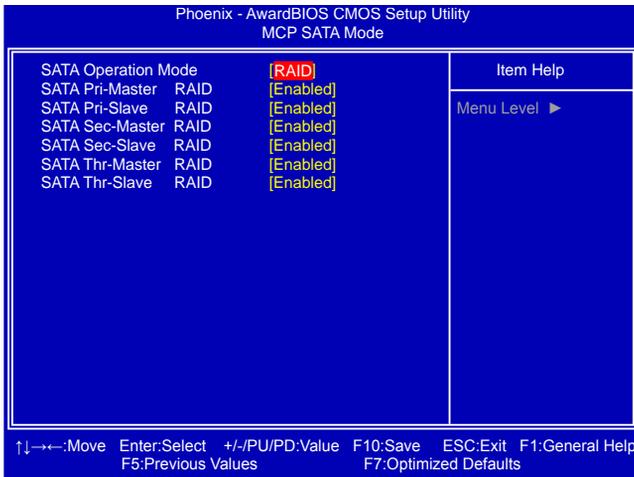
In section 5-3 later, you will know the relationships between port numbers in the MediaShield BIOS and SATA ports on the motherboard. We put their descriptions here for better arrangement. They are :
Port 0.0 is the lower SATA port of SATA_1 on the motherboard.
Port 0.2 is the lower SATA port of SATA_2.
Port 0.1 is the upper SATA port of SATA_1.

Port 0.3 is the upper SATA port of SATA_2.

Port 0.4 is the lower SATA port of SATA_3.

Port 0.5 is the upper SATA port of SATA_3.

MediaShield BIOS   Mar 31 2008
- Define a New Array -

RAID Mode: Striped   Stripe Block: Optimal

Free Disks   Array Disks
Port   Disk Model   Capacity   Port   Disk Model   Capacity

0.0   WDC WD1200JD-9   111.79GB
0.2   Hitachi HDT725   232.88GB
0.1   HDS728080PLA38   76.69GB   [+] Add
0.3   ST3320620AS   298.09GB

                                            [-] Del

[ESC] Quit   [F6] Back   [F7] Finish   [TAB] Navigate   [↑↓] Select   [ENTER] Popup
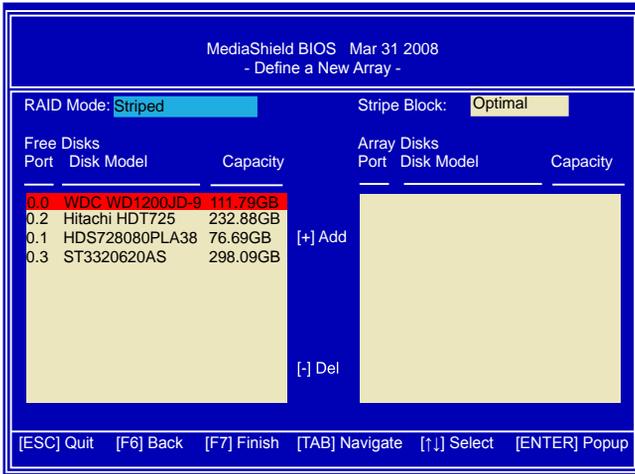
Two topics will be covered in the following sections :

1). Creating a Bootable Array - Installing a new Windows XP in a brand new RAID system.

2). Creating a Non-Bootable Array - Existing Windows XP system with new RAID built as data storage.

Install SATA Hard Disks before we continue :

■   Shut down your computer.

■   Install SATA hard disks into the drive bays, connect all power and SATA cables.

WARNING!

To achieve the best performance and reliability, we highly recommend you using the hard disks with the same brand, size and model number. Though we are using four different hard disks as an example to describe RAID function in this chapter, it is only helpful in explaining what the final disk volume of the RAID array will be. In the real world, using the same model to build a disk array is strongly recommended.

5-1 Create RAID Driver Diskette

If you want to install a brand new Windows XP on a RAID system, you need to create two RAID driver floppy diskettes which will be used during Windows XP installation later.

1. Find a PC, put a diskette into its floppy drive A:, put the driver CD into DVD-ROM drive. Suggest you format the diskette first. Right click Floppy (A:) to select Format.

2. Click on "OK" to go through this warning message.

3. Click on "OK" to finish the format.

4. Depending on which platform your XP system is, normally, it is a 32-bit system. In Windows, browse CD content, and go to **CD:\Driver\Chipset\xp\IDE\WinXP\sataraid\Floppy\Disk1**, copy all the content to the first diskette.
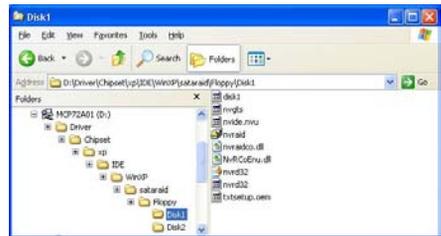
5. Check if the first diskette contains the driver files.

72
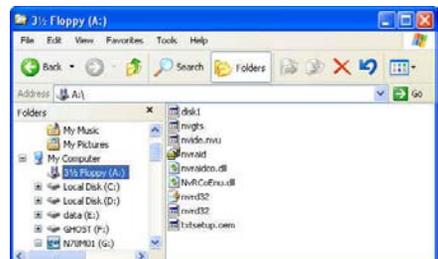
6. Go to **CD:\Driver\Chipset\xp\IDE\ WinXP\sataraid\Floppy\Disk2**, coppy all the content to the second diskette. Repeat the steps from step 1 to step 5.

   Later, when in the process of installing Windows XP in your RAID system, it will ask you to use these floppy diskettes to provide driver for additional specific devices, for example, a RAID device.
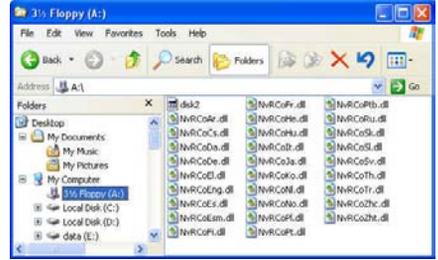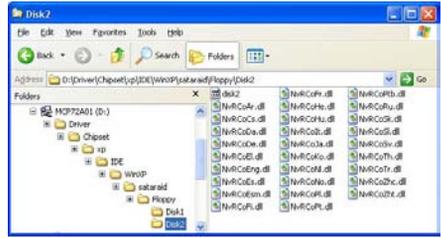
5-2 RAID Enable in BIOS

1. Enter the BIOS setup by pressing [DEL] key when boot up.
2. Select the "Integrated Peripherals" from the "Main menu", then select the "MCP SATA Mode" menu and press [Enter] to go to the configuration items.
3. Enable RAID function and individual SATA port for hard drive or DVD connection.
4. Press [F10] to save the setting then PC will reboot itself.

```
           Phoenix - AwardBIOS CMOS Setup Utility
                      MCP SATA Mode

   SATA Operation Mode        [RAID]              Item Help
   SATA Pri-Master    RAID    [Enabled]
   SATA Pri-Slave     RAID    [Enabled]        Menu Level ▶
   SATA Sec-Master    RAID    [Enabled]
   SATA Sec-Slave     RAID    [Enabled]
   SATA Thr-Master    RAID    [Enabled]
   SATA Thr-Slave     RAID    [Enabled]




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

5-3 Select a RAID Array for Use

When BIOS is restarted, it will display a message asking you to press [F10] key to enter the main menu of MediaShield BIOS. Press [F10], the screen appears.
At the bottom of each screen displayed, there is one line listing each key's function, such as [Tab], [Enter], [ESC]...etc. It is helpful to make your choice easier.

```
              MediaShield BIOS  Mar 31 2008
                   - Define a New Array -

  RAID Mode: Mirrored              Stripe Block:  Optimal

  Free Disks                       Array Disks
  Port  Disk Model      Capacity   Port  Disk Model      Capacity

  0.0  WDC WD1200JD-9 111.79GB
  0.2  Hitachi HDT725  232.88GB
  0.1  HDS728080PLA38  76.69GB   [+] Add
  0.3  ST3320620AS     298.09GB




                                  [-] Del



  [ESC] Quit   [F6] Back   [F7] Finish   [TAB] Navigate   [↑↓] Select   [Enter] Popup
```
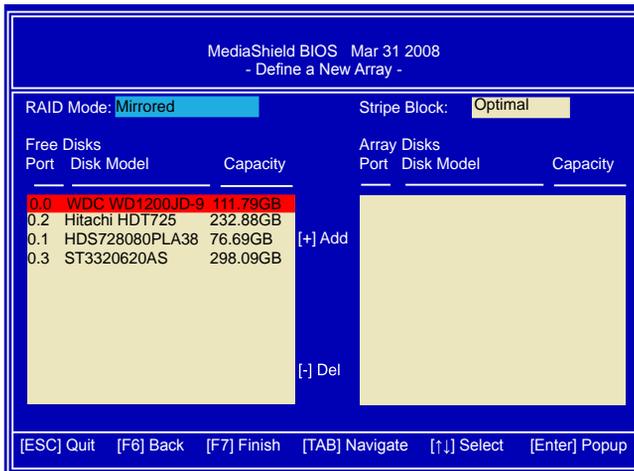
Create RAID 0 (Striped)

1. Select "**Striped"** from the RAID Mode. The menu appears :


```
                    MediaShield BIOS   Mar 31 2008
                        - Define a New Array -

RAID Mode: Striped                      Stripe Block:    Optimal

Free Disks                              Array Disks
Port   Disk Model         Capacity      Port   Disk Model        Capacity

0.0    WDC WD1200JD-9   111.79GB
0.2    Hitachi HDT725     232.88GB
0.1    HDS728080PLA38   76.69GB   [+] Add
0.3    ST3320620AS        298.09GB



                                 [-] Del


[ESC] Quit    [F6] Back    [F7] Finish   [TAB] Navigate   [↑↓] Select   [ENTER] Popup
```
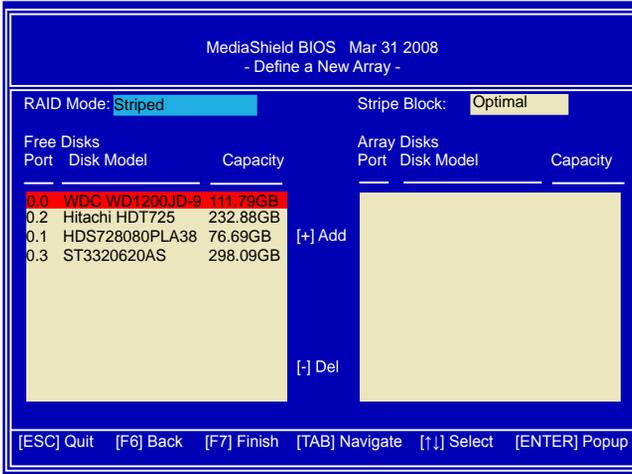
2. Select two hard disks to build our RAID0 system.
3. Press [TAB] to navigate to left drive panel, then use [→] and [↓] keys to add the hard disks to the right drive panel.


```
                    MediaShield BIOS   Mar 31 2008
                        - Define a New Array -

RAID Mode: Striped                      Stripe Block:    Optimal

Free Disks                              Array Disks
Port   Disk Model         Capacity      Port   Disk Model        Capacity

0.2    Hitachi HDT725     232.88GB       0.0   WDC WD1200JD-9   111.79GB
0.3    ST3320620AS        298.09GB       0.1   HDS728080PLA38   76.69GB
                                 [+] Add



                                 [-] Del


[ESC] Quit    [F6] Back    [F7] Finish   [TAB] Navigate   [↑↓] Select   [ENTER] Popup
```

4. The stripe value should be selected based on different applications. It ranges from 4KB to 128KB. Some suggested choices are :

16K - Best for sequential transfer.

64K - Good general purpose strip size.

128K - Best performance for most desktops and workstations.

Keep it at Optimal default value. Press [F7] to finish the setting.

5. Press [Y] to continue, and press [Y] again to select "Clear MBR".

6. The screen displays a STRIPE array of 153.38GB, which is twice the size of the smallest hard disk. That is, 2*76.69GB = 153.38GB.

   If you want to build a new Operating System (such as Windows XP) in this RAID system, please press [B] to select it as bootable.

   You can then press [Ctrl]+[X] keys to exit the setup program, and restart your PC.

```
┌─────────────────────────────────────────────────────────┐
│            MediaShield BIOS   Mar 31 2008                 │
│                   - Array List -                          │
├─────────────────────────────────────────────────────────┤
│                                                           │
│       Boot   Status   Vendor   Array    Size             │
│                                                           │
│              Healthy  NVIDIA   STRIPE   153.38G          │
│                                                           │
│                                                           │
│                                                           │
│                                                           │
│                                                           │
│                                                           │
│                                                           │
│ [Ctrl-X] Exit   [↑↓] Select   [B] Set Bootable   [N] New Array   [ENTER] Detail │
└─────────────────────────────────────────────────────────┘
```

7. In above screen, you also can press [Enter] to know the detailed drive information of this RAID system. Press [D] here allow you to delete previous settings, and go back to the first time when MediaShield was started.

```
┌─────────────────────────────────────────────────────────┐
│         Array 4 : NVIDIA   STRIPE   153.38G              │
│                   - Array Detail-                         │
├─────────────────────────────────────────────────────────┤
│ RAID Mode: Striped                                        │
│ Stripe Width :   2              Stripe Block:   64K      │
│                                                           │
│       Port   Index   Disk Model            Capacity      │
│                                                           │
│       0.0    0       WDC WD1200JD-98HBB0   111.79G      │
│       0.1    1       HDS728080PLA380        76.69GB     │
│                                                           │
│                                                           │
│                                                           │
│                                                           │
│ [R] Rebuild   [D] Delete   [C] Clear MBR   [V] remove Vol   [ENTER] Return │
└─────────────────────────────────────────────────────────┘
```

Create RAID 1 (Mirrored)

1. Select "**Mirrored**" from the RAID Mode.

```
                    MediaShield BIOS   Mar 31 2008
                         - Define a New Array -

  RAID Mode: Mirrored                    Stripe Block:   Optimal

  Free Disks                             Array Disks
  Port   Disk Model       Capacity      Port   Disk Model       Capacity

  0.0   WDC WD1200JD-9   111.79GB
  0.2   Hitachi HDT725    232.88GB
  0.1   HDS728080PLA38   76.69GB    [+] Add
  0.3   ST3320620AS       298.09GB




                                      [-] Del

  [ESC] Quit    [F6] Back    [F7] Finish    [TAB] Navigate    [↑↓] Select    [ENTER] Popup
```

2. Select two hard disks to build our RAID1 system.
3. Press [TAB] to navigate to left drive panel, then use [→] and [↓] keys to add the hard disks to the right drive panel.

```
                    MediaShield BIOS   Mar 31 2008
                         - Define a New Array -

  RAID Mode: Mirrored                    Stripe Block:   Optimal

  Free Disks                             Array Disks
  Port   Disk Model       Capacity      Port   Disk Model       Capacity

  0.0   WDC WD1200JD-9   111.79GB       0.2   Hitachi HDT725    232.88GB
  0.1   HDS728080PLA38   76.69GB       0.3   ST3320620AS       298.09GB
                                  [+] Add




                                      [-] Del

  [ESC] Quit    [F6] Back    [F7] Finish    [TAB] Navigate    [↑↓] Select    [ENTER] Popup
```

4. The stripe block value is fixed and not changeable.
   Press [F7] to finish the setting.

5. Press [Y] to continue, and press [Y] again to select "Clear MBR".

6. The screen displays a MIRRORED array of 232.88GB, which is the size of the smallest hard disk. That is, 232.88GB.

   If you want to build a new Operating System (such as Windows XP) in this RAID system, please press [B] to select it as bootable.

   You can then press [Ctrl]+[X] keys to exit the setup program, and restart your PC.

```
                    MediaShield BIOS   Mar 31 2008
                           - Array List -


         Boot    Status    Vendor    Array     Size

                 Healthy   NVIDIA    MIRROR   232.88G




 [Ctrl-X] Exit     [↑↓] Select      [B] Set Bootable     [N] New Array     [ENTER] Detail
```

7. In above screen, you also can press [Enter] to know the detailed drive information of this RAID system. Press [D] here allow you to delete previous settings, and go back to the first time when MediaShield was started.

```
                    Array 4 : NVIDIA   MIRROR   232.88G
                           - Array Detail -

 RAID Mode: Mirrored
 Stripe Width :    1                      Stripe Block:    64K

            Port    Index   Disk Model                    Capacity

            0.2     0       Hitachi HDT725025VLA380    232.88G
            0.3     1       ST3320620AS                298.09G




 [R] Rebuild     [D] Delete     [C] Clear MBR     [V] remove Vol     [ENTER] Return
```

Create RAID 0+1 (Striped Mirror)

1. Select "**Striped Mirror**" from the RAID Mode. The menu appears :

MediaShield BIOS   Mar 31 2008
- Define a New Array -

RAID Mode: Striped Mirror   Stripe Block: Optimal

Free Disks   Array Disks
Port   Disk Model   Capacity   Port   Disk Model   Capacity

0.0   WDC WD1200JD-9   111.79GB
0.2   Hitachi HDT725   232.88GB
0.1   HDS728080PLA38   76.69GB   [+] Add
0.3   ST3320620AS   298.09GB

[-] Del

[ESC] Quit   [F6] Back   [F7] Finish   [TAB] Navigate   [↑↓] Select   [ENTER] Popup
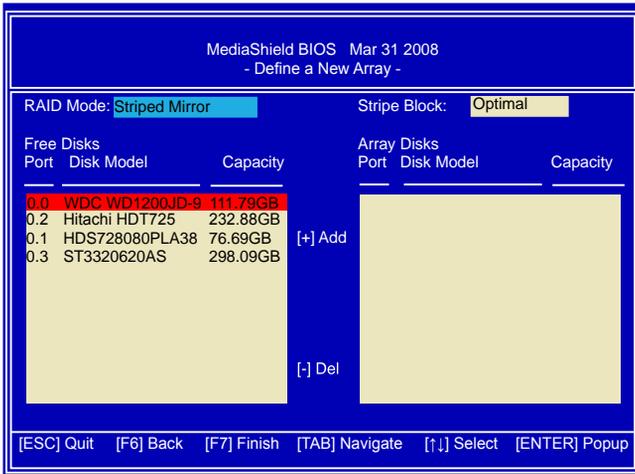
2. Select four hard disks to build our RAID 0+1 system.
3. Press [TAB] to navigate to left drive panel, then use [→] and [↓] keys to add the hard disks to the right drive panel.

MediaShield BIOS   Mar 31 2008
- Define a New Array -

RAID Mode: Striped Mirror   Stripe Block: Optimal

Free Disks   Array Disks
Port   Disk Model   Capacity   Port   Disk Model   Capacity

                                             0.0   WDC WD1200JD-9   111.79GB
                                             0.1   HDS728080PLA38   76.69GB
                                  [+] Add   0.2   Hitachi HDT725   232.88GB
                                             0.3   ST3320620AS   298.09GB

[-] Del

[ESC] Quit   [F6] Back   [F7] Finish   [TAB] Navigate   [↑↓] Select   [ENTER] Popup

4. The stripe value should be selected based on different applications. It ranges from 4KB to 128KB. Some suggested choices are :

16K - Best for sequential transfer.

64K - Good general purpose strip size.

128K - Best performance for most desktops and workstations.

Keep it at Optimal default value. Press [F7] to finish the setting.

5. Press [Y] to continue, and press [Y] again to select "Clear MBR".

6. The screen displays a RAID 0+1 array of 153.38GB, which is twice the size of the smallest hard disk. That is, 2*76.69= 153.38GB.
   If you want to build a new Operating System (such as Windows XP) in this RAID system, please press [B] to select it as bootable.
   You can then press [Ctrl]+[X] keys to exit the setup program, and restart your PC.

7. In above screen, you also can press [Enter] to know the detailed drive information of this RAID system. Press [D] here allow you to delete previous settings, and go back to the first time when MediaShield was started.

Create RAID 5

1. Select "**RAID5**" from the RAID Mode.

   The menu appears :


```
                    MediaShield BIOS   Mar 31 2008
                         - Define a New Array -

   RAID Mode: RAID5                   Stripe Block:   Optimal

   Free Disks                        Array Disks
   Port   Disk Model      Capacity   Port   Disk Model      Capacity

   0.0   WDC WD1200JD-9  111.79GB
   0.2   Hitachi HDT725   232.88GB
   0.1   HDS728080PLA38  76.69GB     [+] Add
   0.3   ST3320620AS     298.09GB


                                      [-] Del


   [ESC] Quit   [F6] Back   [F7] Finish   [TAB] Navigate   [↑↓] Select   [ENTER] Popup
```

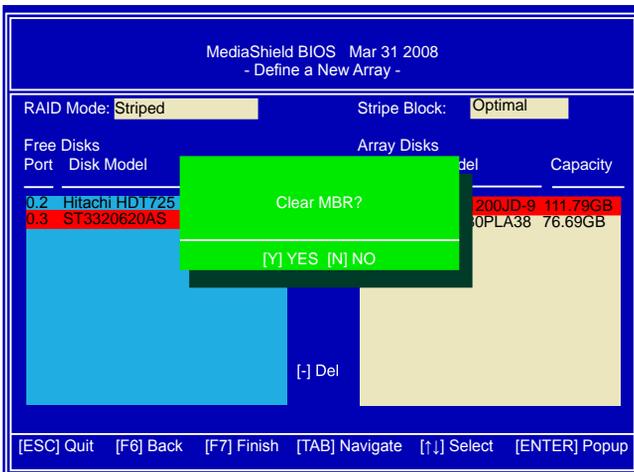2. Select three SATA hard disks to build our RAID5 system.
3. Press [TAB] to navigate to left drive panel, then use [→] and [↓] keys to add the hard
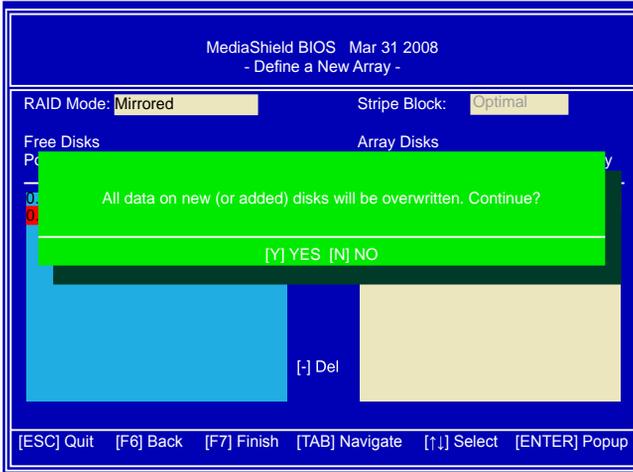   disks to the right drive panel.


```
                    MediaShield BIOS   Mar 31 2008
                         - Define a New Array -

   RAID Mode: RAID5                   Stripe Block:   Optimal

   Free Disks                        Array Disks
   Port   Disk Model      Capacity   Port   Disk Model      Capacity

   0.3   ST3320620AS     298.09GB    0.0   WDC WD1200JD-9  111.79GB
                                     0.1   HDS728080PLA38  76.69GB
                          [+] Add    0.2   Hitachi HDT725   232.88GB


                                      [-] Del


   [ESC] Quit   [F6] Back   [F7] Finish   [TAB] Navigate   [↑↓] Select   [ENTER] Popup
```

4. The stripe value should be selected based on different applications. It ranges from 4KB to 128KB. Some suggested choices are :

16K - Best for sequential transfer.

64K - Good general purpose strip size.

128K - Best performance for most desktops and workstations.

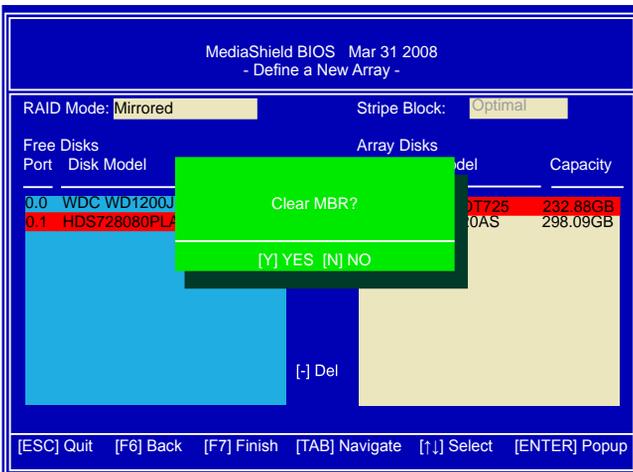Keep it at Optimal default value. Press [F7] to finish the setting.

5. Press [Y] to continue, and press [Y] again to select "Clear MBR".

6. The screen displays a RAID5 array of 153.38GB, which is twice the size of the smallest hard disk. That is, 2*76.69= 153.38GB. Another hard disk is used for parity check. If you want to build a new Operating System (such as Windows XP) in this RAID system, please press [B] to select it as bootable.
   You can then press [Ctrl]+[X] keys to exit the setup program, and restart your PC.

```
                       MediaShield BIOS   Mar 31 2008
                             - Array List -


             Boot   Status   Vendor   Array     Size

                    Healthy  NVIDIA   RAID5    153.38G










  [Ctrl-X] Exit    [↑↓] Select    [B] Set Bootable    [N] New Array    [ENTER] Detail
```

7. In above screen, you also can press [Enter] to know the detailed drive information of this RAID system. Press [D] here allow you to delete previous settings, and go back to the first time when MediaShield was started.

```
                     Array 4 : NVIDIA   RAID5  153.38G
                             - Array Detail -

  RAID Mode: RAID5
  Stripe Width :    2                        Stripe Block:    64K

             Port   Index   Disk Model                 Capacity

             0.0    0       WDC WD1200JD-98HBB0         111.79G
             0.1    1       HDS728080PLA380             76.69GB
             0.2    2       Hitachi HDT725025VLA380     232.88G









  [R] Rebuild    [D] Delete    [C] Clear MBR    [V] remove Vol    [ENTER] Return
```

Create Spanned RAID

1. Select "**Spanned**" from the RAID Mode. The menu appears :
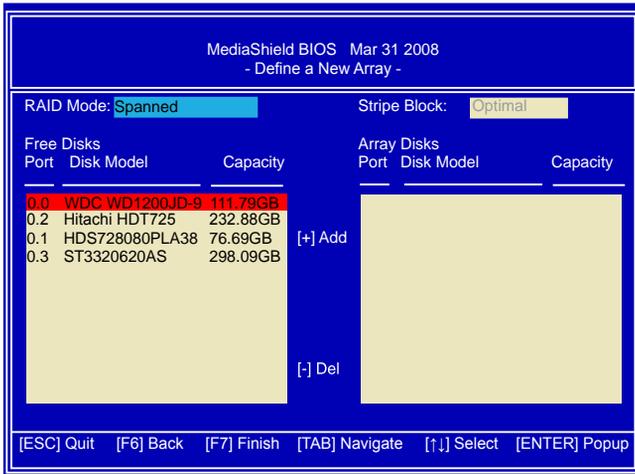
2. Select three SATA hard disks to build our Spanned RAID system.
3. Press [TAB] to navigate to left drive panel, then use [→] and [↓] keys to add the hard disks to the right drive panel.

4. The stripe block value is fixed and not changeable.
   Press [F7] to finish the setting.

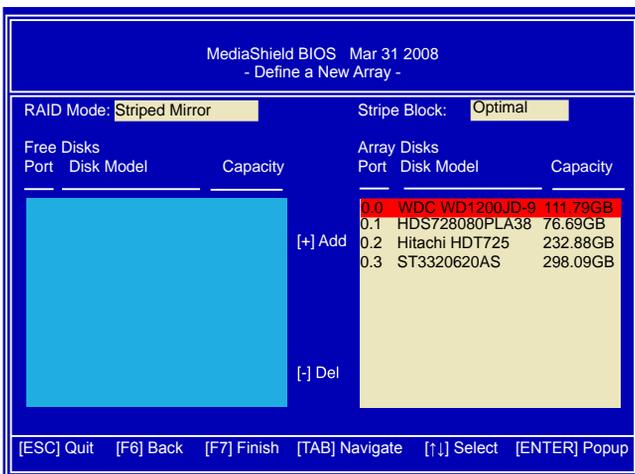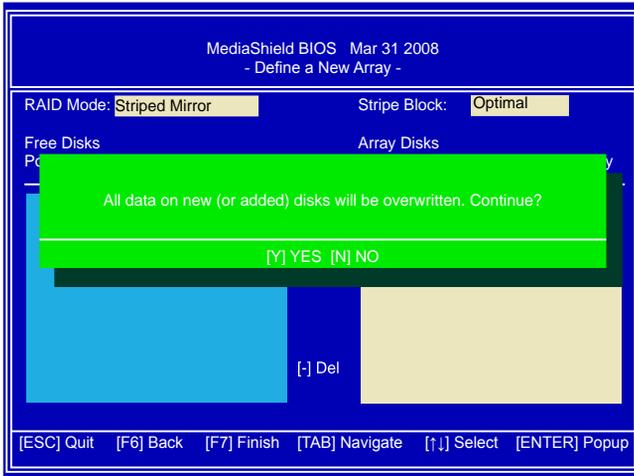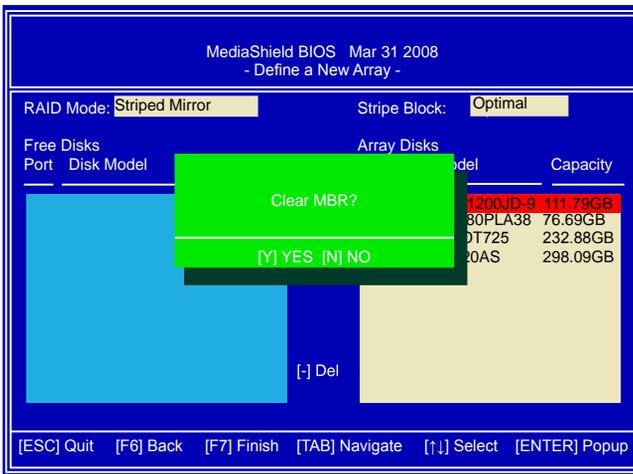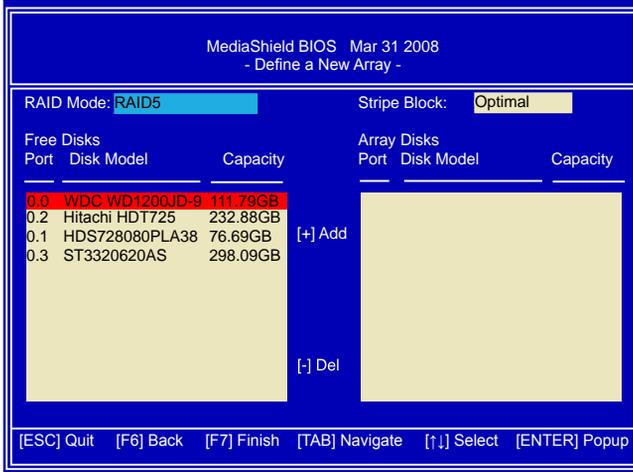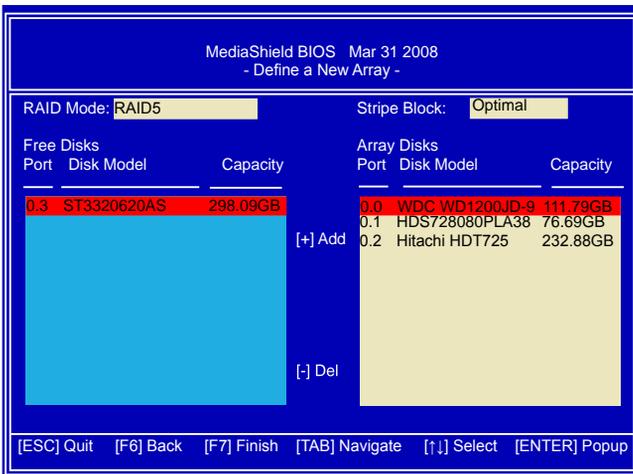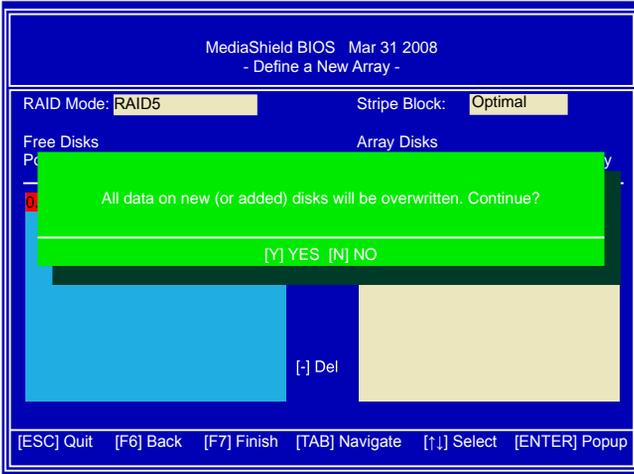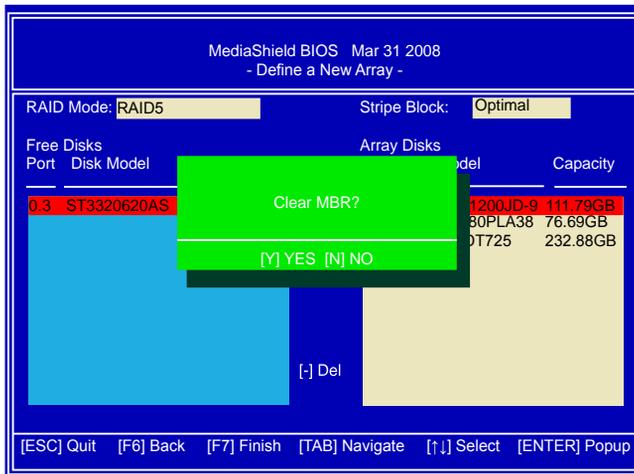5. Press [Y] to continue, and press [Y] again to select "Clear MBR".

6. The screen displays a Spanned RAID array of 421.36GB, which is the total sizes of these three hard disks. That is, 111.79+76.69+232.88= 421.36GB. We recommend not setting it to bootable as it will be impossible to recover if crashed. You can then press [Ctrl]+[X] keys to exit the setup program, and restart your PC.

```
                    MediaShield BIOS   Mar 31 2008
                           - Array List -

           Boot   Status   Vendor   Array    Size

                  Healthy  NVIDIA   SPAN    421.36G




 [Ctrl-X] Exit     [↑↓] Select     [B] Set Bootable     [N] New Array     [ENTER] Detail
```

7. In above screen, you also can press [Enter] to know the detailed drive information of this RAID system. Press [D] here allow you to delete previous settings, and go back to the first time when MediaShield was started.

```
                    Array 4 : NVIDIA   SPAN   421.36G
                              - Array Detail -

 RAID Mode: Spanned
 Stripe Width :   3                        Stripe Block:    64K

           Port   Index   Disk Model                    Capacity

           0.0    0       WDC WD1200JD-98HBB0           111.79G
           0.1    1       HDS728080PLA380                76.69GB
           0.2    2       Hitachi HDT725025VLA380       232.88G




 [R] Rebuild     [D] Delete     [C] Clear MBR     [V] remove Vol     [ENTER] Return
```

5-4 Creating a Bootable Array- **Install a New Windows XP**

Assume a Mirrored array (232.88GB) was created as introduced in section 5-3, after the system restarts :

1. Press [DEL] to enter BIOS Setup during POST.

2. Insert the Windows installation CD into the optical drive.

3. Set the "First Boot Device" to "CDROM", save changes and exit BIOS.


```
                    Phoenix - AwardBIOS CMOS Setup Utility
                           Advanced BIOS Features

  ► Removable Device Priority      [Press Enter]          Item Help
  ► Hard Disk Boot Priority        [Press Enter]
  ► CD-ROM Boot Priority           [Press Enter]      Menu Level  ►
    First Boot Device              [CDROM]
    Second Boot Device             [CDROM]             Select Removable Boot
    Third Boot Device              [Removable]         Device Priority
    Boot Other Device              [Enabled]
    Boot Up Floppy Seek            [Disabled]
    Boot Up NumLock Status         [on]
    Security Option                [Setup]
    Full Screen Logo Show          [Enabled]



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

4. The computer will reboot, and it will start installing Windows Operating System. Watch the screen carefully, when the following picture appears, press [F6] key immediately. If you forgot to do this, PC will go to an fatal blue screen, and you may need to reboot the system again. PC may not respond to your [F6] input immediately, and it keeps loading files until the next screen displays.


```
Windows Setup
_____




Press F6 if you need to install a 3rd party SCSI or RAID driver.
```
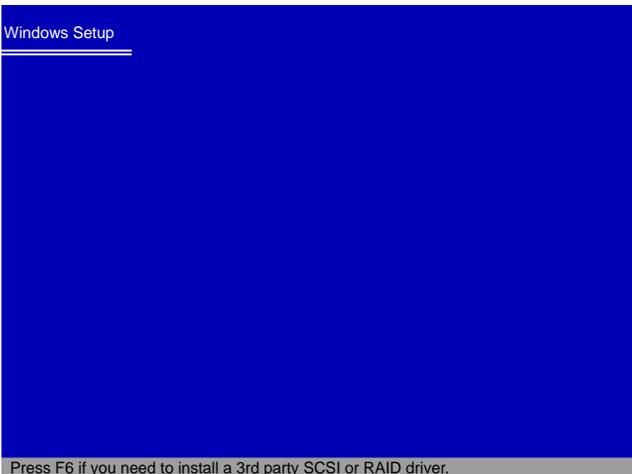
5. After some files are copied to your system, the following picture appears, press [S] to continue the specific driver installation.

```
Windows Setup
─────────────

  Setup could not determine the type of one or more mass storage devices
 installed in your system, or you have chosen to manually specify an adapter.
 Currently, Setup will load support for the following mass storage device(s):

    <none>

   * To specify additional SCSI adapters, CD-ROM drivers, or special
     disk controllers for use with Windows, including those for
     which you have a device support disk from a mass storage device
     manufacturer, press S.

   * If you do not have any device support disks from a mass storage
     device manufacturer, or do not want to specify additional
     mass storage devices for use with Windows, press ENTER.




 S=Specify Additional Device        ENTER=Continue       F3=Exit
```
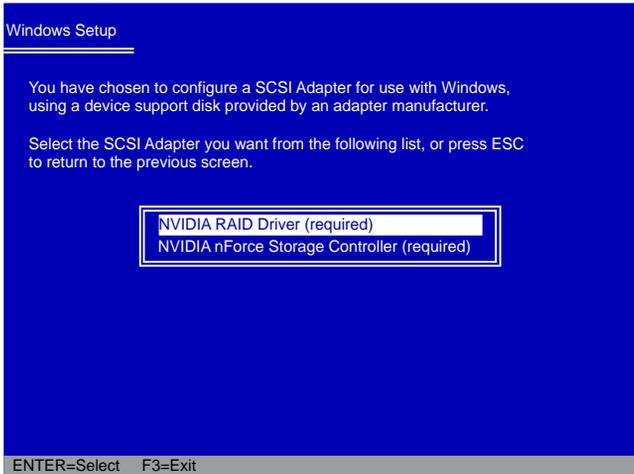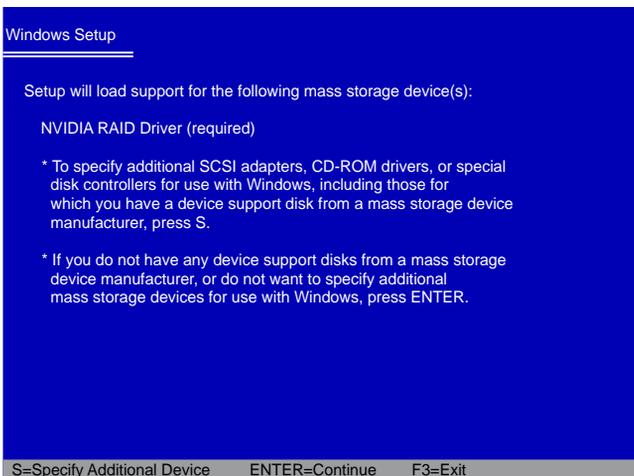
6. It will ask you to insert the RAID driver diskette 1 into your floppy drive. Press [Enter] after it is done.

```
Windows Setup
─────────────




                    Please insert the disk labeled

               manufacturer-supplied hardware support disk

                           into Drive A:

                      *  Press ENTER when ready




 Enter=Continue  ESC=Cancel  F3=Exit
```
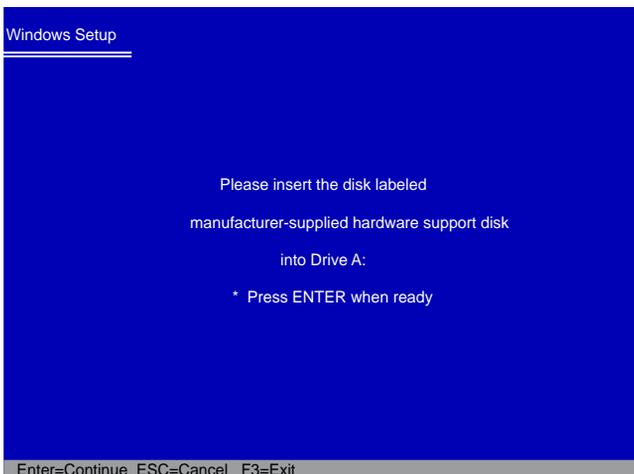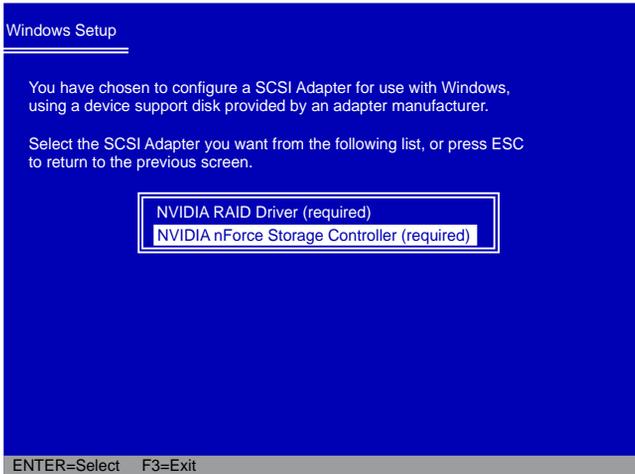
7. There are two drivers, all these two drivers must be installed. Press [Enter] to select the first driver - "NVIDIA RAID Driver (required)".

```
Windows Setup

    You have chosen to configure a SCSI Adapter for use with Windows,
    using a device support disk provided by an adapter manufacturer.

    Select the SCSI Adapter you want from the following list, or press ESC
    to return to the previous screen.

                    NVIDIA RAID Driver (required)
                    NVIDIA nForce Storage Controller (required)




ENTER=Select    F3=Exit
```
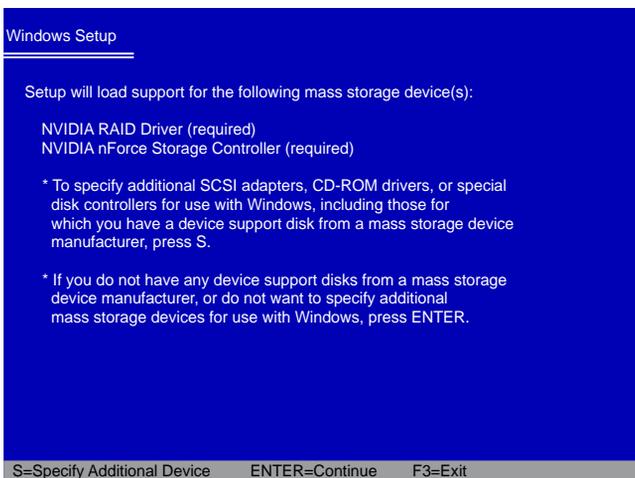
8. A confirmation message appears to double check if the driver is really what we wanted. As we need to install both two drivers, so we will press [S] again to select the second driver. It will ask you to insert the RAID driver diskette into your floppy drive again, press [Enter] to continue.

```
Windows Setup

   Setup will load support for the following mass storage device(s):

      NVIDIA RAID Driver (required)

    * To specify additional SCSI adapters, CD-ROM drivers, or special
      disk controllers for use with Windows, including those for
      which you have a device support disk from a mass storage device
      manufacturer, press S.

    * If you do not have any device support disks from a mass storage
      device manufacturer, or do not want to specify additional
      mass storage devices for use with Windows, press ENTER.




S=Specify Additional Device        ENTER=Continue        F3=Exit
```

9. Use [↓] key to select "NVIDIA nForce Storage Controller (required)", then press
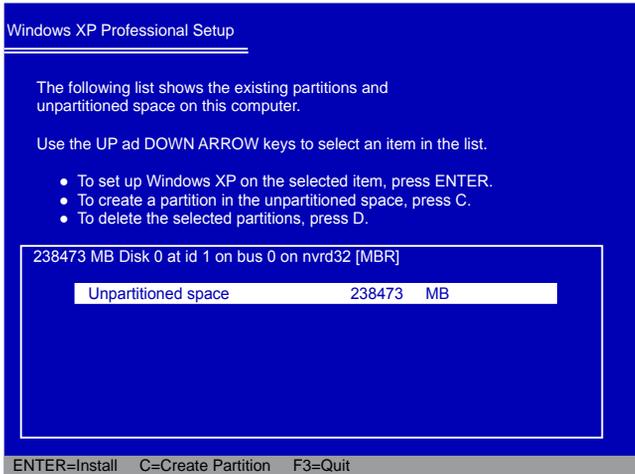   [Enter]. Still, The RAID floppy diskette 1 is inside the floppy drive.

```
 Windows Setup
 ─────────────

     You have chosen to configure a SCSI Adapter for use with Windows,
     using a device support disk provided by an adapter manufacturer.

     Select the SCSI Adapter you want from the following list, or press ESC
     to return to the previous screen.

                   ┌─────────────────────────────────────────┐
                   │  NVIDIA RAID Driver (required)           │
                   │  NVIDIA nForce Storage Controller (required) │
                   └─────────────────────────────────────────┘




 ENTER=Select    F3=Exit
```

10. Two drivers are displayed. Press [Enter] to continue.

```
 Windows Setup
 ─────────────

   Setup will load support for the following mass storage device(s):

     NVIDIA RAID Driver (required)
     NVIDIA nForce Storage Controller (required)

     * To specify additional SCSI adapters, CD-ROM drivers, or special
       disk controllers for use with Windows, including those for
       which you have a device support disk from a mass storage device
       manufacturer, press S.

     * If you do not have any device support disks from a mass storage
       device manufacturer, or do not want to specify additional
       mass storage devices for use with Windows, press ENTER.




 S=Specify Additional Device      ENTER=Continue      F3=Exit
```
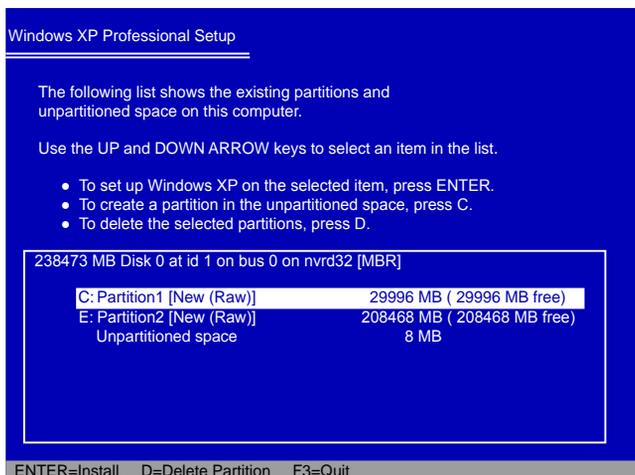
11. Windows will display the partition of your system. As we are using a Mirrored RAID array as an example, its size 232.88GB is now displayed as 238473MB. You can press [C] to create partitions as many as you wish, assign them C:, D: or E: logical drive names.
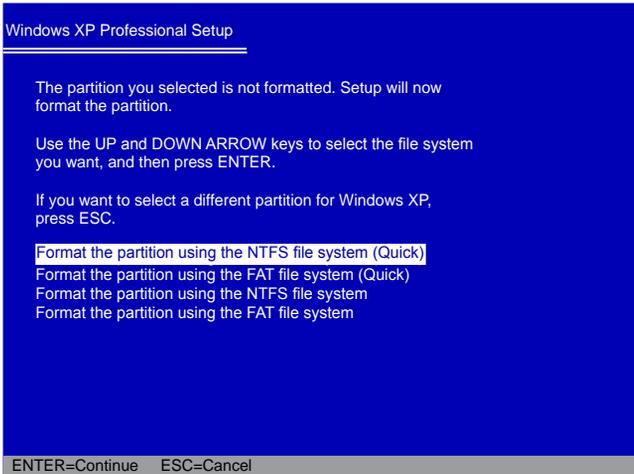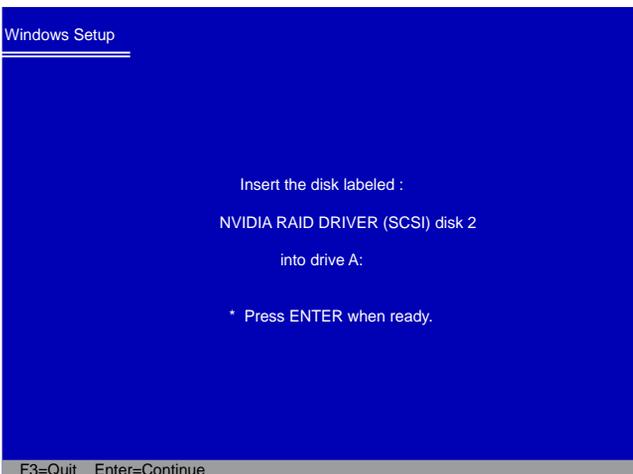
(Note : 238473MB/1024 = 232.88GB)

```
Windows XP Professional Setup
━━━━━━━━━━━━━━━━━━━━━━━━━

    The following list shows the existing partitions and
    unpartitioned space on this computer.

    Use the UP ad DOWN ARROW keys to select an item in the list.

        ● To set up Windows XP on the selected item, press ENTER.
        ● To create a partition in the unpartitioned space, press C.
        ● To delete the selected partitions, press D.

    238473 MB Disk 0 at id 1 on bus 0 on nvrd32 [MBR]

        Unpartitioned space                 238473    MB


ENTER=Install    C=Create Partition    F3=Quit
```

12. In this example, we will create a 30GB partition C: and leave the remaining space as a partition E:. Drive D: is DVD drive. Press [Enter] to install Windows.
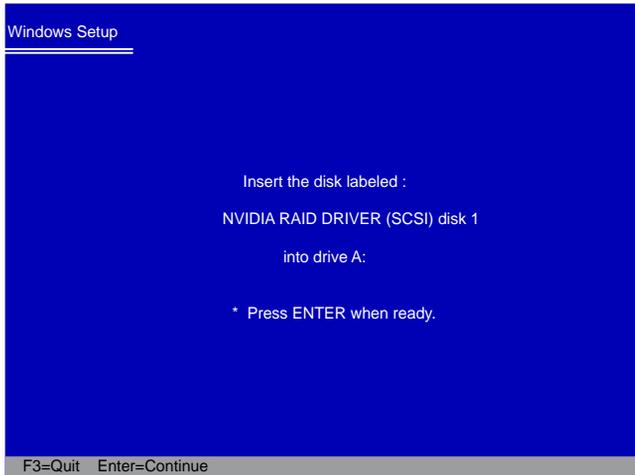
```
Windows XP Professional Setup
━━━━━━━━━━━━━━━━━━━━━━━━━

    The following list shows the existing partitions and
    unpartitioned space on this computer.

    Use the UP and DOWN ARROW keys to select an item in the list.

        ● To set up Windows XP on the selected item, press ENTER.
        ● To create a partition in the unpartitioned space, press C.
        ● To delete the selected partitions, press D.

    238473 MB Disk 0 at id 1 on bus 0 on nvrd32 [MBR]

        C: Partition1 [New (Raw)]            29996 MB ( 29996 MB free)
        E: Partition2 [New (Raw)]            208468 MB ( 208468 MB free)
        Unpartitioned space                  8 MB


ENTER=Install    D=Delete Partition    F3=Quit
```

13. The Windows XP install processes will ask you to format your hard disk, select quick formatting using NTFS file system, press [ENTER].

```
Windows XP Professional Setup

    The partition you selected is not formatted. Setup will now
    format the partition.

    Use the UP and DOWN ARROW keys to select the file system
    you want, and then press ENTER.

    If you want to select a different partition for Windows XP,
    press ESC.

    Format the partition using the NTFS file system (Quick)
    Format the partition using the FAT file system (Quick)
    Format the partition using the NTFS file system
    Format the partition using the FAT file system




 ENTER=Continue    ESC=Cancel
```
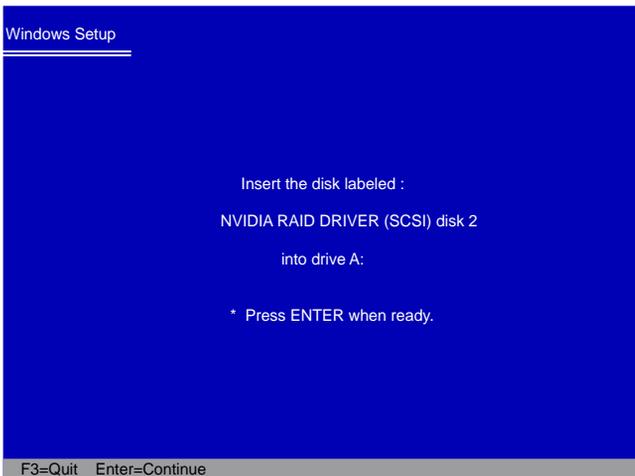
14. After drive C: is formatted, Setup will copy files from RAID floppy diskette 1 to the Windows installation folders, then ask you to insert the second RAID diskette. Press [Enter] to continue when it is done.

```
Windows Setup




                    Insert the disk labeled :

               NVIDIA RAID DRIVER (SCSI) disk 2

                        into drive A:


                  *  Press ENTER when ready.




 F3=Quit   Enter=Continue
```

15. After Setup copies files from RAID floppy diskette 2 to the Windows installation folders, it then will ask you to insert the first RAID diskette into floppy drive again. Press [Enter] to continue when it is done.

```
Windows Setup




                    Insert the disk labeled :

                NVIDIA RAID DRIVER (SCSI) disk 1

                        into drive A:

                   *  Press ENTER when ready.




   F3=Quit   Enter=Continue
```

16. Again, after Setup copies files from RAID floppy diskette 1 to the Windows installation folders, it then will ask you to insert the second RAID diskette into floppy drive. Press [Enter] to continue when it is done.

```
Windows Setup




                    Insert the disk labeled :

                NVIDIA RAID DRIVER (SCSI) disk 2

                        into drive A:

                   *  Press ENTER when ready.




   F3=Quit   Enter=Continue
```

17. Setup will be coping files to the RAID disk array to create your new Windows XP system. You can follow the normal procedures to complete the installations.

5-5 Setting Up a Non-Bootable RAID Array

This section assumes the following setup :

■ Boot Disk with Windows XP installed :

One hard disk HDS728080PLAT20 (80GB) is connected to the IDE channel, and set to Master.

■ A Mirrored RAID Array Disk :

Two SATA hard disks are configured as a mirrored RAID1 array, they are :

Hitachi HDT725025VLA, (232.88GB) connected to the lower SATA port of SATA_2 of the moherboard.

Segate ST3320620AS, (298.09GB) connected to the upper SATA port of SATA_2.

■ A SATA DVD Drive :

A DVD drive connected to the lower SATA port of SATA_1.

WARNING!

> To achieve the best performance and reliability, we highly recommend you using the hard disks with the same brand, size and model number. Though we are using different brand of hard disks as an example here, the purpose is only for easy understanding.

1. Reboot your system, and go to "MCP SATA Mode" menu.

Enable the RAID function together with the SATA ports which have the hard disks and DVD drive connected. Press [F10] to save the settings and reboot.

```
                    Phoenix - AwardBIOS CMOS Setup Utility
                               MCP SATA Mode

   SATA Operation Mode          [RAID]              Item Help
   SATA Pri-Master   RAID       [Enabled]
   SATA Pri-Slave    RAID       [Enabled]       Menu Level  ▶
   SATA Sec-Master   RAID       [Enabled]
   SATA Sec-Slave    RAID       [Enabled]
   SATA Thr-Master   RAID       [Enabled]
   SATA Thr-Slave    RAID       [Enabled]




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

2. Select a RAID array for use (also can refer to section 5-3)

After rebooting your computer, you will see the RAID software prompting you to press [F10].

Press [F10] to enter the NVIDIA MediaShield BIOS setup and configure the mirrored RAID array as described in the 5-3 section. Finally, you can reach this step as depicted.
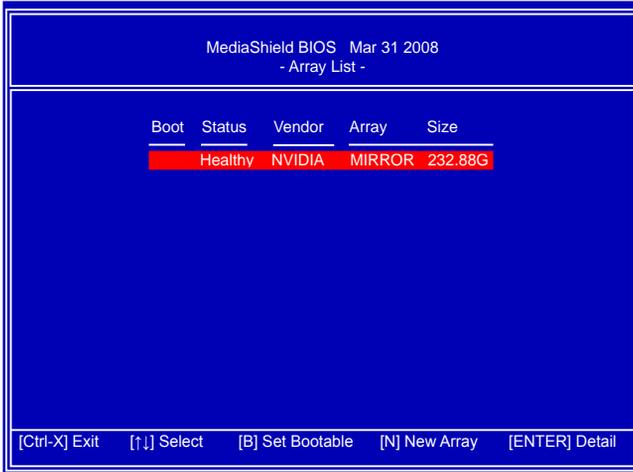
3. Press [Ctrl]+[X] keys to exit and go to Windows.
4. In Windows, click "Cancel" to skip any "Found New Hardware Wizard".

Use driver CD and click on "Chipset Driver" to install the NVIDIA RAID driver. The RAID driver can be installed only when you select and enable "RAID" in BIOS "SATA Operation Mode" setting. If you do not select RAID, then RAID driver can not be installed.

5. The installation of driver may take a while, after the NVIDIA driver is installed, it will
   ask you to click "Finish" to restart your computer.
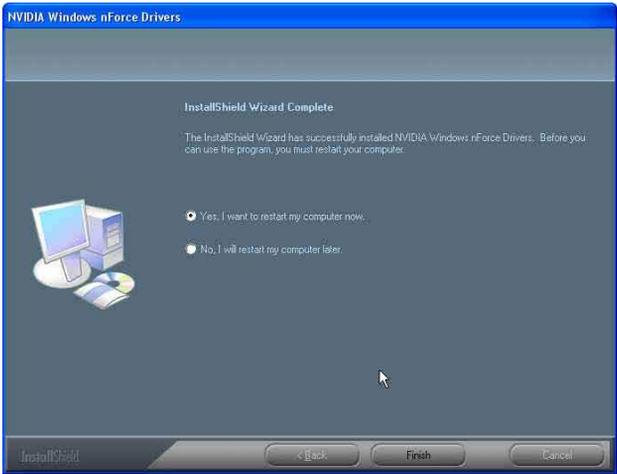
6. When Windows starts, a "Found New Hardware Wizard" appears. Click on "Cancel"
   to ignore it.

7. After PC starts, the RAID array is now ready to be initialized under Windows.
Launch Computer Management by clicking Start -> Settings -> Control Panel then open the Administrative Tools folder and double click on Computer Management. Click Disk Management (under the Storage section).
The Initialize and Convert Disk Wizards appears. Click "Next" to continue.
The RAID array is named as Disk1 and its status is unknown and not Initialized.

8. A "Select Disks to Initialize" window will appear. The disks listed depend on how many arrays you have configured. Select "Disk1" and click "Next" to continue.
9. When "Select Disks to Convert" window appears, do not select anything and click "Next" to continue.
10. When the "Completing the Initialize and Convert Disk Wizard" window appears, click "Finish" to complete the wizard.

11. The Computer Management window appears. The actual disks listed will depend on your system. In below figure, you can see there is a 232.88 GB unallocated partition. You must format the unallocated disk space before using it.
Right click "Unallocated space", select "New Partition…" and follow the Wizard instrucrtions.
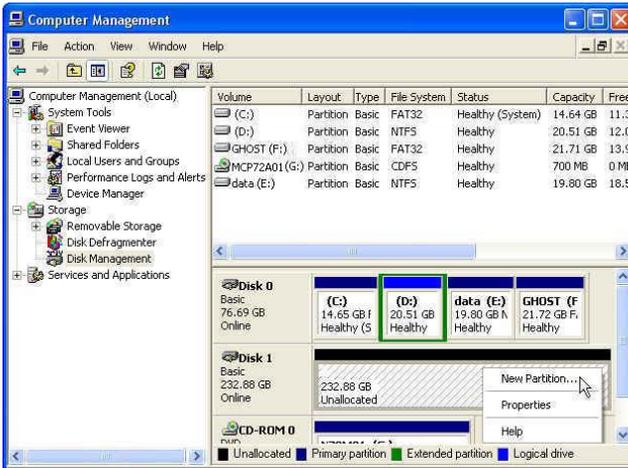
12. When "New Partition Wizard" appears, click "Next" to continue.
13. When "Primary partition" screen appears, click "Next" to continue.
14. When "Specify Partition Size" screen appears, click "Next" to continue.
15. When "Assign Drive Letter or Path" screen appears, click "Next" to continue.
16. Click "Finish" to end the "New Partition Wizard".

17. The format of disk array (Disk1) is in processing.
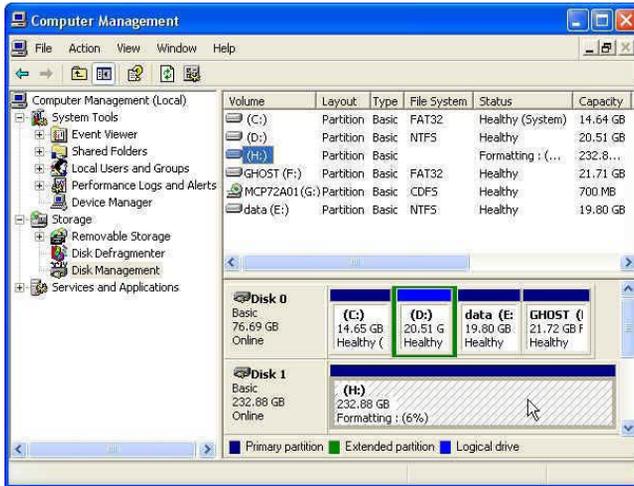
18. Format completed, now you can start using your RAID array.
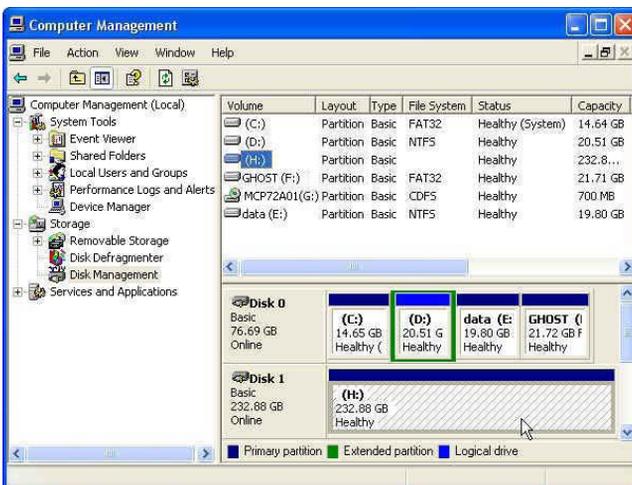
NVIDIA® SLI™ Technology

1. Introduction

NVIDIA® SLI™ (Scalable Link Interface) technology takes advantage of the increased bandwidth of the PCI Express™ bus architecture, and features intelligent hardware and software solutions to deliver earth-shattering PC performance in a multi NVIDIA® GPU solution. It allows up to three identical PCI Express™ x16 graphics cards.

> **⚠ CAUTION**
>
> ■ In Dual SLI mode, it needs two identical SLI-ready graphics cards.
>
> ■ In 3-way SLI mode, it needs three identical SLI-ready graphics cards.
>
> ■ Make sure that all the graphics cards are certified by NVIDIA, different type of graphics cards will not work together properly.
>
> ■ Make sure that your power supply unit can provide at least the minimum power required by your system. If you want to use 3-way SLI™ configuration, please visit the NVIDIA website (www.nvidia.com) for the qualified Power Supply Unit vendor list.
>
> ■ The NVIDIA 3-way SLI technology supports Windows® Vista operating system only.
>
> ■ For the detailed Graphics Card support list on this motherboard, please visit the website: http://www.foxconnchannel.com
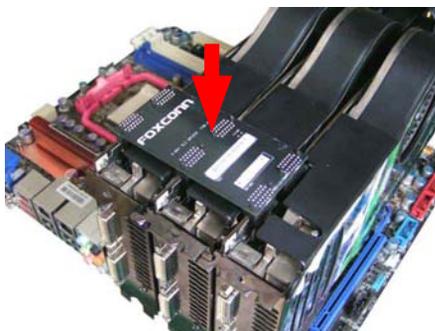
2. Graphics card configuration

2-1 Installing three SLI-ready graphics cards

1. Install the first graphics card into the PCI-E1_16X slot, the second into the PCI-E2_16X slot, and the third into the PCI-E3_16X slot (or the first into the PCI-E1_16X slot, the second into the PCI-E3_16X slot, and the third into the PCI-E4_16X slot).
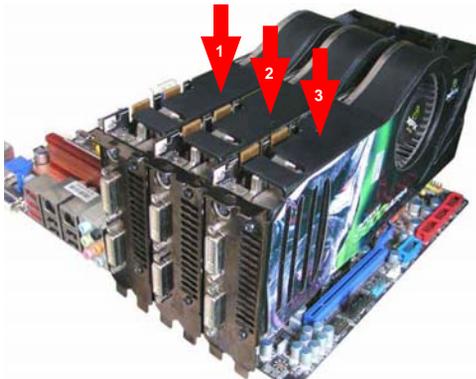
2. Align and firmly insert the 3-way SLI bridge onto the edge connector of each graphics card. Make sure that the bridge is firmly in place.

3. Connect power extension cable from the power supply to the graphics card power connector separately.

4. Follow Chapter 2, section 2-5 to install the Quantum Flow-GPU Blower for better thermal emanation.
5. Connect a monitor DVI-I cable to the graphics card.

2-2 Installing two SLI-ready graphics cards

1. Install the first graphics card into the PCI-E1_16X slot and the other into the PCI-E3_16X slot.
2. Align and firmly insert the 2-way SLI bridge onto the edge connector of each graphics card. Make sure that the bridge is firmly in place.
3. Connect power extension cable from the power supply to the graphics card power connector separately.
4. Follow Chapter 2, section 2-5 to install the Quantum Flow-GPU Blower for better thermal emanation.
5. Connect a monitor DVI-I cable to the graphics card.

2-3 Installing the graphics cards drivers

1. Power on your computer and boot into Operating System.
2. Install the NVIDIA graphics card drivers and restart your computer.

### 2-4 Enabling the NVIDIA® SLI™ technology

1. Right click on the empty space of Windows®
   and select "NVIDIA Control Panel" to open it.

If you cannot see the NVIDIA Control Panel
item, select "Personalize", then follow the
procedure below:

From the "Personalization" window, select
"Display Settings".

Click "Advanced Settings" from the dialog box.

Select the NVIDIA GeForce tab, then click
"Start the NVIDIA Control Panel".

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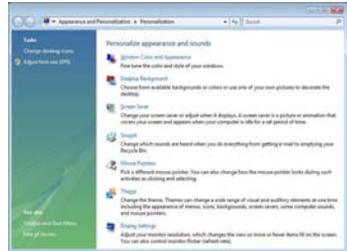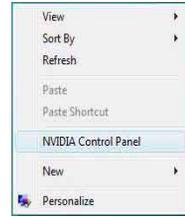
2. When using three graphics cards:
   Select "Set SLI Configuration", then
   click "Enable 3-way NVIDIA SLI",
   when done, click Apply to enable it.

Select the "3D Setting" tab and enable
the "Show SLI Visual Indicators" item.

When using two graphics cards:
The display is similar to the three graphics'
one.
Just select "Set SLI Configuration", then
click "Enable SLI" and set the display, when
done, click Apply.

3-way and 2-way graphics card Speed Table:

Card Numbers	Slot	Speed Mode
3-way	PCI-E1_16X	x8
	PCI-E2_16X	x8
	PCI-E3_16X	x16
3-way	PCI-E1_16X	x16
	PCI-E3_16X	x8
	PCI-E4_16X	x8
2-way	PCI-E1_16X	x16
	PCI-E3_16X	x16