

M7VMX Series

Motherboard

User's Manual

Statement:

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Version:

User's Manual V1.1 for M7VMX Series motherboard.

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>

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All images are for reference only, please refer to the physical motherboard for specific features.

Declaration of conformity

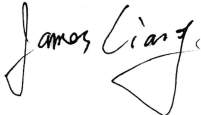


HON HAI PRECISION INDUSTRY COMPANY LTD
66 , CHUNG SHAN RD., TU-CHENG INDUSTRIAL DISTRICT,
TAIPEI HSIEN, TAIWAN, R.O.C.

declares that the product
Motherboard M7VMX/M7VMX-K/M7VMX-S

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 $\leq 16A$ 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 $\leq 16A$
- EN 55024/A2:2003 Information technology equipment-Immunity characteristics limits and methods of measurement

Signature : 

Place / Date : TAIPEI/2008

Printed Name : James Liang

Declaration of conformity



Trade Name: FOXCONN
Model Name: M7VMX/M7VMX-K/M7VMX-S
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 :

A handwritten signature in black ink that reads "James Liang". The signature is written in a cursive style with a large, stylized 'L' at the end.

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.



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Technical Support :



Support

Website :

<http://www.foxconnchannel.com>

Support Website :

<http://www.foxconnchannel.com/support/online.aspx> or
<http://www.foxconnsupport.com>

Worldwide E-mail Support :

pcebg-cisg-support@foxconn.com

CPU, Memory, VGA Compatibility Supporting Website :

<http://www.foxconnchannel.com/product/Motherboards/compatibility.aspx>



1

Thank you for buying Foxconn M7VMX Series motherboard. Foxconn products are engineered to maximize computing power, providing only what you need for break-through performance.

With advanced overclocking capability and a range of connectivity features for today multi-media computing requirements, M7VMX Series enables you to unleash more power from your computer.

This chapter includes the following information:

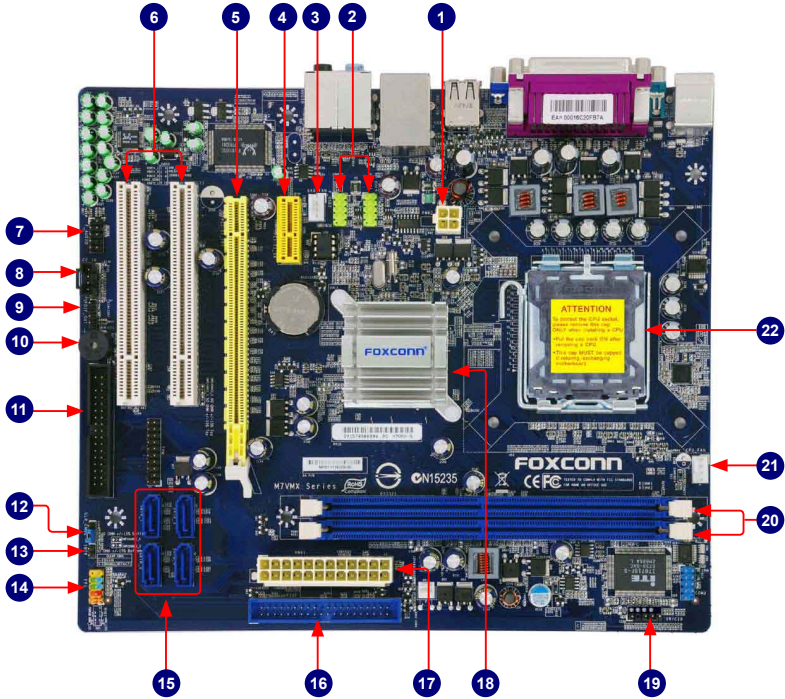
- Product Specifications
- Layout
- Back Panel Connectors

1-1 Product Specifications

CPU	Support LGA775 socket Intel® CPU: Core™ 2 Quad / Core™ 2 Extreme / Core™ 2 Duo / Pentium® Dual-Core / Celeron® processors Future-proof supporting for 45nm processors
Front Side Bus	1333/1066/800 MHz FSB
Chipset	NVIDIA GeForce 7050 / nForce 610i
Memory	2 x 240-pin DDR2 DIMM sockets Support up to 4GB of system memory Single channel DDR2 800(oc*)/667 MHz architecture (oc* : Overclocking)
Audio	Realtek 6-channel audio chip (M7VMX / M7VMX-K) Realtek 8-channel audio chip (M7VMX-S) High Definition Audio 2/4/5.1/7.1-channel Support for S/PDIF out Support Jack-Sensing function
LAN	Realtek 10/100 Mb/s LAN chip (M7VMX) Realtek Gigabit LAN chip (M7VMX-K / M7VMX-S)
Expansion Slots	1 x PCI Express x16 slot 1 x PCI Express x1 slot 2 x PCI slots
Onboard Serial ATA	4 x SATA connectors 300MB/s data transfer rate Support hot plug and NCQ (Native Command Queuing)
USB	Support hot plug Support up to 8 x USB 2.0 ports (4 rear panel ports, 2 onboard USB headers supporting 4 extra ports) Supports USB 2.0 protocol up to 480Mb/s
Internal Connectors	1 x 24-pin ATX main power connector 1 x 4-pin ATX 12V power connector 1 x Floppy disk drive connector 1 x IDE connector 4 x SATA connectors 2 x USB 2.0 connectors (supporting 4 x USB devices) 1 x CPU fan header (4-pin) 1 x System fan header (4-pin) 1 x Front Panel connector 1 x CD_IN connector 1 x Front Audio connector 1 x IrDA connector 1 x Chassis intrusion alarm header 1 x S/PDIF_OUT connector 1 x Buzzer (or Speaker connector)

Back Panel	1 x PS/2 Keyboard port
Connectors	1 x PS/2 Mouse port 1 x Serial port 1 x Parallel port 4 x USB 2.0 ports 1 x RJ-45 LAN port 1 x VGA port 6-channel audio ports (M7VMX / M7VMX-K) 8-channel audio ports (M7VMX-S)
Hardware Monitor	System voltage detection CPU/System temperature detection CPU/System fan speed detection CPU/System overheating shutdown CPU/System fan speed control
PCI Express x1	Support 250MB/s (500MB/s concurrent) bandwidth Low power consumption and power management features
PCI Express x16	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	FOX ONE FOX LiveUpdate FOX LOGO FOX DMI
Operating System	Support for Microsoft® Windows® Vista/XP
Form Factor	Micro ATX Form Factor, 9.6 inches x 8.2 inches (24.4cm x 20.8cm)

1-2 Layout

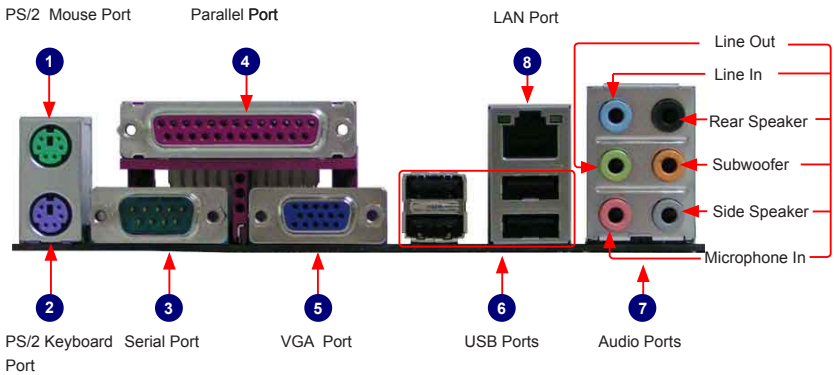


- 1. 4-pin ATX 12V Power Connector
- 2. Front USB Connectors
- 3. SYS_FAN Header
- 4. PCI Express x1 Slot
- 5. PCI Express x16 Slot
- 6. PCI Slots
- 7. Front Audio Connector
- 8. CD_IN Connector
- 9. S/PDIF_OUT Connector
- 10. Buzzer (or Speaker Connector)
- 11. Floppy Connector
- 12. Clear CMOS Jumper
- 13. Chassis Intrusion Alarm Header
- 14. Front Panel Connector
- 15. SATA Connectors
- 16. IDE Connector
- 17. 24-pin ATX Power Connector
- 18. Chipset: NVIDIA GeForce 7050 / nForce 610i
- 19. IrDA Connector
- 20. DDR2 DIMM Slots
- 21. CPU_FAN Header
- 22. LGA 775 CPU Socket

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

1-3 Back Panel Connectors

Back Panel of M7VMX-S:



Back Panel of M7VMX / M7VMX-K:



1. PS/2 Mouse Port

Use the upper port (green) to connect a PS/2 mouse.

2. PS/2 Keyboard Port

Use the lower port (purple) to connect a PS/2 keyboard.

3. Serial Port

This is output of RS232 COM1 port.

4. Parallel Port

This connector provides printer port interface.

5. VGA Port

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

6. USB Ports

The USB port supports the USB 2.0/1.1 specification. Use this port for USB devices such as an USB keyboard/mouse, USB printer, USB flash drive and etc.

7. Audio Ports

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

Audio Ports of M7VMX-S:

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

Audio Ports of M7VMX / M7VMX-K:

Port	2-channel	4-channel	5.1-channel
Blue	Line In	Rear Speaker Out*	Rear Speaker Out*
Green	Line Out	Front Speaker Out	Front Speaker Out
Pink	Microphone In	Microphone In	Center/Subwoofer Out*

* : Please refer to Chapter 4, and install the Realtek audio driver (in CD) to assign the audio output ports for different applications of 2/4/5.1 channels. The fundamental audio outputs are depicted in the table above.

8. RJ-45 LAN Port

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
100M	Off	No Link	Off	No Link
	Green Blinking	Data Activity	Orange	10/100Mb/s Connection
1000M	Off	No Link	Off	No Link
	Green Blinking	Data Activity	Off	10Mb/s Connection
			Green	100Mb/s Connection
Orange	1000Mb/s Connection			



M7VMX supports 10/100Mb/s Ethernet.
M7VMX-K / M7VMX-S support 1Gb/s Ethernet.

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
- Jumpers



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



Read the following guidelines before you begin to install the CPU :

- Make sure that the motherboard supports the CPU.
- Always turn off the computer and unplug the power cord from the power supply before installing the CPU to prevent hardware damage.
- Locate the pin one of the CPU. The CPU cannot be inserted if oriented incorrectly. (Or you may locate the notches on both sides of the CPU and alignment keys on the CPU socket.)
- Apply an even and thin layer of thermal grease on the surface of the CPU.
- Do not turn on the computer if the CPU cooler is not installed, otherwise overheating and damage of the CPU may occur.
- Set the CPU host frequency in accordance with the CPU specifications. It is not recommended that the system bus frequency be set beyond hardware specifications since it does not meet the standard requirements for the peripherals. If you wish to set the frequency beyond the standard specifications, please do so according to your hardware specifications including the CPU, graphics card, memory, hard drive, etc.

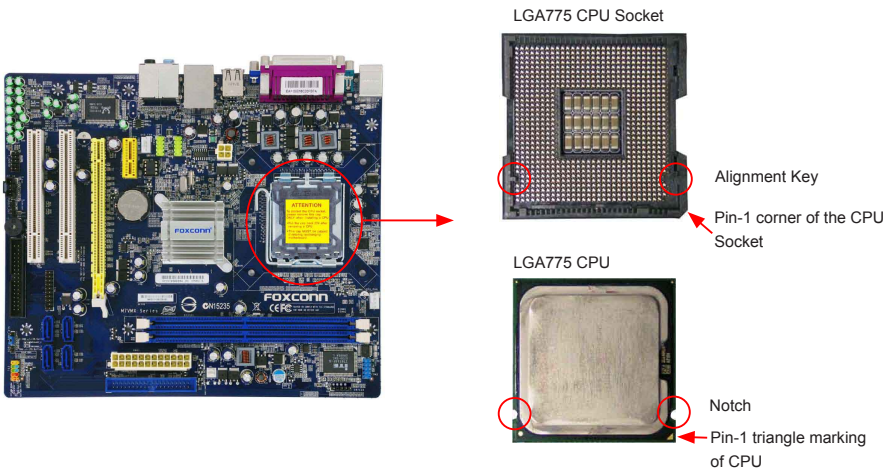
Hyper-Threading Technology System Requirements:

(Go to Intel's website for more information about the Hyper-Threading Technology)

- An Intel® CPU that supports HT Technology
- A chipset that supports HT Technology
- An operating system that is optimized for HT Technology
- A BIOS that supports HT Technology and has it enabled

Install the CPU

Locate the alignment keys on the motherboard CPU socket and the notches on the CPU.



Follow the steps to install the CPU onto the CPU socket :



Before installing the CPU, make sure to turn off the computer and unplug the power cord from the power outlet to prevent damage to the CPU.



1. Remove protective socket cover.



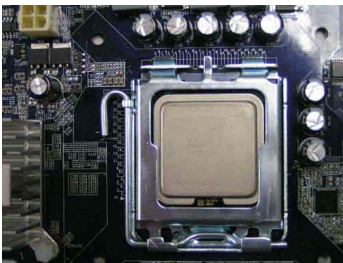
2. Release the CPU socket lever.



3. Lift the metal cover on the CPU socket.



4. Check pin one marking (triangle) with the pin one corner of the CPU socket, align the CPU notches with the socket alignment keys and gently put the CPU onto the socket.



5. When CPU is properly seated, replace the metal cover and push the CPU socket lever back to its locked position.

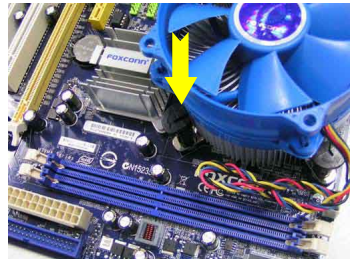
Install the CPU Cooler

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

2



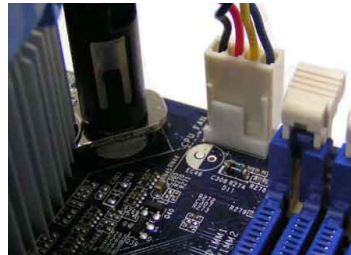
1. Apply and spread an even thermal grease on the surface of CPU.



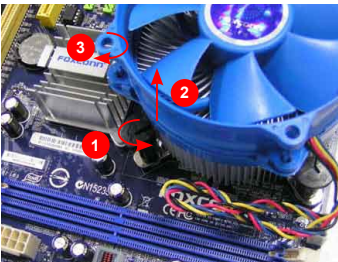
2. Place the four bolts of the CPU cooler to the holes of the motherboard, push them straight down from the top, and the bolts will be fastened on the motherboard. That's it.



3. Check the solder side of the motherboard, the push pin should be fixed as depicted in the picture.



4. Attach the 4-wire CPU cooler connector to the CPU FAN header on the motherboard .



Release bolts of CPU cooler from motherboard :

1. Turning the push pin (bolt) along with the direction of arrow (counterclockwise).
2. Pull the push pin straight up.
3. Turning push pin clockwise to its default position.



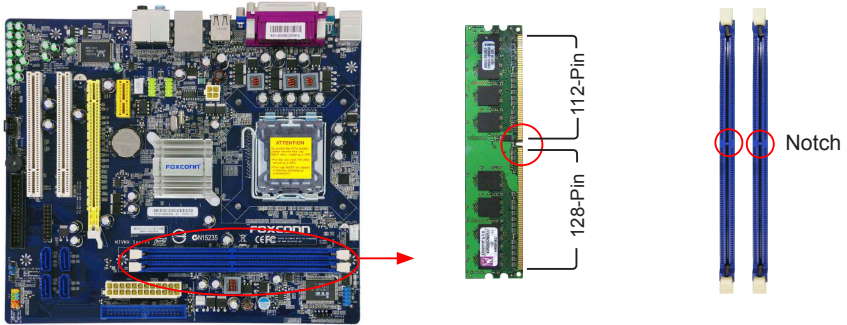
Use extreme care when removing the CPU cooler because the thermal grease may adhere to the CPU. Inadequately removing the CPU cooler may damage the CPU.

2-2 Install the Memory

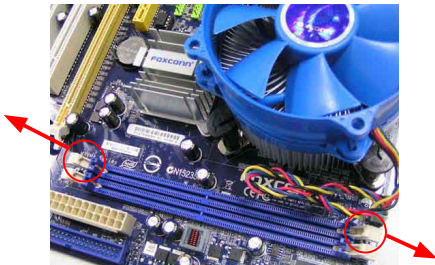


Read the following guidelines before you begin to install the memory :

- Make sure that the motherboard supports the memory. It is recommended that memory of the same capacity, brand, speed, and chips be used.
- Always turn off the computer and unplug the power cord from the power outlet before installing the memory to prevent hardware damage.
- Memory modules have a foolproof design. A memory module can be installed in only one direction. If you are unable to insert the memory, switch the direction.
- Be sure to install DDR2 DIMMs on this motherboard.

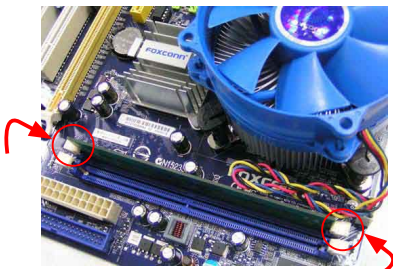


If you take a look at front side of memory module, it has asymmetric pin counts on both sides separated by a notch in the middle, so it can only fit in one direction. Follow the steps below to correctly install your memory modules into the sockets.



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.



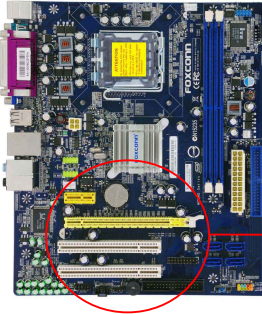
Step 2:

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.



PCI Express x1



PCI Express x16



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.

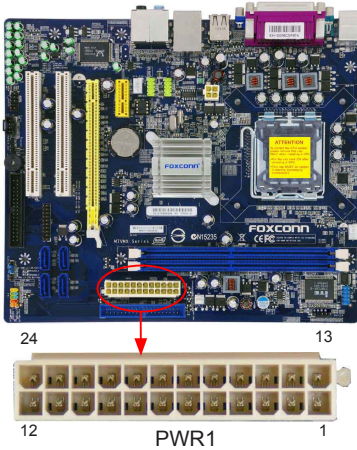
2-4 Install other Internal Connectors

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

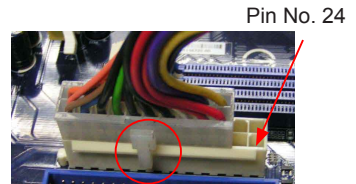
PWR1 is the ATX power supply connector. Make sure that the power supply cable and pins are properly aligned with the connector on the motherboard. Firmly plug the power supply cable into the connector and make sure it is secure.



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	-5V
9	+5V SB(Stand by +5V)	21	+5V
10	+12V	22	+5V
11	+12V	23	+5V
12	3.3V	24	GND



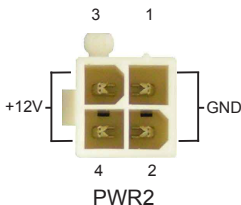
We recommend you using a 24-pin power supply. If you are using a 20-pin power supply, you need to align the ATX power connector according to the picture.



20-Pin Power

4-pin ATX 12 V Power Connector : PWR2

Connect the 4-pin ATX 12V power supply to PWR2 and provides power to the CPU.



Pin #	Definition
1	GND
2	GND
3	+12V
4	+12V

Audio Connector : F_AUDIO

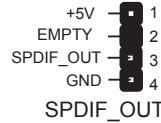
The audio connector supports HD Audio standard. It provides the Front Audio output choice.



F_AUDIO

S/PDIF OUT Connector : SPDIF_OUT

The connector is used for S/PDIF output.



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.

Chassis Intrusion Alarm Connector : 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 is closed, the system will send a message out.

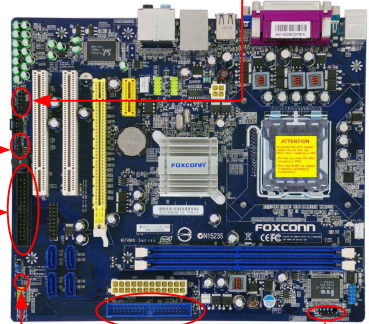
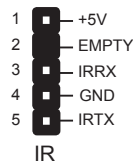


IDE Connector : PIDE

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

IrDA Connector : IR

This connector supports infrared wireless transmitting and receiving device.



Front Panel Connector : FP1

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

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)

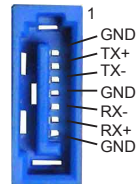
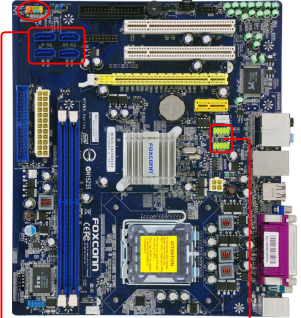
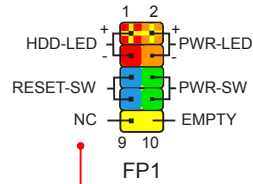
Connect to the power button on the front panel of the chassis. Push this switch allows the system to be turned on and off rather than using the power supply button.

Serial ATA Connectors : SATA_1/2/3/4

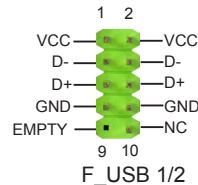
The Serial ATA connector is used to connect with SATA Hard Disk or CD devices which support this feature. The current Serial ATA II interface allows up to 300MB/s data transfer rate.

USB Connectors : F_USB1/2

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

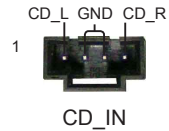


SATA_1/2/3/4



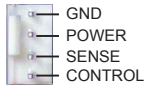
Audio Connector : CD_IN

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

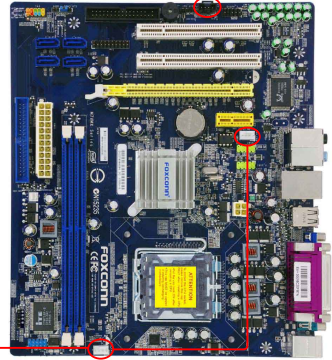


Fan Connectors : CPU_FAN, SYS_FAN

There are two 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.



CPU_FAN / SYS_FAN





2-5 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.

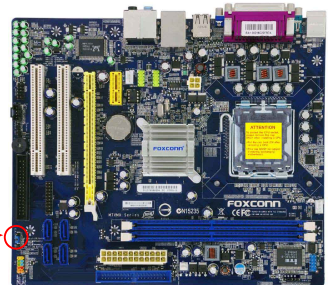
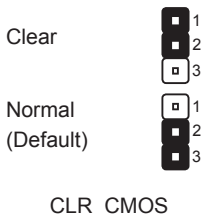
Jumper	Diagram	Definition	Description
1	1 	1-2	Set Pin 1 and Pin 2 closed
	1 	2-3	Set Pin 2 and Pin 3 closed

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.



- Disconnect the power cable before adjusting the jumper settings.
- Do not clear the CMOS while the system is turned 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
- Fox Central Control Unit
- Advanced BIOS Features
- Advanced Chipset Features
- Integrated Peripherals
- Power Management Setup
- PC Health Status
- 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

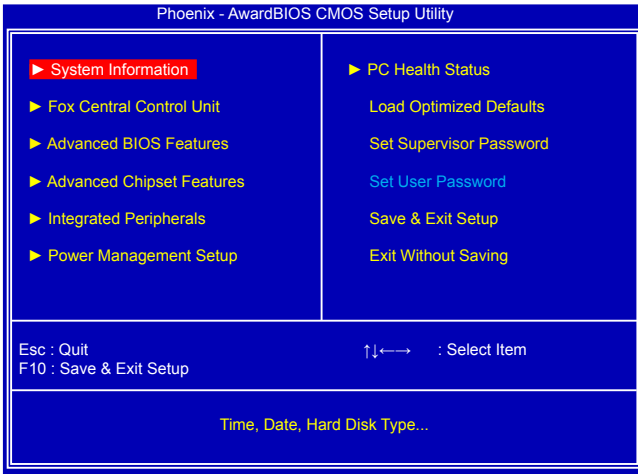
The BIOS is the communication bridge between hardware and software, correctly setting up the BIOS parameters is critical to maintain optimal system performance. Power on the computer, when the message "Press to enter Setup, <ESC> to boot menu" appears at the bottom of the screen, you can press key to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



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:



► System Information

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

► Fox Central Control Unit

Some special proprietary features (such as overclocking) 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, Parallel port 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.

▶ **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.

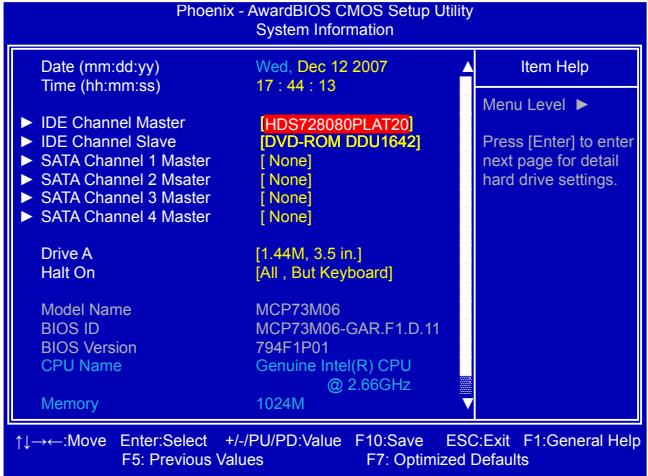
▶ **Exit Without Saving**

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



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 SATA 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.

3

► **SATA Channel 1/2/3/4 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 SATA port 1 of the motherboard.

SATA Channel 2 Master is the SATA port 2.

SATA Channel 3 Master is the SATA port 3.

SATA Channel 4 Master is the SATA port 4.

► **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 ID**

This item shows the information of the BIOS ID.

► **BIOS Version**

This item shows the BIOS version.

► **CPU Name**

This item shows the CPU name installed in your system.

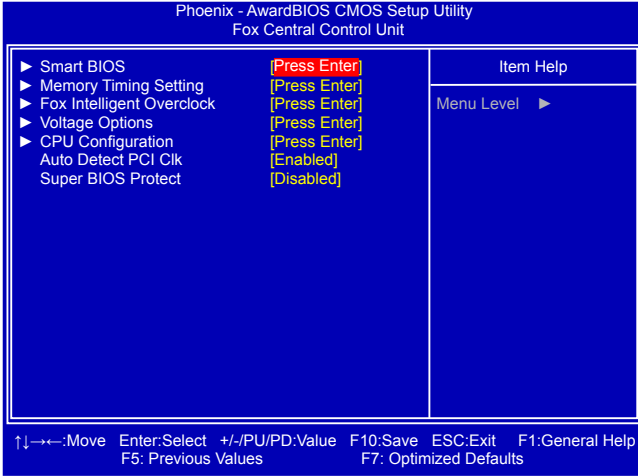
► **Memory**

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

► **MAC Address**

This item shows the MAC address.

Fox Central Control Unit



▶ Smart BIOS / Memory Timing Setting / Fox Intelligent Overclock / Voltage Options / CPU Configuration

Press [Enter] to get into its submenu.

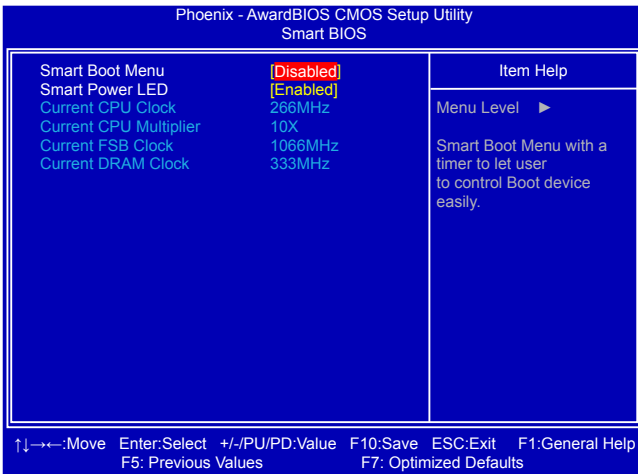
▶ Auto Detect PCI Clk

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).

▶ 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 BIOS



► Smart Boot Menu

This item is used to enable or disable the smart boot menu. Select [Enter] will provide a timer to let user control boot devices easily.

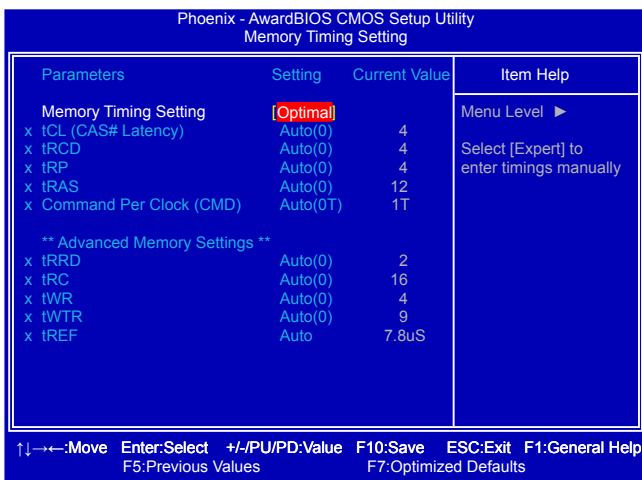
► Smart Power LED

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, which can display POST state by using different long-short blinking intervals. You can always leave this state enabled.

► Current CPU Clock / Current CPU Multiplier / Current FSB Clock / Current DRAM Clock

These items are display only for different system parameters.

3 Memory Timing Setting



Parameters	Setting	Current Value	Item Help
Memory Timing Setting			Menu Level ▶
x tCL (CAS# Latency)	Auto(0)	4	Select [Expert] to enter timings manually
x tRCD	Auto(0)	4	
x tRP	Auto(0)	4	
x tRAS	Auto(0)	12	
x Command Per Clock (CMD)	Auto(0T)	1T	
** Advanced Memory Settings **			
x tRRD	Auto(0)	2	
x tRC	Auto(0)	16	
x tWR	Auto(0)	4	
x tWTR	Auto(0)	9	
x tREF	Auto	7.8uS	

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

► Memory Timing Setting

Select [Expert], you can configure the DRAM timing manually.

Select [Optimal], then system will use the DRAM timing provided by the memory vendor.

The provision of DRAM timing is done by a SPD device. The Serial Presence Detect (SPD) device is a small EEPROM chip, mounted on a DDR2 memory module. It contains important information about the module's speed, size, addressing mode and various other parameters, so that the motherboard memory controller (chipset) can better access the memory device.

The following 10 settings are valid only when the DRAM Timing Setting is set to [Expert].

► tCL - CAS Latency Time

This item controls the CAS latency, which determines the timing delay (in clock cycles) before SDRAM starts a read command after receiving it.

► tRCD - RAS# to CAS# Delay

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

► tRP - Row Precharge Time

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

► tRAS - RAS# Active Time

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

► Command Per Clock (CMD)

This item allows you to set the Command timing (per clock unit) which is the delay between chip select and command.

** Advanced Memory Settings **

► tRRD - RAS# to RAS# Delay

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

► tRC - Row Cycle Time

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

► tWR - Write Recovery Time

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

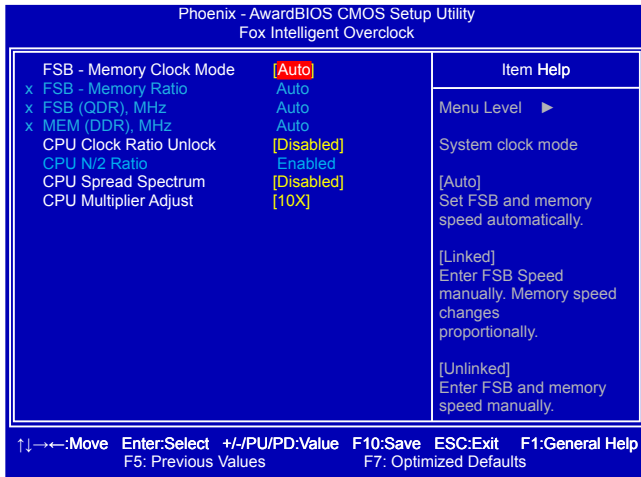
► tWTR - Write to Read Delay

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.

► tREF - Refresh Period

This item allows you to set refresh period (in clock cycles) for SDRAM. If memory clock is 200MHz, then $200\text{MHz} * 7.8 \mu\text{s} = 1560$.

Fox Intelligent Overclock



► FSB - Memory Clock Mode

[Auto] - Set FSB and memory speed automatically.

[Linked] - Enter FSB speed manually. Memory speed will change proportionally.

[Unlinked] - Enter FSB speed and memory speed separately and manually.

► FSB - Memory Ratio

When "FSB - Memory Clock Mode" is set to "Linked", this item is used to set up the ratio between FSB and Memory.

► FSB (QDR), MHz

When "FSB - Memory Clock Mode" is set to "Linked" or "Unlinked", you can set up the FSB speed manually.

► MEM (DDR), MHz

When “FSB - Memory Clock Mode” is set to “Linked”, memory speed will proportionally change. When “FSB - Memory Clock Mode” is set to “Unlinked”, you can set the memory speed manually.

► CPU Clock Ratio Unlock

This item is used to enable or disable CPU clock ratio unlock function.

► CPU N/2 Ratio

This option will be displayed only if your CPU support this feature. The speed of Front Side Bus is in a transit from 266MHz to 333MHz, if we are still using integer multiplier in our circuit design, the speed interval between two CPUs will be in a 333MHz step and only few CPU models can be produced. The newly coming 45nm CPUs are supporting 0.5 multiplier ratio to provide more flexible choices for CPUs. For example, $333\text{MHz} \times 7.0 = 2.33\text{GHz}$, $333\text{MHz} \times 7.5 = 2.50\text{GHz}$, while $333\text{MHz} \times 8.0 = 2.66\text{GHz}$.

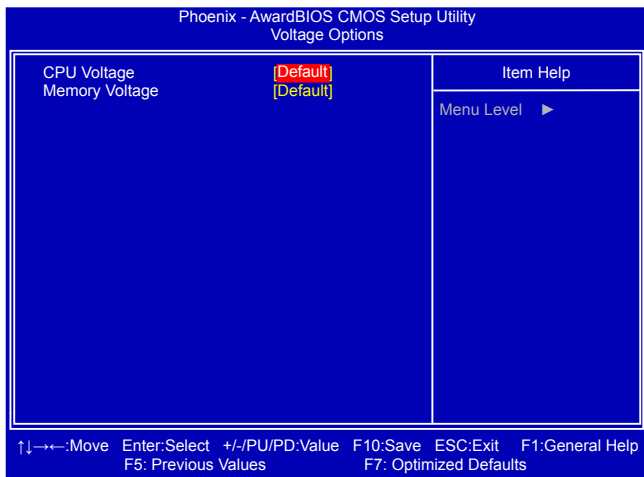
► CPU Spread Spectrum

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.

► CPU Multiplier Adjust

This option is used to adjust CPU multiplier. Multiply CPU clock with this ratio, you can get the CPU speed. Increase this ratio may overclock your CPU. This option will be displayed only if your CPU support this feature.

Voltage Options



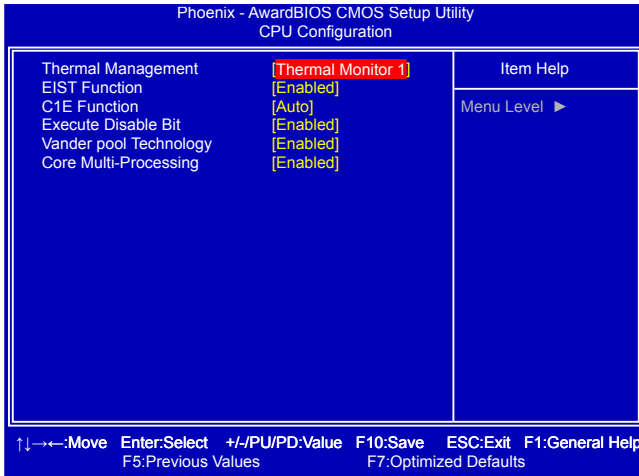
► CPU Voltage

This option is used to change the CPU voltage.

► Memory Voltage

This option is used to change the memory voltage.

CPU Configuration



► Thermal Management

Thermal Monitor 1 (TM1) is implemented in Pentium 4, Xeon and Pentium M processors. It is a CPU clock modulation mechanism which prevents CPU overheating in emergency cases by reducing duty cycle of the processor for up to 46%. The task of this mechanism is to maintain the CPU temperature at maximum safe level by decreasing its performance, or, in terms, by reducing CPU Load.

Thermal Monitor 2 (TM2) is an advanced mechanism of CPU overheating protection. A considerable difference is that TM2 can control the frequency and CPU voltage, while TM1 only modulates CPU clock. Due to reduced voltage, TM2 allows to retain better processor performance in case of overheating at the same reduction of power consumption level.

TM2 is recommended for 2.8 GHz processors and higher (166 MHz bus) and 3.6 GHz and higher (200 MHz bus), while TM1 is recommended for junior models.

This item will be displayed only when the CPU support this feature.

► EIST Function

This item is used to enable/disable the EIST (Processor Power Management, PPM) feature.



Enhanced Intel SpeedStep® technology (EIST) allows the system to dynamically adjust processor voltage and core frequency, which can result in decreased average power consumption and decreased average heat production. There are some system requirements must be met, including CPU, chipset, motherboard, BIOS and operation system. Please refer to Intel website for more information.

► C1E Function

C1E represents Enhanced HALT State. It is a feature which Intel 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.

► **Execute Disable Bit**

This item is used to enable/disable the Execute Disable Bit feature.

Intel's Execute Disable Bit functionality can help prevent certain classes of malicious buffer overflow attacks when combined with a supporting operating system.

Execute Disable Bit allows the processor to classify areas in memory by where application code can execute and where it cannot. When a malicious worm attempts to insert code in the buffer, the processor disables code execution, preventing damage and worm propagation.

Replacing older computers with Execute Disable Bit-enabled systems can halt worm attacks, reducing the need for virus-related repairs. By combining Execute Disable Bit with anti-virus, firewall, spyware removal, e-mail filtering software, and other network security measures, IT managers can free IT resources for other initiatives.

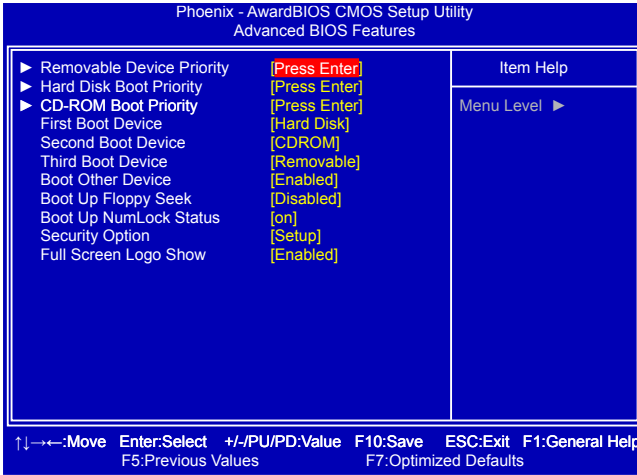
► **Vander pool Technology**

Vanderpool (i.e. Intel® **Virtualization Technology**) allows a platform to run multiple operating systems and applications in independent partitions or “containers”. One physical compute system can function as multiple “virtual” systems. Vanderpool Technology can help improve future virtualization solutions. This item will be displayed only when the CPU support this feature and the setting is used to enable/disable it.

► **Core Multi-Processing or Hyper-Threading Technology**

It will be displayed single one at one time. It is used to enable or disable the feature and will be displayed only if your CPU is supporting this feature.

Advanced BIOS Features



▶ 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 be checking 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.

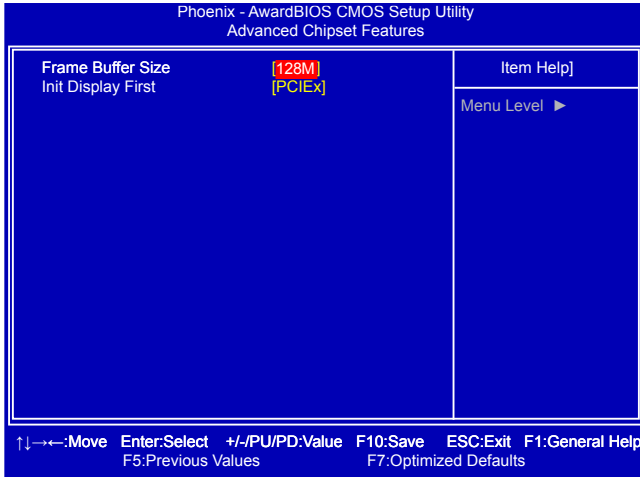
▶ Security Option

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



► Frame Buffer Size

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

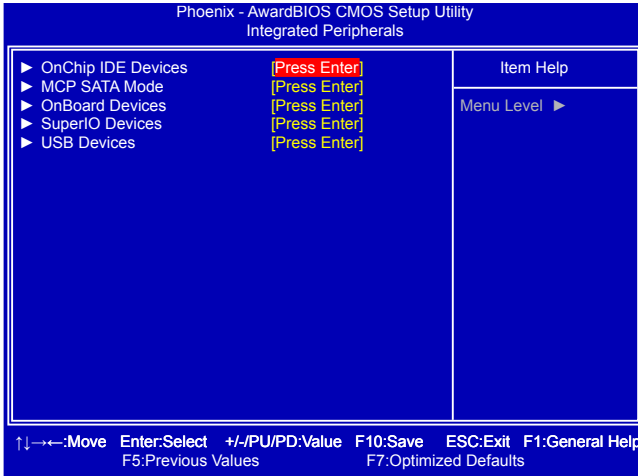
This is a memory allocation method addition to the Unified Memory Architecture (UMA) concept, wherein a static amount of page-locked graphics memory is allocated during driver initialization. This fixed amount of memory will provide the user with a guaranteed graphics memory at all times, and will no longer be available to the OS.

► 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.

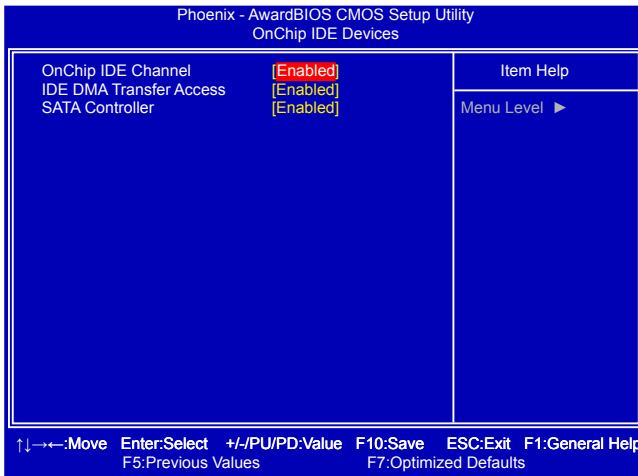
Integrated Peripherals



► OnChip IDE Devices / MCP SATA Mode / OnBoard Devices / SuperIO Devices / USB Devices

Press <Enter> to go to relative submenu.

OnChip IDE Devices



► OnChip IDE Channel

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

► IDE DMA Transfer Access

[Disabled] : to disable DMA transfers for all IDE drives. They will revert to PIO mode transfers.

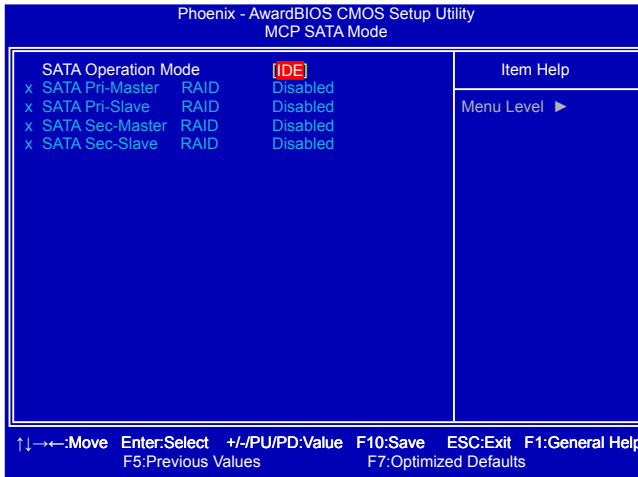
[Enabled] : to enable DMA transfers for all IDE drives. The proper DMA mode will be detected at boot-up. If the drive does not support DMA transfers, then it will use PIO mode instead.

Recommend leaving this BIOS feature at the default [Enabled] setting.

► SATA Controller

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

MCP SATA Mode



► 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.



With your motherboard and SATA hard disk both supporting AHCI, you had better set this BIOS setting to AHCI, then install your Operating System (such as Windows XP). Later, if you ever change this BIOS setting to IDE, OS still can run. But if you at the first time set this setting to IDE, then install the Operating System. Later, if you change this BIOS setting to AHCI, this operating system can not run.

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



The Installation procedures for AHCI and RAID drivers are the same, they are :

- Creating a bootable drive (or RAID array).
- Creating a non-bootable drive (or RAID array).

In Chapter 5, only RAID is introduced. AHCI installation is almost the same, the only difference is BIOS SATA Operation Mode is set to [AHCI] instead of [RAID].

► SATA Pri-Master RAID / SATA Pri-Slave RAID / SATA Sec-Master RAID / SATA Sec-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 :

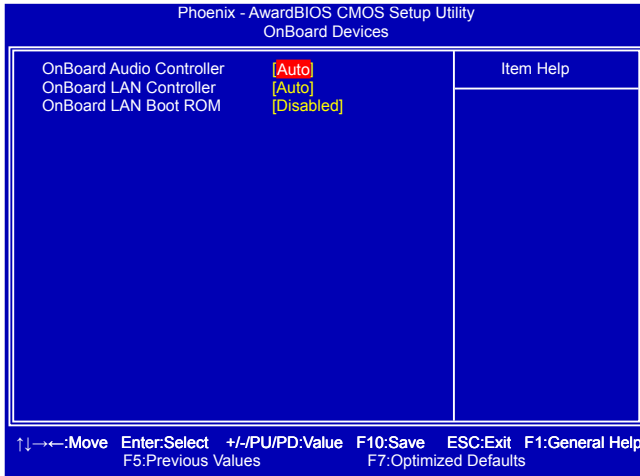
SATA Pri-Master RAID is the SATA port 1 of the motherboard.

SATA Pri-Slave RAID is the SATA port 2.

SATA Sec-Master RAID is the SATA port 3.

SATA Sec-Slave RAID is the SATA port 4.

OnBoard Devices



► OnBoard Audio Controller

This item is used to select the operation of your audio controller. You can select [Auto] for high definition audio. Select [Disabled] will turn off audio function.

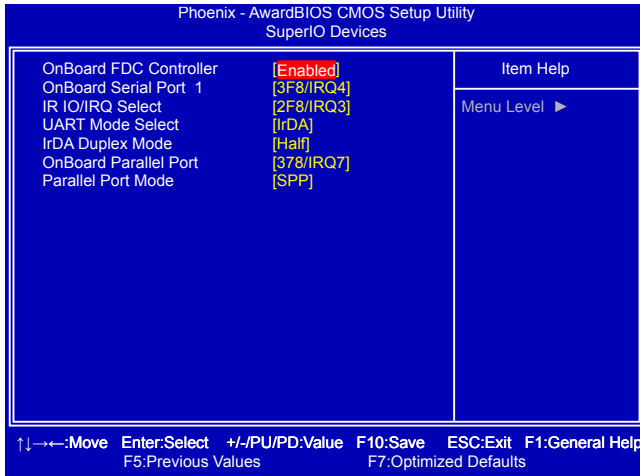
► OnBoard LAN Controller

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

► OnBoard 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.

► IR IO/IRQ Select

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

► UART Mode Select

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

► IrDA Duplex Mode

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

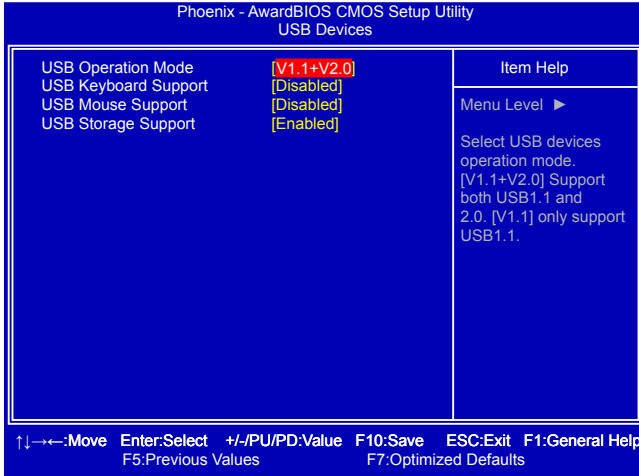
► OnBoard Parallel Port

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

► Parallel Port Mode

This item is used to select the operation modes for the onboard parallel (or Printer) port. They are [SPP] (default), [EPP], [ECP] and [ECP+EPP].

USB Devices



► USB Operation Mode

This item is used to set the USB operation mode. If you select the [V1.1+V2.0], then the USB operation mode is determined by the USB device; select [V1.1], the USB device operates on full/low speed. Select [Disabled], no function at all.

► USB Keyboard Support

This item is used to enable the support for USB keyboard in DOS mode. Even if this option is disabled, the USB keyboard is still working under BIOS or Windows environments.

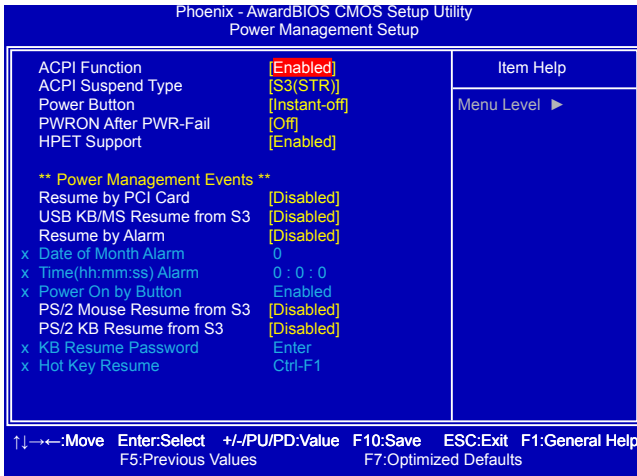
► USB Mouse Support

This item is used to enable the support for USB mouse in DOS mode. Even if this option is disabled, the USB mouse is still working under BIOS or Windows environments.

► 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).

Power Management Setup



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.

► **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 Card**

This item is used to set the system to be waken up by PCI card.

► **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 Mouse Resume from S3**

When enabled, it allows you to use the PS/2 mouse to wake up the system from S3 mode. This feature requires an ATX power supply.

► **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].

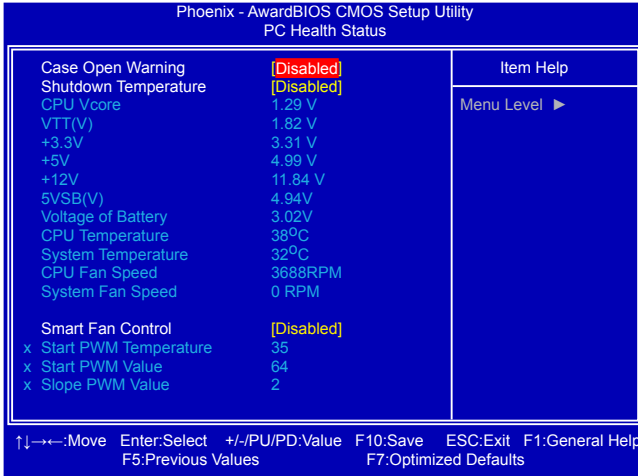
► **KB Resume Password**

When "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**

When "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



► Case Open Warning

This item is used to enable 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/VTT(V)/+ 3.3V/+5V/+12V/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 Speed

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

► Smart Fan Control

This option is used to enable or disable 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.

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 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.

Load Optimized Defaults (Y/N)? N

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 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.

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

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 LOGO
- FOX DMI

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

Utility CD content

This motherboard comes with one Utility CD. You can simply put it into your CD/DVD-ROM drive, and the main menu will be displayed on your PC screen to guide you how to install.

1. Install Driver

Use these options to install all the drivers for your system. You should install the drivers in order, and you need to restart your computer after all the drivers have been installed.

- A. NVIDIA MCP73 Chipset Driver
- B. Realtek HDA Audio Driver
- C. Realtek LAN Driver

2. Software Utilities

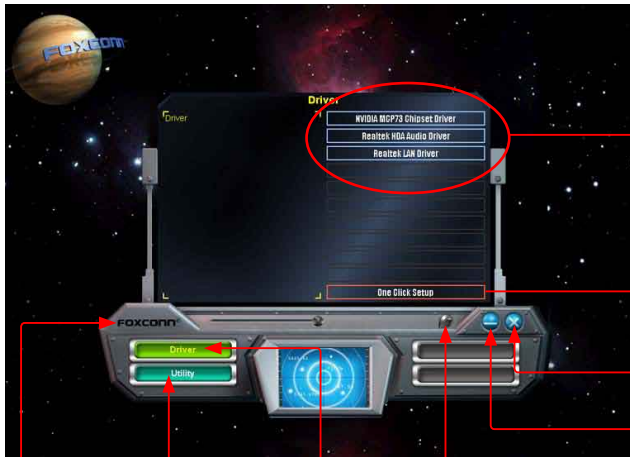
Use these options to install additional software programs. FOX ONE is a very powerful user interface program which allows you to change your system setting without going to BIOS. Some auto features help user to improve (or overclock) your system without being a computer literate.

- A. FOX ONE
- B. FOX LiveUpdate
- C. FOX LOGO
- D. FOX DMI
- E. Microsoft DirectX 9.0
- F. Adobe Acrobat Reader
- G. Norton Internet Security
- H. Create RAID Driver Floppy

Install driver and utility

1. Install Driver

You must click "NVIDIA MCP73 Chipset Driver" to install it first. After that, you can click "One Click Setup" to install all the other drivers left, or you can click on each individual driver to install it manually.



Manual Installation Step by Step

Automatic Installation by One Click.

Exit the program

Drop to System Tray

Click to visit Foxconn's website

Select to Install Utilities

Select to Install Drivers

Browse CD

2. Install Utility

You can select the specific utility to install.



FOX ONE

FOX ONE is a powerful utility for easily modifying system settings. It also allows users to monitor various temperature values, voltage values, frequencies and fan speeds at any time.

With FOX ONE, you can :

- Modify system performance settings, such as the CPU and memory bus speeds, CPU voltages, fan speeds, and other system performance options.
- Monitor hardware temperatures, voltages, frequencies and fan speeds.



Depending on hardware support, voltage monitoring and Fox Intelligent Stepping features are optional and only supported in some models. If the option is selectable, it also means the feature is supported.

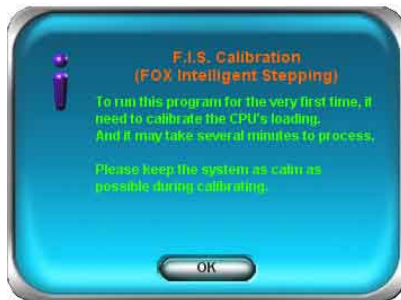
- Voltage Monitoring is supported only in FOX ONE Premium & Deluxe products.
- Fox Intelligent Stepping is supported only in FOX ONE Deluxe products.

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)

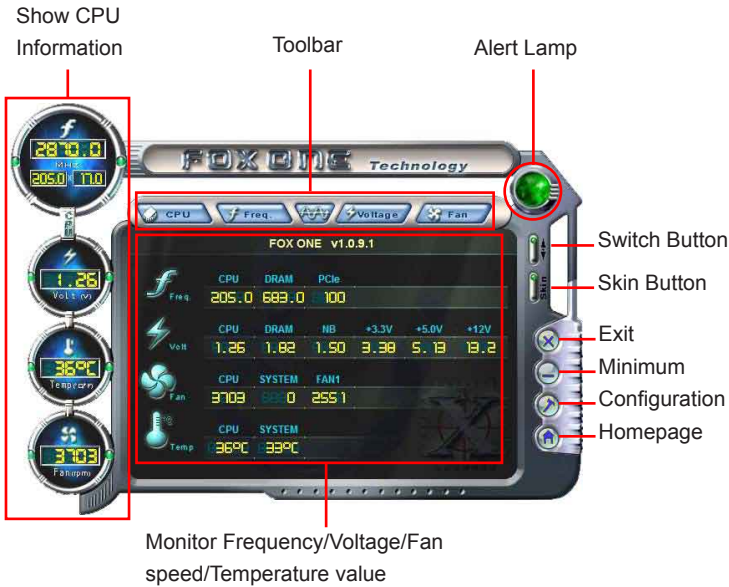
Using FOX ONE :

The very first time you run FOX ONE, F.I.S. Calibration function (FOX Intelligent Stepping) will require you to calibrate the CPU's loading. Click "OK" to proceed and start the Utility. F.I.S. is a feature of FOX ONE, which can automatically adjust your CPU clock based on your current system loading.



Before you running the FOX ONE program, the system parameters (such as CPU clock, voltage...etc.) are controlled by BIOS settings. After you run FOX ONE, it will take over, and the controlling right will be transferred to FOX ONE. Later, if you exit FOX ONE, then BIOS control will be back again.

1. Main Page



Toolbar

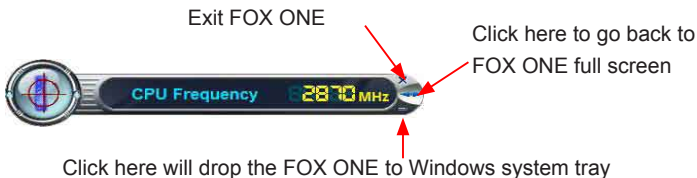
Use the toolbar to navigate to other pages.

Alert Lamp

When the system is in healthy state, the color of alert lamp is green. When the system is in abnormal state, the alert lamp color is red.

Switch Button

Click this button, it will simplify the whole FOX ONE control panel to a smaller information bar (i.e. Simple Mode) as depicted below, you can drag this bar to any place on your screen to help you monitoring system status.



Skin Button

There are more choices of FOX ONE screen panels. Click this button, you can select your favorite skin (FOX ONE Panel).



Click the new skin picture to select the new skin

Apply the changes Cancel the changes

Exit

Click this button to exit the program.

Minimum

Click this button to drop the FOX ONE to Windows system tray located at the lower right corner of your screen.



Homepage

Click this button to visit Foxconn motherboard website :
<http://www.foxconnchannel.com>

Configuration

This menu allows you to configure :

1). Monitor interval (ms) :

This is to define the interval of different messages of system settings which are to be displayed on Simple Mode screen. Minimum value is 1 second.



2). Simple Mode :

To select which message of system settings are to be displayed in the Simple Mode. Messages such as CPU frequency, voltage...etc., they can be displayed one by one in Simple Mode.



3). F.I.S. Calibration (FOX Intelligent Stepping, Optional)

This function will re-calibrate the CPU's loading, and it may take several minutes to proceed. The FOX ONE calibration process will apply different loadings to your CPU, record PWM IC voltage together with the CPU clock running at these loadings, so it can define and estimate within a particular range of system loading, what the CPU clock should be.

Step 1 : Click Calibration icon, a message pops out to ask for continue. Select Yes.



Step 2 : After data is collected, it will ask you to restart your computer now.



Later on, when the FOX ONE program is activated, and F.I.S. feature (in CPU Page) is also enabled, FOX ONE will automatically adjust your CPU clock according to your system loadings. (Loadings are like Power Gaming, Data Mining...etc.)

2. CPU Page - CPU Control

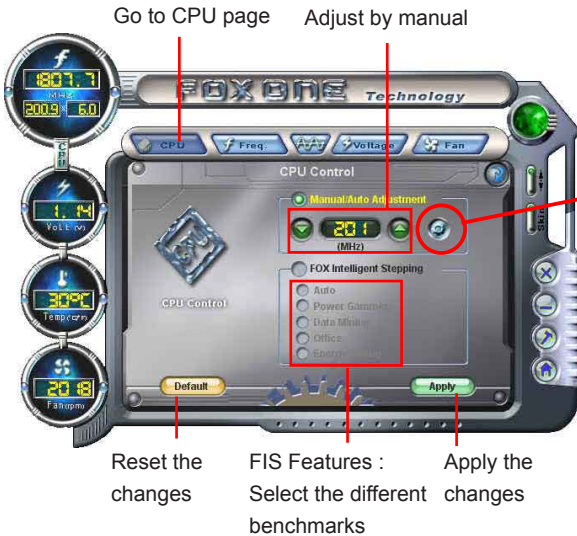
This page lets you select (or overclock) CPU clock to meet the current performance level of the system. The fastest and suitable CPU clock running for current system can be calculated by FOX ONE automatically or manually input by yourselves.

Manual :

You can press the up/down button to adjust your CPU clock.

Auto :

Click this button to let FOX ONE check the highest CPU clock you can use. System will raise the CPU clock step by step until it hangs, you can then push the RESET button on your PC panel to restart the system. When system restarts, run FOX ONE again, it will display a recommended highest CPU clock for you, click <Yes> to apply it.





You can see the system is raising CPU clock until the system hangs. Push RESET button on the front panel of your system to restart the computer.



Run FOX ONE program again, it will inform you the previous test found that 255MHz is the recommended CPU clock for your system. Click Yes to apply it to your system.



Now, your system is running at a CPU clock of 255MHz.

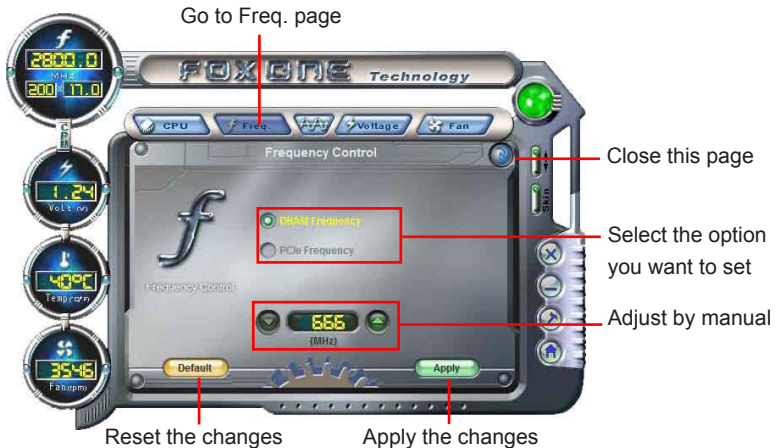
FOX Intelligent Stepping (F.I.S., Optional)

Select FOX Intelligent Stepping will allow your system to automatically adjust your CPU clock rate based on different system loadings. For example, if you select Power Gaming, CPU clock will be driven to run at its maximum speed. While in Energy Saving, CPU will lower down its speed to a minimum. The four benchmarks - Power Gaming, Data Mining, Office and Energy Saving, the references of their system loading were calculated and defined in the FIS Calibration option of Configuration menu. Select Auto, CPU will automatically adjust its clock according to current system loading.



3. Frequency Page - Frequency Control

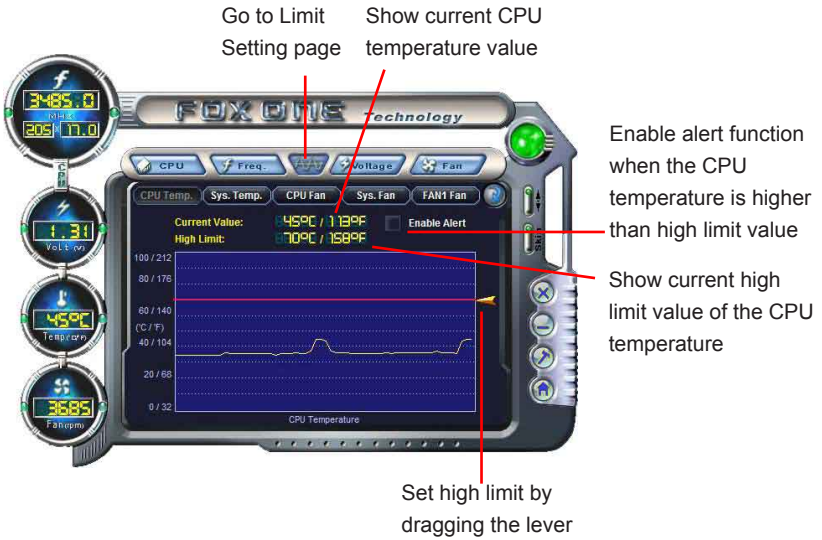
This page lets you set memory and PCI Express frequencies by manual.



4. Limit Setting

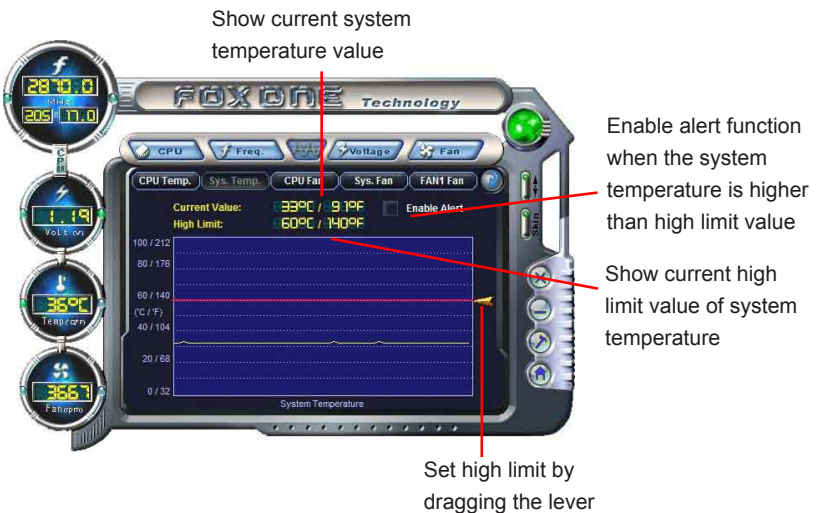
4.1 Limit Setting - CPU Temperature

This page lets you to set CPU high limit temperature and enable the alert function.



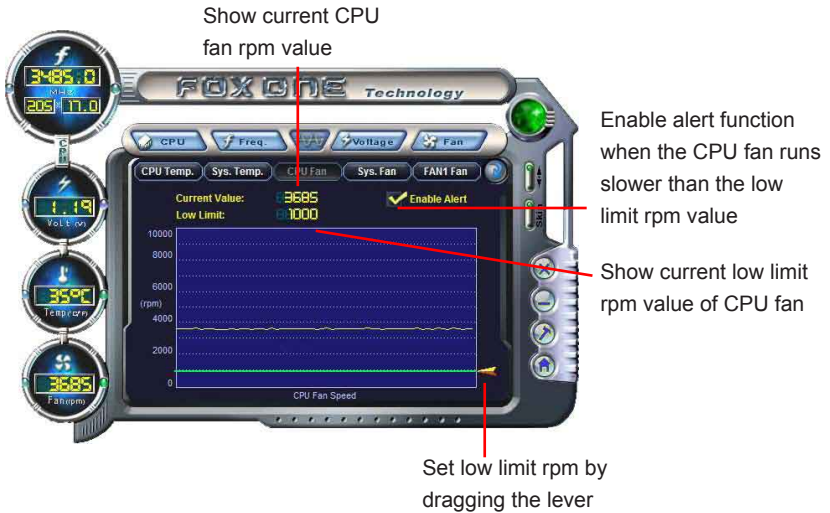
4.2 Limit Setting - System Temperature

This page lets you to set system high limit temperature and enable the alert function.



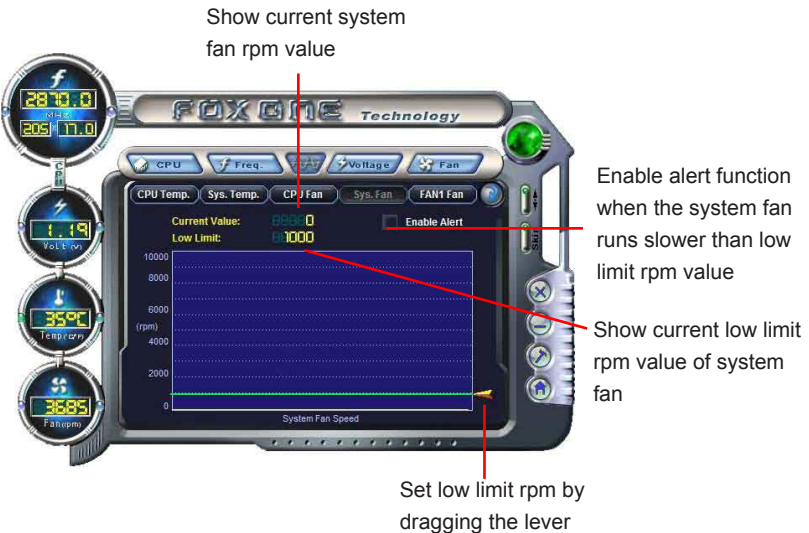
4.3 Limit Setting - CPU Fan

This page lets you to set CPU fan low limit rpm and enable the alert function.



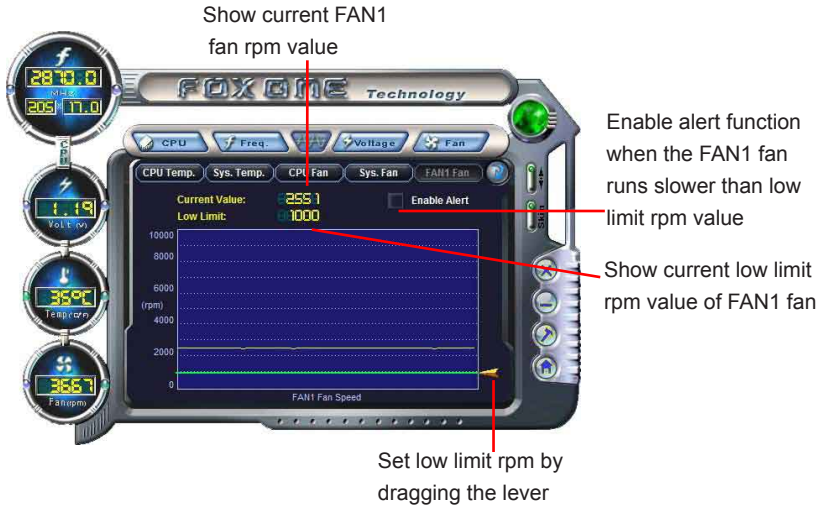
4.4 Limit Setting - System Fan

This page lets you to set system fan low limit rpm and enable the alert function.



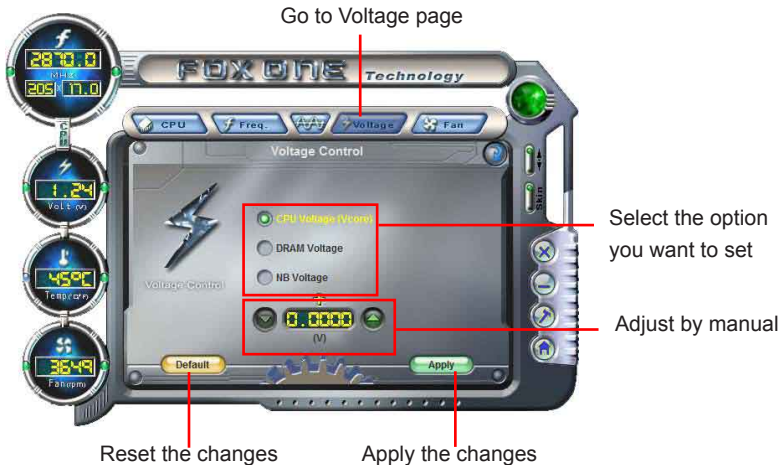
4.5 Limit Setting - FAN1 Fan

This page lets you to set FAN1 fan low limit rpm and enable the alert function.



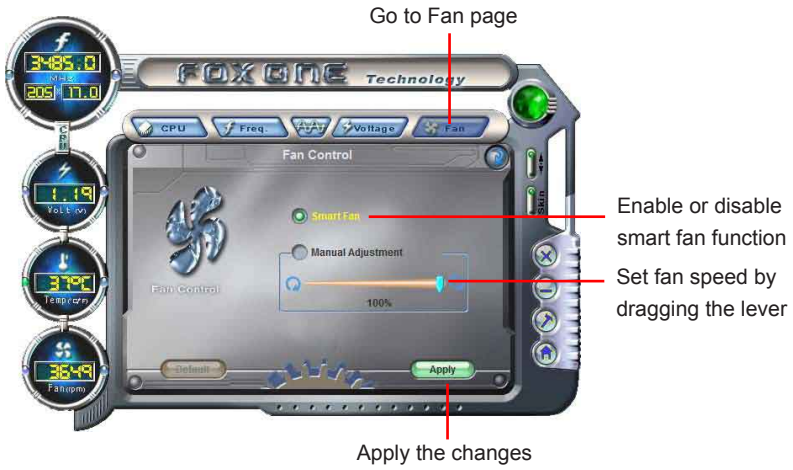
5. Voltage Page - Voltage Control (Optional)

This page lets you set CPU voltage, memory voltage and North Bridge voltage manually. CPU voltage can be stepped up/down by a unit of 12.5mV, while memory is 0.05V/step, and North Bridge is 0.04V/step.



6. Fan Page - Fan Control

This page lets you enable Smart Fan function or set the fan speed by manual. When Smart Fan is selected, you must use a 4-pin CPU cooler in your system.



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 :

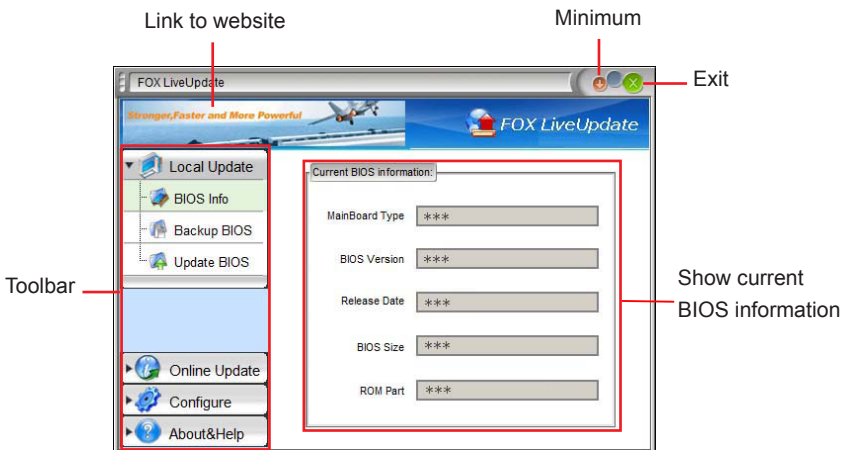
- Windows 2000
- Windows XP (32-bit and 64-bit)
- Windows 2003 (32-bit and 64-bit)
- Windows Vista (32-bit and 64-bit)

Using FOX LiveUpdate :

1. Local Update

1-1 Local Update - BIOS Information

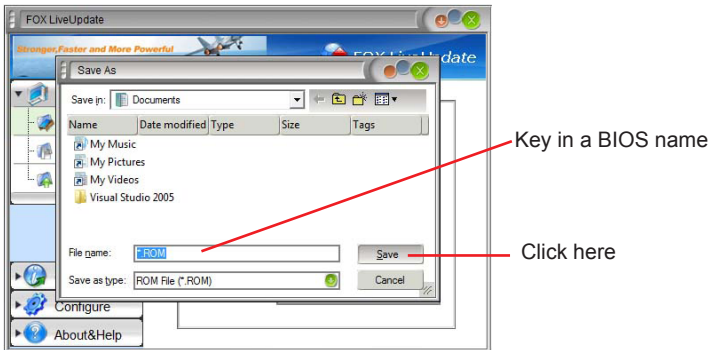
This page lets you know your system BIOS information.



*** : please refer to the physical motherboard for detail.

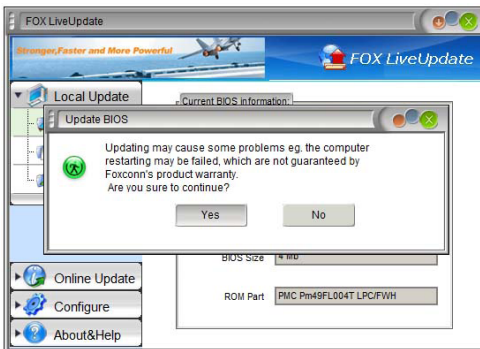
1-2 Local Update - Backup

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.



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.

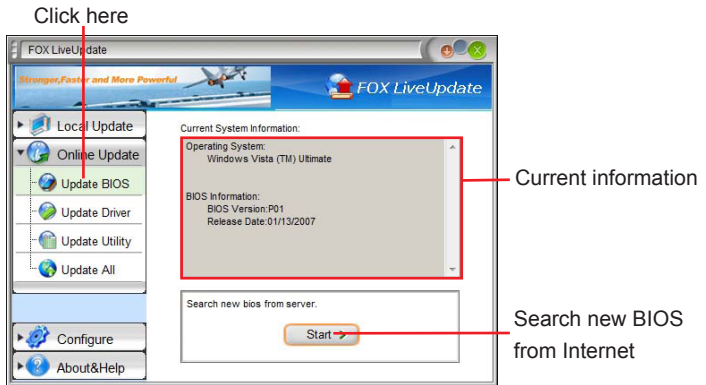


FOX LiveUpdate can automatically backup old BIOS before update. This feature can be enabled in the "Configure-System" setup. Please refer to "Configure-System" section for more detail. The default backup directory is C:\LiveUpdate_Temp, but the backup file name will be automatically generated. It is 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.

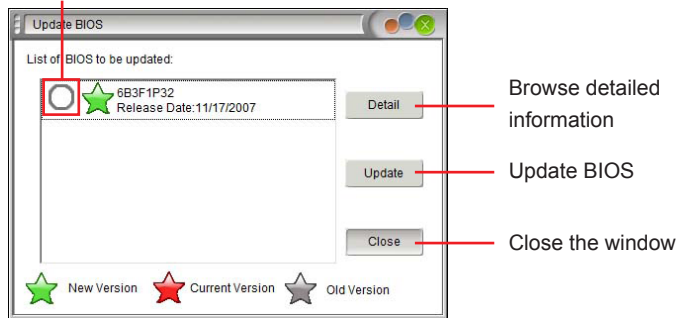
2. Online Update

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.

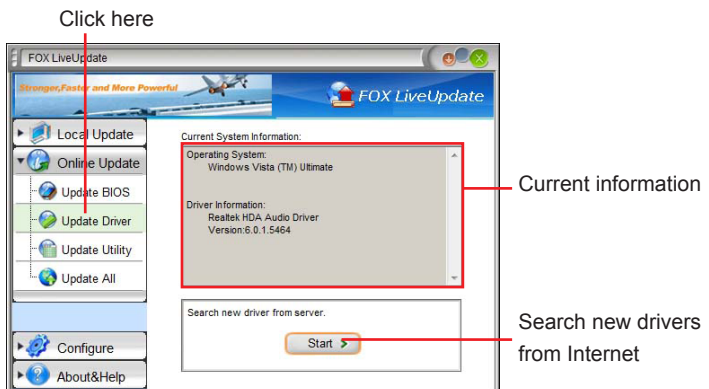


Select BIOS to update

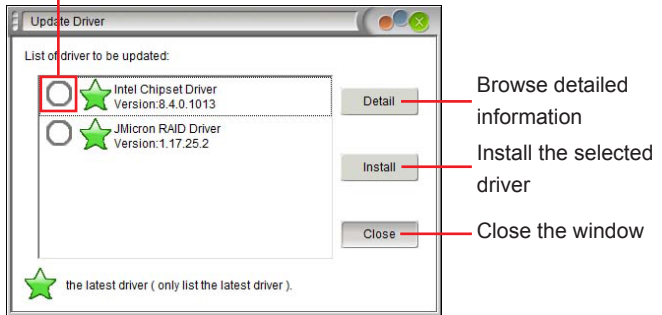


2-2 Online Update - Update Driver

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.



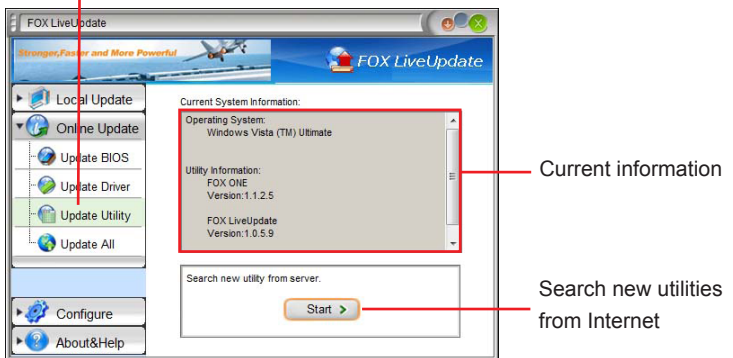
Select the driver to update



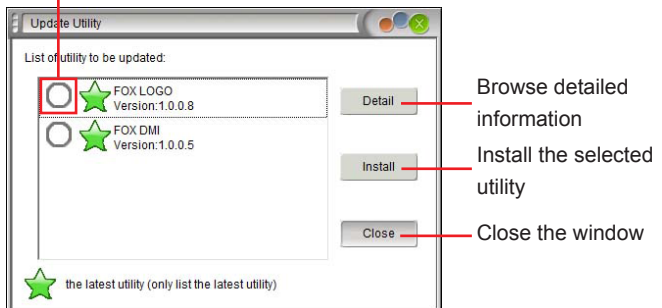
2-3 Online Update - Update Utility

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

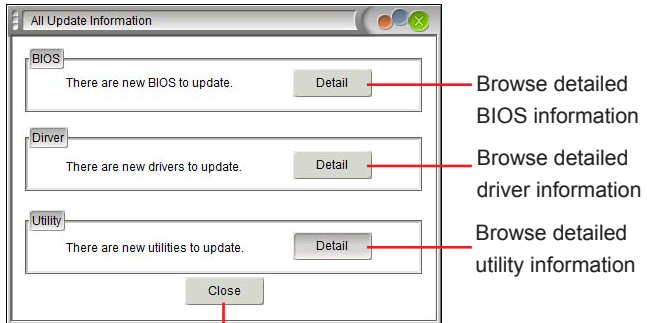
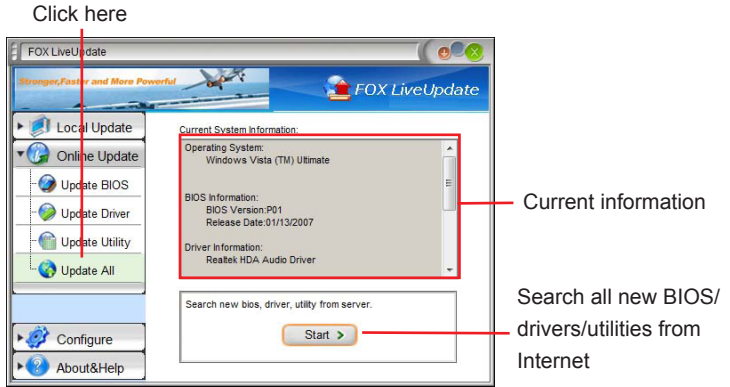


Select the utility to update



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.

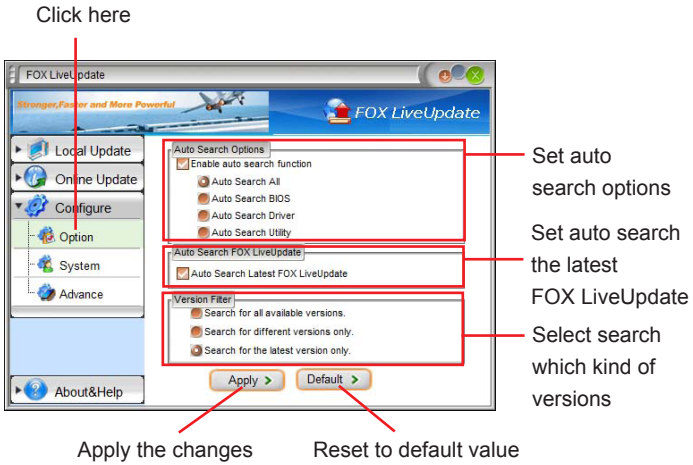


Close the window

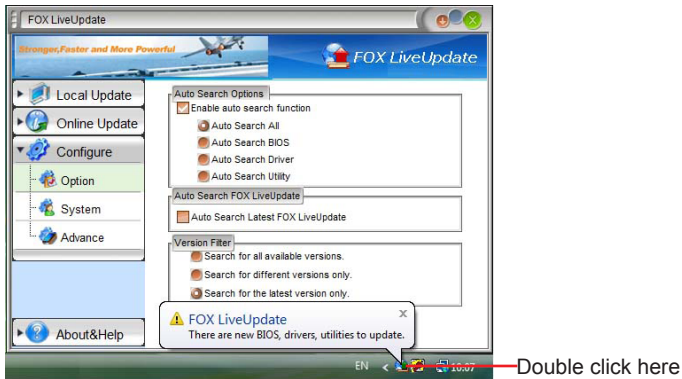
3. Configure

3-1 Configure - option

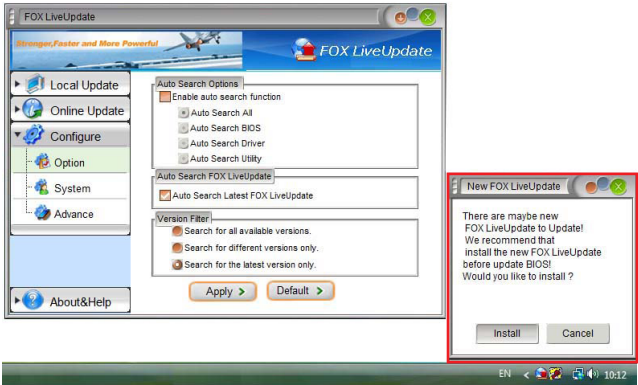
This page lets you set auto search options. After you enable the auto search function, FOX LiveUpdate will start its searching from Internet and if any qualified item found, it will pop out a message on the task bar to inform you to do the next step.



Double click on the icon as show below, you can see the detailed information.



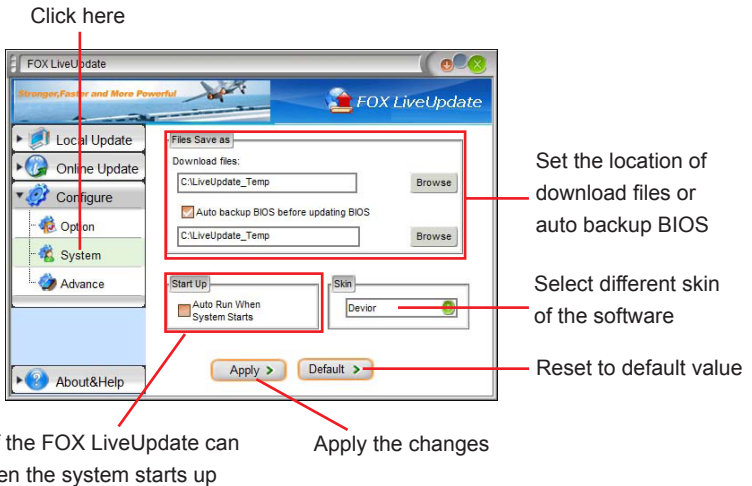
When you enable "Auto Search FOX LiveUpdate", if your FOX LiveUpdate version is older, it will auto search from internet and prompt you to install the new version.



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.

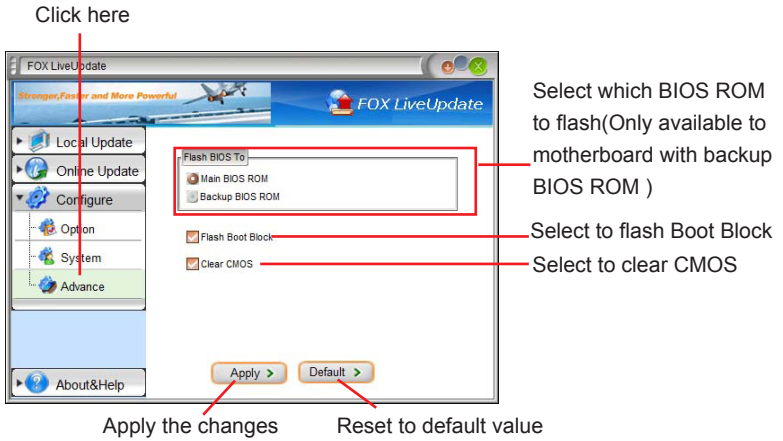


Determine if the FOX LiveUpdate can auto run when the system starts up

Apply the changes

3-3 Configure - Advance

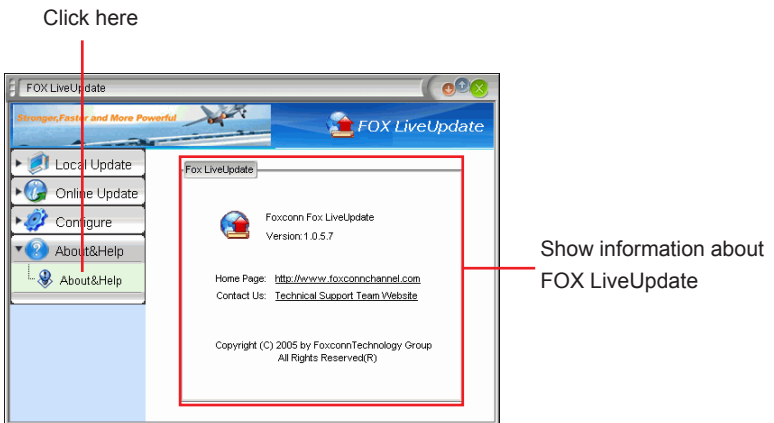
This page lets you select to flash BIOS / Boot Block and clear CMOS. If you choose Flash Boot Block, it means BIOS is not protective, and you must make sure the flash process is continuous and without any interruption.



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

4. About & Help

This page shows some information about FOX LiveUpdate.



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



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.

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 :

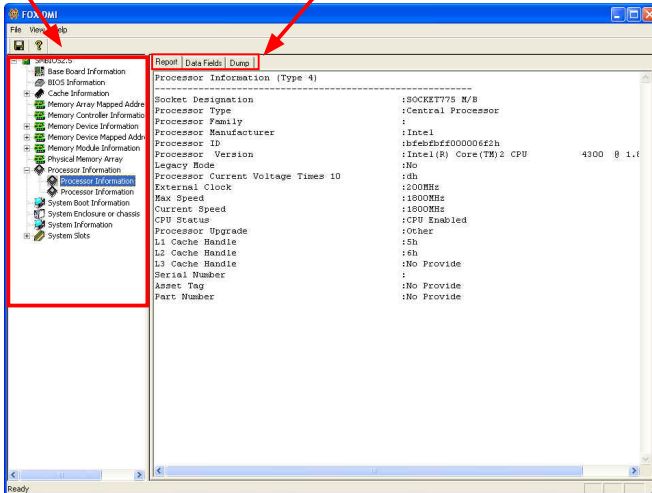
- Windows 2000
- Windows XP (32-bit and 64-bit)
- Windows 2003 (32-bit and 64-bit)
- Windows Vista (32-bit and 64-bit)

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





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 a 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 a 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 CD-ROM drive.
3. Several SATA hard disks.
4. A RAID driver diskette. (Could be bundled in motherboard package.)
5. A motherboard driver CD. (To create RAID driver diskette if it is not bundled.)
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 CD-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).

5 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 :

SATA port 1 - WDC WD1200JD-98HBBO, 111.79GB

SATA port 2 - Hitachi HDT725025VLA, 232.88GB

SATA port 3 - HDS728080PLA380, 76.69GB

SATA port 4 - ST3320620AS, 298.09GB



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.

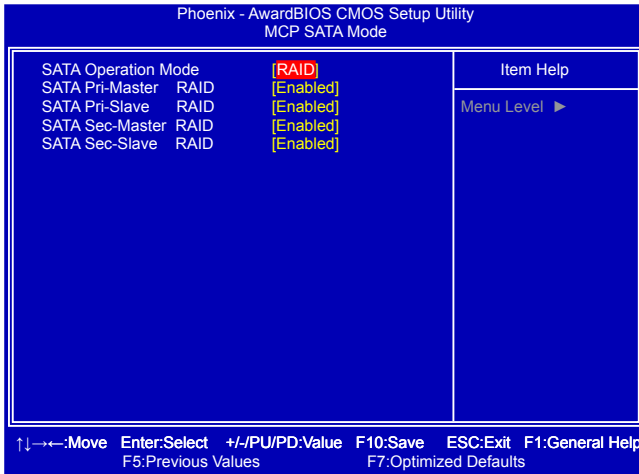
The relationships between RAID settings and SATA ports on the motherboard are :

SATA Pri-Master RAID is the SATA port 1 of the motherboard.

SATA Pri-Slave RAID is the SATA port 2.

SATA Sec-Master RAID is the SATA port 3.

SATA Sec-Slave RAID is the SATA port 4.



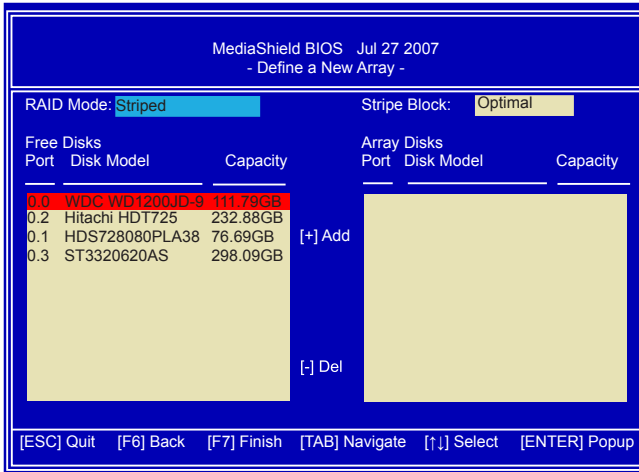
In section 5-3 later, you will know the relationships between port numbers in the MediaShield BIOS and SATA ports on the motherboard. We put their descriptions here for better arrangement. They are :

Port 0.0 is the SATA port 1 of the motherboard.

Port 0.2 is the SATA port 2.

Port 0.1 is the SATA port 3.

Port 0.3 is the SATA port 4.



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.



- Before installing the SATA hard disks, make sure to turn off the computer and unplug the power cord from the power outlet to prevent damage to the hardware.
- Depending on how many SATA ports are built on your motherboard. If your system is accompanied with a SATA DVD drive, then you may not select Striped Mirror (RAID0+1) function if only four SATA ports are provided.

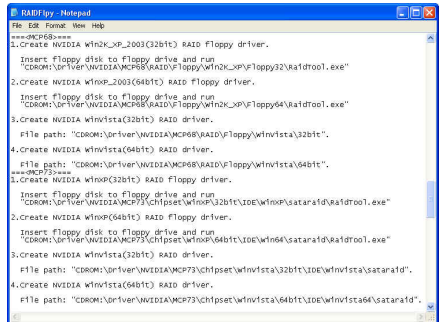
5-1 Create a RAID Driver Diskette

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

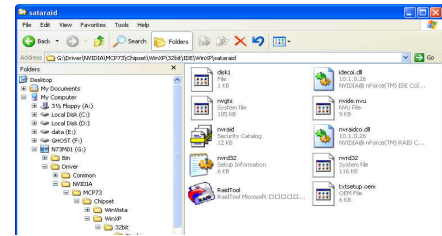
1. Find a PC, put a diskette into its floppy drive A:, this diskette will be formatted later. Put the driver CD into CD-ROM drive, when the screen appears, click on "Utility" icon, then click on **"Create RAID Driver Floppy"** icon.



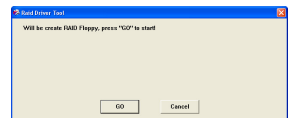
2. A message pops out telling you where to find the routine in driver CD to create the driver diskette.



3. Depending on which platform your XP system is, normally, it is a 32-bit system. Use Windows explorer, and go to **CD:\Driver\NVIDIA\MCP73\Chipset\WinXP\32bit\IDE\WinXP\sataraid**, click on **RaidTool** icon to start the creation.



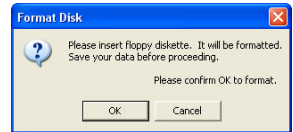
4. Click "GO" to start.



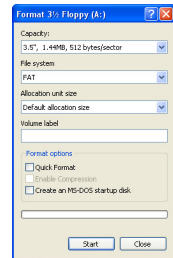
5. Select the desired destination FDD drive. It can be the default drive A: or any USB FDD. Click "OK" to continue.



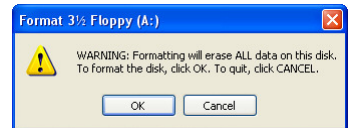
6. Insert a diskette, click "OK" to continue.



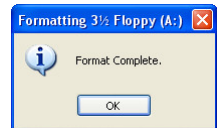
7. You can input a volume label for this diskette, click on "Start" to format.



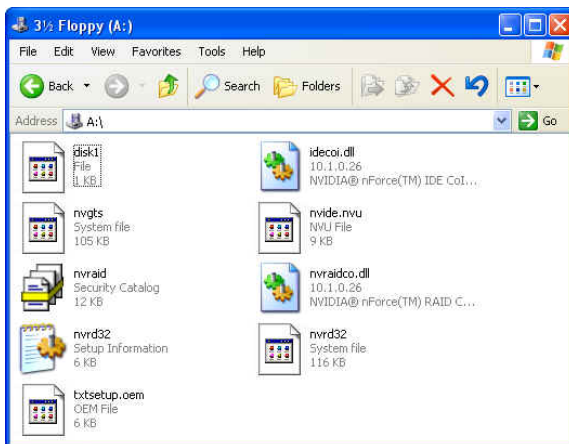
8. Click on "OK" to go through this warning message.



9. Format finished. Click "OK" to continue copying of RAID driver into this diskette.

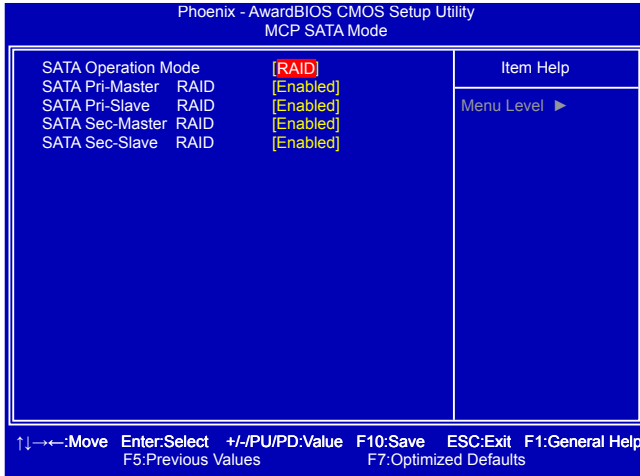


10. Check if the diskette contains the driver files.



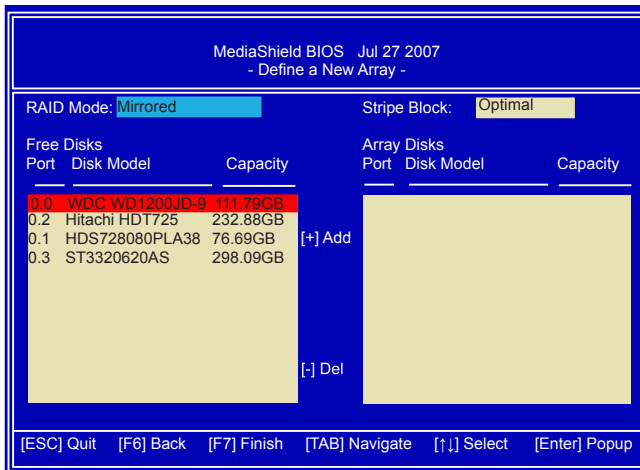
5-2 RAID Enable in BIOS

1. Enter the BIOS setup by pressing 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.



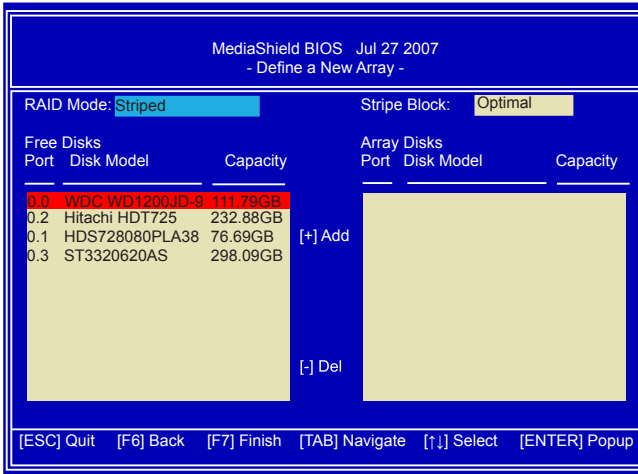
5-3 Select a RAID Array for Use

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.



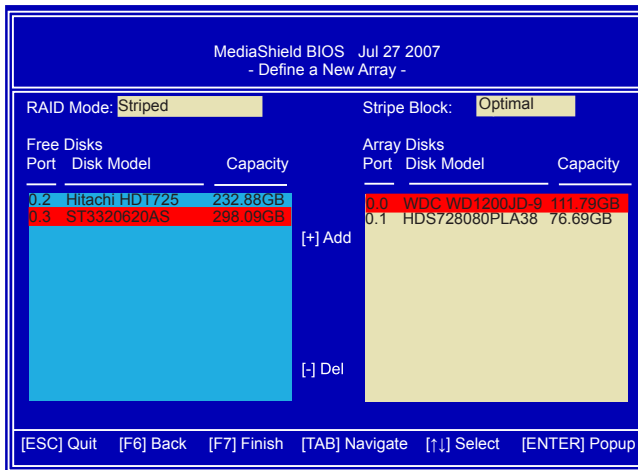
Create RAID 0 (Striped)

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

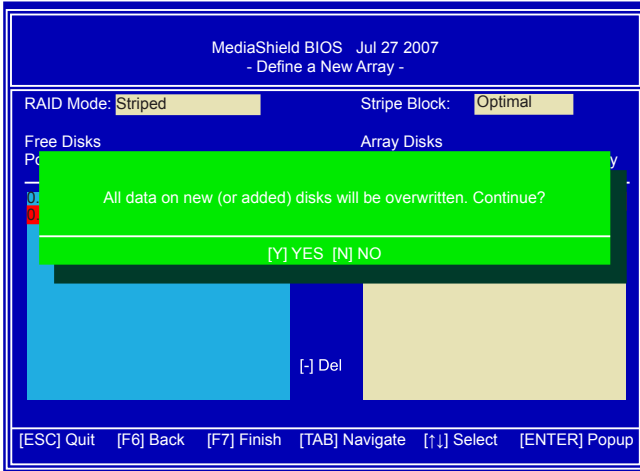


2. Select two hard disks to build our RAID0 system.

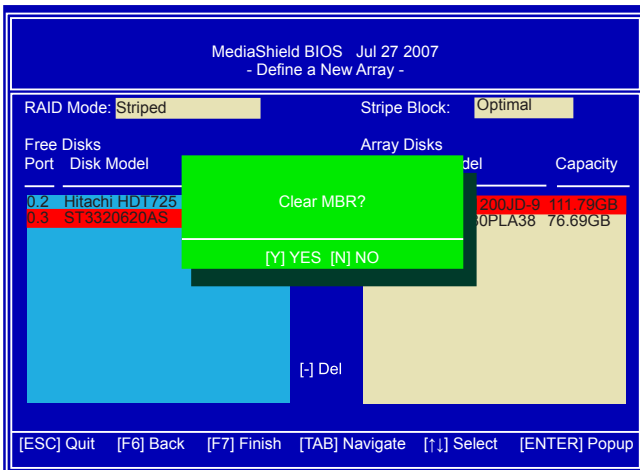
3. Press [TAB] to navigate to left drive panel, then use [→] and [↓] keys to add the hard disks to the right drive panel.



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.



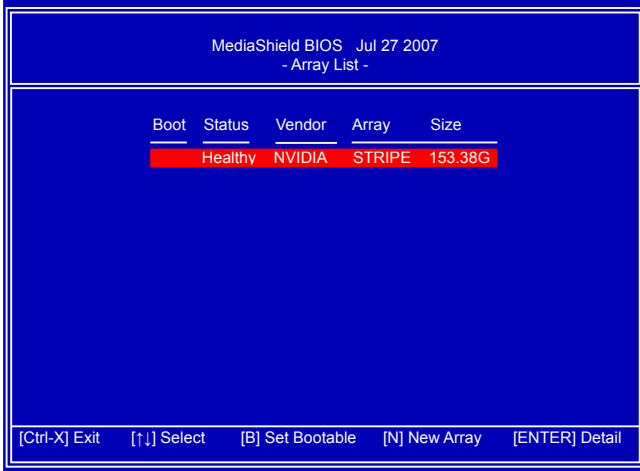
5. Press [Y] to continue, and press [Y] again to select "Clear MBR".



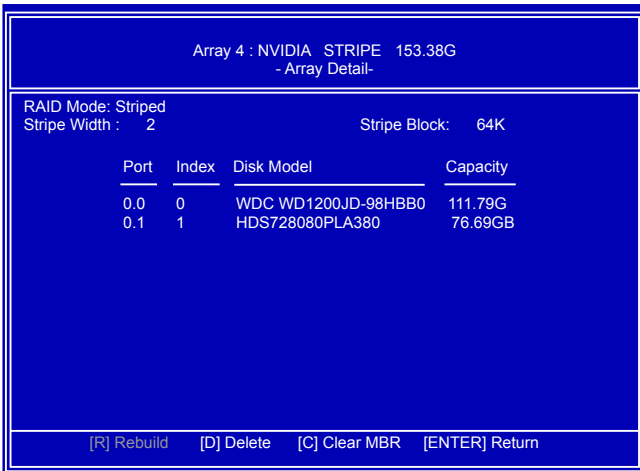
6. The screen displays a STRIPE array of 153.38GB, which is twice the size of the smallest hard disk. That is, $2 \times 76.69\text{GB} = 153.38\text{GB}$.

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.

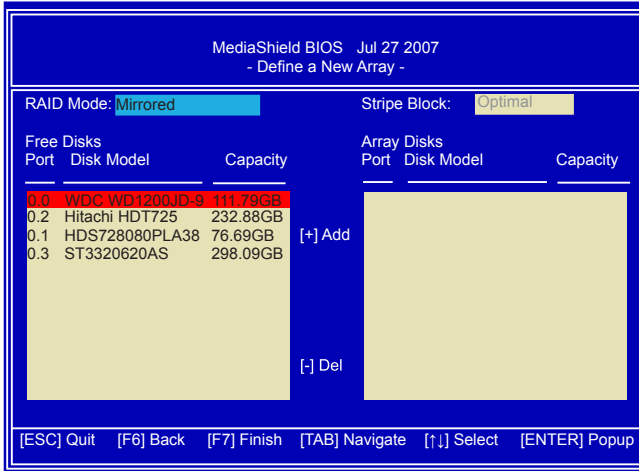


7. In above screen, you also can press <Enter> to know the detailed drive information of this RAID system. Press [D] here allow you to delete previous settings, and go back to the first time when MediaShield was started.

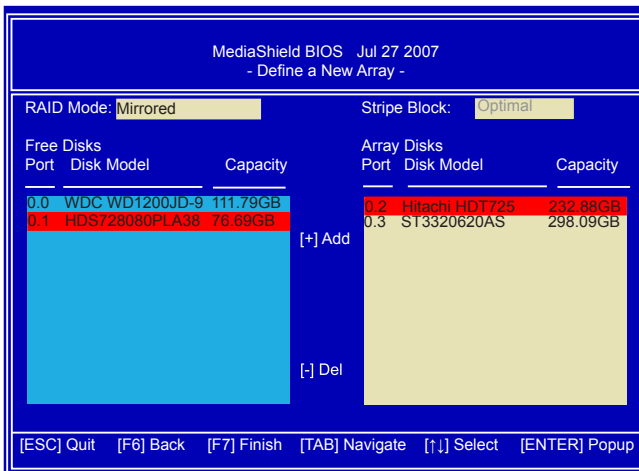


Create RAID 1 (Mirrored)

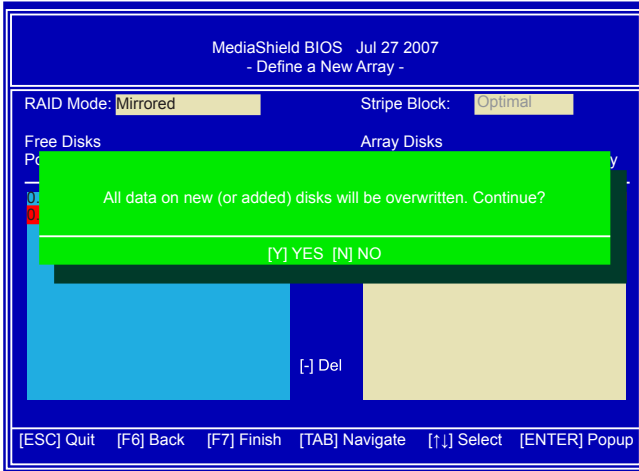
1. Select **"Mirrored"** from the RAID Mode.



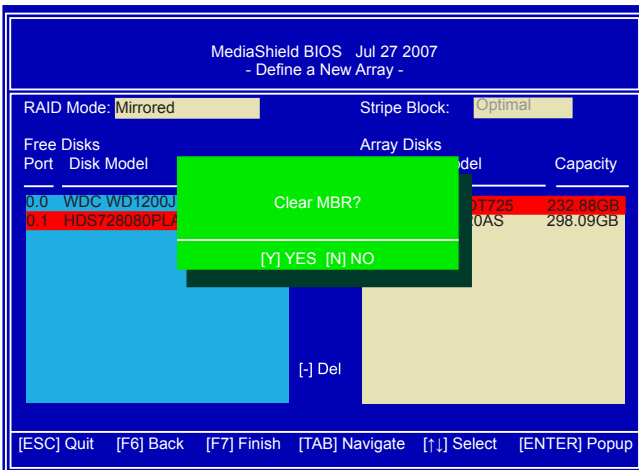
2. Select two hard disks to build our RAID1 system.
3. Press [TAB] to navigate to left drive panel, then use [→] and [↓] keys to add the hard disks to the right drive panel.



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



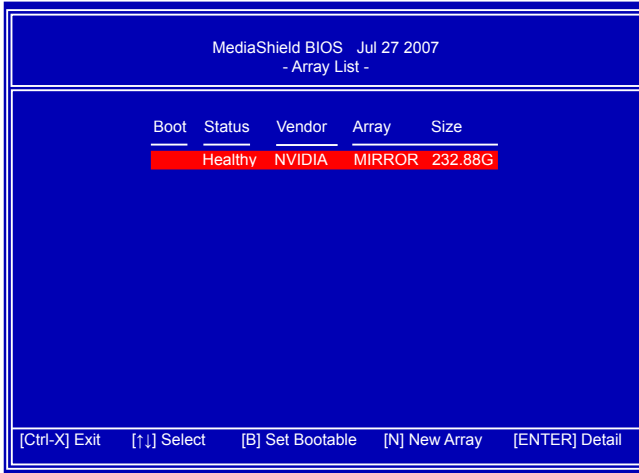
5. Press [Y] to continue, and press [Y] again to select "Clear MBR".



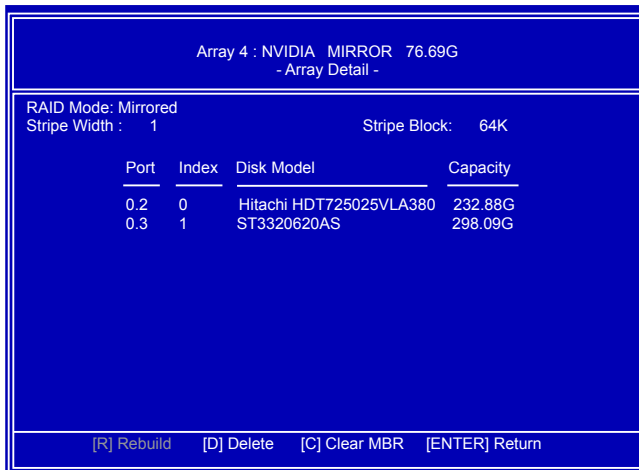
6. The screen displays a MIRRORRED array of 232.88GB, which is the size of the smallest hard disk. That is, 232.88GB.

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.

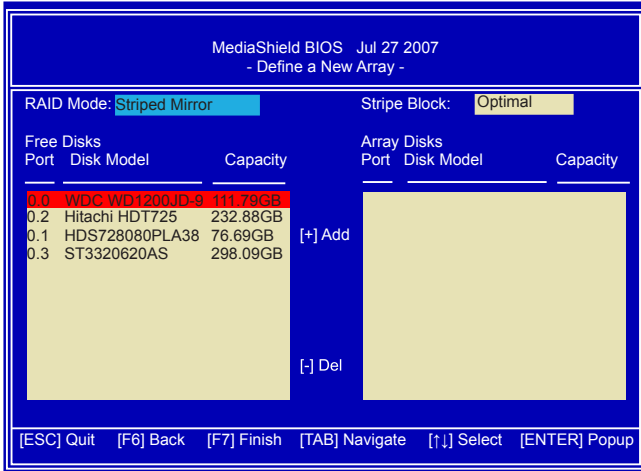


7. In above screen, you also can press <Enter> to know the detailed drive information of this RAID system. Press [D] here allow you to delete previous settings, and go back to the first time when MediaShield was started.



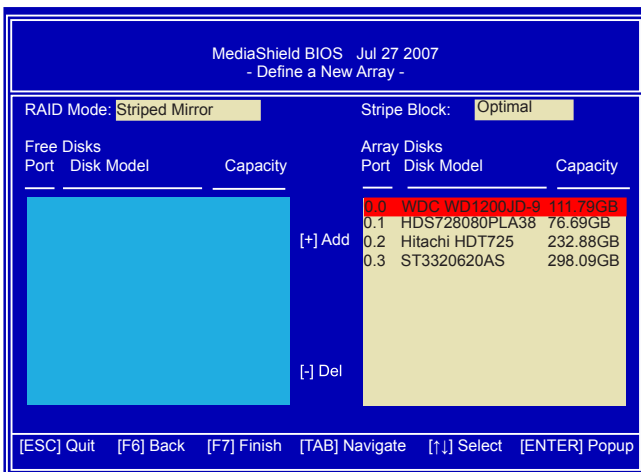
Create RAID 0+1 (Striped Mirror)

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

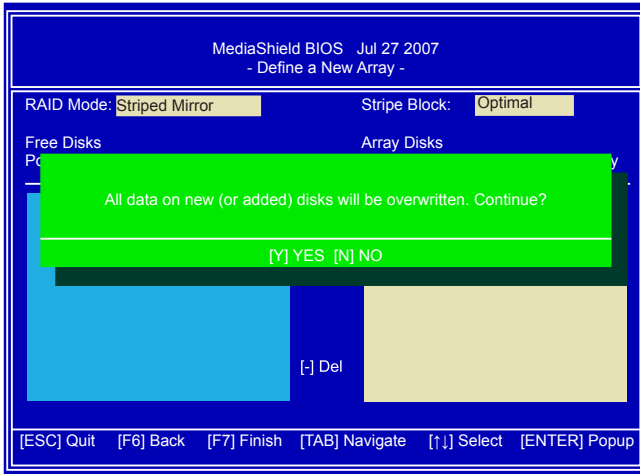


2. Select four hard disks to build our RAID0+1 system.

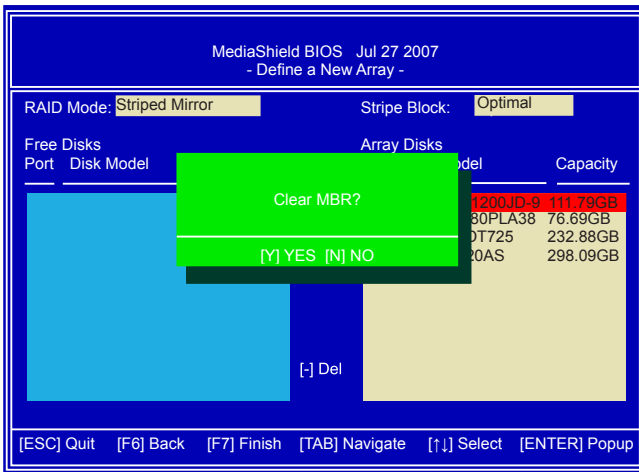
3. Press [TAB] to navigate to left drive panel, then use [→] and [↓] keys to add the hard disks to the right drive panel.



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.



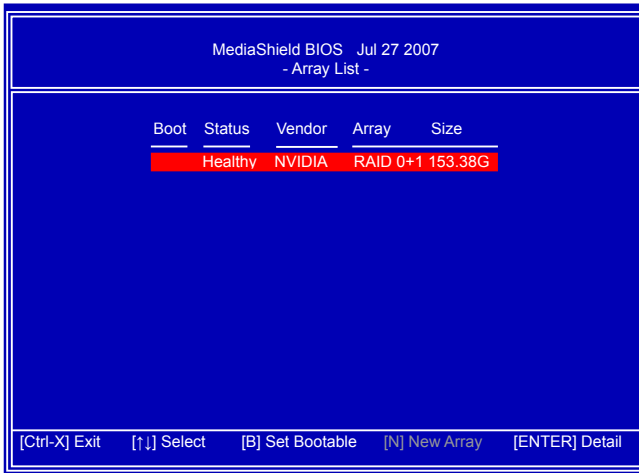
5. Press [Y] to continue, and press [Y] again to select "Clear MBR".



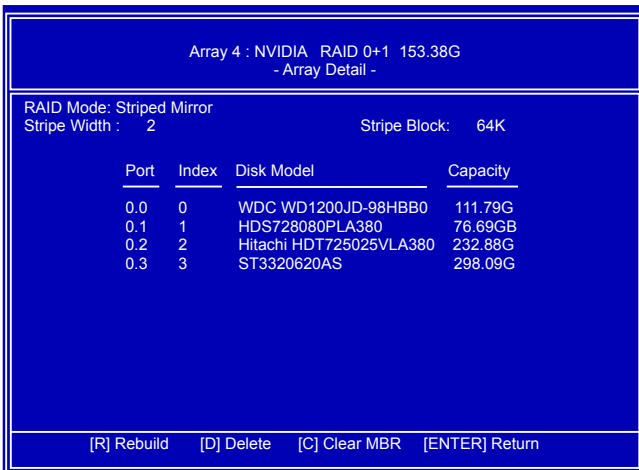
6. The screen displays a RAID 0+1 array of 153.38GB, which is twice the size of the smallest hard disk. That is, $2 * 76.69 = 153.38$ GB.

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.



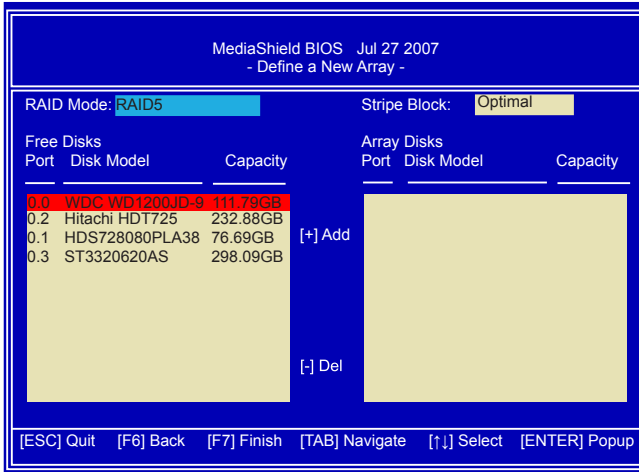
7. In above screen, you also can press <Enter> to know the detailed drive information of this RAID system. Press [D] here allow you to delete previous settings, and go back to the first time when MediaShield was started.



Create RAID 5

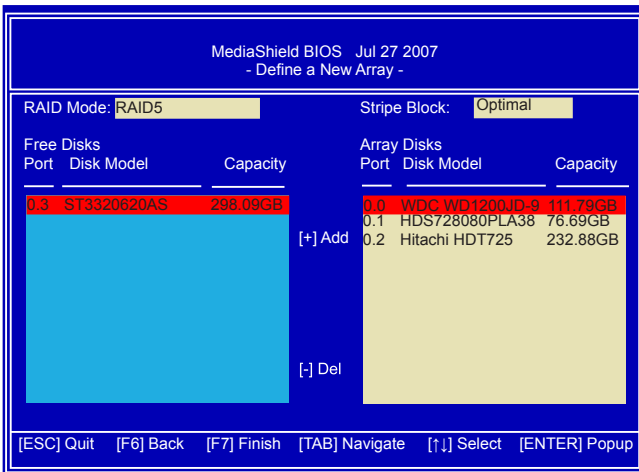
1. Select “**RAID5**” from the RAID Mode.

The menu appears :

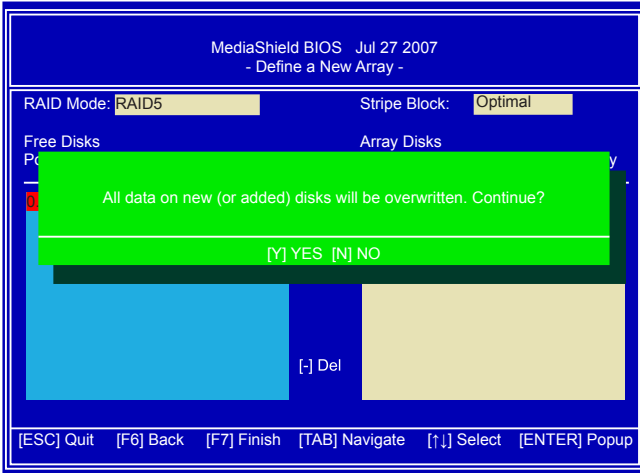


2. Select three SATA hard disks to build our RAID5 system.

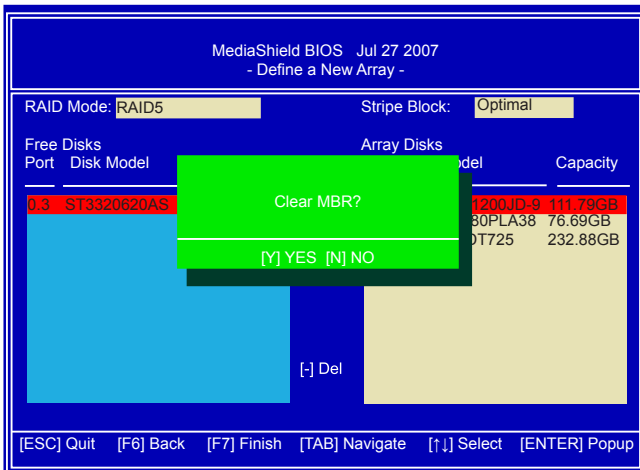
3. Press [TAB] to navigate to left drive panel, then use [→] and [↓] keys to add the hard disks to the right drive panel.



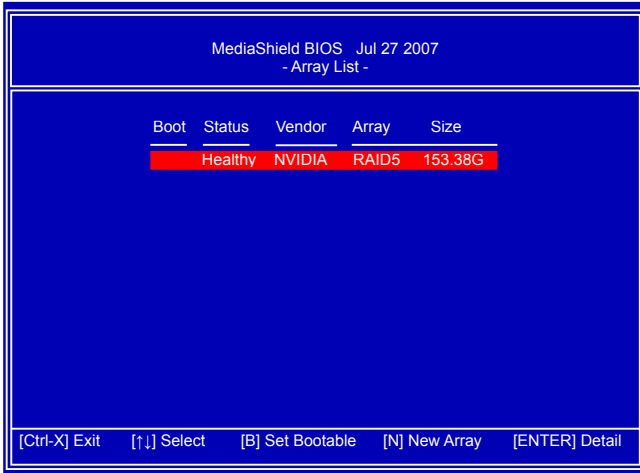
4. The stripe value should be selected based on different applications. It ranges from 4KB to 128KB. Some suggested choices are :
- 16K - Best for sequential transfer.
 - 64K - Good general purpose strip size.
 - 128K - Best performance for most desktops and workstations.
- Keep it at Optimal default value. Press <F7> to finish the setting.



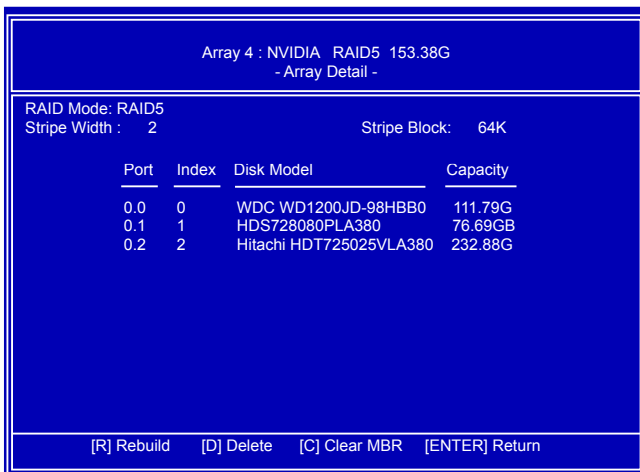
5. Press [Y] to continue, and press [Y] again to select "Clear MBR".



6. The screen displays a RAID5 array of 153.38GB, which is twice the size of the smallest hard disk. That is, $2 \times 76.69 = 153.38$ GB. 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.

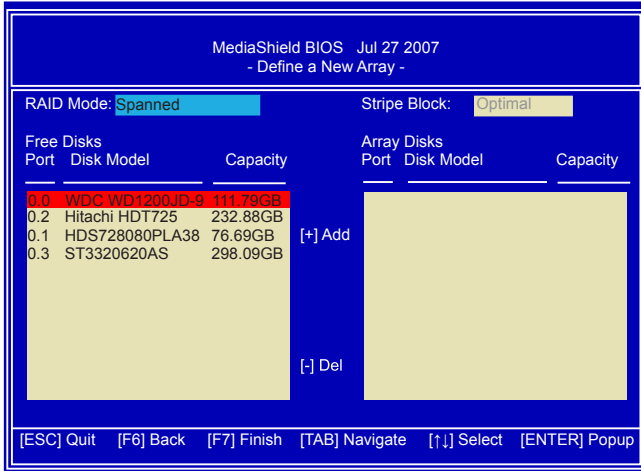


7. In above screen, you also can press <Enter> to know the detailed drive information of this RAID system. Press [D] here allow you to delete previous settings, and go back to the first time when MediaShield was started.



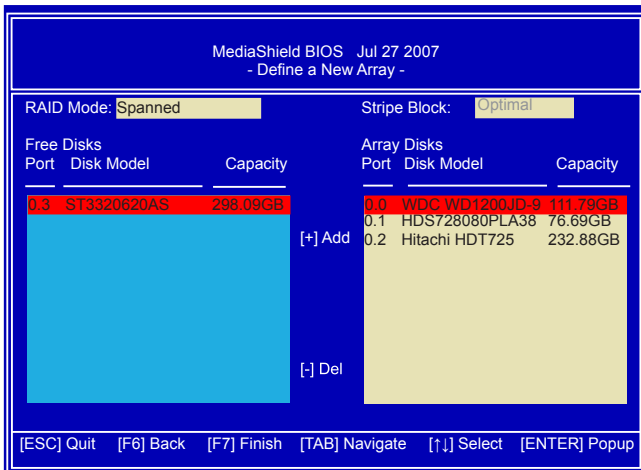
Create Spanned RAID

1. Select “**Spanned**” from the RAID Mode. The menu appears :



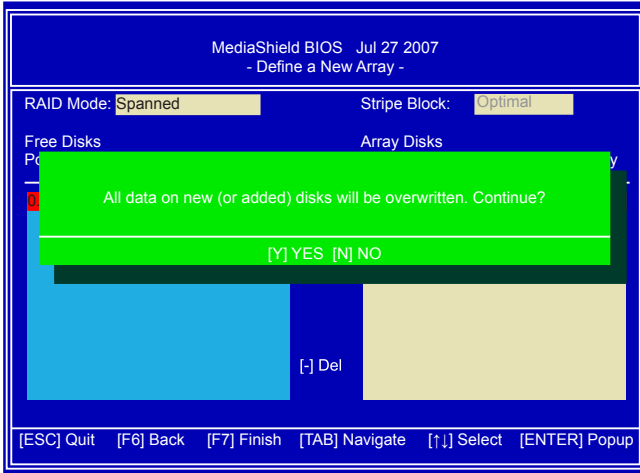
2. Select three SATA hard disks to build our Spanned RAID system.

3. Press [TAB] to navigate to left drive panel, then use [→] and [↓] keys to add the hard disks to the right drive panel.

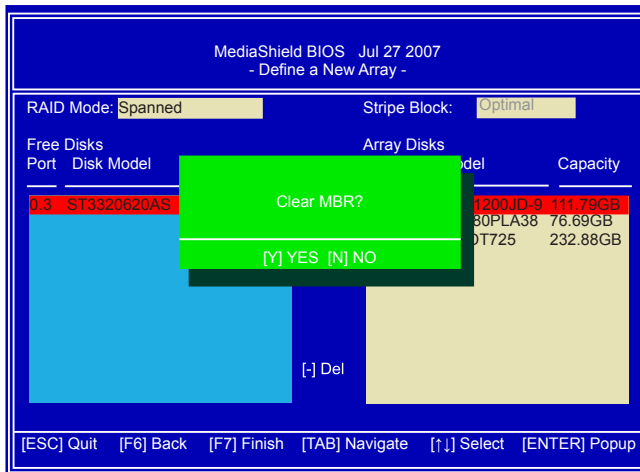


4. The stripe block value is fixed and not changeable.

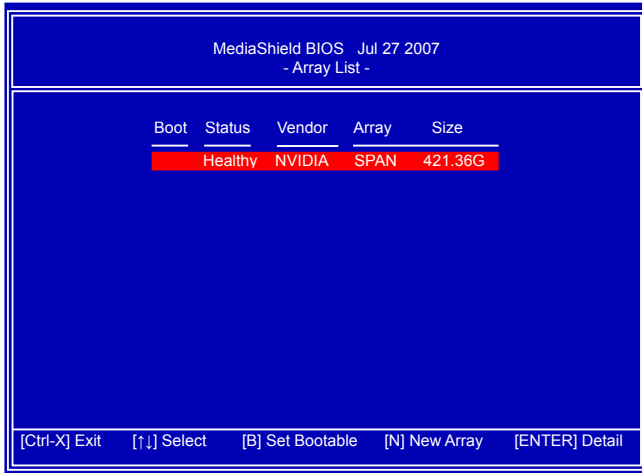
Press <F7> to finish the setting.



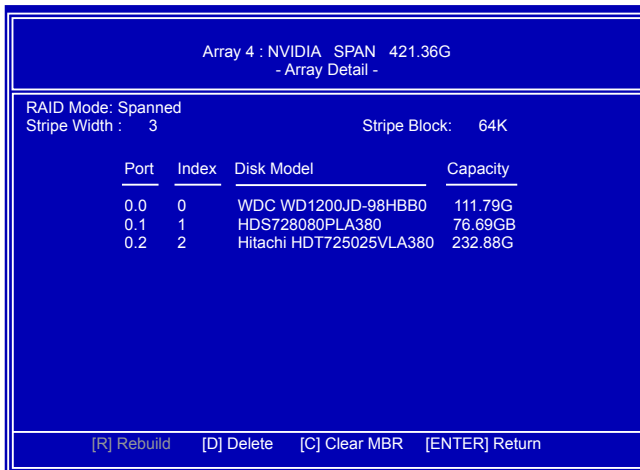
5. Press [Y] to continue, and press [Y] again to select "Clear MBR".



6. The screen displays a Spanned RAID array of 421.36GB, which is the total sizes of these three hard disks. That is, $111.79+76.69+232.88= 421.36\text{GB}$. 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.



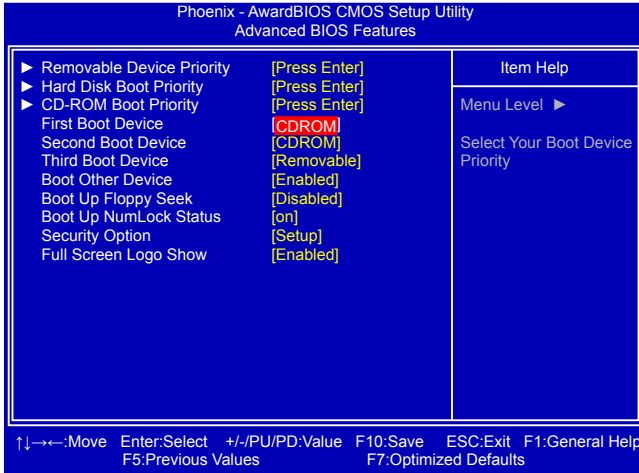
7. In above screen, you also can press <Enter> to know the detailed drive information of this RAID system. Press [D] here allow you to delete previous settings, and go back to the first time when MediaShield was started.



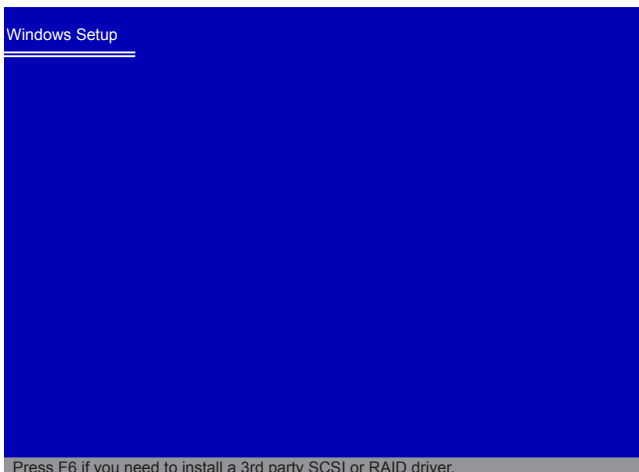
5-4 Install a New Windows XP

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

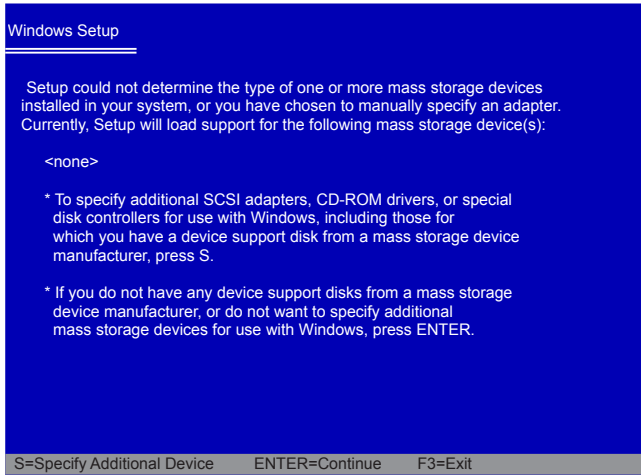
1. Press to enter BIOS Setup during POST.
2. Insert the Windows installation CD into the optical drive.
3. Set the “First Boot Device” to “CDROM”, save changes and exit BIOS.



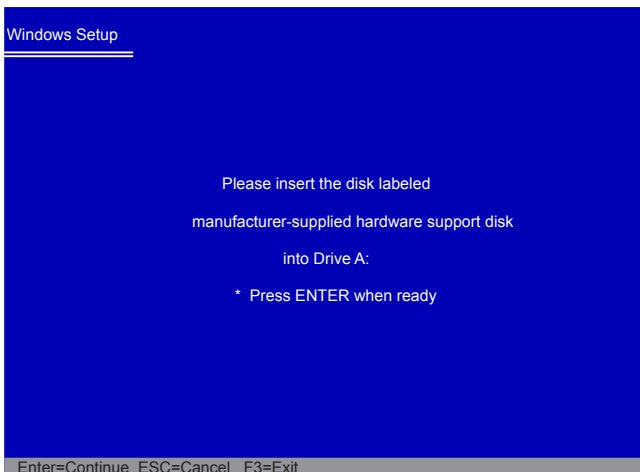
4. The computer will reboot, and it will start installing Windows Operating System. Watch the screen carefully, when the following picture appears, press <F6> key immediately. If you forgot to do this, PC will go to an fatal blue screen, and you may need to reboot the system again. PC may not respond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



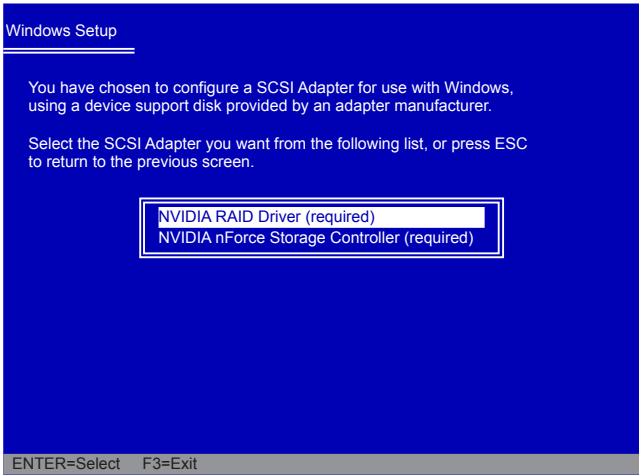
5. After some files are copied to your system, the following picture appears, press <S> to continue the specific driver installation.



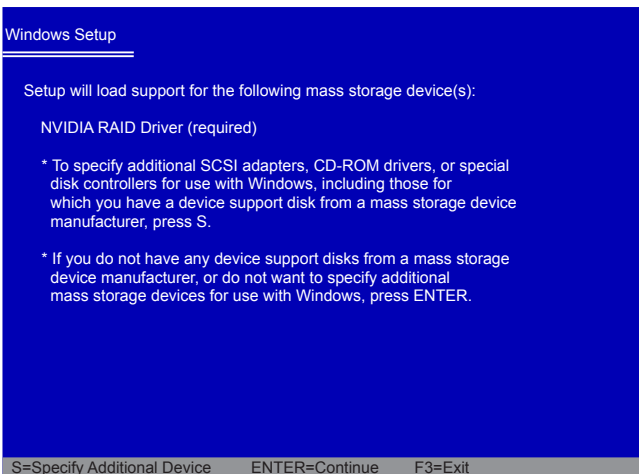
6. It will ask you to insert the RAID driver diskette into your floppy drive. Press <Enter> after it is done.



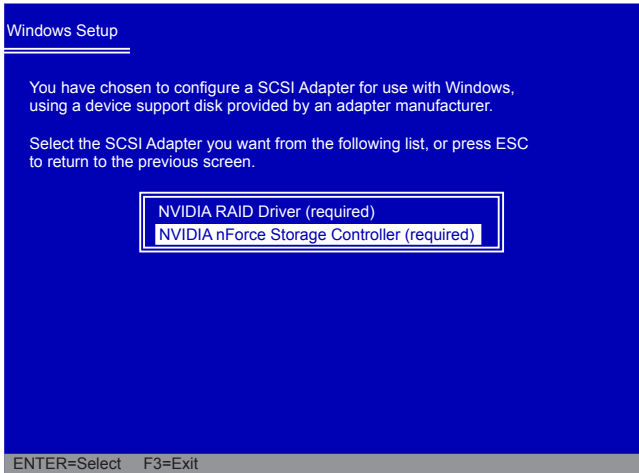
7. There are two drivers, all these two drivers must be installed. Press [Enter] to select the first driver - "NVIDIA RAID Driver (required)".



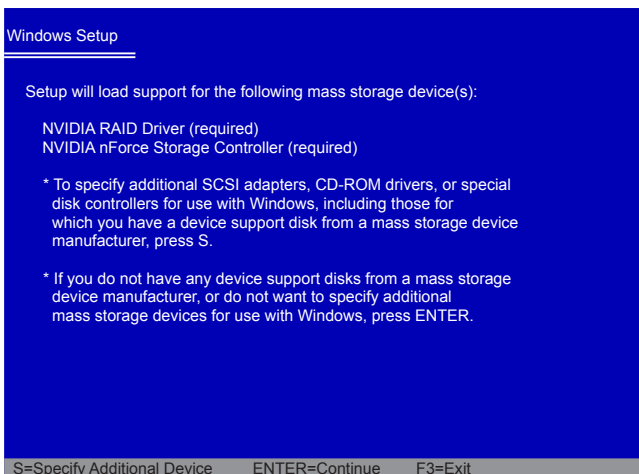
8. A confirmation message appears to double check if the driver is really what we wanted. As we need to install both two drivers, so we will press <S> again to select the second driver. It will ask you to insert the RAID driver diskette into your floppy drive again, press <Enter> to continue.



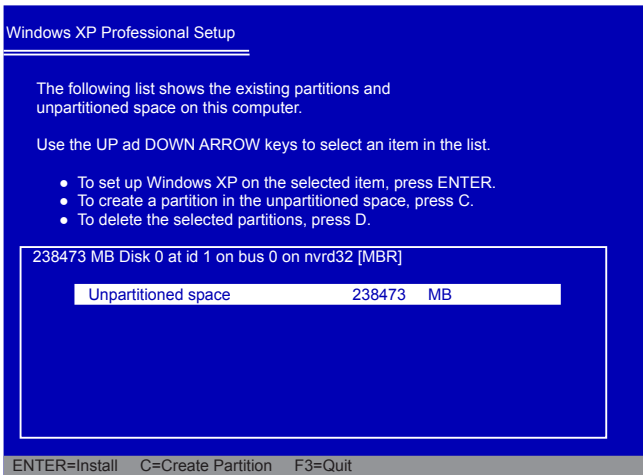
9. Use [↓] key to select "NVIDIA nForce Storage Controller (required)", then press [Enter].



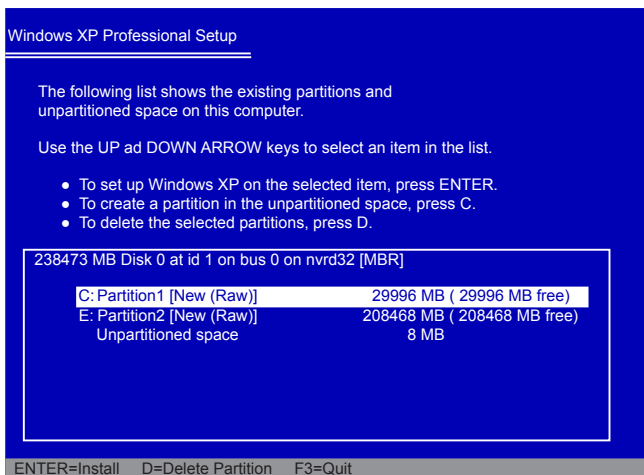
10. Two drivers are displayed. Press <Enter> to continue.



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 : $238473\text{MB}/1024 = 232.88\text{GB}$)



12. In this example, we will create a 30GB partition C: and leave the remaining space as a partition E:. (D: is allocated by a DVD drive)
13. Press <Enter> to install Windows. The Windows XP installation process will ask you to format your hard disk, then copy files...etc. Follow the installation steps until the whole Windows is setup.



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 SATA port2 of the motherboard.
Seagate ST3320620AS, (298.09GB) connected to SATA port4.

- A SATA DVD Drive :

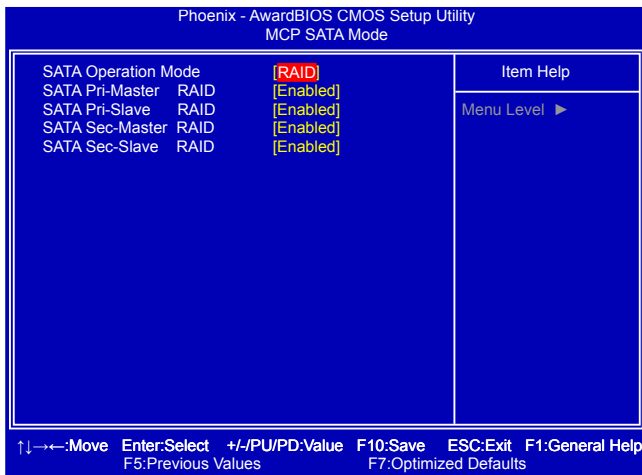
A DVD drive connected to SATA port1.



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.

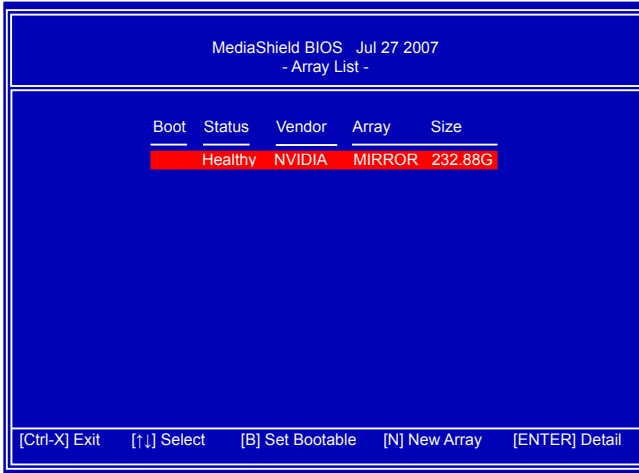
Enable the RAID function together with the SATA ports which have the hard disks and DVD drive connected. Press [F10] to save the settings and reboot.



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.



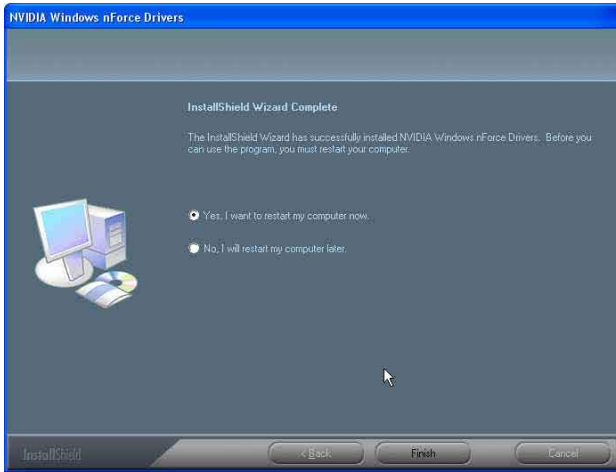
3. Press [Ctrl]+[X] keys to exit and go to Windows.

4. In Windows, click "Cancel" to skip any "Found New Hardware Wizard".

Use driver CD and click on "NVIDIA MCP73 Chipset Driver" to install the NVIDIA RAID driver. The RAID driver will be installed only when you select "RAID" in "RAID Operation Mode" setting. If you do not select RAID, then RAID driver will not be installed.



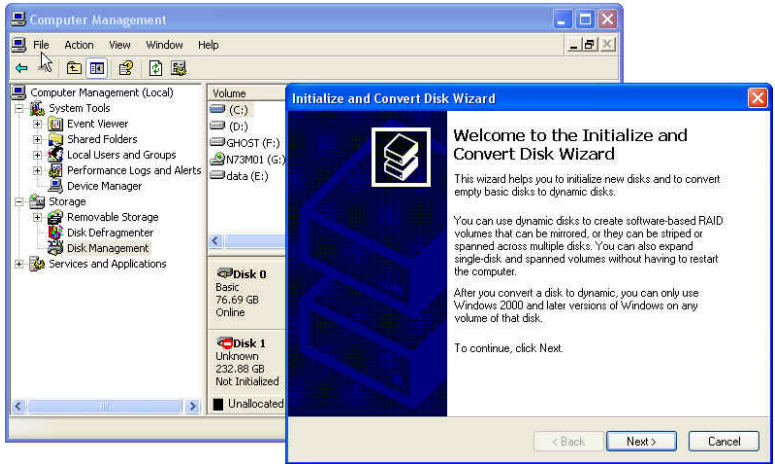
5. After the NVIDIA driver is installed, it will ask you to click "Finish" to restart your computer.



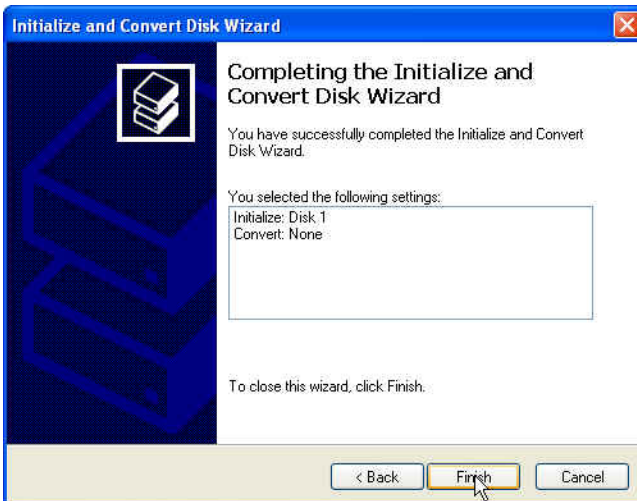
6. When Windows starts, a "Found New Hardware" message is prompting you to reboot again.
Click "Yes" to restart your computer.



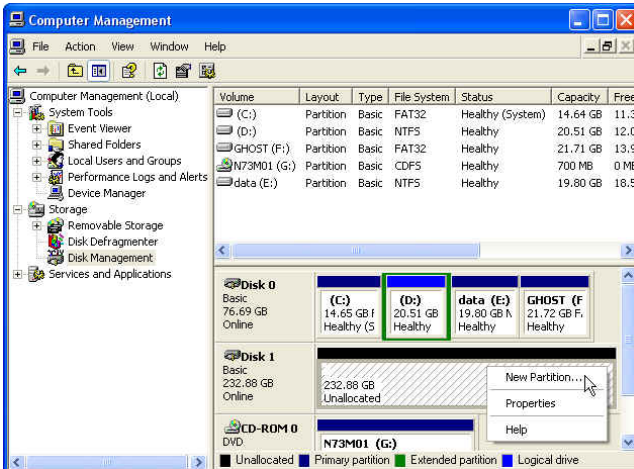
7. After PC starts, the RAID array is now ready to be initialized under Windows. Launch Computer Management by clicking Start -> Settings -> Control Panel then open the Administrative Tools folder and double click on Computer Management. Click Disk Management (under the Storage section). The Initialize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



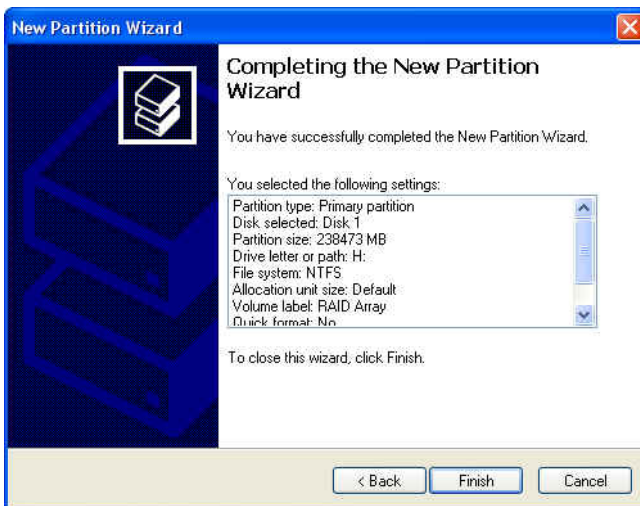
8. A "Select Disks to Initialize" window will appear. The disks listed depend on how many arrays you have configured. Select "Disk1" and click "Next" to continue.
9. When "Select Disks to Convert" window appears, do not select anything and click "Next" to continue.
10. When the "Completing the Initialize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



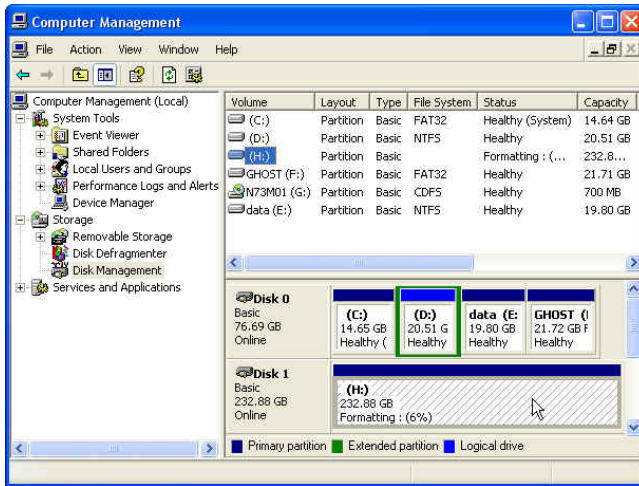
11. The Computer Management window appears. The actual disks listed will depend on your system. In below figure, you can see there is a 232.88 GB unallocated partition. You must format the unallocated disk space before using it. Right click "Unallocated space", select "New Partition..." and follow the Wizard instructions.



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.

