M2N/ M2N DH

Motherboard

E2753

First Edition
August 2006

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Notices

Federal Communications Commission Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

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

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

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

> The use of shielded cables for connection of the monitor to the graphics card is required to assure compliance with FCC regulations. Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

Canadian Department of Communications Statement

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

This class B digital apparatus complies with Canadian ICES-003.

Safety information

Electrical safety

*   To prevent electrical shock hazard, disconnect the power cable from the electrical outlet before relocating the system.

*   When adding or removing devices to or from the system, ensure that the power cables for the devices are unplugged before the signal cables are connected. If possible, disconnect all power cables from the existing system before you add a device.

*   Before connecting or removing signal cables from the motherboard, ensure that all power cables are unplugged.

*   Seek professional assistance before using an adpater or extension cord. These devices could interrupt the grounding circuit.

*   Make sure that your power supply is set to the correct voltage in your area. If you are not sure about the voltage of the electrical outlet you are using, contact your local power company.

*   If the power supply is broken, do not try to fix it by yourself. Contact a qualified service technician or your retailer.

Operation safety

*   Before installing the motherboard and adding devices on it, carefully read all the manuals that came with the package.

*   Before using the product, make sure all cables are correctly connected and the power cables are not damaged. If you detect any damage, contact your dealer immediately.

*   To avoid short circuits, keep paper clips, screws, and staples away from connectors, slots, sockets and circuitry.

*   Avoid dust, humidity, and temperature extremes. Do not place the product in any area where it may become wet.

*   Place the product on a stable surface.

*   If you encounter technical problems with the product, contact a qualified service technician or your retailer.

This symbol of the crossed out wheeled bin indicates that the product (electrical and electronic equipment) should not be placed in municipal waste. Check local regulations for disposal of electronic products.

About this guide

This user guide contains the information you need when installing and configuring the motherboard.

How this guide is organized

This guide contains the following parts:

- **Chapter 1: Product introduction**

  This chapter describes the features of the motherboard and the new technology it supports.

- **Chapter 2: Hardware information**

  This chapter lists the hardware setup procedures that you have to perform when installing system components. It includes description of the switches, jumpers, and connectors on the motherboard.

- **Chapter 3: Powering up**

  This chapter describes the power up sequence and ways of shutting down the system.

- **Chapter 4: BIOS setup**

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

- **Chapter 5: Software support**

  This chapter describes the contents of the support CD that comes with the motherboard package.

Where to find more information

Refer to the following sources for additional information and for product and software updates.

1. **ASUS websites**

   The ASUS website provides updated information on ASUS hardware and software products. Refer to the ASUS contact information.

2. **Optional documentation**

   Your product package may include optional documentation, such as warranty flyers, that may have been added by your dealer. These documents are not part of the standard package.

Conventions used in this guide

To make sure that you perform certain tasks properly, take note of the following symbols used throughout this manual.

DANGER/WARNING: Information to prevent injury to yourself when trying to complete a task.

CAUTION: Information to prevent damage to the components when trying to complete a task.

IMPORTANT: Instructions that you MUST follow to complete a task.

NOTE: Tips and additional information to help you complete a task.

Typography

Bold text	Indicates a menu or an item to select.
Italics	Used to emphasize a word or a phrase.
<Key>	Keys enclosed in the less-than and greater-than sign means that you must press the enclosed key.
	Example: <Enter> means that you must press the Enter or Return key.
<Key1>+<Key2>+<Key3>	If you must press two or more keys simultaneously, the key names are connected with a plus sign (+).
	Example: <Ctrl>+<Alt>+<D>
Command	Means that you must type the command exactly as shown.
	Example: At the DOS prompt, type the command line:
	format a:

M2N/M2N DH specifications summary

CPU	Socket AM2 for AMD Athlon™ 64 X2 /AMD Athlon™ 64 /AMD Athlon™ 64 FX /AMD Sempron™ processors Supports AMD Cool 'n' Quiet™ Technology AMD64 architecture enables simultaneous 32-bit and 64-bit computing AMD Live!™ ready
Chipset	NVIDIA® nForce® 430 MCP
System bus	2000 / 1600 MT/s
Memory	Dual-channel memory architecture - 4 x 240-pin DIMM sockets support unbuffered ECC/non-ECC DDR2 800/667/533 MHz memory modules - Supports up to 8 GB system memory
Expansion slots	1 x PCI Express™ x16 slot 2 x PCI Express™ x1 slots 3 x PCI 2.2 slots
Storage	NVIDIA® nForce® 430 MCP supports: - 1 x IDE connector for up to two Ultra DMA 133/100/66/33 devices - 4 x Serial ATA 3.0 Gb/s connectors support four Serial ATA devices - RAID 0, RAID1, RAID 0+1, RAID 5, and JBOD configurations spanning across Serial ATA drives via the onboard NVIDIA® MediaShield™ RAID controller
LAN	NVIDIA® nForce® 430 MCP built-in Gigabit MAC with external Attansic PHY
High Definition Audio	ADI 6-channel High Definition Audio CODEC Supports Jack-Sensing, Enumeration Technology S/PDIF Out interface
USB	Supports up to 10 USB 2.0/1.1 ports (for M2N model) Supports up to 8 USB 2.0/1.1 ports (for M2N DH model)
Special features	ASUS Q-Fan 2 (for 4-pin CPU cooler only) Q-Connector ASUS CrashFree BIOS 3 ASUS EZ Flash 2 Advanced Thermal Design - ASUS Fanless Design: Heat-sink Thermal solution ASUS MyLogo

M2N/M2N DH specifications summary

ASUS Exclusive Overclocking features	ASUS O.C. Profile: overclocking configuration-sharing tool
	Precision Tweaker:
	  - Stepless Frequency Selection(SFS) allows FSB tuning from 200 MHz up to 300 MHz at 1 MHz increment
	Overclocking protection:
	  - ASUS C.P.R. (CPU Parameter Recall)

Rear panel	1 x PS/2 keyboard port (purple) 1 x PS/2 mouse port (green) 1 x Parallel port 1 x Coaxial S/PDIF Out port 1 x LAN (RJ-45) port 4 x USB 2.0/1.1 ports 6-channel audio ports
Internal connectors	3 x USB 2.0 connectors support six additional USB 2.0 ports (2 x USB 2.0 connectors on M2N DH model) 1 x Floppy disk drive connector 1 x IDE connector for two devices 4 x Serial ATA connectors 1 x CPU / 1 x Chassis / 1 x Power fan connector 1 x COM port connector 1 x S/PDIF Out connector Chassis intrusion connector Front panel audio connector CD audio in connector 24-pin ATX power connector 4-pin ATX 12 V power connector System panel connector
BIOS features	4 Mb Flash ROM, AMI BIOS, PnP, DMI 2.0, WfM2.0, SM BIOS 2.3, ACPI2.0a
Manageability	WOL by PME, WOR by PME, Chassis intrusion, PXE
Power requirements	ATX power supply with 24-pin and 4-pin 12V plugs ATX 12V 2.0 compliant
Support CD contents	Device drivers ASUS PC Probe II ASUS Update NVIDIA® MediaShield™ RAID Anti-virus software (OEM version)
Form factor	ATX form factor: 12 in x 8.1 in (30.5 cm x 20.6 cm)

Extra specifications on M2N DH

ASUS Digital Home Features	ASUS WiFi-AP Solo - 54 Mbps IEEE 802.11g and backwards compatible with 11 Mbps IEEE 802.11b - Access point mode - Station mode: Infrastructure mode or Ad-Hoc mode ASUS DH Remote™ - Power - Quick Power - Noise off - EZ WiFi - AP Launch - Full Screen - Media Control Zone ASUS MP3-In™
Wireless LAN	Up to 54 Mbps IEEE 802.11b/g (ASUS WiFi-AP Solo™)
Rear Panel	1 x WiFi-AP Solo antenna jack
Internal connectors	1 x MP3-In connector
Support CD contents	ASUS WiFi-AP Solo Wizard ASUS DH Remote™ Application
Form factor	ATX form factor: 12 in x 8.1 in (30.5 cm x 20.6 cm)

*Specifications are subject to change without notice.

This chapter describes the motherboard
features and the new technologies
it supports.

Product introduction

Chapter summary

1

1.1 Welcome!

Thank you for buying an **ASUS® M2N / M2N DH motherboard**!

The motherboard delivers a host of new features and latest technologies, making it another standout in the long line of ASUS quality motherboards!

Before you start installing the motherboard, and hardware devices on it, check the items in your package with the list below.

1.2 Package contents

Check your motherboard package for the following items.

Motherboard	ASUS M2N / M2N DH
Cables	1 x Serial ATA cables 1 x Serial ATA power cable 1 x Ultra DMA 133/100/66 cable 1 x Floppy disk drive cable
Accessories	I/O shield ASUS Q-Connector Kit (Retail version only) ASUS DH Remote (for M2N DH model only) ASUS DH Remote Receiver (for M2N DH model only) ASUS WiFi-AP Solo™ Antenna (for M2N DH model only) ASUS MP3-In module (for M2N DH model only)
Application CD	ASUS motherboard support CD
Documentation	User guide ASUS DH Remote manual (for M2N DH model only) ASUS WiFi-AP Solo manual (for M2N DH model only)

If any of the above items is damaged or missing, contact your retailer.

1.3   Special features

1.3.1   Product highlights

Latest processor technology

The motherboard comes with a 940-pin AM2 socket that supports AMD Athlon™ 64 X2/AMD Athlon™ 64/AMD Athlon™ 64 FX/AMD Sempron™ processors. With an integrated low-latency high-bandwidth memory controller and a highly scalable HyperTransport™ technology-based system bus, the motherboard provides a powerful platform for your diverse computing needs, increased office productivity, and enhanced digital media experience. See page 2-6 for details.

DDR2 memory support

The motherboard supports DDR2 memory that features data transfer rates of 800/667/533 MHz to meet the higher bandwidth requirements of the latest 3D graphics, multimedia, and Internet applications. The dual-channel DDR2 architecture doubles the bandwidth of your system memory to boost system performance, eliminating bottlenecks with peak bandwidths of up to 12.8 GB/s. See pages 2-11 to 2-14 for details.

PCI Express™ interface

The motherboard fully supports PCI Express, the latest I/O interconnect technology that speeds up the PCI bus. PCI Express features point-to-point serial interconnections between devices and allows higher clockspeeds by carrying data in packets. This high speed interface is software compatible with existing PCI specifications. See page 2-18 for details.

Serial ATA I/II technology

The motherboard fully supports the Serial ATA II 3.0 Gb/s technology through the Serial ATA interfaces and the NVIDIA® nForce® 430 MCP chipset. The Serial ATA 3 Gb/s specification provides twice the bandwidth of the current Serial ATA products with a host of new features, including Nativa Command Queueing (NCQ), and Power Management (PM) Implementation Algorithm. Serial ATA allows for thinner, more flexible cables with lower pin count and reduced voltage required. See page 2-25 for details.

S/PDIF digital sound ready

The motherboard supports the S/PDIF technology through the S/PDIF interfaces on the rear panel. The S/PDIF technology turns your computer into a high-end entertainment system with digital connectivity to powerful audio and speaker systems. See pages 2-23 and 2-29 for details.

USB 2.0 technology

The motherboard implements the Universal Serial Bus (USB) 2.0 specification, dramatically increasing the connection speed from the 12 Mbps bandwidth on USB 1.1 to a fast 480 Mbps on USB 2.0. USB 2.0 is backward compatible with USB 1.1. See pages 2-23 and 2-26 for details.

Gigabit LAN solution

This motherboard comes with a Gigabit LAN controller to meet your growing networking needs. The controller provides faster data bandwidth for your Internet, LAN, and file sharing requirements. See page 2-22 for details.

AMD Cool 'n' Quiet Technology

The motherboard supports the AMD Cool 'n' Quiet Technology, which monitors system operation and automatically adjusts CPU voltage and frequency for a cool and quiet operating environment. See page 4-21 for details.

1.3.2 ASUS Special features

ASUS Q-Connector

ASUS Q-Connector allows you to easily connect or disconnect the chassis front panel cables to the motherboard. This unique module eliminates the trouble of connecting the system panel cables one at a time and avoiding wrong cable connections. See page 2-31 for details.

ASUS O.C. Profile

The motherboard features the ASUS O.C. Profile that allows users to conveniently store or load multiple BIOS settings. The BIOS settings can be stored in the CMOS or a separate file, giving users freedom to share and distribute their favorite settings. See page 4-36 for details.

ASUS Q-Fan 2

ASUS Q-Fan2 technology intelligently adjusts both CPU fan and chassis fan speeds according to system loading to ensure quiet, cool and efficient operation.

ASUS CrashFree BIOS 3

The ASUS CrashFree BIOS 3 allows users to restore corrupted BIOS data from a USB flash disk containing the BIOS file. See page 4-5 for details.

ASUS EZ Flash 2

EZ Flash 2 is a user-friendly BIOS update utility. Simply press the predefined hotkey to launch the utility and update the BIOS without entering the OS. Update your BIOS easily without preparing a bootable diskette or using an OS-based flash utility. See page 4-2 for details.

ASUS MyLogo™

This new feature present in the motherboard allows you to personalize and add style to your system with customizable boot logos. See details on page 4-32.

C.P.R. (CPU Parameter Recall)

The C.P.R. feature of the motherboard BIOS allows automatic re-setting to the BIOS default settings in case the system hangs due to overclocking. When the system hangs due to overclocking, C.P.R. eliminates the need to open the system chassis and clear the RTC data. Simply shut down and reboot the system, and the BIOS automatically restores the CPU default setting for each parameter.

1.3.3 ASUS Digital Home features Digital HOME for M2N DH model

ASUS WiFi-AP Solo™ **(For M2N DH model only)**

WiFi AP Solo™ allows a new level of versitility for your PC, enabling it to create a complete wireless home network in either AP or wirelesss client mode. Users will be able to play LAN games, connecting to the Internet, access and share printers, and use Skype from anywhere within range. WiFi-AP Solo™ can provide these functions even when the PC is in sleep mode, so users can use Skype as a true replacement for tradition long distance telephone service. WiFi-AP Solo™ is an on-board feature, which means that users will save the extra WiFi-AP cost. (Refer to the ASUS Wi-Fi AP Solo™ user guide for details.)

ASUS DH Remote™ **(For M2N DH model only)**

DH Remote™ is a convenient PC remote controller that gives users unprecedented control over their PCs from the comfort of their couches. With the touch of a button, users can instantly operate the following functions: (Refer to the ASUS DH Remote™ user guide for details.)

Power: Turns the computer on/off.
Quick Power: Puts the computer quickly into sleep mode.
Noise Off: Reduces the noise coming from the computer.

EZ WiFi: Puts the computer quickly into sleep mode but allowing WiFi-AP
Solo™ to still operate.
Full Screen: Puts the media application into full screen.
AP Launch: Launches the media application.
Media Control Zone: Controls the media application.

ASUS MP3-In™ **(For M2N DH model only)**

A convenient interface between computers and MP3 players, the ASUS MP3-In™ features enables MP3 players to connect to PC speakers even when the PC power is off, which means that users can enjoy the sound quality from PC speakers without additional stereo equipment cost. (Refer to the ASUS MP3-In™ quick installation guide for details.)

　　　　　　　　　　　　　　　　　　Chapter 1: Product introduction

This chapter lists the hardware setup
procedures that you have to perform
when installing system components. It
includes description of the jumpers and
connectors on the motherboard.

Hardware information

2

Chapter summary

2

2.1   Before you proceed

Take note of the following precautions before you install motherboard components or change any motherboard settings.

> • Unplug the power cord from the wall socket before touching any component.
>
> • Use a grounded wrist strap or touch a safely grounded object or to a metal object, such as the power supply case, before handling components to avoid damaging them due to static electricity.
>
> • Hold components by the edges to avoid touching the ICs on them.
>
> • Whenever you uninstall any component, place it on a grounded antistatic pad or in the bag that came with the component.
>
> • Before you install or remove any component, ensure that the ATX power supply is switched off or the power cord is detached from the power supply. Failure to do so may cause severe damage to the motherboard, peripherals, and/or components.

Onboard LED

The motherboard comes with a standby power LED. The green LED lights up to indicate that the system is ON, in sleep mode, or in soft-off mode. This is a reminder that you should shut down the system and unplug the power cable before removing or plugging in any motherboard component. The illustration below shows the location of the onboard LED.

SB_PWR

ON
Standby
Power

OFF
Powered
Off

M2N/M2N DH Onboard LED
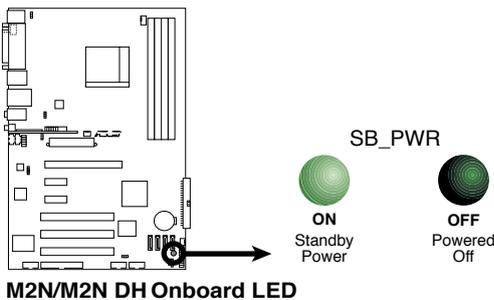
2.2 Motherboard overview

Before you install the motherboard, study the configuration of your chassis to ensure that the motherboard fits into it.

> Make sure to unplug the power cord before installing or removing the motherboard. Failure to do so can cause you physical injury and damage motherboard components.

2.2.1 Placement direction

When installing the motherboard, make sure that you place it into the chassis in the correct orientation. The edge with external ports goes to the rear part of the chassis as indicated in the image below.

2.2.2 Screw holes

Place six (6) screws into the holes indicated by circles to secure the motherboard to the chassis.

> Do not overtighten the screws! Doing so can damage the motherboard.

Place this side towards the rear of the chassis

2.2.3   Motherboard layout

20.6cm (8.1in)

PS/2KBMS
T: Mouse
B: Keyboard

KBPWR

SPDIF_IO

PARALLE PORT

USB12

LAN_USB34

AUDIO

ATX12V

USBPW1234

USB910_WFGBT

USB910

PWR_FAN

CD

MP3IN

AAFP

USBPW910

EATXPWR

ADI HD Codec

SPDIF_OUT

PCIEX16

PCIEX1_1

Attansic
F1

PCIEX1_2

PCI1

PCI2

PCI3

Super I/O

COM1

FLOPPY

USBPW5678

USB78

USB56

CPU_FAN

Socket AM2

DDR2 DIMM_A1 (64 bit,240-pin module)
DDR2 DIMM_B1 (64 bit,240-pin module)
DDR2 DIMM_A2 (64 bit,240-pin module)
DDR2 DIMM_B2 (64 bit,240-pin module)

30.5cm (12.0in)

NVIDIA
nForce
430 MCP

PRI_IDE

CR2032 3V
Lithium Cell
CMOS Power

4Mb
BIOS

SATA2 SATA1 SATA4 SATA3

CHA_FAN

SB_PWR

CLRTC

CHASSIS

PANEL

The USB910_WFGBT module, and MP3-IN connector are available to M2N DH model only. The USB910 port is available to M2N model only. These items are greyed out in the given motherboard layout.

2.2.4   Layout contents

Slots		Page
1.	DDR2 DIMM slots	2-11
2.	PCI slots	2-18
3.	PCI Express x1 slots	2-18
4.	PCI Express x16 slot	2-18

Jumper		Page
1.	Clear RTC RAM (3-pin CLRTC)	2-19
2.	USB device wake-up (3-pin USBPW1, USBPW2)	2-20
3.	Keyboard power (3-pin KBPWR)	2-21

Rear panel connectors		Page
1.	PS/2 mouse port (green)	2-22
2.	Parallel port	2-22
3.	LAN 1 (RJ-45) port.	2-22
4.	Line In port (light blue)	2-22
5.	Line Out port (lime)	2-22
6.	Microphone port (pink)	2-22
7.	Wireless LAN activity LED (M2N DH Model only)	2-23
8.	Wireless LAN antenna port (M2N DH Model only)	2-23
9.	USB 2.0 ports 3 and 4	2-23
10.	USB 2.0 ports 1 and 2	2-23
11.	Coaxial S/PDIF Out port	2-23
12.	PS/2 keyboard port (purple)	2-23

Internal connectors	Page
1. Floppy disk drive connector (34-1 pin FLOPPY)	2-23
2. IDE connector (40-1 pin PRI_IDE)	2-24
3. Serial ATA connectors (7-pin SATA1 [red], SATA2 [red], SATA3 [red], SATA4 [red])	2-25
4. Serial port connector (10-1 pin COM1)	2-25
5. USB connectors (10-1 pin USB56, USB78, USB910)	2-26
6. Optical drive audio connector (4-pin CD)	2-26
7. CPU, chassis, and power fan connectors (4-pin CPU_FAN, 3-pin CHA_FAN, 3-pin PWR_FAN)	2-27
8. Chassis intrusion connector (4-1 pin CHASSIS)	2-27
9. ATX power connectors (24-pin EATXPWR, 4-pin EATX12V)	2-28
10. Front panel audio connector (10-1 pin AAFP)	2-29
11. Digital audio connector (4-1 pin SPDIF_OUT)	2-29
12. System panel connector (20-8 pin PANEL) • System power LED (2-pin LED) • Hard disk drive activity LED (2-pin IDE_LED) • System warning speaker (4-pin SPEAKER) • ATX power button/soft-off button (2-pin PWR) • Reset button (2-pin RESET)	2-30

2.3 Central Processing Unit (CPU)

The motherboard comes with a 940-pin AM2 socket designed for the AMD Athlon™ 64/AMD Athlon™ 64 FX/AMD Athlon™ 64 X2 and AMD Sempron™ processors.

The AM2 socket has a different pin layout from the 940-pin socket designed for the AMD AM2 processor. Make sure you use a CPU is designed for the AM2 socket. The CPU fits in only one correct orientation. DO NOT force the CPU into the socket to prevent bending the connectors on the socket and damaging the CPU!

2.3.1 Installing the CPU

To install a CPU:

1. Locate the CPU socket on the motherboard.
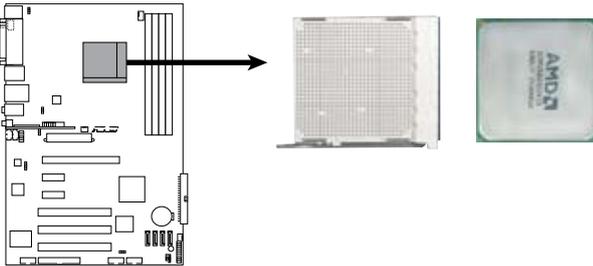
M2N/M2N DH CPU Socket M2

2. Unlock the socket by pressing the lever sideways, then lift it up to a 90º angle.
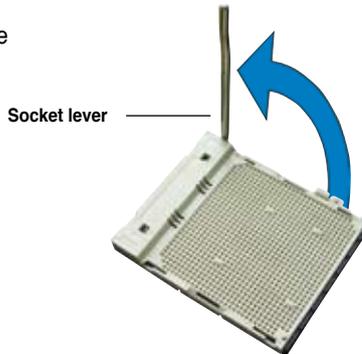
Socket lever

Make sure that the socket lever is lifted up to a 90º angle; otherwise, the CPU will not fit in completely.

3. Position the CPU above the socket such that the CPU corner with the gold triangle matches the socket corner with a small triangle.

4. Carefully insert the CPU into the socket until it fits in place.

Gold triangle

Small triangle
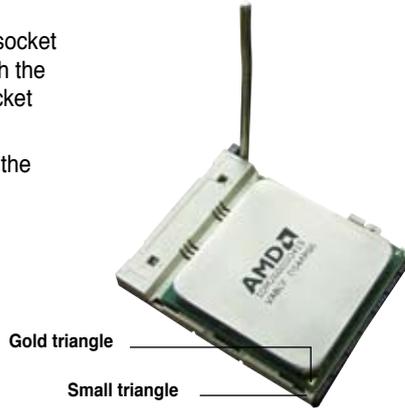
5. When the CPU is in place, push down the socket lever to secure the CPU. The lever clicks on the side tab to indicate that it is locked.

6. Install a CPU heatsink and fan following the instructions that came with the heatsink package.

2.3.2 Installing the heatsink and fan

The AMD Athlon™ 64/AMD Athlon™ 64 FX/AMD Athlon™ 64 X2 and AMD Sempron™ processors require a specially designed heatsink and fan assembly to ensure optimum thermal condition and performance.

Make sure that you use only AMD-certified heatsink and fan assembly.

To install the CPU heatsink and fan:

1.   Place the heatsink on top of the installed CPU, making sure that the heatsink fits properly on the retention module base.

- •   The retention module base is already installed on the motherboard upon purchase.

- •   You do not have to remove the retention module base when installing the CPU or installing other motherboard components.

- •   If you purchased a separate CPU heatsink and fan assembly, make sure that a Thermal Interface Material is properly applied to the CPU heatsink or CPU before you install the heatsink and fan assembly.

CPU fan

CPU heatsink

Retention module base

Retention bracket

Retention bracket lock
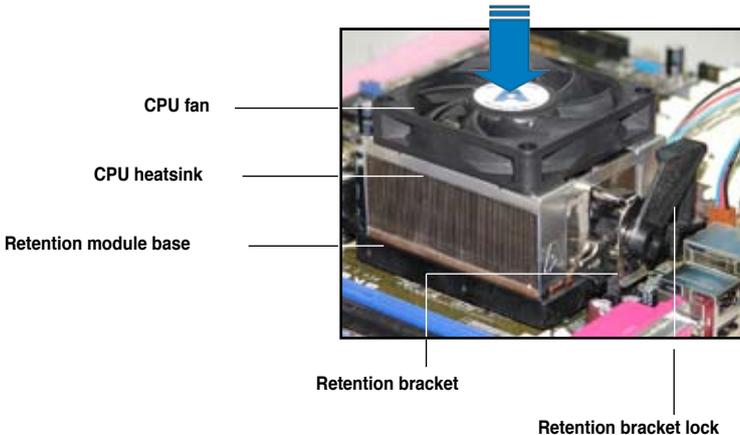
Your boxed CPU heatsink and fan assembly should come with installation instructions for the CPU, heatsink, and the retention mechanism. If the instructions in this section do not match the CPU documentation, follow the latter.

2. Attach one end of the retention bracket
    to the retention module base.

3. Align the other end of the retention
    bracket (near the retention bracket
    lock) to the retention module base.
    A clicking sound denotes that the
    retention bracket is in place.

    Make sure that the fan and
    heatsink assembly perfectly fits
    the retention mechanism module
    base, otherwise you cannot snap
    the retention bracket in place.

4. Push down the retention bracket lock
    on the retention mechanism to secure
    the heatsink and fan to the module
    base.

5.	When the fan and heatsink assembly is in place, connect the CPU fan cable to the connector on the motherboard labeled CPU_FAN.

CPU_FAN

GND
CPU FAN PWR
CPU FAN IN
CPU FAN PWM
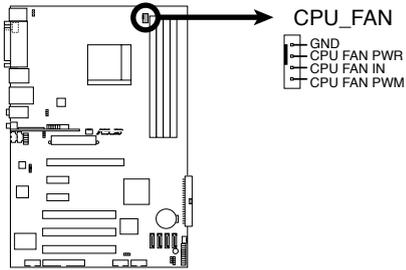
M2N/M2N DH CPU Fan Connector

•	Do not forget to connect the CPU fan connector! Hardware monitoring errors can occur if you fail to plug this connector.

•	This connector is backward compatible to the 3-pin CPU fan connector.

•	Only 4-pin CPU fan supports Q-Fan function.

2.4 System memory

2.4.1 Overview

The motherboard comes with four Double Data Rate 2 (DDR2) Dual Inline Memory Modules (DIMM) sockets.

A DDR2 module has the same physical dimensions as a DDR DIMM but has a 240-pin footprint compared to the 184-pin DDR DIMM. DDR2 DIMMs are notched differently to prevent installation on a DDR DIMM socket.

The figure illustrates the location of the DDR2 DIMM sockets:
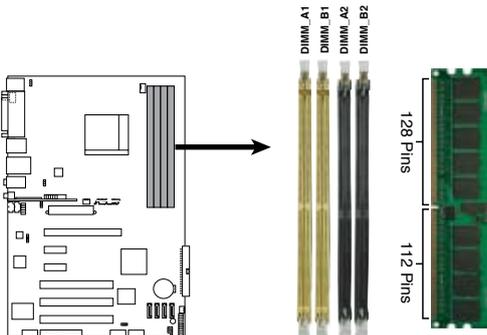
M2N/M2N DH 240-pin DDR2 DIMM Sockets

Channel	Sockets
Channel A	DIMM_A1 and DIMM_A2
Channel B	DIMM_B1 and DIMM_B2

2.4.2 Memory configurations

You may install 256 MB, 512 MB, 1 GB, and 2GB unbuffered ECC/non-ECC DDR2 DIMMs into the DIMM sockets.

Recommended Memory Configurations

Mode	Sockets			
	DIMM_A1	DIMM_A2	DIMM_B1	DIMM_B2
Single Channel	Populated	–	–	–
	–	Populated	–	–
	–	–	Populated	–
	–	–	–	Populated
Dual-channel (1)	Populated	–	Populated	–
	–	Populated	–	Populated
Dual-channel (2)	Populated	Populated	Populated	Populated

*   For dual-channel memory configuration (2), you may:
    *   install identical DIMMs in all four sockets OR
    *   install an identical DIMM pair in DIMM_A1 and DIMM_B1 (yellow sockets) and another identical DIMM pair in DIMM_A2 and DIMM_B2 (black sockets)

*   Always use identical DDR2 DIMM pairs for dual-channel model. For optimum compatibility, we recommend that you obtain memory modules from the same vendor. Visit the ASUS website (www.asus.com) for the latest Qualified Vendors List.

Important notice on installing Windows® XP 32-bit version

If you install Windows® XP 32-bit version Operating System (OS), the limitation of this OS version is that it may reserve a certain amount of memory space for system devices. We recommend that you install less than 3 GB system memory if you would like to work under Windows® XP 32-bit version OS. The excess memory installation will not cause any usage problem, but it will not give users the benefit of manipulating this excess memory space.

Visit the ASUS FAQ site for further explanation:
http://support.asus.com/faq/faq.aspx?SLanguage=en-us
Under **General Search**, make the selections as shown, then click **Search**.
Click the article titled "**4GB memory installed but less memory size detected.**"

You also may check the URLs below for third party comments on this issue:
http://dlsvr01.asus.com/pub/ASUS/mb/4GB_Rev1.pdf
http://www.intel.com/support/motherboards/server/sb/cs-016594.htm

Notes on memory limitations

*   Due to chipset limitation, this motherboard can only support up to 8 GB on the operating systems listed below. You may install a maximum of 2 GB DIMMs on each slot, but only DDR2-533 and DDR2-667 2 GB density modules are available for this configuration.

32-bit	64-bit
Windows® 2000 Advanced Server	Windows® XP Professional x64 Edition

Qualified Vendors List
DDR2-533

Size	Vendor	Model	Side(s)	Component	DIMM support A	B	C
512MB	ELPIDA	EBE51ED8ABFA-5C-E	SS	E5108AB-5C-E	•	•	
512MB	ELPIDA	EBE51UD8ABFA-5C-E	SS	E5108AB-5C-E	•		
512MB	HYNIX	HYMP564U648-C4	SS	HY5PS12821F-C4	•		
1024MB	HYNIX	HYMP512U728-C4 AA	DS	HY5PS12821F-C4	•	•	
512MB	INFINEON	HYS64T64000GU-3.7-A	SS	HYB18T512	•	•	•
512MB	MICRON	MT16HTF6464AG-53EB2	DS	4EB11D9BQM	•	•	
256MB	SAMSUNG	M378T3253FG0-CD5	SS	K4T56083QF-GCD5	•	•	•
512MB	SAMSUNG	M378T6553BG0-CD5	SS	K4T151083QB-GCD5	•	•	•
1024MB	SAMSUNG	M391T2953BG0-CD5	DS	K4T51083QB-GCD5	•	•	

Qualified Vendors List
DDR2-667

Size	Vendor	Model	Side(s)	Component	DIMM support A	B	C
256MB	HYNIX	HYMP532U64AP6-Y5 AA	SS	HY5PS121621AFP-Y5	•	•	•
512MB	HYNIX	HYMP564U64AP8-Y5 AA	SS	HY5PS12821AFP-Y5	•	•	•
512MB	HYNIX	HYMP564U64AP8-Y4 AA	SS	HY5PS12821AFP-Y4	•	•	•
512MB	HYNIX	HYMP564U72AP8-Y4 AA	SS	HY5PS12821AFP-Y4	•	•	
256MB	GEIL	GX25125300DC	SS	GL2L32M168BA30F	•	•	
512MB	SAMSUNG	M378T6553CZ0-CE6	SS	K4T51083QC	•	•	
1024MB	SAMSUNG	M378T2953CZ0-CE6	DS	K4T51083QC	•		
512MB	SAMSUNG	M378T6453FZ0-CE6	DS	K4T56083QF-ZCE6	•	•	

Qualified Vendors List
DDR2-800

Size	Vendor	Model	Side(s)	Component	DIMM support		
					A	B	C
512MB	KINGSTON	K4T51083QC	SS	KVR800D2N5/512	•	•	•
1024MB	KINGSTON	K4T51083QC	DS	KVR800D2N5/1G	•	•	
512MB	Qimonda	HYB18T256800AF25F	DS	HYS64T64020HU-25F-A	•	•	•
256MB	Qimonda	HYB18T512160BF-25F	SS	HYS64T32000HU-25F-B	•	•	
512MB	Qimonda	HYB18T512800BF25F	SS	HYS64T64000HU-25F-B	•	•	•
1024MB	Qimonda	HYB18T512800BF25F	DS	HYS64T128020HU-25F-B	•	•	
256MB	SAMSUNG	K4T51163QC-ZCE7	SS	M378T3354CZ3-CE7	•	•	•
512MB	Hynix	HY5PS12821BFP-S5	SS	HYMP564U64BP8-S5	•	•	
512MB	MICRON	5JAIIZ9DQQ	SS	MT8HTF6464AY-80EA3	•	•	•
1024MB	MICRON	5JAIIZ9DQQ	DS	MT16HTF12864AY-80EA3	•	•	
512MB	MICRON	5ZD22D9GKX	SS	MT8HTF6464AY-80ED4	•	•	•
1024MB	MICRON	5ZD22D9GKX	DS	MT16HTF12864AY-80ED4	•	•	
512MB	MICRON	6CD22D9GKX	SS	MT8HTF6464AY-80ED4	•	•	•
1024MB	MICRON	6CD22D9GKX	DS	MT16HTF12864AY-80ED4	•	•	
1024MB	CORSAIR	Heat-Sink Package	DS	CM2X1024-6400C4	•	•	
1024MB	Crucial	Heat-Sink Package	DS	BL12864AA804.16FD	•	•	

Side(s): SS - Single-sided   DS - Double-sided

DIMM Support:

A - Supports one module inserted in any slot for a single-channel memory configuration.

B - Supports one pair of modules inserted into either the blue slots or the black slots as one pair of dual-channel memory configuration.

C - Supports three modules inserted into both the blue and black slots as two pairs of dual-channel memory configuration.

> Visit the ASUS website (www.asus.com) for the latest memory Qualified Vendor List (QVL).

2.4.3   Installing a DIMM

⚠️ Unplug the power supply before adding or removing DIMMs or other system components. Failure to do so can cause severe damage to both the motherboard and the components.

To install a DIMM:

1. Unlock a DIMM socket by pressing the retaining clips outward.

2. Align a DIMM on the socket such that the notch on the DIMM matches the break on the socket.

3. Firmly insert the DIMM into the socket until the retaining clips snap back in place and the DIMM is properly seated.
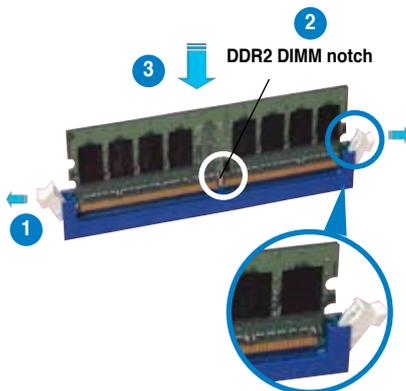
DDR2 DIMM notch

Unlocked retaining clip

✏️ •   A DDR2 DIMM is keyed with a notch so that it fits in only one direction. Do not force a DIMM into a socket to avoid damaging the DIMM.

•   The DDR2 DIMM sockets do not support DDR DIMMs. DO not install DDR DIMMs to the DDR2 DIMM sockets.

2.4.4   Removing a DIMM

To remove a DIMM:

1. Simultaneously press the retaining clips outward to unlock the DIMM.

✏️ Support the DIMM lightly with your fingers when pressing the retaining clips. The DIMM might get damaged when it flips out with extra force.

DDR2 DIMM notch
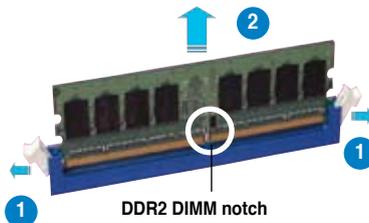
2. Remove the DIMM from the socket.

2.5 Expansion slots

In the future, you may need to install expansion cards. The following sub-sections describe the slots and the expansion cards that they support.

⚠️ Make sure to unplug the power cord before adding or removing expansion cards. Failure to do so may cause you physical injury and damage motherboard components.

2.5.1 Installing an expansion card

To install an expansion card:

1. Before installing the expansion card, read the documentation that came with it and make the necessary hardware settings for the card.

2. Remove the system unit cover (if your motherboard is already installed in a chassis).

3. Remove the bracket opposite the slot that you intend to use. Keep the screw for later use.

4. Align the card connector with the slot and press firmly until the card is completely seated on the slot.

5. Secure the card to the chassis with the screw you removed earlier.

6. Replace the system cover.

2.5.2 Configuring an expansion card

After installing the expansion card, configure the it by adjusting the software settings.

1. Turn on the system and change the necessary BIOS settings, if any. See Chapter 4 for information on BIOS setup.

2. Assign an IRQ to the card. Refer to the tables on the next page.

3. Install the software drivers for the expansion card.

✍️ When using PCI cards on shared slots, ensure that the drivers support "Share IRQ" or that the cards do not need IRQ assignments; otherwise, conflicts will arise between the two PCI groups, making the system unstable and the card inoperable.

2.5.3   Interrupt assignments

Standard interrupt assignments

IRQ	Priority	Standard function
0	1	System Timer
1	2	Keyboard Controller
2	–	Redirect to IRQ#9
4	12	Communications Port (COM1)*
5	13	IRQ Holder for PCI Steering*
6	14	Floppy Disk Controller
7	15	Printer Port (LPT1)*
8	3	System CMOS/Real Time Clock
9	4	IRQ Holder for PCI Steering*
10	5	IRQ Holder for PCI Steering*
11	6	IRQ Holder for PCI Steering*
12	7	PS/2 Compatible Mouse Port*
13	8	Numeric Data Processor
14	9	Primary IDE Channel
15	10	Secondary IDE Channel

* These IRQs are usually available for ISA or PCI devices.

IRQ assignments for this motherboard

	A	B	C	D	E	F	G	H
PCI Slot 1	shared	-	-	-	--	-	-	-
PCI Slot 2	-	shared	-	-	-	-	-	-
PCI Slot 3	-	-	shared	-	-	-	-	-
PCIe x16 slot	-	-	-	-	-	-	-	shared
PCIe x1 slot 1	-	-	-	-	-	shared	-	-
PCIe x1 slot 2	-	-	-	-	shared	-	-	-

2.5.4   PCI slots

The PCI slots support cards such as
a LAN card, SCSI card, USB card,
and other cards that comply with PCI
specifications. The figure shows a LAN
card installed on a PCI slot.
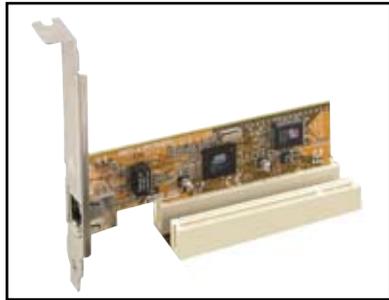
2.5.5   PCI Express x1 slots

This motherboard supports PCI Express
x1 network cards, SCSI cards and other
cards that comply with the PCI Express
specifications. The following figure
shows a network card installed on the
PCI Express x1 slot.
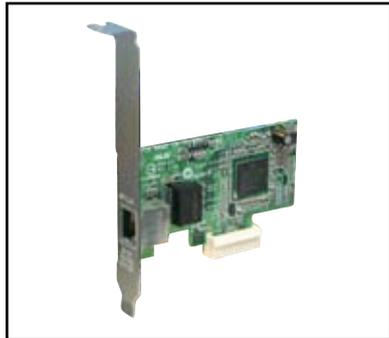
2.5.6   PCI Express x16 slot

This motherboard supports PCI Express
x16 graphic cards that comply with the
PCI Express specifications. The figure
shows a graphics card installed on the
PCI Express x16 slot.

2.6 Jumper

1.   Clear RTC RAM (CLRTC)

This jumper allows you to clear the Real Time Clock (RTC) RAM in CMOS. You can clear the CMOS memory of date, time, and system setup parameters by erasing the CMOS RTC RAM data. The onboard button cell battery powers the RAM data in CMOS, which include system setup information such as system passwords.

To erase the RTC RAM:

1.   Turn OFF the computer and unplug the power cord.

2.   Remove the onboard battery.

3.   Move the jumper cap from pins 1-2 (default) to pins 2-3. Keep the cap on pins 2-3 for about 5~10 seconds, then move the cap back to pins 1-2.

4.   Reinstall the battery.

5.   Plug the power cord and turn ON the computer.

6.   Hold down the <Del> key during the boot process and enter BIOS setup to re-enter data.

> Except when clearing the RTC RAM, never remove the cap on CLRTC jumper default position. Removing the cap will cause system boot failure!

M2N/M2N DH Clear RTC RAM
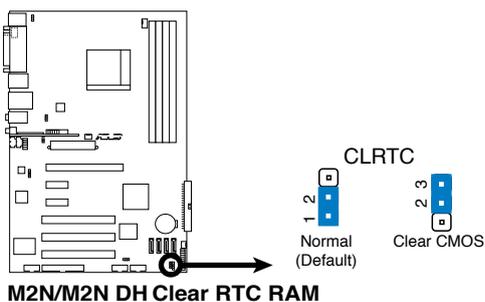
> •   Make sure to re-enter your previous BIOS settings after you clear the CMOS.
>
> •   You do not need to clear the RTC when the system hangs due to overclocking. For system failure due to overclocking, use the C.P.R. (CPU Parameter Recall) feature. Shut down and reboot the system so the BIOS can automatically reset parameter settings to default values.

2. USB device wake-up (3-pin USBPW1234, USBPW5678, USBPW910)

Set these jumpers to +5V to wake up the computer from S1 sleep mode (CPU stopped, DRAM refreshed, system running in low power mode) using the connected USB devices. Set to +5VSB to wake up from S3 and S4 sleep modes (no power to CPU, DRAM in slow refresh, power supply in reduced power mode).
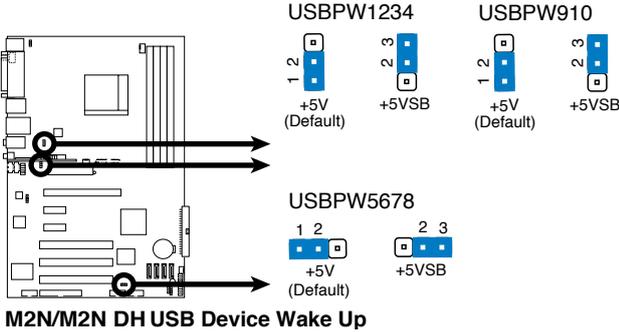
M2N/M2N DH USB Device Wake Up

- The USB device wake-up feature requires a power supply that can provide 500mA on the +5VSB lead for each USB port; otherwise, the system would not power up.

- The total current consumed must NOT exceed the power supply capability (+5VSB) whether under normal condition or in sleep mode.

M2N USB port default			
status	USBPW1234	USBPW5678	USBPW910
+5VSB	-	-	-
+5V	Default	Default	Default

M2N DH USB port default		
status	USBPW1234	USBPW5678
+5VSB	Default	-
+5V	-	Default

3. Keyboard power (3-pin KBPWR)

This jumper allows you to enable or disable the keyboard wake-up feature. Set this jumper to pins 2-3 (+5VSB) to wake up the computer when you press a key on the keyboard (the default is the Space Bar). This feature requires an ATX power supply that can supply at least 1A on the +5VSB lead, and a corresponding setting in the BIOS.

KBPWR

+5V
(Default)

+5VSB
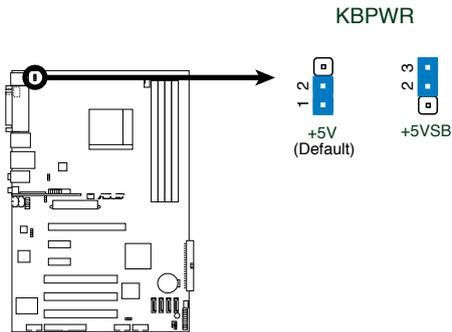
M2N/M2N DH Keyboard Power Setting

2.7 Connectors

2.7.1 Rear panel connectors
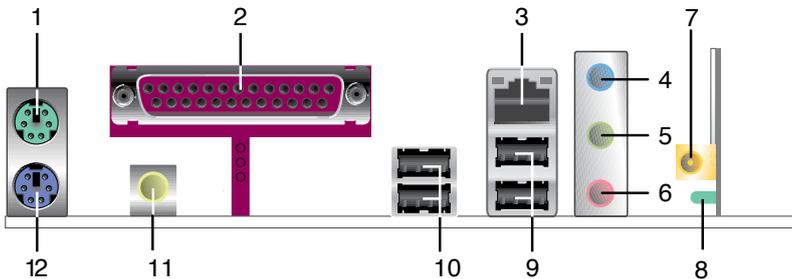
1. **PS/2 mouse port (green).** This port is for a PS/2 mouse.
2. **Parallel port.** This 25-pin port connects a parallel printer, a scanner, or other devices.
3. **LAN (RJ-45) port.** This port allows Gigabit connection to a Local Area Network (LAN) through a network hub. Refer to the table below for the LAN port LED indications.

LAN port LED indications

Activity/Link Speed LED			
Status	Description	Status	Description
OFF	No link	OFF	10 Mbps connection
ORANGE	Linked	ORANGE	100 Mbps connection
BLINKING	Data activity	GREEN	1 Gbps connection

ACT/LINK   SPEED
LED   LED

LAN port
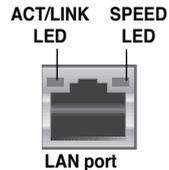
4. **Line In port (light blue).** This port connects the tape, CD, DVD player, or other audio sources.
5. **Line Out port (lime).** This port connects a headphone or a speaker. In 4-channel, 6-channel, and 8-channel configuration, the function of this port becomes Front Speaker Out.
6. **Microphone port (pink).** This port connects a microphone.

> Refer to the audio configuration table below for the function of the audio ports in 2, 4, or 6-channel configuration.

Audio 2, 4, or 6-channel configuration

Port	Headset 2-channel	4-channel	6-channel
Light Blue	Line In	Rear Speaker Out	Rear Speaker Out
Lime	Line Out	Front Speaker Out	Front Speaker Out
Pink	Mic In	Mic In	Bass/Center

7. **Wireless LAN activity LED (M2N DH model only).** The wireless LAN module comes with an activity LED.

8. **Wireless LAN antenna port (M2N DH model only).** This port connects to the optional dipolar antenna for the onboard WiFi-g™ wireless solution.

9. **USB 2.0 ports 3 and 4.** These 4-pin Universal Serial Bus (USB) ports are available for connecting USB 2.0 devices.

10. **USB 2.0 ports 1 and 2.** These 4-pin Universal Serial Bus (USB) ports are available for connecting USB 2.0 devices.

11. **Coaxial S/PDIF Out port.** This port connects an external audio output device via an coaxial S/PDIF cable.

12. **PS/2 keyboard port (purple)**. This port is for a PS/2 keyboard.

2.7.2   Internal connectors

1. **Floppy disk drive connector (34-1 pin FLOPPY)**

   This connector is for the provided floppy disk drive (FDD) signal cable. Insert one end of the cable to this connector, then connect the other end to the signal connector at the back of the floppy disk drive.

   > Pin 5 on the connector is removed to prevent incorrect cable connection when using a FDD cable with a covered Pin 5.

FLOPPY

PIN 1

NOTE: Orient the red markings on the floppy ribbon cable to PIN 1.

M2N/M2N DH Floppy Disk Drive Connector
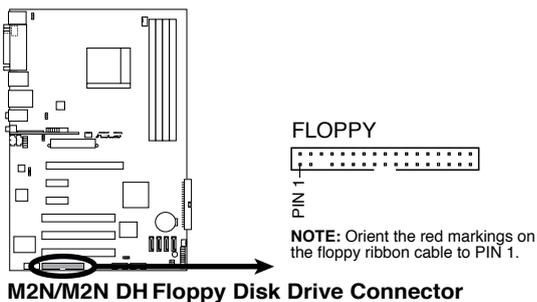
2.   **IDE connector (40-1 pin PRI_IDE)**

The onboard IDE connector is for the Ultra DMA 133/100/66 signal cable.
There are three connectors on each Ultra DMA 133/100/66 signal cable:
blue, black, and gray. Connect the blue connector to the motherboard's IDE
connector, then select one of the following modes to configure your device.

	Drive jumper setting	Mode of device(s)	Cable connector
Single device	Cable-Select or Master	-	Black
Two devices	Cable-Select	Master	Black
		Slave	Gray
	Master	Master	Black or gray
	Slave	Slave	

- Pin 20 on the IDE connector is removed to match the covered hole on the
  Ultra DMA cable connector. This prevents incorrect insertion when you
  connect the IDE cable.

- Use the 80-conductor IDE cable for Ultra DMA 100/66 IDE devices.

If any device jumper is set as "Cable-Select," make sure all other device
jumpers have the same setting.
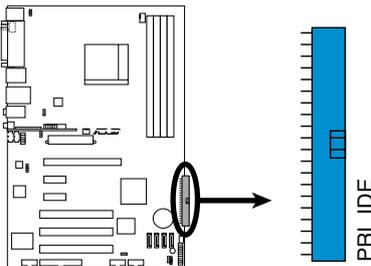
M2N/M2N DH IDE Connector

3. **Serial ATA connectors (7-pin SATA1 [red], SATA2 [red], SATA3 [red], SATA4 [red])**

These connectors are for the Serial ATA signal cables for Serial ATA 3.0 Gb/s hard disk and optical disk drives. The Serial ATA 3.0 Gb/s is backward compatible with Serial ATA 1.5 Gb/s specification.

If you installed Serial ATA hard disk drives, you can create a RAID 0, RAID 1, RAID 0+1, RAID 5, or JBOD configuration through the onboard NVIDIA® MediaShield™ controller.

M2N/M2N DH SATA Connectors
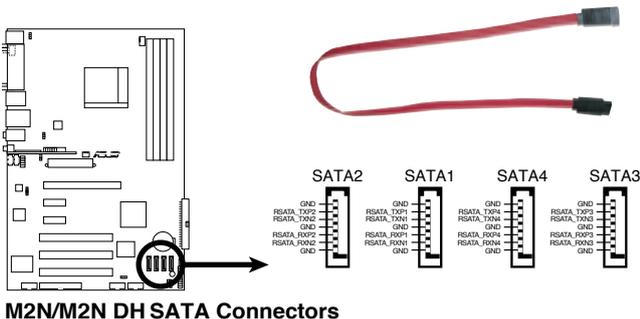
The RAID function of these connectors is set to [Disabled] by default. If you intend to create a Serial ATA RAID set using these connectors, enable the **nVidia RAID Function** item in the BIOS. See section "4.3.4 IDE Configuration" for details.

4. **Serial port connector (10-1 pin COM1)**

This connector is for a serial (COM) port. Connect the serial port module cable to this connector, then install the module to a slot opening at the back of the system chassis.

M2N/M2N DH COM Port Connector
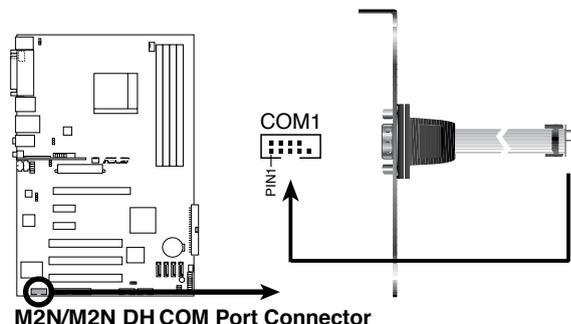
The COM module is purchased separately.

5.   USB connectors (10-1 pin USB56, USB78, USB910 [for M2N model only])

These connectors are for USB 2.0 ports. Connect the USB module cable to any of these connectors, then install the module to a slot opening at the back of the system chassis. These USB connectors comply with USB 2.0 specification that supports up to 480 Mbps connection speed.

USB910

USB78   USB56
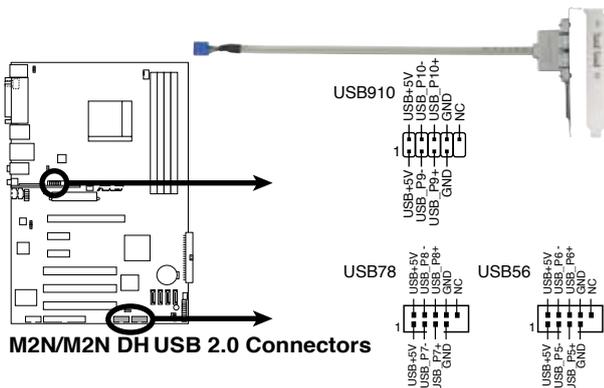
M2N/M2N DH USB 2.0 Connectors

Never connect a 1394 cable to the USB connectors. Doing so will damage the motherboard!

Connect one end of the USB cable to the ASUS Q-Connector first before connecting to the USB connector onboard.

The USB module is purchased separately.

6.   Optical drive audio connector (4-pin CD)

This connector allows you to receive stereo audio input from an optical drive such as DVD or CD-ROM.

CD
(black)

Right Audio Channel
Ground
Ground
Left Audio Channel
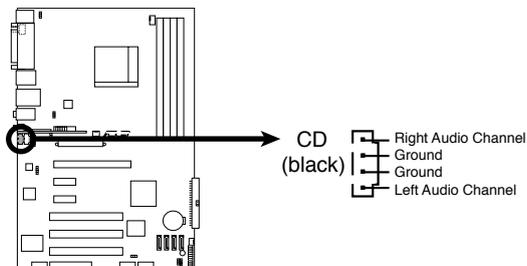
M2N/M2N DH Internal Audio Connector

7. **CPU, chassis, and power fan connectors (4-pin CPU_FAN, 3-pin CHA_FAN, 3-pin PWR_FAN)**

    The fan connectors support cooling fans of 350 mA ~ 2000 mA (24 W max.) or a total of 1 A ~ 3.48 A (41.76 W max.) at +12V. Connect the fan cables to the fan connectors on the motherboard, making sure that the black wire of each cable matches the ground pin of the connector.

    > Do not forget to connect the fan cables to the fan connectors. Insufficient air flow inside the system may damage the motherboard components. These are not jumpers! Do not place jumper caps on the fan connectors!

    M2N/M2N DH Fan Connectors
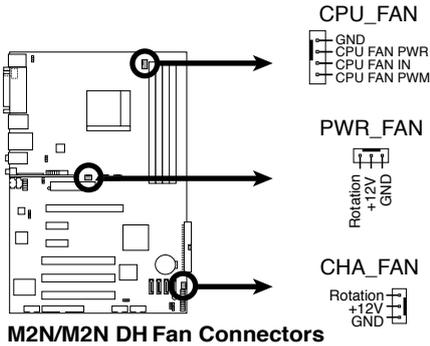
8. **Chassis intrusion connector (4-1 pin CHASSIS)**

    This connector is for a chassis-mounted intrusion detection sensor or switch. Connect one end of the chassis intrusion sensor or switch cable to this connector. The chassis intrusion sensor or switch sends a high-level signal to this connector when a chassis component is removed or replaced. The signal is then generated as a chassis intrusion event.

    By default, the pins labeled "Chassis Signal" and "Ground" are shorted with a jumper cap. Remove the jumper caps only when you intend to use the chassis intrusion detection feature.

    M2N/M2N DH Chassis Intrusion Connector
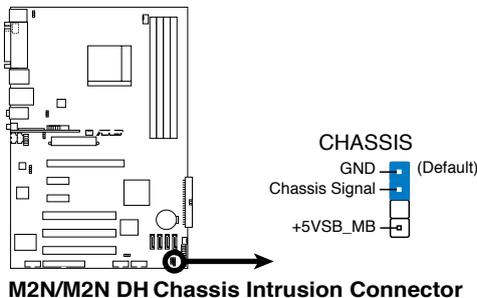
9. ATX power connectors (24-pin ATXPWR, 4-pin EATX12V)

These connectors are for ATX power supply plugs. The power supply plugs are designed to fit these connectors in only one orientation. Find the proper orientation and push down firmly until the connectors completely fit.

ATX12V

+12V DC
GND

+12V DC
GND

EATXPWR

+3 Volts
+3 Volts
Ground
+5 Volts
Ground
Ground
+5 Volts
Power OK
+5V Standby
+12 Volts
+12 Volts
+3 Volts

+3 Volts
-12 Volts
Ground
PSON#
Ground
Ground
Ground
-5 Volts
+5 Volts
+5 Volts
+5 Volts
Ground

M2N/M2N DH ATX Power Connector
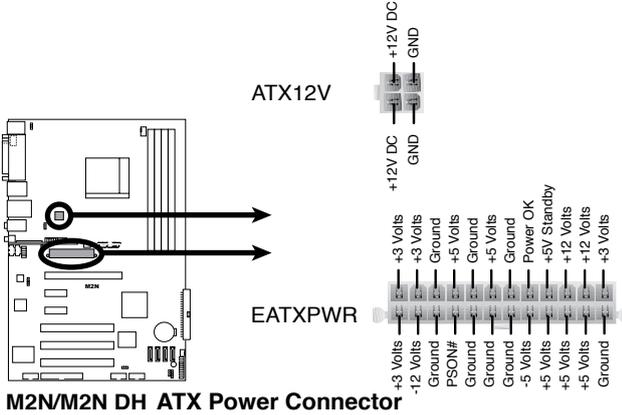
- For a fully configured system, we recommend that you use a power supply unit (PSU) that complies with ATX 12 V Specification 2.0 (or later version) and provides a minimum power of 600 W.

- Do not forget to connect the 4-pin ATX +12 V power plug; otherwise, the system will not boot.

- Use of a PSU with a higher power output is recommended when configuring a system with more power-consuming devices. The system may become unstable or may not boot up if the power is inadequate.

10. Front panel audio connector (10-1 pin AAFP)

This connector is for a chassis-mounted front panel audio I/O module that supports either HD Audio or legacy AC`97 audio standard. Connect one end of the front panel audio I/O module cable to this connector.

Azalia-compliant pin definition

Legacy AC'97-compliant pin definition

AAFP

HP_HD — HP_L
— Jack_Sense
MIC2_JD — HP_R
PRESENSE# — MIC2_R
AGND — MIC2_L

NC — Line out_L
— NC
NC — Line out_R
NC — MIC2_R
AGND — MIC2_L

M2N/M2N DH Front Panel Audio Connector
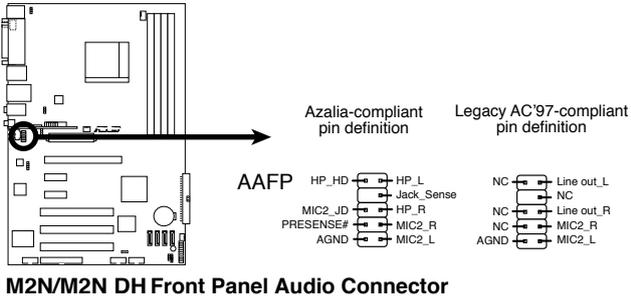
We recommend that you connect a high-definition front panel audio module to this connector to avail of the motherboard's high-definition audio capability.

11. Digital audio connector (4-1 pin SPDIF_OUT)

This connector is for an additional Sony/Philips Digital Interface (S/PDIF) port(s). Connect the S/PDIF In/Out module cable to this connector, then install the module to a slot opening at the back of the system chassis.

GND
SPDIFOUT

+5V

SPDIF_OUT

M2N/M2N DH Digital Audio Connector
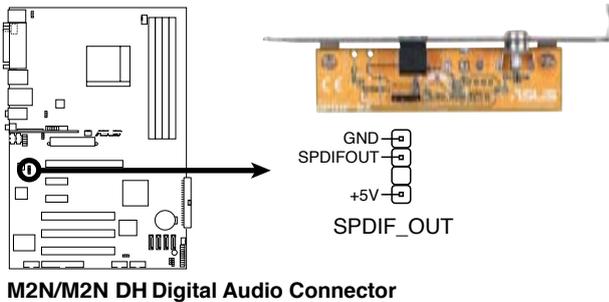
The S/PDIF module is purchased separately.

12. System panel connector (20-8 pin PANEL)

This connector supports several chassis-mounted functions.

PANEL

SPEAKER

Speaker — Ground
Ground — Reset
Ground
+5V — Ground
PWR

RESET

PWRSW

PLED

PLED-
PLED+

IDE_LED

IDE_LED-
IDE_LED+

* Requires an ATX power supply

M2N/M2N DH System Panel Connector
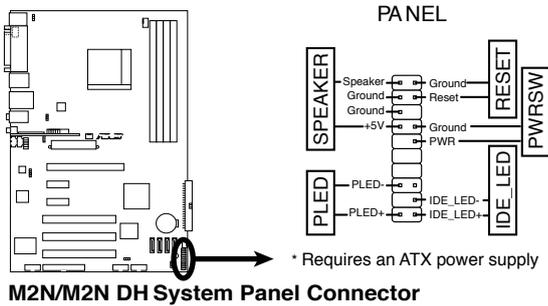
- **System power LED (2-pin PLED)**

    This 2-pin connector is for the system power LED. Connect the chassis power LED cable to this connector. The system power LED lights up when you turn on the system power, and blinks when the system is in sleep mode.

- **Hard disk drive activity LED (2-pin IDE_LED)**

    This 2-pin connector is for the HDD Activity LED. Connect the HDD Activity LED cable to this connector. The IDE LED lights up or flashes when data is read from or written to the HDD.

- **System warning speaker (4-pin SPEAKER)**

    This 4-pin connector is for the chassis-mounted system warning speaker. The speaker allows you to hear system beeps and warnings.

- **ATX power button/soft-off button (2-pin PWRSW)**

    This connector is for the system power button. Pressing the power button turns the system on or puts the system in sleep or soft-off mode depending on the BIOS settings. Pressing the power switch for more than four seconds while the system is ON turns the system OFF.

- **Reset button (2-pin RESET)**

    This 2-pin connector is for the chassis-mounted reset button for system reboot without turning off the system power.

Q-Connector (System panel)

ASUS Q-Connector allows you to easily to connect the chassis front panel cables to the motherboard. Perform these steps to install ASUS Q-Connector.

Step 1

Connect the front panel cables to their respective connectors on the ASUS Q-Connector. Refer to the labels on the Q-Connector for proper connection and pin definition.
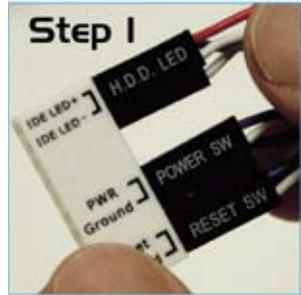
Step 2

Carefully connect the ASUS Q-Connector to the System panel connector.

> The ASUS Q-Connector fits only in one orientation; if it doesn't fit, try reversing it.
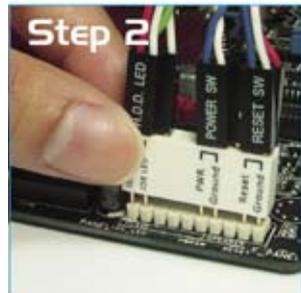
When installed, the Q-connector appears as shown.

This chapter describes the power up
sequence, the vocal POST messages,
and ways of shutting down the system.

Powering up 3

Chapter summary

3

3.1   Starting up for the first time

1.   After making all the connections, replace the system case cover.

2.   Be sure that all switches are off.

3.   Connect the power cord to the power connector at the back of the system chassis.

4.   Connect the power cord to a power outlet that is equipped with a surge protector.

5.   Turn on the devices in the following order:

    a.   Monitor

    b.   External SCSI devices (starting with the last device on the chain)

    c.   System power

6.   After applying power, the system power LED on the system front panel case lights up. For systems with ATX power supplies, the system LED lights up when you press the ATX power button. If your monitor complies with "green" standards or if it has a "power standby" feature, the monitor LED may light up or switch between orange and green after the system LED turns on.

    The system then runs the power-on self tests or POST. While the tests are running, the BIOS beeps or additional messages appear on the screen. If you do not see anything within 30 seconds from the time you turned on the power, the system may have failed a power-on test. Check the jumper settings and connections or call your retailer for assistance.

7.   At power on, hold down the <Del> key to enter the BIOS Setup. Follow the instructions in Chapter 4.

3.2 Powering off the computer

3.2.1 Using the OS shut down function

If you are using Windows® 2000:

1. Click the Start button then click Shut Down...
2. Make sure that the Shut Down option button is selected, then click the OK button to shut down the computer.
3. The power supply should turn off after Windows® shuts down.

If you are using Windows® XP:

1. Click the Start button then select Turn Off Computer.
2. Click the Turn Off button to shut down the computer.
3. The power supply should turn off after Windows® shuts down.

3.2.2 Using the dual function power switch

While the system is ON, pressing the power switch for less than four seconds puts the system to sleep mode or to soft-off mode, depending on the BIOS setting. Pressing the power switch for more than four seconds lets the system enter the soft-off mode regardless of the BIOS setting. Refer to section "4.5 Power Menu" in Chapter 4 for details.

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

BIOS setup

4

Chapter summary

4.1 Managing and updating your BIOS

The following utilities allow you to manage and update the motherboard Basic Input/Output System (BIOS) setup.

1. **ASUS EZ Flash 2** (Updates the BIOS using a floppy disk, USB Flash, or the motherboard support CD during POST.)
2. **ASUS AFUDOS** (Updates the BIOS in DOS mode using a bootable floppy disk.)
3. **ASUS CrashFree BIOS 3** (Updates the BIOS using a bootable floppy, USB Flash disk, or the motherboard support CD when the BIOS file fails or gets corrupted.)
4. **ASUS Update** (Updates the BIOS in Windows® environment.)

Refer to the corresponding sections for details on these utilities.

> Save a copy of the original motherboard BIOS file to a bootable floppy disk or a USB flash disk in case you need to restore the BIOS in the future. Copy the original motherboard BIOS using the ASUS Update or AFUDOS utilities.

4.1.1 Creating a bootable floppy disk

1. Do either one of the following to create a bootable floppy disk.
   DOS environment
   a. Insert a 1.44MB floppy disk into the drive.

   b. At the DOS prompt, type `format` **A:/S** then press <Enter>.
   Windows® XP environment
   a. Insert a 1.44 MB floppy disk to the floppy disk drive.

   b. Click **Start** from the Windows® desktop, then select **My Computer.**

   c. Select the 3 1/2 Floppy Drive icon.

   d. Click **File** from the menu, then select **Format**. A **Format 3 1/2 Floppy Disk** window appears.

   e. Select **Create an MS-DOS startup disk** from the format options field, then click **Start.**
   Windows® 2000 environment

   To create a set of boot disks for Windows® 2000:

   a. Insert a formatted, high density 1.44 MB floppy disk into the drive.

   b. Insert the Windows® 2000 CD to the optical drive.

   c. Click **Start**, then select **Run**.

   d. From the Open field, type

   D:\bootdisk\makeboot a:

   assuming that D: is your optical drive.

   e. Press <Enter>, then follow screen instructions to continue.

2.   Copy the original or the latest motherboard BIOS file to the bootable floppy disk.

4.1.2   ASUS EZ Flash 2 utility

The ASUS EZ Flash 2 feature allows you to update the BIOS without having to go through the long process of booting from a floppy disk and using a DOS-based utility. The EZ Flash 2 utility is built-in the BIOS chip so it is accessible by pressing <Alt> + <F2> during the Power-On Self-Test (POST).

To update the BIOS using EZ Flash 2:

1.   Visit the ASUS website (www.asus.com) to download the latest BIOS file for the motherboard.

2.   Save the BIOS file to a floppy disk or a USB flash disk, then restart the system.

3.   You can launch the EZ Flash 2 by two methods.

    (1)   Insert the floppy disk / USB flash disk that contains the BIOS file to the floppy disk drive or the USB port.

           Press <Alt> + <F2> during POST to display the following.

```
        ASUSTek EZ Flash 2 BIOS ROM Utility V3.00
FLASH TYPE: SST 49LF004/040B LP
       Current ROM                        Update ROM
  BOARD: M2N                          BOARD: Unknown
  VER:  0103                          VER:  Unknown
  DATE: 07/28/06                      DATE: Unknown
PATH: A:\
  A:




  Note
  [Enter] Select or Load       [B] Backup    [ESC] Exit
  [Tab] Switch                 [Up/Down/Home/End] Move
```
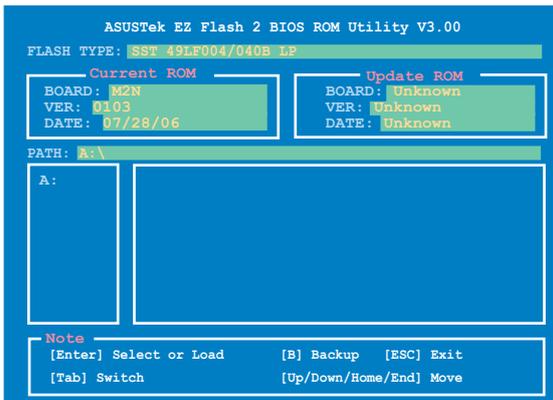
    (2)   Enter BIOS setup program. Go to the **Tools** menu to select **EZ Flash2** and press <Enter> to enable it.

           You can switch between drives by pressing <Tab> before the correct file is found. Then press <Enter>.

4.   When the correct BIOS file is found, EZ Flash 2 performs the BIOS update process and automatically reboots the system when done.

⚠️   •   This function can support devices such as USB flash disk, or floppy disk with **FAT 32/16** format only.

      •   Do not shut down or reset the system while updating the BIOS to prevent system boot failure!

⚠️ • This function can support devices such as USB flash disk, or floppy disk with **FAT 32/16** format only.

• Do not shut down or reset the system while updating the BIOS to prevent system boot failure!

4.1.3   AFUDOS utility

The AFUDOS utility allows you to update the BIOS file in DOS environment using a bootable floppy disk with the updated BIOS file. This utility also allows you to copy the current BIOS file that you can use as backup when the BIOS fails or gets corrupted during the updating process.

Copying the current BIOS

To copy the current BIOS file using the AFUDOS utility:

🖉 • Make sure that the floppy disk is not write-protected and has at least 1024KB free space to save the file.

• The succeeding BIOS screens are for reference only. The actual BIOS screen displays may not be same as shown.

1. Copy the AFUDOS utility (afudos.exe) from the motherboard support CD to the bootable floppy disk you created earlier.

2. Boot the system in DOS mode, then at the prompt type:

   afudos /o[filename]

   where the [filename] is any user-assigned filename not more than eight alphanumeric characters for the main filename and three alphanumeric characters for the extension name.

   ```
   A:\>afudos /oOLDBIOS1.rom
   ```
   Main filename   Extension name

3. Press <Enter>. The utility copies the current BIOS file to the floppy disk.

   ```
   A:\>afudos /oOLDBIOS1.rom
   AMI Firmware Update Utility - Version 1.19(ASUS V2.07(03.11.24BB))
   Copyright (C) 2002 American Megatrends, Inc. All rights reserved.
      Reading flash ..... done
      Write to file...... ok
   A:\>
   ```

   The utility returns to the DOS prompt after copying the current BIOS file.

Updating the BIOS file

To update the BIOS file using the AFUDOS utility:

1. Visit the ASUS website (www.asus.com) and download the latest BIOS file for the motherboard. Save the BIOS file to a bootable floppy disk.

    > Write the BIOS filename on a piece of paper. You need to type the exact BIOS filename at the DOS prompt.

2. Copy the AFUDOS utility (afudos.exe) from the motherboard support CD to the bootable floppy disk you created earlier.

3. Boot the system in DOS mode, then at the prompt type:

    afudos /i[filename]

    where [filename] is the latest or the original BIOS file on the bootable floppy disk.

    ```
    A:\>afudos /iM2N.ROM
    ```

4. The utility verifies the file and starts updating the BIOS.

    ```
    A:\>afudos /iM2N.ROM
    AMI Firmware Update Utility - Version 1.19(ASUS V2.07(03.11.24BB))
    Copyright (C) 2002 American Megatrends, Inc. All rights reserved.

        WARNING!! Do not turn off power during flash BIOS
        Reading file ....... done
        Reading flash ...... done

        Advance Check ......
        Erasing flash ...... done
    ```

    > Do not shut down or reset the system while updating the BIOS to prevent system boot failure!

5. The utility returns to the DOS prompt after the BIOS update process is completed. Reboot the system from the hard disk drive.

    ```
    A:\>afudos /iM2N.ROM
    AMI Firmware Update Utility - Version 1.19(ASUS V2.07(03.11.24BB))
    Copyright (C) 2002 American Megatrends, Inc. All rights reserved.

        WARNING!! Do not turn off power during flash BIOS
        Reading file ....... done
        Reading flash ...... done

        Advance Check ......
        Erasing flash ...... done
        Writing flash ...... done
        Verifying flash .... done

        Please restart your computer

    A:\>
    ```

4.1.4   ASUS CrashFree BIOS 3 utility

The ASUS CrashFree BIOS 3 is an auto recovery tool that allows you to restore the BIOS file when it fails or gets corrupted during the updating process. You can update a corrupted BIOS file using the motherboard support CD, the USB flash disk, or the floppy disk that contains the updated BIOS file.

- Prepare the motherboard support CD, the USB flash disk, or the floppy disk containing the updated motherboard BIOS before using this utility.

- Make sure that you rename the original or updated BIOS file in the floppy disk or the USB flash disk to **M2N.ROM** for M2N model, and **M2NDH.ROM** for M2N DH model.

Recovering the BIOS from the USB flash disk

To recover the BIOS from the USB flash disk:

1.   Insert the USB flash disk that contains BIOS file to the USB port.

2.   Turn on the system.

3.   The utility will automatically checks the devices for the BIOS file when found, the utility reads the BIOS file and starts flashing the corrupted BIOS file.

4.   Restart the system after the utility completes the updating process.

- Only the USB flash disk with FAT 32/16 format and single partition can support ASUS CrashFree BIOS 3. The device size should be smaller than 8GB.

- DO NOT shut down or reset the system while updating the BIOS! Doing so can cause system boot failure!

Recovering the BIOS from a floppy disk

To recover the BIOS from a floppy disk:

1.   Turn on the system.

2.   Insert the floppy disk with the original or updated BIOS file to the floppy disk drive.

3.   The utility displays the following message and automatically checks the floppy disk for the original or updated BIOS file.

```
Bad BIOS checksum. Starting BIOS recovery...
Checking for floppy...
```

When found, the utility reads the BIOS file and starts flashing the corrupted BIOS file.

```
Bad BIOS checksum. Starting BIOS recovery...
Checking for floppy...
Floppy found!
Reading file "M2N.ROM". Completed.
Start flashing...
```

DO NOT shut down or reset the system while updating the BIOS! Doing so can cause system boot failure!

4.   Restart the system after the utility completes the updating process.

Recovering the BIOS from the support CD

To recover the BIOS from the support CD:

1.   Remove any floppy disk from the floppy disk drive, then turn on the system.
2.   Insert the support CD to the optical drive.
3.   The utility displays the following message and automatically checks the floppy disk for the original or updated BIOS file.

```
Bad BIOS checksum. Starting BIOS recovery...
Checking for floppy...
```

When no floppy disk is found, the utility automatically checks the optical drive for the original or updated BIOS file. The utility then updates the corrupted BIOS file.

```
Bad BIOS checksum. Starting BIOS recovery...
Checking for floppy...
Floppy not found!
Checking for CD-ROM...
CD-ROM found!
Reading file "M2N.ROM". Completed.
Start flashing...
```

DO NOT shut down or reset the system while updating the BIOS! Doing so can cause system boot failure!

4.   Restart the system after the utility completes the updating process.

> The recovered BIOS may not be the latest BIOS version for this motherboard. Visit the ASUS website (www.asus.com) to download the latest BIOS file.

4.1.5   ASUS Update utility

The ASUS Update is a utility that allows you to manage, save, and update the motherboard BIOS in Windows® environment. The ASUS Update utility allows you to:

- • Save the current BIOS file
- • Download the latest BIOS file from the Internet
- • Update the BIOS from an updated BIOS file
- • Update the BIOS directly from the Internet, and
- • View the BIOS version information.

This utility is available in the support CD that comes with the motherboard package.

> ASUS Update requires an Internet connection either through a network or an Internet Service Provider (ISP).

Installing ASUS Update

To install ASUS Update:

1.   Place the support CD in the optical drive. The **Drivers** menu appears.

2.   Click the **Utilities** tab, then click **Install ASUS Update**. See page 5-3 for the **Utilities** screen menu.

3.   The ASUS Update utility is copied to your system.

> Quit all Windows® applications before you update the BIOS using this utility.

Updating the BIOS through the Internet

To update the BIOS through the Internet:

1. Launch the ASUS Update utility from the Windows® desktop by clicking **Start > Programs > ASUS > ASUSUpdate > ASUSUpdate**. The ASUS Update main window appears.
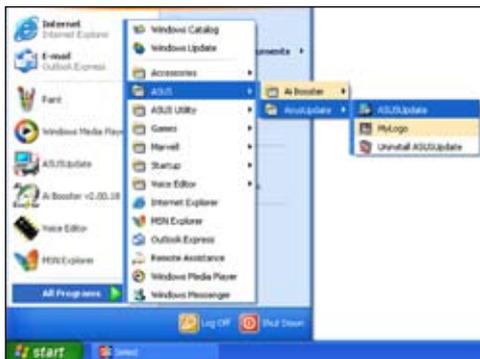
2. Select **Update BIOS from the Internet** option from the drop-down menu, then click **Next**.

3. Select the ASUS FTP site nearest you to avoid network traffic, or click **Auto Select**. Click **Next**.

4. From the FTP site, select the BIOS version that you wish to download. Click **Next**.

5. Follow the screen instructions to complete the update process.

    ✏️ The ASUS Update utility is capable of updating itself through the Internet. Always update the utility to avail all its features.

Updating the BIOS through a BIOS file

To update the BIOS through a BIOS file:

1. Launch the ASUS Update utility from the Windows® desktop by clicking **Start > Programs > ASUS > ASUSUpdate > ASUSUpdate**. The ASUS Update main window appears.

2. Select **Update BIOS from a file** option from the drop-down menu, then click **Next**.

3. Locate the BIOS file from the **Open** window, then click **Open**.

4. Follow the screen instructions to complete the update process.
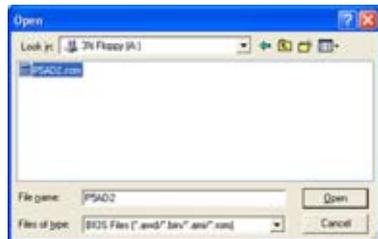
4.2   BIOS setup program

This motherboard supports a programmable firmware chip that you can update using the provided utility described in section "4.1 Managing and updating your BIOS."

Use the BIOS Setup program when you are installing a motherboard, reconfiguring your system, or prompted to"Run Setup." This section explains how to configure your system using this utility.

Even if you are not prompted to use the Setup program, you can change the configuration of your computer in the future. For example, you can enable the security password feature or change the power management settings. This requires you to reconfigure your system using the BIOS Setup program so that the computer can recognize these changes and record them in the CMOS RAM of the SPI chip.

The firmware chip on the motherboard stores the Setup utility. When you start up the computer, the system provides you with the opportunity to run this program. Press <Del> during the Power-On Self-Test (POST) to enter the Setup utility; otherwise, POST continues with its test routines.

If you wish to enter Setup after POST, reboot the system by doing any of the following procedures:

  • Restart using the OS standard shut-down procedure.
  • Press <Ctrl>+<Alt>+<Del> simultaneously.
  • Press the reset button on the system chassis.
  • Press the power button to turn the system off then back on.

> ⚠ Using the **power button**, **reset button**, or the **<Ctrl>+<Alt>+<Del>** keys to force reset from a running operating system can cause damage to your data or system. We recommend to always shut-down the system properly from the operating system.

The Setup program is designed to make it as easy to use as possible. Being a menu-driven program, it lets you scroll through the various sub-menus and make your selections from the available options using the navigation keys.

> •   The default BIOS settings for this motherboard apply for most conditions to ensure optimum performance. If the system becomes unstable after changing any BIOS settings, load the default settings to ensure system compatibility and stability. Select the **Load Setup Defaults** item under the Exit Menu. See section "4.8 Exit Menu."
>
> •   The BIOS setup screens shown in this section are for reference purposes only, and may not exactly match what you see on your screen.
>
> •   Visit the ASUS website (www.asus.com) to download the latest BIOS file for this motherboard.

4.2.1   BIOS menu screen

Menu items   Menu bar   Configuration fields   General help

```
                          BIOS SETUP UTILITY
   Main    Advanced    Power    Boot    Tools    Exit

   System Time              [11:51:19]              Use [ENTER], [TAB]
   System Date             [Mon 05/15/2006]         or [SHIFT-TAB] to
   Legacy Diskette A       [1.44M, 3.5 in]          select a field.
                                                    Use [+] or [-] to
   ▶  IDE Configuration                             configure system time.

   ▶  Primary IDE Master        :[Not Detected]
   ▶  Primary IDE Slave         :[Not Detected]
   ▶  SATA 1                     :[Not Detected]
   ▶  SATA 2                     :[Not Detected]
   ▶  SATA 3                     :[Not Detected]     ←→     Select Screen
   ▶  SATA 4                     :[Not Detected]     ↑↓     Select Item
                                                     +-     Change Option
   ▶  System Information                             F1     General Help
                                                     F10    Save and Exit
                                                     ESC    Exit

           v00.00 (C)Copyright 1985-2002, American Megatrends, Inc.
```

Sub-menu items   Navigation keys

4.2.2   Menu bar

The menu bar on top of the screen has the following main items:

Main   For changing the basic system configuration

Advanced   For changing the advanced system settings

Power   For changing the advanced power management (APM) configuration

Boot   For changing the system boot configuration

Tools   For setting EZ Flash 2 and O.C. Profile.

Exit   For selecting the exit options and loading default settings

To select an item on the menu bar, press the right or left arrow key on the keyboard until the desired item is highlighted.

4.2.3   Navigation keys

At the bottom right corner of a menu screen are the navigation keys for that particular menu. Use the navigation keys to select items in the menu and change the settings.

Some of the navigation keys differ from one screen to another.

4.2.4   Menu items

The highlighted item on the menu bar displays the specific items for that menu. For example, selecting Main shows the Main menu items.

The other items (Advanced, Power, Boot, Tool, and Exit) on the menu bar have their respective menu items.
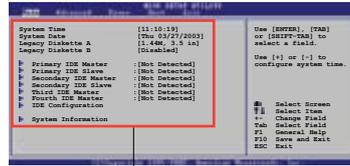
Main menu items

4.2.5   Sub-menu items

A solid triangle before each item on any menu screen means that the iteam has a sub-menu. To display the sub-menu, select the item and press <Enter>.

4.2.6   Configuration fields

These fields show the values for the menu items. If an item is user- configurable, you can change the value of the field opposite the item. You cannot select an item that is not user-configurable.

A configurable field is enclosed in brackets, and is highlighted when selected. To change the value of a field, select it then press <Enter> to display a list of options. Refer to "4.2.7 Pop-up window."

4.2.7   Pop-up window

Select a menu item then press <Enter> to display a pop-up window with the configuration options for that item.

4.2.8   Scroll bar

A scroll bar appears on the right side of a menu screen when there are items that do not fit on the screen. Press the Up/Down arrow keys or <Page Up> /<Page Down> keys to display the other items on the screen.
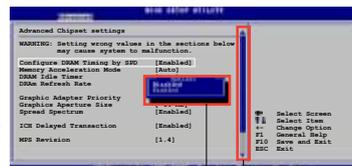
Pop-up window

Scroll bar

4.2.9   General help

At the top right corner of the menu screen is a brief description of the selected item.

4.3 Main menu

When you enter the BIOS Setup program, the Main menu screen appears, giving you an overview of the basic system information.

> Refer to section "4.2.1 BIOS menu screen" for information on the menu screen items and how to navigate through them.

```
                          BIOS SETUP UTILITY
 Main    Advanced    Power    Boot    Tools    Exit

 System Time                    [11:51:19]           Use [ENTER], [TAB]
 System Date                    [Mon 05/15/2006]     or [SHIFT-TAB] to
 Legacy Diskette A              [1.44M, 3.5 in]      select a field.

 ▶  IDE Configuration                                Use [+] or [-] to
                                                     configure system time.
 ▶  Primary IDE Master          :[Not Detected]
 ▶  Primary IDE Slave           :[Not Detected]
 ▶  SATA 1                       :[Not Detected]
 ▶  SATA 2                       :[Not Detected]
 ▶  SATA 3                       :[Not Detected]
 ▶  SATA 4                       :[Not Detected]      ←→     Select Screen
                                                     ↑↓     Select Item
 ▶  System Information                                +-     Change Option
                                                     F1     General Help
                                                     F10    Save and Exit
                                                     ESC    Exit

            v00.00 (C)Copyright 1985-2002, American Megatrends, Inc.
```

4.3.1 System Time [xx:xx:xx]

Allows you to set the system time.

4.3.2 System Date [Day xx/xx/xxxx]

Allows you to set the system date.

4.3.3 Legacy Diskette A [1.44M, 3.5 in.]

Sets the type of floppy drive installed. Configuration options: [Disabled] [360K, 5.25 in.] [1.2M , 5.25 in.] [720K , 3.5 in.] [1.44M, 3.5 in.] [2.88M, 3.5 in.]

4.3.4   IDE Configuration

The items in this menu allow you to set or change the configurations for the IDE devices installed in the system. Select an item then press <Enter> if you wish to configure the item.

```
                          BIOS SETUP UTILITY
  Main

  IDE Configuration

  Onboard IDE Controller        [Enabled]
  Serial-ATA Devices            [Device 0/1]

  nVidia RAID Function          [Disabled]
```

Onboard IDE Controller [Enabled]

Allows you to enable or disable the onboard IDE controller.
Configuration options: [Enabled] [Disabled]

Serial-ATA Devices [Device 0/1]

Allows you to disable or set the Serial-ATA devices.
Configuration options: [Disabled] [Device 0] [Device 0/1]

nVidia RAID Function [Disabled]

Allows you to enable or disable the NVIDIA RAID function.
Configuration options: [Enabled] [Disabled]

4.3.5   Primary IDE Master/ Slave

While entering Setup, the BIOS automatically detects the presence of IDE devices. There is a separate sub-menu for each IDE device. Select a device item then press <Enter> to display the IDE device information.

The BIOS automatically detects the values opposite the dimmed items (Device, Vendor, Size, LBA Mode, Block Mode, PIO Mode, Async DMA, Ultra DMA, and SMART monitoring). These values are not user-configurable. These items show N/A if no IDE device is installed in the system.

Type [Auto]

Selects the type of IDE drive. Setting to Auto allows automatic selection of the appropriate IDE device type. Select CDROM if you are specifically configuring a CD-ROM drive. Select ARMD (ATAPI Removable Media Device) if your device is either a ZIP, LS-120, or MO drive. Configuration options: [Not Installed] [Auto] [CDROM] [ARMD]

LBA/Large Mode [Auto]

Enables or disables the LBA mode. Setting to Auto enables the LBA mode if the device supports this mode, and if the device was not previously formatted with LBA mode disabled. Configuration options: [Disabled] [Auto]

Block (Multi-sector Transfer) M [Auto]

Enables or disables data multi-sectors transfers. When set to Auto, the data transfer from and to the device occurs multiple sectors at a time if the device supports multi-sector transfer feature. When set to [Disabled], the data transfer from and to the device occurs one sector at a time. Configuration options: [Disabled] [Auto]

PIO Mode [Auto]

Selects the PIO mode.
Configuration options: [Auto] [0] [1] [2] [3] [4]

DMA Mode [Auto]

Selects the DMA mode. Configuration options: [Auto] [SWDMA0] [SWDMA1]
[SWDMA2] [MWDMA0] [MWDMA1] [MWDMA2] [UDMA0] [UDMA1] [UDMA2]
[UDMA3] [UDMA4] [UDMA5]

SMART Monitoring [Auto]

Sets the Smart Monitoring, Analysis, and Reporting Technology. Configuration
options: [Auto] [Disabled] [Enabled]

32Bit Data Transfer [Enabled]

Enables or disables 32-bit data transfer.
Configuration options: [Disabled] [Enabled]

4.3.6 SATA1, SATA2, SATA3, SATA4

While entering Setup, the BIOS automatically detects the presence of Serial ATA devices. There is a separate sub-menu for each Serial ATA device. Select a device item then press <Enter> to display the Serial ATA device information.
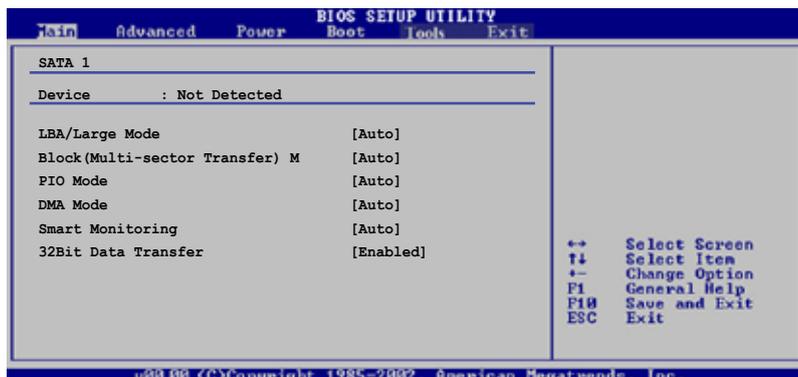
The BIOS automatically detects the values opposite the dimmed items (Device, Vendor, Size, LBA Mode, Block Mode, PIO Mode, Async DMA, Ultra DMA, and SMART monitoring). These values are not user-configurable. These items show N/A if no IDE device is installed in the system.

LBA/Large Mode [Auto]

Enables or disables the LBA mode. Setting to Auto enables the LBA mode if the device supports this mode, and if the device was not previously formatted with LBA mode disabled. Configuration options: [Disabled] [Auto]

Block (Multi-sector Transfer) M [Auto]

Enables or disables data multi-sectors transfers. When set to Auto, the data transfer from and to the device occurs multiple sectors at a time if the device supports multi-sector transfer feature. When set to [Disabled], the data transfer from and to the device occurs one sector at a time. Configuration options: [Disabled] [Auto]

PIO Mode [Auto]

Selects the PIO mode. Configuration options: [Auto] [0] [1] [2] [3] [4]

DMA Mode [Auto]

Selects the DMA mode. Configuration options: [Auto] [SWDMA0] [SWDMA1] [SWDMA2] [MWDMA0] [MWDMA1] [MWDMA2] [UDMA0] [UDMA1] [UDMA2] [UDMA3] [UDMA4] [UDMA5]

SMART Monitoring [Auto]

Sets the Smart Monitoring, Analysis, and Reporting Technology. Configuration
options: [Auto] [Disabled] [Enabled]

32Bit Data Transfer [Disabled]

Enables or disables 32-bit data transfer.
Configuration options: [Disabled] [Enabled]

4.3.7   System Information

This menu gives you an overview of the general system specifications. The BIOS
automatically detects the items in this menu.

```
                          BIOS SETUP UTILITY
 Main

   AMIBIOS

   Version    : 0105
   Build Date : 08/03/06

   Processor

   Type     : AMD Sempron(tm) Processor 3200+
   Speed    : 1800MHz
   Count    : 1

   System Memory                        ←→   Select Screen
   Usable Size: 256MB                    ↑↓   Select Item
                                         +-   Change Option
                                         F1   General Help
                                         F10  Save and Exit
                                         ESC  Exit
```
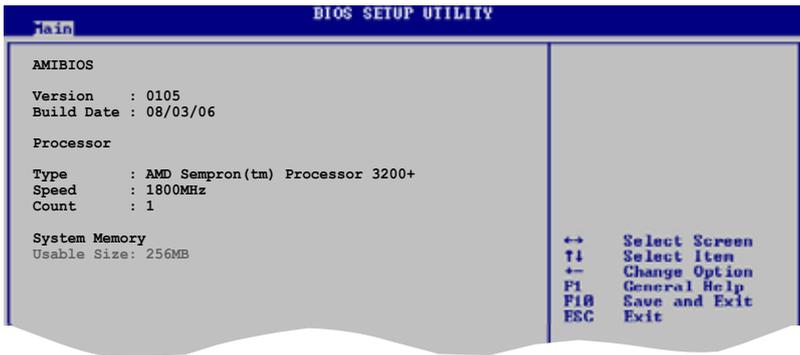
AMI BIOS

Displays the auto-detected BIOS information

Processor

Displays the auto-detected CPU specification

System Memory

Displays the auto-detected system memory

4.4 Advanced menu

The Advanced menu items allow you to change the settings for the CPU and other system devices.

⚠️ Take caution when changing the settings of the Advanced menu items. Incorrect field values can cause the system to malfunction.

```
                          BIOS SETUP UTILITY
Main    Advanced    Power    Boot    Tools    Exit

    ▶  Jumperfree Configuration
    ▶  CPU Configuration
    ▶  Chipset
    ▶  Onboard Devices Configuration
    ▶  PCIPnP
    ▶  USB Configuration



                                              ←→     Select Screen
                                              ↑↓     Select Item
                                              Enter  Go to Sub Screen
                                              F1     General Help
                                              F10    Save and Exit
                                              ESC    Exit

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```

4.4.1 Jumperfree Configuration

```
                          BIOS SETUP UTILITY
    Advanced

   Configure System Frequency/Voltage


   AI Overclocking              [Auto]
   Memory Voltage               [Auto]
```
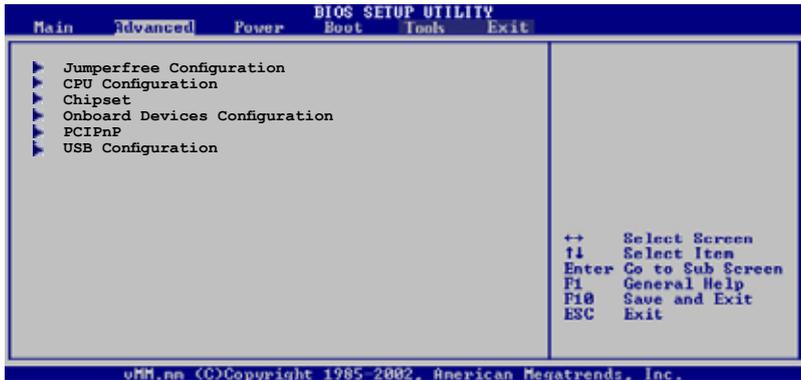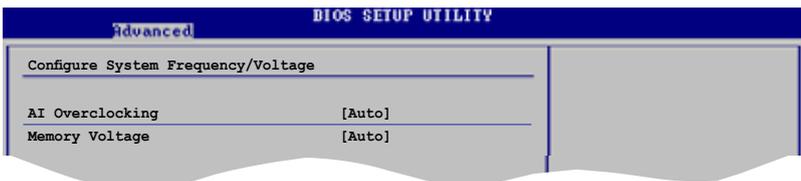
AI Overclocking [Auto]

Allows selection of CPU overclocking options to achieve desired CPU internal frequency. Select either one of the preset overclocking configuration options:

Manual - allows you to individually set overclocking parameters.

Auto - loads the optimal settings for the system.

Standard - loads the standard settings for the system.

Overclock Profile - loads overclocking profiles with optimal parameters for stability when overclocking.

Memory Voltage [Auto]

Allows you to select the memory voltage or set it to auto for safe mode. Configuration options: [Auto] [1.80V] [1.90V]

The following items appear only when the AI overclocking item is set to [Manual].

CPU Frequency [200]

Displays the frequency sent by the clock generator to the system bus and PCI bus. The value of this item is auto-detected by the BIOS. Use the <+> and <-> keys to adjust the CPU frequency. You can also type the desired CPU frequency using the numeric keypad. The values range from 200 to 300.

PCI Express Frequency [Auto]

Allows you to select PCI Express frequency.
Configuration options: [Auto] [100] [101] [102]... [150]

4.4.2 CPU Configuration

The items in this menu show the CPU-related information that the BIOS automatically detects.

```
                          BIOS SETUP UTILITY
      Advanced

  CPU Configuration                                  This option should
  Module Version: 13.05                              remain disabled for
  AGESA Version: 02.06.09                            the normal operation.
  Physical Count: 1                                  The driver developer
  Logical Count : 1                                  may enable it for
                                                     testing purpose.
  AMD Opteron(tm) Processor 146
  Revision: CG
  Cache L1: 128KB
  Cache L2: 1024KB
  Speed   : 2000MHz
  Current FSB Multiplier: 10x
  Maximum FSB Multiplier: 9X          ←→    Select Screen
  Able to Change Freq   : Yes         ↑↓    Select Item
  uCode Patch Level  : None Required  +-    Change Option
  GART Error Reporting       [Disabled]  F1    General Help
  MTRR Mapping               [Continuous] F10   Save and Exit
  Runtime Legacy PSB         [Disabled]   ESC   Exit
  Cool'n'Quiet               [Enabled]

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```

GART Error Reporting [Disabled]

Enables or disables the GART Error reporting feature.
Configuration options: [Disabled] [Enabled]

MTRR Mapping [Continuous]

Sets the method used for programming CPU MTRRs when 4GB or more memory is installed on the system. When set to Discrete, the BIOS leaves the PCI hole below the 4GB boundary undescribed. Set to Continuous to describe the PCI hole as non-cacheable. Configuration options: [Continuous] [Discrete]

Runtime Legacy PSB [Disabled]

Enables or disables the generation of Power State Block for use of PowerNow™ driver in a single core system. Configuration options: [Enabled] [Disabled]

Cool 'N' Quiet [Enabled]

Enables or disables the ASUS AMD Cool 'n' Quiet technology feature.
Configuration options: [Enabled] [Disabled]

4.4.3   Chipset

The Chipset menu allows you to change the advanced chipset settings. Select an item then press <Enter> to display the sub-menu.

```
                          BIOS SETUP UTILITY
    Advanced

 ►  Memory Controller                             Options for NB.
 ►  SouthBridge Configuration
 ►  Hyper Transport Configuration
```

Memory Controller

The Memory Conotroller menu allows you to change the Northbridge settings.

```
                          BIOS SETUP UTILITY
    Advanced

 Memory Controller
 ► Memory Configuration
 Power Down Control        [Auto]

 Memory CLK               : 200 MHz
 CAS Latency (Tcl)        : 3.0
 RAS/CAS Delay (Trcd)     : 3 CLK
 Min Active RAS (Tras)    : 8 CLK
 Row Precharge Time (Trp) : 3 CLK
 RAS/RAS Delay (Trrd)     : 2 CLK
 Row Cycle (Trc)          : 11 CLK
 Row Refresh Cycle (Trfc) : 14 CLK         ←    Select Screen
 Read Write Delay (Trwt)  : 4 CLK          ↑↓   Select Item
 Read Preamble            : 5.5 ns         +-   Change Option
 Asynchronous Latency     : 7 ns           F1   General Help
                                           F10  Save and Exit
                                           ESC  Exit

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```

Memory Configuration

The memory configuration menu allows you to change the memory settings.

```
                          BIOS SETUP UTILITY
    Advanced

 Memory Configuration                             MEMCLK can be set
 Memclock Mode            [Auto]                  by the code using
 MCT Timing Mode          [Auto]                  AUTO, or if you use
 Bank Interleaving        [Auto]                  LIMIT, you can set
 Enable Clock to All DIMMs  [Disabled]            one of the standard
 MemClk Tristate C3/ATLVID  [Disabled]            values.
 Memory Hole Remapping      [Enabled]
```

Memclock Mode [Auto]
Sets the memory clock mode. Configuration options: [Auto] [Limit] [Manal]

The following items appear when the **Memclock Mode** is set to Limit or manual.

Memclock Value [400 MHz]

Sets the memory clock mode limit. This item appears only when the Memory Mode item is set to Limit. Configuration options: [400 MHz] [533 MHz] [667 MHz] [800 MHz]

MCT Timing Mode [Auto]
Sets the MCT Timing mode.
Configuration options: [Auto] [Manual]

The following item appears when the **MCT Timing Mode** item is set to [Manual].

CAS Latency (CL) [Auto]

Configuration options: [Auto] [3.0] [4.0] [5.0] [6.0]

TRAS [Auto]

Configuration options: [Auto] [5 CLK] [6 CLK]... [18 CLK]

TRP [Auto]

Configuration options: [Auto] [3 CLK] [4 CLK] [5 CLK] [6 CLK]

TRCD [Auto]

Configuration options: [Auto] [3 CLK] [4 CLK] [5 CLK] [6 CLK]

TRRD [Auto]

Configuration options: [Auto] [2T] [3T] [4T] [5T]

TRC [Auto]

Configuration options: [Auto] [11T] [12T] [13T]...[25T]

Bank Interleaving [Auto]
Sets the bank interleaving feature.
Configuration options: [Auto] [Disabled]

The Bank Interleaving item appears only when you use a memmory that supports this function.

Enable Clock to All DIMMs [Disabled]
Enables or disables the unused clocks to DIMMs, even if the memory slots are not populated. Configuration options: [Enabled] [Disabled]

MemClk Tristate C3/ATLVID [Disabled]
Enables or disables the MemClk Tri-Stating during C3 and Alt VID.
Configuration options: [Enabled] [Disabled]

Memory Hole Remapping [Enabled]
Enables or disables the memory remapping around the memory hole.
Configuration options: [Enabled] [Disabled]

Power Down Control [Auto]

Allows the DIMMs to enter power down mode by deasserting the clock enable signal when DIMMs are not in use. Configuration options: [Auto] [Disabled]

SouthBridge Configuration

The SouthBridge Configuration menu allows you to change the SouthBridge settings.

```
                      BIOS SETUP UTILITY
       Advanced

  South Bridge Chipset Configuration          Enable or Disable
                                              SMBus Controller.
  Primary Graphics Adapter      [PCIE]
  AZILIA AUDIO                   [Auto]
  OnBoard LAN                    [Auto]
   OnBoard LAN Boot ROM          [Disabled]
```
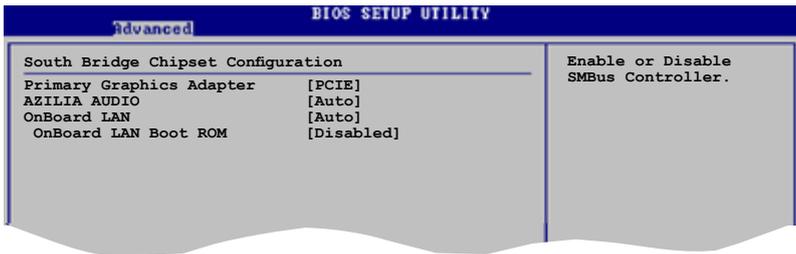
Primary Graphics Adapter [PCIE]

Allows you to select the graphics controller to use as the primary boot device.
Configuration options: [PCI] [PCIE]

AZALIA AUDIO [Auto]

Allows you to disable or set the High-Definition audio function.
Configuration options: [Auto] [Disabled]

OnBoard LAN [Auto]

Allows you to disable or set the onboard LAN controller.
Configuration options: [Disabled] [Auto]

OnBoard LAN Boot ROM [Disabled]
Allows you to enable or disable the option ROM in the onboard LAN controller. This item appears only when the Onboard LAN item is set to Enabled. Configuration options: [Disabled] [Enabled]

Hyper Transport MCP61 Configuration

```
                          BIOS SETUP UTILITY
         Advanced

  Hyper Transport MCP61 Configuration

  MCP61(SB) to K8(CPU) Freq Auto        [Disabled]
  MCP61(SB) to K8(CPU) Frequency        [1000 MHz]
  MCP61(SB) to K8(CPU) LinkWidth        [16↑16↓]
```
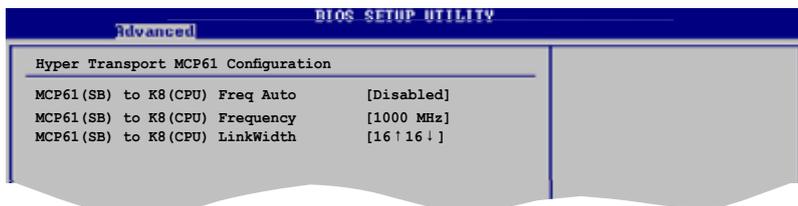
MCP61 (SB) to K8 (CPU) Freq Auto [Disabled]

Enables or disables the CPU to automatically adjust Hyper Transport frequency.
Configuration options: [Disabled] [Enabled]

MCP61 (SB) to K8 (CPU) Frequency [1000MHz]

Allows you to set the Hyper Transport frequency. This item appears when you set
the MCP61(SB) to K8(CPU) Freq Auto to Disabled.
Configuration options: [200 MHz] [400 MHz] [800 MHz] [1000 MHz].

MCP61 (SB) to K8 (CPU) LinkWidth [[16 ↑ 16 ↓]]

Sets the Hyper Transport width.
Configuration options: [4 ↑ 4 ↓] [8 ↑ 8 ↓] [16 ↑ 16 ↓]

4.4.4   Onboard Devices Configuration

```
                          BIOS SETUP UTILITY
         Advanced

   Serial Port1 Address               [3F8/IRQ4]
   Parallel Port Address              [378]
   Parallel Port Mode                 [Normal]
     Parallel Port IRQ                [IRQ7]
```
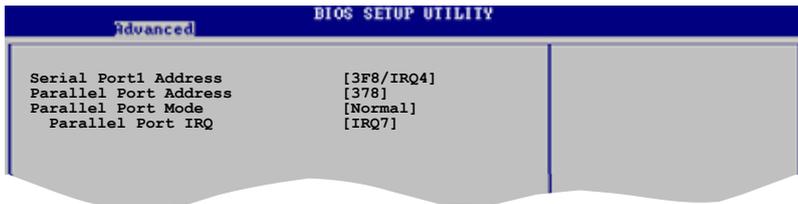
Serial Port1 Address [3F8/IRQ4]

Allows you to select the Serial Port1 base address. Configuration options:
[Disabled] [3F8/IRQ4][2F8/IRQ3] [3E8/IRQ4] [2E8/IRQ3]

Parallel Port Address [378]

Allows you to select the Parallel Port base addresses.
Configuration options: [Disabled] [378] [278] [3BC]

Parallel Port Mode [Normal]

Allows you to select the Parallel Port mode.
Configuration options: [Normal] [EPP] [ECP] [EPP+ECP]

ECP Mode DMA Channel [DMA3]

Appears only when the Parallel Port Mode is set to [ECP] or [EPP+ECP]. This item allows you to set the Parallel Port ECP DMA. Configuration options: [DMA0] [DMA1] [DMA3]

EPP Version [1.9]

Appears only when the Parallel Port Mode is set to [EPP] or [EPP+ECP]. Configuration options: [1.9] [1.7]

Parallel Port IRQ [IRQ7]
Configuration options: [IRQ5] [IRQ7]

4.4.5   PCI PnP

The PCI PnP menu items allow you to change the advanced settings for PCI/PnP devices. The menu includes setting IRQ and DMA channel resources for either PCI/PnP or legacy ISA devices, and setting the memory size block for legacy ISA devices.

> ⚠ Take caution when changing the settings of the PCI PnP menu items. Incorrect field values can cause the system to malfunction.

```
                          BIOS SETUP UTILITY
       Advanced

   Advanced PCI/PnP Settings

   WARNING: Setting wrong values in below sections
            may cause system to malfunction.

   Plug And Play O/S             [No]
   PCI Latency Timer             [64]
   Allocate IRQ to PCI VGA       [Yes]
   Palette Snooping              [Disabled]

   IRQ-3 assigned to             [PCI Device]
   IRQ-4 assigned to             [PCI Device]
   IRQ-5 assigned to             [PCI Device]          ←→   Select Screen
   IRQ-7 assigned to             [PCI Device]          ↑↓   Select Item
   IRQ-9 assigned to             [PCI Device]          +-   Change Option
   IRQ-10 assigned to            [PCI Device]          F1   General Help
   IRQ-11 assigned to            [PCI Device]          F10  Save and Exit
   IRQ-14 assigned to            [PCI Device]          ESC  Exit
   IRQ-15 assigned to            [PCI Device]

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```

Plug and Play O/S [No]

When set to [No], BIOS configures all the devices in the system. When set to [Yes] and if you install a Plug and Play operating system, the operating system configures the Plug and Play devices not required for boot. Configuration options: [No] [Yes]

PCI Latency Timer [64]

Allows you to select the value in units of PCI clocks for the PCI device latency timer register. Configuration options: [32] [64] [96] [128] [160] [192] [224] [248]

Allocate IRQ to PCI VGA [Yes]

When set to [Yes], BIOS assigns an IRQ to PCI VGA card if the card requests for an IRQ. When set to [No], BIOS does not assign an IRQ to the PCI VGA card even if requested. Configuration options: [No] [Yes]

Palette Snooping [Disabled]

When set to [Enabled], the pallete snooping feature informs the PCI devices that an ISA graphics device is installed in the system so that the latter can function correctly. Configuration options: [Disabled] [Enabled]

IRQ-xx assigned to [PCI Device]

When set to [PCI Device], the specific IRQ is free for use of PCI/PnP devices. When set to [Reserved], the IRQ is reserved for legacy ISA devices. Configuration options: [PCI Device] [Reserved]

4.4.6   USB Configuration

The items in this menu allows you to change the USB-related features. Select an item then press <Enter> to display the configuration options.

```
                Advanced

    USB Configuration

    Module Version - 2.24.0-11.4

    USB Devices Enabled:
              None

    USB 1.1 Controller          [Enabled]
    USB 2.0 Controller          [Enabled]
    Legacy USB Support          [Enabled]
    USB 2.0 Controller Mode     [HiSpeed]
                                              ↔    Select Screen
```
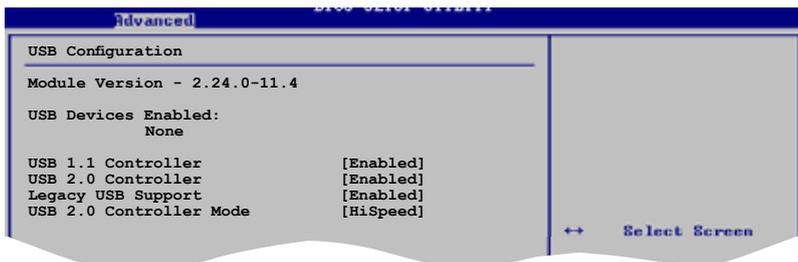
The Module Version and USB Devices Enabled items show the auto-detected values. If no USB device is detected, the item shows None.

USB 1.1 Controller [Enabled]

Allows you to disable or enable the USB 1.1 controller.
Configuration options: [Disabled] [Enabled]

USB 2.0 Controller [Enabled]

Allows you to disable or enable the USB 2.0 controller.
Configuration options: [Disabled] [Enabled]

Legacy USB Support [Enabled]

Allows you to enable or disable support for USB devices on legacy operating systems (OS). Setting to Auto allows the system to detect the presence of USB devices at startup. If detected, the USB controller legacy mode is enabled. If no USB device is detected, the legacy USB support is disabled. Configuration options: [Disabled] [Enabled] [Auto]

USB 2.0 Controller Mode [HiSpeed]

Allows you to configure the USB 2.0 controller in HiSpeed (480 Mbps) or Full Speed (12 Mbps). Configuration options: [HiSpeed] [Full Speed]

4.5 Power menu

The Power menu items allow you to change the settings for the Advanced Power Management (APM). Select an item then press <Enter> to display the configuration options.

```
                     BIOS SETUP UTILITY
    Main    Advanced    Power    Boot    Tools    Exit

    Suspend Mode                    [Auto]
    Repost Video on S3 Resume       [No]
    ACPI Support                    [ACPI v1.0]
    ACPI APIC Support               [Enabled]

    ▶  APM Configuration
    ▶  Hardware Monitor
```
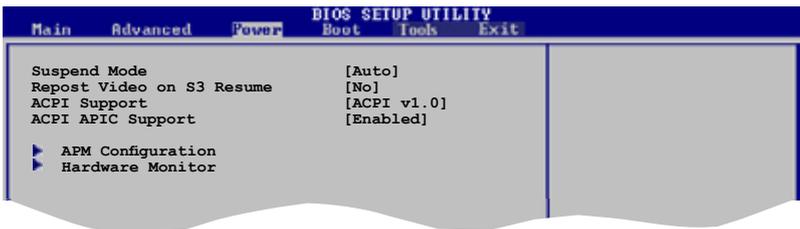
4.5.1 Suspend Mode [Auto]

Allows you to select the Advanced Configuration and Power Interface (ACPI) state to be used for system suspend. Configuration options: [S1 (POS) only] [S3 only] [Auto]

4.5.2 Repost Video on S3 Resume [No]

Allows you to determines whether to invoke VGA BIOS POST on S3/STR resume. Configuration options: [No] [Yes]

4.5.3 ACPI Support [ACPI v1.0]

Allows you to add more tables for Advanced Configuration and Power Interface (ACPI) 2.0 specifications. Configuration options: [ACPI v1.0] [ACPI v2.0] [ACPI v3.0]

4.5.4 ACPI APIC Support [Enabled]

Allows you to enable or disable the Advanced Configuration and Power Interface (ACPI) support in the Application-Specific Integrated Circuit (ASIC). When set to Enabled, the ACPI APIC table pointer is included in the RSDT pointer list. Configuration options: [Disabled] [Enabled]

4.5.5 APM Configuration

```
                          BIOS SETUP UTILITY
              Power
  APM Configuration

  Power Button Mode            [On/Off]
  Restore on AC Power Loss     [Last State]

  Power On By PCI Devices      [Disabled]
  Power On By PCIE Devices     [Disabled]
  Power On By LAN(MAC)         [Disabled]
  Power On By Ring             [Disabled]
  Power On By PS/2 KB/MS       [Disabled]
  Power On By USB              [Disabled]
  Power On By RTC Alarm        [Disabled]      ↔    Select Screen
                                               ↑↓   Select Item
```
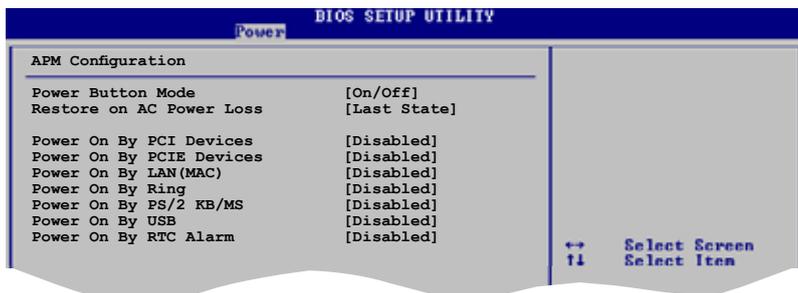
Power Button Mode [On/Off]

Allows the system to go into On/Off mode or suspend mode when the power button is pressed. Configuration options: [On/Off] [Suspend]

Restore on AC Power Loss [Last State]

When set to Power Off, the system goes into off state after an AC power loss. When set to Power On, the system goes on after an AC power loss. When set to Last State, the system goes into either off or on state, whatever the system state was before the AC power loss.
Configuration options: [Power Off] [Power On] [Last State]

Power On By PCI Devices [Disabled]

When set to [Enabled], this parameter allows you to turn on the system through a PCI LAN or modem card. This feature requires an ATX power supply that provides at least 1A on the +5VSB lead. Configuration options: [Disabled] [Enabled]

Power On By PCIE Devices [Disabled]

When set to [Enabled], this parameter allows you to turn on the system through a PCIE LAN or modem card. This feature requires an ATX power supply that provides at least 1A on the +5VSB lead. Configuration options: [Disabled] [Enabled]

Power On By LAN(MAC) [Disabled]

When set to [Enabled], this parameter allows you to turn on the system through a PCI LAN or modem card. This feature requires an ATX power supply that provides at least 1A on the +5VSB lead. Configuration options: [Disabled] [Enabled]

Power On By Ring [Disabled]

Allows you to enable or disable the RI to generate a wake event. Configuration options: [Disabled] [Enabled]

Power On By PS/2 KB/MS [Disabled]

Allows you to use specific keys on the keyboard or use the PS/2 mouse to turn on the system. This feature requires an ATX power supply that provides at least 1A on the +5VSB lead. Configuration options: [Disabled] [Enabled]

Power On By USB[Disabled]

When set to [Enabled], this parameter allows you to turn on the system through a USB device. This feature requires an ATX power supply that provides at least 1A on the +5VSB lead. Configuration options: [Disabled] [Enabled]

Power On By RTC Alarm [Disabled]

Allows you to enable or disable RTC to generate a wake event. When this item is set to Enabled, the items RTC Alarm Date, RTC Alarm Hour, RTC Alarm Minute, and RTC Alarm Second appear with set values. Configuration options: [Disabled] [Enabled]

4.5.6   Hardware Monitor

```
                        BIOS SETUP UTILITY
                Power

  Hardware Monitor

  CPU Temperature                [48°C/118°F]
  MB Temperature                 [38°C/100°F]

  CPU Fan Speed                  [5273RPM]
  Chassis Fan Speed              [N/A]
  Power Fan Speed                [N/A]

  VCORE Voltage                  [ 1.320V]
  3.3V Voltage                   [ 3.345V]
  5V Voltage                     [ 5.094V]
  12V Voltage                    [11.880V]        ↔    Select Screen
                                                  ↑↓   Select Item
  Smart Q-Fan Function           [Enabled]        +-   Change Option
                                                  F1   General Help
  Fan Auto Mode Start Voltage    [5.0V]           F10  Save and Exit
                                                  ESC  Exit
  Fan Auto Mode Start Speed Temp [25°C]
  Fan Auto Mode Full Speed Temp  [55°C]

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```

CPU Temperature [xxxºC/xxxºF]
MB Temperature [xxxºC/xxxºF]

The onboard hardware monitor automatically detects and displays the motherboard and CPU temperatures. Select Ignored if you do not wish to display the detected temperatures.

CPU / Chassis /Power Fan Speed (RPM)
[xxxxRPM] or [N/A] or [Ignored]

The onboard hardware monitor automatically detects and displays the CPU, chassis, and power fan speed in rotations per minute (RPM). If the fan is not connected to the motherboard, the field shows N/A. Select Ignored if you do not wish to display the detected speed.

VCORE Voltage, 3.3V Voltage, 5V Voltage, 12V Voltage

The onboard hardware monitor automatically detects the voltage output through the onboard voltage regulators.

Smart Q-Fan Function [Ensabled]

Allows you to enable or disable the Q-Fan function that monitors the CPU/system temperature and smartly adjust the fan speed.
Configuration options: [Disabled] [Enabled]

Fan Auto Mode Start Voltage [5.0V]

Allows you to set the smart Q-Fan starting voltage.
Configuration options: [4.0V] [4.5V] [5.0V] [5.5V] [6.0V]

Fan Auto Mode Start Speed Temp [25ºC]

Allows you to set the smart Q-Fan starting temperature.
Configuration options: [25ºC] [26ºC] [27ºC]... [49ºC]

Fan Auto Mode Full Speed Temp [55ºC]

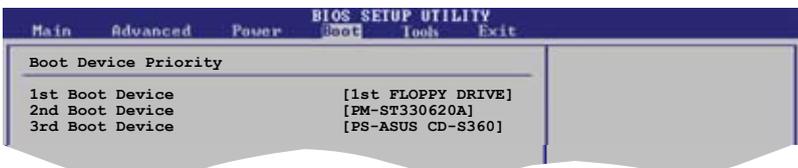Allows you to set the smart Q-Fan full speed temperature.
Configuration options: [50ºC] [51ºC] [52ºC]... [75ºC]

4.6   Boot menu

The Boot menu items allow you to change the system boot options. Select an item then press <Enter> to display the sub-menu.

4.6.1   Boot Device Priority

1st ~ xxth Boot Device [1st Floppy Drive]

These items specify the boot device priority sequence from the available devices. The number of device items that appears on the screen depends on the number of devices installed in the system. Configuration options: [xxxxx Drive] [Disabled]

4.6.2   Boot Settings Configuration

```
                          BIOS SETUP UTILITY
                            Boot

     Boot Settings Configuration                    Allows BIOS to skip
                                                    certain tests while
     Quick Boot              [Enabled]              booting. This will
     Full Screen Logo        [Enabled]              decrease the time
     AddOn ROM Display Mode   [Force BIOS]          needed to boot the
     Bootup Num-Lock          [On]                  system.
     PS/2 Mouse Support       [Auto]
     Wait For 'F1' If Error   [Enabled]
     Hit 'DEL' Message Display [Enabled]
     Interrupt 19 Capture     [Disabled]
```
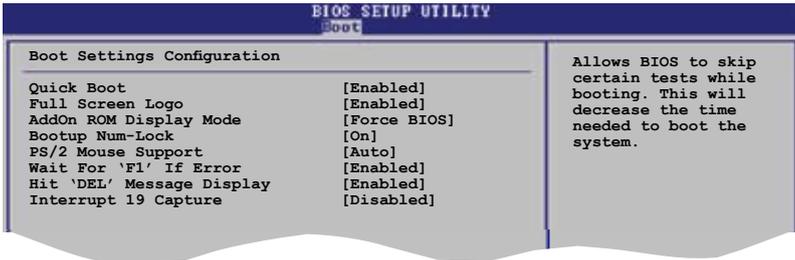
Quick Boot [Enabled]

Enabling this item allows the BIOS to skip some power on self tests (POST) while booting to decrease the time needed to boot the system. When set to [Disabled], BIOS performs all the POST items.
Configuration options: [Disabled] [Enabled]

Full Screen Logo [Enabled]

This allows you to enable or disable the full screen logo display feature.
Configuration options: [Disabled] [Enabled]

> Set this item to [Enabled] to use the ASUS MyLogo™ feature.

Add On ROM Display Mode [Force BIOS]

Sets the display mode for option ROM.
Configuration options: [Force BIOS] [Keep Current]

Bootup Num-Lock [On]

Allows you to select the power-on state for the NumLock.
Configuration options: [Off] [On]

PS/2 Mouse Support [Auto]

Allows you to enable or disable support for PS/2 mouse.
Configuration options: [Disabled] [Enabled] [Auto]

Wait for 'F1' If Error [Enabled]

When set to Enabled, the system waits for the F1 key to be pressed when error occurs. Configuration options: [Disabled] [Enabled]

Hit 'DEL' Message Display [Enabled]

When set to Enabled, the system displays the message "Press DEL to run Setup" during POST. Configuration options: [Disabled] [Enabled]

Interrupt 19 Capture [Disabled]

When set to [Enabled], this function allows the option ROMs to trap Interrupt 19. Configuration options: [Disabled] [Enabled]

4.6.3   Security

The Security menu items allow you to change the system security settings. Select an item then press <Enter> to display the configuration options.

```
                        BIOS SETUP UTILITY
                            Boot

   Security Settings                              <Enter> to change
                                                  password.
   Supervisor Password   : Not Installed          <Enter> again to
   User Password         : Not Installed          disabled password.

   Change Supervisor Password
   Change User Password
```
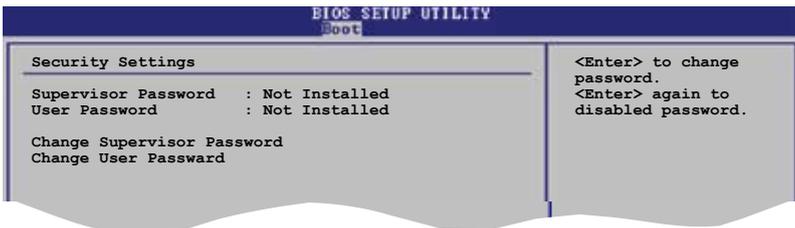
Change Supervisor Password

Select this item to set or change the supervisor password. The Supervisor Password item on top of the screen shows the default Not Installed. After you set a password, this item shows Installed.

To set a Supervisor Password:

1.   Select the Change Supervisor Password item and press <Enter>.
2.   From the password box, type a password composed of at least six letters and/or numbers, then press <Enter>.
3.   Confirm the password when prompted.

The message "Password Installed" appears after you successfully set your password.

To change the supervisor password, follow the same steps as in setting a user password.

To clear the supervisor password, select the Change Supervisor Password then press <Enter>. The message "Password Uninstalled" appears.

> If you forget your BIOS password, you can clear clear it by erasing the CMOS Real Time Clock (RTC) RAM. See section "2.6 Jumpers" for information on how to erase the RTC RAM.

After you have set a supervisor password, the other items appear to allow you to change other security settings.

```
                        BIOS SETUP UTILITY
                             Boot

  Security Settings

  Supervisor Password   : Not Installed
  User Password         : Not Installed

  Change Supervisor Password
  User Access Level              [Full Access]
  Change User Password
  Clear User Password
  Password Check                 [Setup]
```

User Access Level [Full Access]

This item allows you to select the access restriction to the Setup items.
Configuration options: [No Access] [View Only] [Limited] [Full Access]

No Access prevents user access to the Setup utility.

View Only allows access but does not allow change to any field.

Limited allows changes only to selected fields, such as Date and Time.

Full Access allows viewing and changing all the fields in the Setup utility.

Change User Password

Select this item to set or change the user password. The User Password item on top of the screen shows the default Not Installed. After you set a password, this item shows Installed.

To set a User Password:

1.   Select the Change User Password item and press <Enter>.
2.   On the password box that appears, type a password composed of at least six letters and/or numbers, then press <Enter>.
3.   Confirm the password when prompted.

The message "Password Installed" appears after you set your password successfully.

To change the user password, follow the same steps as in setting a user password.

Clear User Password

Select this item to clear the user password.

Password Check [Setup]

When set to [Setup], BIOS checks for user password when accessing the Setup utility. When set to [Always], BIOS checks for user password both when accessing Setup and booting the system.
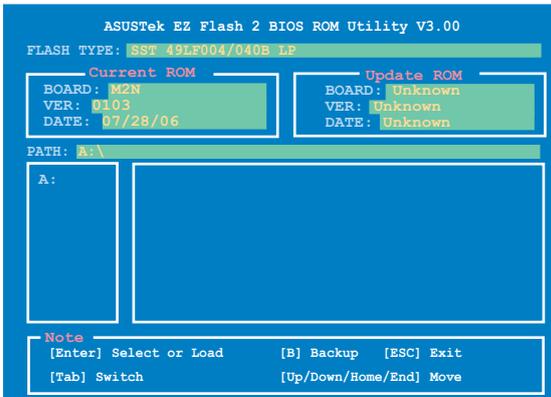Configuration options: [Setup] [Always]
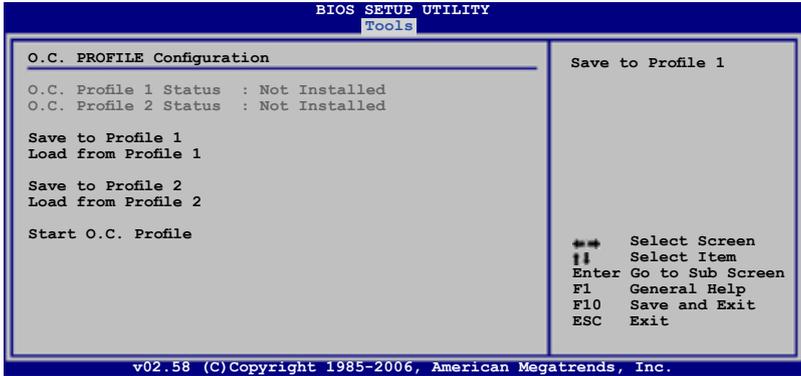
4.7   Tools menu

4.7.1   ASUS EZ Flash 2

Allows you to run ASUS EZ Flash 2. When you press <Enter>, a confirmation message appears. Use the left/right arrow key to select between [Yes] or [No], then press <Enter> to confirm your choice. Please see page 4-2, section 4.1.2 for details.

4.7.2   ASUS O.C. Profile

This item allows you to store or load multiple BIOS settings.

```
                        BIOS SETUP UTILITY
                         Tools

 O.C. PROFILE Configuration                       Save to Profile 1

 O.C. Profile 1 Status  : Not Installed
 O.C. Profile 2 Status  : Not Installed

 Save to Profile 1
 Load from Profile 1

 Save to Profile 2
 Load from Profile 2

 Start O.C. Profile
                                                  ←→    Select Screen
                                                  ↑↓    Select Item
                                                  Enter Go to Sub Screen
                                                  F1    General Help
                                                  F10   Save and Exit
                                                  ESC   Exit

    v02.58 (C)Copyright 1985-2006, American Megatrends, Inc.
```
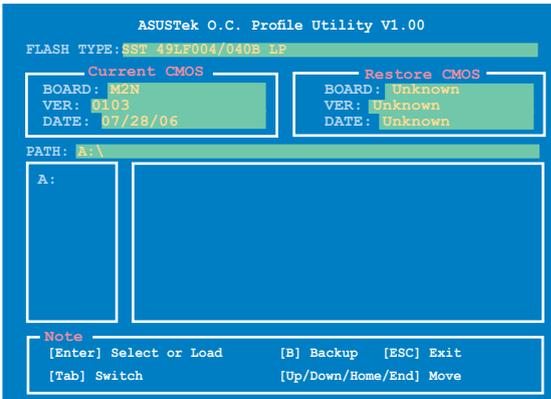
Save to Profle 1/2

Allows you to save the current BIOS file to the BIOS Flash. Press <Enter> to save the file.

Load from Profile 1/2

Allows you to load the previous BIOS settings saved in the BIOS Flash. Press <Enter> to load the file.

Start O.C. Profile

Allows you to run the utility to save and load CMOS. Press <Enter> to run the utility.

```
               ASUSTek O.C. Profile Utility V1.00
    FLASH TYPE: SST 49LF004/040B LP
          Current CMOS                  Restore CMOS
    BOARD: M2N                     BOARD: Unknown
    VER:   0103                    VER:   Unknown
    DATE:  07/28/06                DATE:  Unknown

    PATH: A:\

    A:


    Note
    [Enter] Select or Load      [B] Backup    [ESC] Exit
    [Tab] Switch                [Up/Down/Home/End] Move
```

> •   This function can support devices such as USB flash disk or floppy disk with FAT 32/16 format only.
> •   DO NOT shut down or reset the system while updating the BIOS to prevent the system boot failure!

4.8   Exit menu

The Exit menu items allow you to load the optimal or failsafe default values for the BIOS items, and save or discard your changes to the BIOS items.

```
                         BIOS SETUP UTILITY
  Main    Advanced    Power    Boot    Tools    Exit

  Exit Options                                    Exit system setup
                                                  after saving the
  Exit & Save Changes                             changes.
  Exit & Discard Changes
  Discard Changes                                 F10 key can be used
                                                  for this operation.
  Load Setup Defaults
```
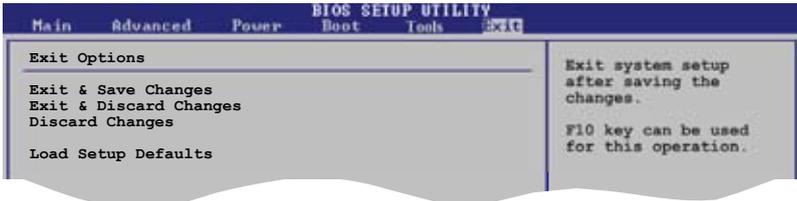
> 🖉 Pressing <Esc> does not immediately exit this menu. Select one of the options from this menu or <F10> from the legend bar to exit.

Exit & Save Changes

Once you are finished making your selections, choose this option from the Exit menu to ensure the values you selected are saved to the CMOS RAM. An onboard backup battery sustains the CMOS RAM so it stays on even when the PC is turned off. When you select this option, a confirmation window appears. Select **OK** to save changes and exit.

> 🖉 If you attempt to exit the Setup program without saving your changes, the program prompts you with a message asking if you want to save your changes before exiting. Press <Enter> to save the changes while exiting.

Exit & Discard Changes

Select this option only if you do not want to save the changes that you made to the Setup program. If you made changes to fields other than System Date, System Time, and Password, the BIOS asks for a confirmation before exiting.

Discard Changes

This option allows you to discard the selections you made and restore the previously saved values. After selecting this option, a confirmation appears. Select **OK** to discard any changes and load the previously saved values.

Load Setup Defaults

This option allows you to load the default values for each of the parameters on the Setup menus. When you select this option or if you press <F5>, a confirmation window appears. Select **OK** to load default values. Select **Exit & Save Changes** or make other changes before saving the values to the non-volatile RAM.

This chapter describes the contents of the support CD that comes with the motherboard package.

Software support

5

Chapter summary

5.1 Installing an operating system

This motherboard supports Windows® 2000/XP/64-bit XP operating systems (OS). Always install the latest OS version and corresponding updates to maximize the features of your hardware.

> • Motherboard settings and hardware options vary. Use the setup procedures presented in this chapter for reference only. Refer to your OS documentation for detailed information.
>
> • Make sure that you install Windows® 2000 Service Pack 4 or the Windows® XP Service Pack2 or later versions before installing the drivers for better compatibility and system stability.
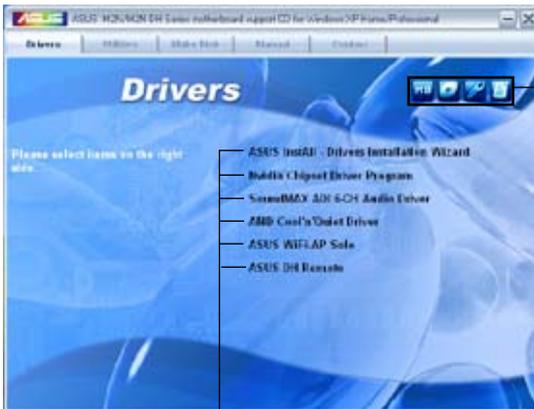
5.2 Support CD information

The support CD that came with the motherboard package contains the drivers, software applications, and utilities that you can install to avail all motherboard features.

> The contents of the support CD are subject to change at any time without notice. Visit the ASUS website(www.asus.com) for updates.

5.2.1 Running the support CD

Place the support CD to the optical drive. The CD automatically displays the Drivers menu if Autorun is enabled in your computer.

Click an icon to display support CD/motherboard information

Click an item to install

> If Autorun is NOT enabled in your computer, browse the contents of the support CD to locate the file ASSETUP.EXE from the BIN folder. Double-click the ASSETUP.EXE to run the CD.

5.2.2 Drivers menu

The drivers menu shows the available device drivers if the system detects installed devices. Install the necessary drivers to activate the devices.

ASUS InstAll - Installation Wizard for Drivers

Launches the ASUS InstallAll driver installation wizard.

Nvidia Chipset Driver Program

Installs the NVIDIA® Chipset drivers for the NVIDIA® nForce™ 430 MCP chipset.

SoundMAX ADI 6-CH Audio Driver

Installs the SoundMAX® ADI 6-Channel audio driver and application.

AMD Cool 'n' Quiet Driver

Installs the AMD Cool 'n' Quiet™ technology driver.
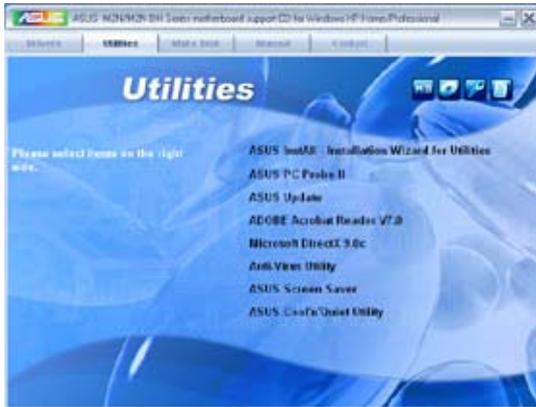
ASUS WiFi-AP Solo (for M2N DH model only)

Installs the WiFi-AP Solo™ driver and application.

ASUS DH Remote (for M2N DH model only)

Installs the ASUS DH Remote driver and application.

5.2.3   Utilities menu

The Utilities menu shows the applications and other software that the motherboard supports.

ASUS InstAll - Installation Wizard for Utilities

Launches the ASUS InstallAll utilities installation wizard.

ASUS PC Probe II

This smart utility monitors the fan speed, CPU temperature, and system voltages, and alerts you of any detected problems. This utility helps you keep your computer in healthy operating condition.

ASUS Update

The ASUS Update utility allows you to update the motherboard BIOS in Windows® environment. This utility requires an Internet connection either through a network or an Internet Service Provider (ISP).

ADOBE Acrobat V7.0

Installs the Adobe® Acrobat® Reader that allows you to open, view, and print documents in Portable Document Format (PDF).

Microsoft DirectX 9.0c

Installs the Microsoft® DirectX 9.0c driver. The Microsoft DirectX® 9.0c is a multimedia technology that enhances computer graphics and sound. DirectX® improves the multimedia features of you computer so you can enjoy watching TV and movies, capturing videos, or playing games in your computer. Visit the Microsoft website (www.microsoft.com) for updates.

Anti-Virus Utility

The anti-virus application scans, identifies, and removes computer viruses. View the online help for detailed information.

ASUS Screen Saver

Bring life to your computer screen by installing the ASUS screen saver.

ASUS Cool 'n' Quiet Utility

Installs the AMD Cool 'n' Quiet™ software.

5.2.4   Make Disk menu

The Make Disk menu contains item to create the NVIDIA® nForce™ 430 MCP driver disk.

NVIDIA 32bit SATA RAID Driver
Allows you to create an NVIDIA® Serial ATA RAID driver disk for a 32-bit system.

5.2.5　Manuals menu

The Manuals menu contains a list of supplementary user manuals. Click an item to open the folder of the user manual.

> Most user manual files are in Portable Document Format (PDF). Install the Adobe® Acrobat® Reader from the Utilities menu before opening a user manual file.

5.2.6　ASUS Contact information

Click the Contact tab to display the ASUS contact information. You can also find this information on the inside front cover of this user guide.

5.2.7 Other information

The icons on the top right corner of the screen give additional information on the motherboard and the contents of the support CD. Click an icon to display the specified information.

Motherboard Info

Displays the general specifications of the motherboard.

Browse this CD

Displays the support CD contents in graphical format.

Technical support Form

Displays the ASUS Technical Support Request Form that you have to fill out when requesting technical support.

5.3   RAID configurations

The motherboard comes with the NVIDIA® MediaShield™ RAID controllers that allow you to configure Serial ATA hard disk drives as RAID sets. The motherboard supports the following RAID configurations.

RAID 0 (Data striping) optimizes two identical hard disk drives to read and write data in parallel, interleaved stacks. Two hard disks perform the same work as a single drive but at a sustained data transfer rate, double that of a single disk alone, thus improving data access and storage. Use of two new identical hard disk drives is required for this setup.

RAID 1 (Data mirroring) copies and maintains an identical image of data from one drive to a second drive. If one drive fails, the disk array management software directs all applications to the surviving drive as it contains a complete copy of the data in the other drive. This RAID configuration provides data protection and increases fault tolerance to the entire system. Use two new drives or use an existing drive and a new drive for this setup. The new drive must be of the same size or larger than the existing drive.

RAID 0+1 is *data striping* and *data mirroring* combined without parity (redundancy data) having to be calculated and written. With the RAID 0+1 configuration you get all the benefits of both RAID 0 and RAID 1 configurations. Use four new hard disk drives or use an existing drive and three new drives for this setup.

RAID 5 stripes both data and parity information across three or more hard disk drives. Among the advantages of RAID 5 configuration include better HDD performance, fault tolerance, and higher storage capacity. The RAID 5 configuration is best suited for transaction processing, relational database applications, enterprise resource planning, and other business systems. Use a minimum of three identical hard disk drives for this setup.

JBOD (Spanning) stands for Just a Bunch of Disks and refers to hard disk drives that are not yet configured as a RAID set. This configuration stores the same data redundantly on multiple disks that appear as a single disk on the operating system. Spanning does not deliver any advantage over using separate disks independently and does not provide fault tolerance or other RAID performance benefits.

If you want to boot the system from a hard disk drive included in a RAID set, copy first the RAID driver from the support CD to a floppy disk before you install an operating system to a selected hard disk drive. Refer to section "5.6 Creating a RAID driver disk" for details.

5.3.1   Installing hard disks

The motherboard supports Serial ATA hard disk drives. For optimal performance, install identical drives of the same model and capacity when creating a disk array.

Installing Serial ATA (SATA) hard disks

To install the SATA hard disks for a RAID configuration:

1.   Install the SATA hard disks into the drive bays.

2.   Connect the SATA signal cables.

3.   Connect a SATA power cable to the power connector on each drive.

> Refer to the RAID controllers user manual in the motherboard support CD for detailed information on RAID configurations. See section "5.2.4 Manuals menu."

5.3.2   NVIDIA® MediaShield™ RAID configurations

The motherboard includes a high performance SATA RAID controller integrated in the NVIDIA® nForce™ 430 MCP southbridge chipset. It supports RAID 0, RAID 1, RAID 0+1, RAID 5 and JBOD for four independent Serial ATA channels.

Setting the BIOS RAID items

After installing the hard disk drives, make sure to set the necessary RAID items in the BIOS before setting your RAID configuration.

To set the BIOS RAID items:

1.   Boot the system and press <Del> during the Power-On Self-Test (POST) to enter the BIOS Setup Utility.

2.   From the Main > IDE Configuration menu item in the BIOS set the **nVidia RAID Function** item to Enabled.

3.   Select and enable the SATA drive(s) that you want to configure as RAID. See section "4.3.4 IDE Configuration" for details.

4.   Save your changes and Exit Setup.

> Make sure to re-enter your NVRAID settings after the CMOS is cleared; otherwise, the system will not recognize your RAID setup.

> •   For detailed descriptions on the NVIDIA® RAID configuration, refer to the "NVIDIA® SATA RAID User's Manual" found in your motherboard support CD.
>
> •   When using Windows 2000 operating system, make sure to install the Windows 2000 Service Pack 4 or later versions.
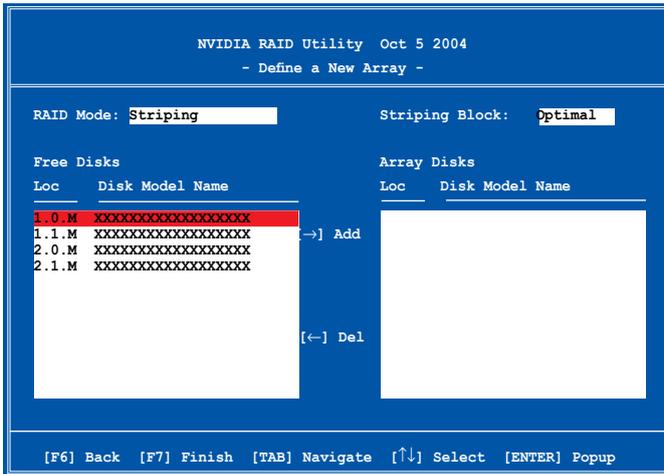
Entering the NVIDIA® MediaShield RAID utility

To enter the NVIDIA® RAID utility:

1.   Boot up your computer.

2.   During POST, press <F10> to display the main menu of the utility.

> The RAID BIOS setup screens shown in this section are for reference only, and may not exactly match the items on your screen.

```
                    NVIDIA RAID Utility  Oct 5 2004
                       - Define a New Array -

   RAID Mode: Striping                Striping Block:   Optimal

   Free Disks                      Array Disks
   Loc    Disk Model Name          Loc    Disk Model Name

   1.0.M  XXXXXXXXXXXXXXXXX
   1.1.M  XXXXXXXXXXXXXXXXX     →] Add
   2.0.M  XXXXXXXXXXXXXXXXX
   2.1.M  XXXXXXXXXXXXXXXXX


                                  [←] Del



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

At the bottom of the screen are the navigation keys. These keys allow you to move through and select menu options.

Creating a RAID Volume

To create a RAID volume:

1.   From the NVIDIA® RAID utility Define a New Array menu, select RAID Mode then press <Enter>. The following submenu appears.

Use the up or down arrow keys to select a RAID mode then press <Enter>.

```
   Mirroring
   Striping
   Stripe Mirroring
   Spanning
```

2.   Press <TAB> select the Striping
      Block then press <Enter>. The
      following submenu appears:

```
8K    ↑
16K
32K
64K
128K
Optim ↓
```
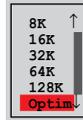
      If you selected Striping or Stripe Mirroring, use the up or down arrow keys to
      select the stripe size for your RAID 0 array then press <Enter>.The available
      values range from 8 KB to 128 KB. The default selection is 128 KB. The strip
      value should be chosen based on the planned drive usage.

      • 8 /16 KB - low disk usage

      • 64 KB - typical disk usage

      • 128 KB - performance disk usage

      TIP: For server systems, we recommend using a lower array block size. For
      multimedia computer systems used mainly for audio and video editing, we
      recommend a higher array block size for optimum performance.

3.`   Press <TAB> to select the Free Disks area. Use the left or right arrow keys to
      assign the array disks.
4.   Press <F7> to create RAID set. The following message box appears.

```
        Clear disk data?


        [Y] YES      [N]
```

5.   Press <Y> to clear the selected disks or <N> to proceed without clearing the
      disks. The following screen appears.

      Take caution in using this option. All data on the RAID drives will be lost!
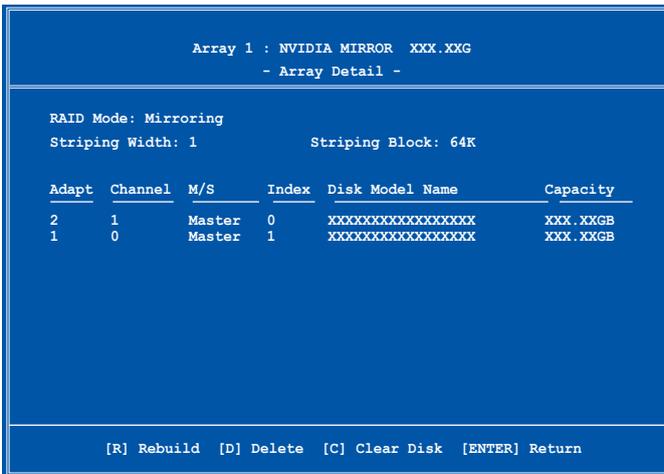
```
                    NVIDIA RAID Utility  Oct 5 2004
                           - Array List -

         Boot   Id  Status    Vendor   Array Model Name

         No     4   Healthy   NVIDIA   MIRROR    XXX.XXG










     [Ctrl-X]Exit   [↑↓]Select   [B]Set Boot   [N]New Array   [ENTER]Detail
```
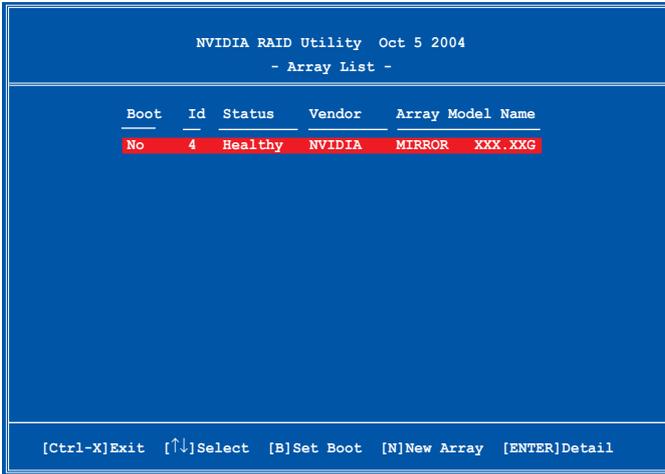
A new set of navigation keys is displayed on the bottom of the screen.

6.   Press <Ctrl+X> to save settings and exit.
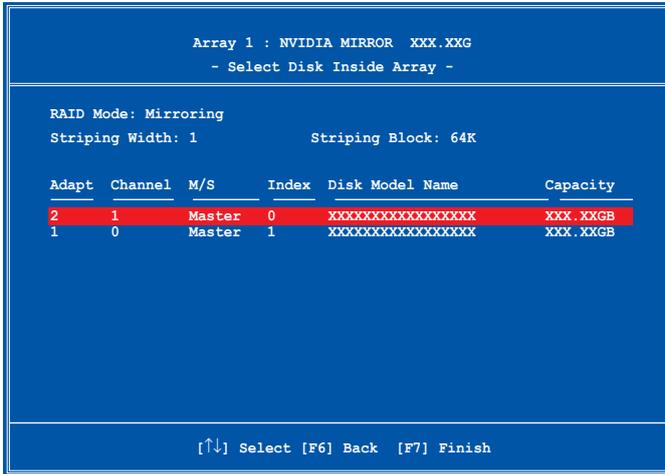
Rebuilding a RAID array

To rebuild a RAID array:

1.   From the Array List menu, use the up or down arrow keys to select a RAID
      array then press <Enter>. The RAID Array details appear.

```
                    Array 1 : NVIDIA MIRROR  XXX.XXG
                          - Array Detail -

     RAID Mode: Mirroring
     Striping Width: 1            Striping Block: 64K

     Adapt   Channel  M/S      Index  Disk Model Name           Capacity

     2       1        Master   0      XXXXXXXXXXXXXXXX          XXX.XXGB
     1       0        Master   1      XXXXXXXXXXXXXXXX          XXX.XXGB








           [R] Rebuild   [D] Delete   [C] Clear Disk   [ENTER] Return
```

A new set of navigation keys is displayed on the bottom of the screen.

2. Press <R> to rebuild a RAID array. The following screen appears.

```
            Array 1 : NVIDIA MIRROR  XXX.XXG
               - Select Disk Inside Array -

    RAID Mode: Mirroring
    Striping Width: 1          Striping Block: 64K

    Adapt  Channel  M/S     Index  Disk Model Name          Capacity

    2       1       Master  0      XXXXXXXXXXXXXXXXX         XXX.XXGB
    1       0       Master  1      XXXXXXXXXXXXXXXXX         XXX.XXGB




                  [↑↓] Select [F6] Back  [F7] Finish
```

3. Use the up or down arrow keys to select a RAID array to rebuild, then press <F7>. The following confirmation message appears.

```
                  Rebuild array?


           [ENTER] OK   [ESC] Cancel
```
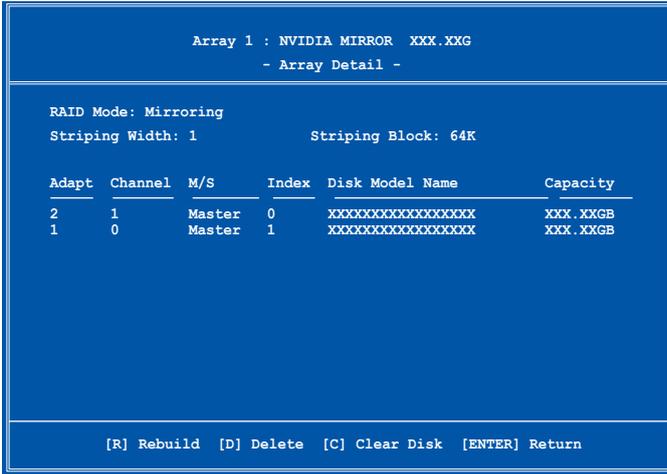
4. Press <Enter> to start rebuilding array or press <Esc> to cancel.

5. After the rebuild process, the Array list menu appears.
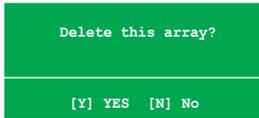
Deleting a RAID array

To delete a RAID array:

1.   From the Array List menu, use the up or down arrow keys to select a RAID array then press <Enter>. The RAID Array details appear.

```
                    Array 1 : NVIDIA MIRROR   XXX.XXG
                           - Array Detail -

     RAID Mode: Mirroring
     Striping Width: 1              Striping Block: 64K

     Adapt   Channel  M/S      Index  Disk Model Name          Capacity

     2       1        Master   0      XXXXXXXXXXXXXXXXX         XXX.XXGB
     1       0        Master   1      XXXXXXXXXXXXXXXXX         XXX.XXGB




          [R] Rebuild  [D] Delete  [C] Clear Disk  [ENTER] Return
```

A new set of navigation keys is displayed on the bottom of the screen.

2.   Press <D> to delete a RAID array. The following confirmation message appears.

```
                    Delete this array?


                    [Y] YES   [N] No
```

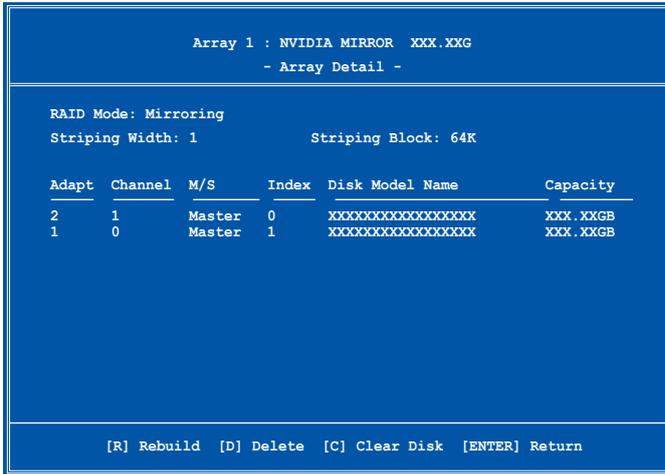3.   Press <Y> to delete array or press <N> to cancel.

⚠   Take caution in using this option. All data on the RAID drives will be lost!

4.   If you selected Yes, the Define a New Array menu appears.

Clearing a disk data

To clear disk data:

1.   From the Array List menu, use the up or down arrow keys to select a RAID array then press <Enter>. The RAID Array details appear.

```
                    Array 1 : NVIDIA MIRROR  XXX.XXG
                           - Array Detail -

     RAID Mode: Mirroring
     Striping Width: 1           Striping Block: 64K

     Adapt   Channel   M/S     Index   Disk Model Name        Capacity

     2       1         Master   0      XXXXXXXXXXXXXXXXX      XXX.XXGB
     1       0         Master   1      XXXXXXXXXXXXXXXXX      XXX.XXGB




         [R] Rebuild  [D] Delete  [C] Clear Disk  [ENTER] Return
```

A new set of navigation keys is displayed on the bottom of the screen.

2.   Press <C> to clear disk. The following confirmation message appears.

```
                    Clear disk data?


                    [Y] YES      [N]
```
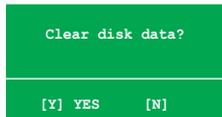
5.   Press <Y> to clear the disk data or press <N> to cancel.

Take caution in using this option. All data on the RAID drives will be lost!

5.4   Creating a RAID driver disk

A floppy disk with the RAID driver is required when installing Windows® 2000/XP operating system on a hard disk drive that is included in a RAID set.

To create a RAID driver disk:

1.   Place the motherboard support CD into the CD-ROM drive.
2.   Select Make Disk tab.
3.   From the Make Disk menu, select the RAID driver disk you want to create or browse the contents of the support CD to locate the driver disk utility.

Refer to section "5.2.4 Make Disk menu" for details.

4.   Insert floppy disk to floppy disk drive.
5.   Follow succeeding screen information to complete process.
6.   Write-protect the floppy disk to avoid computer virus infection.

To install the RAID driver:

1.   During the OS installation, the system prompts you to press the F6 key to install third-party SCSI or RAID driver.
2.   Press <F6> then insert the floppy disk with RAID driver into the floppy disk drive.
3.   Follow the succeeding screen instructions to complete the installation.

Due to chipset limitation, the Serial ATA ports supported by the NVIDIA chipset doesn't support Serial Optical Disk Drives (Serial ODD) under DOS.