

M2NS-NVM

ASUS[®]

Motherboard

E2805

First Edition V1

October 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 adapter 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.

M2NS-NVM specifications summary

CPU	Socket AM2 for AMD Athlon™ 64 X2/Athlon™ 64/ Sempron™ processor Supports AMD Cool 'n' Quiet™ Technology
Chipset	NVIDIA® MCP61S
Memory	Dual-channel memory architecture <ul style="list-style-type: none"> - 4 x 240-pin DIMM sockets support unbuffered non-ECC DDR2 800/667/533/400 MHz memory modules - Supports up to 4 GB system memory
Expansion slots	1 x PCI Express™ x16 slot 1 x PCI-E x1 slots 2 x PCI 2.2 slots
Storage	NVIDIA® MCP61S supports: <ul style="list-style-type: none"> - 1 x Single-channel Ultra DMA 100/66/33 - 2 x Serial ATA
LAN	10/100 LAN: MCP61S+ PHY: RTL8201CL
High Definition Audio	Realtek® ALC888 8-channel CODEC
IEEE 1394	VIA VT6308 1394a connectors (Optional)
USB	MCP61S support 8 USB ports
Rear panel	1 x PS/2 keyboard port (purple) 1 x PS/2 mouse port (green) 1 x VGA port 1 x Coaxial S/PDIF Out port 1 x LAN (RJ-45) port 4 x USB 2.0/1.1 ports 1 x Coaxial S/PDIF Out (optional) 8-channel audio ports
Internal connectors	2 x USB 2.0 connectors support four additional USB 2.0 ports 1 x Primary IDE connector 2 x Serial ATA connectors 1 x CPU / 1 x Power fan connectors 1 x System fan connector 1 x S/PDIF Out connector (optional) 1 x IEEE 1394a connector (optional) Front panel audio connector CD audio-in connector 24-pin ATX power connector 4-pin ATX12V power connector
BIOS features	4 Mb AWARD BIOS
Power requirements	ATX power supply (with 24-pin and 4-pin 12 V plugs) ATX 12 V 2.0 compliant
Form factor	uATX form factor: 9.6 in x 9.6 in (24.5 cm x 24.5 cm)

(continued on the next page)

1.1 Welcome!

Thank you for buying an **ASUS® M2NS-NVM 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 Special features

1.2.1 Product highlights

Latest processor technology



The motherboard comes with a 940-pin AM2 socket that supports AMD Athlon™ 64 X2/Athlon™ 64/Sempron™ processor. 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 2-7 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 10.7 GB/s. See pages 2-12 to 2-13 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.

IEEE 1394a support



The IEEE 1394a interface provides high-speed and flexible PC connectivity to a wide range of peripherals and devices compliant to the IEEE 1394a standard. The IEEE 1394a interface allows up to 400 Mbps transfer rates through simple, low-cost, high-bandwidth asynchronous (real-time) data interfacing between computers, peripherals, and consumer electronic devices such as camcorders, VCRs, printers, TVs, and digital cameras. See page 2-33 for details.

Serial ATA III technology

The motherboard fully supports the Serial ATA II 3.0 Gb/s technology through the Serial ATA interfaces and the NVIDIA® MCP61S 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 Power Management (PM) Implementation Algorithm. Serial ATA allows for thinner, more flexible cables with lower pin count and reduced voltage required.

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 page 2-27 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 2-28 and 2-33 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 4-26 for details.

1.2.2 Innovative ASUS features

ASUS CrashFree BIOS 2

This feature allows you to restore the original BIOS data from the support CD in case when the BIOS codes and data are corrupted. This protection eliminates the need to buy a replacement BIOS chip. See page 2-10 for details.

ASUS EZ Flash

EZ Flash 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 pages 4-5 and 4-47 for details.

ASUS Q-Fan 2 technology

The ASUS Q-Fan 2 technology smartly adjusts the fan speeds according to the system loading to ensure quiet, cool, and efficient operation. See page 2-33 for details.

1.3 Before you proceed

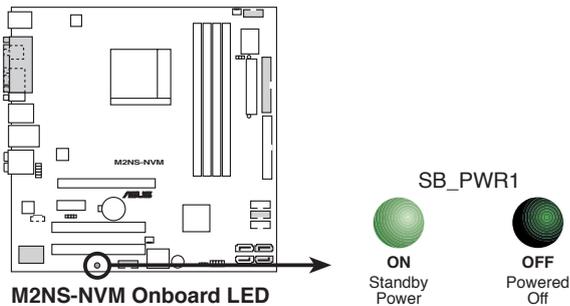
Take note of the following precautions before you install motherboard components or change any motherboard settings.



- 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.

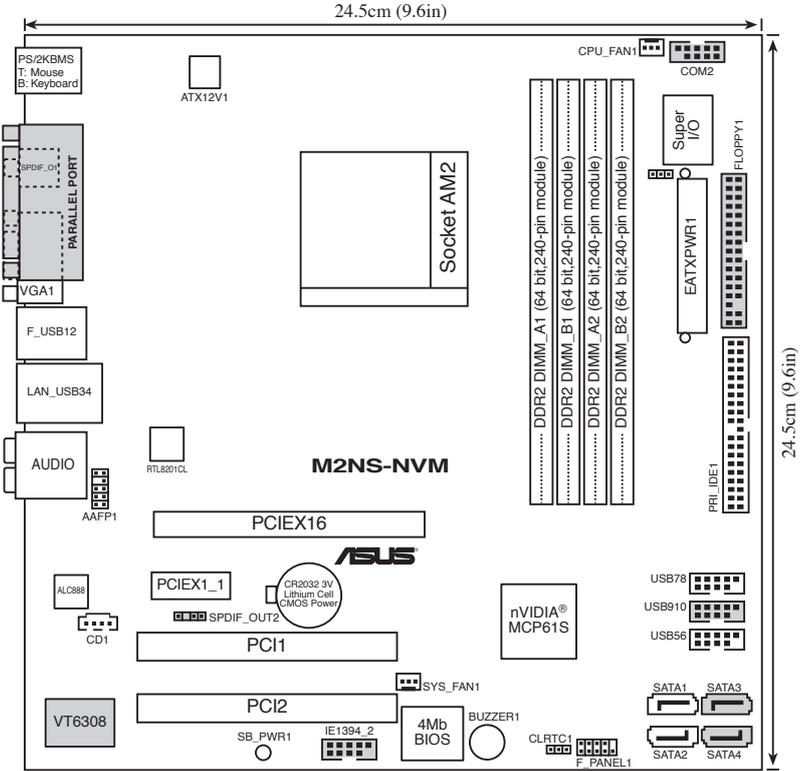
Onboard LED

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.



1.4 Motherboard overview

1.4.1 Motherboard layout



1.4.2 Placement direction

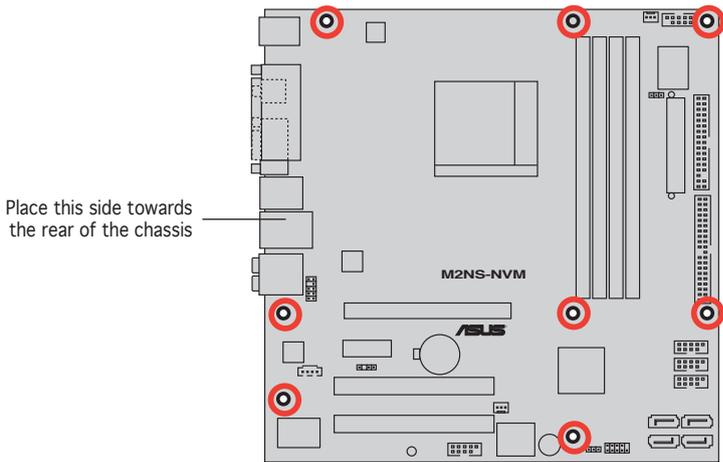
When installing the motherboard, make sure that you place it into the chassis in the correct orientation. The edge with external ports goes to the rear part of the chassis as indicated in the image below.

1.4.3 Screw holes

Place eight (8) 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.



1.5 Central Processing Unit (CPU)

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

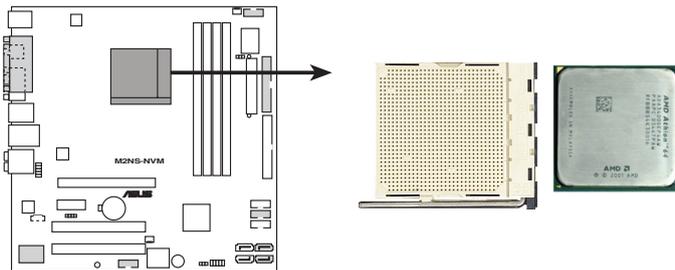


The AM2 socket has a different pinout from the 939-pin socket designed for the AMD Opteron™ processor. Make sure you use a CPU is designed for the AM2 socket. The CPU fits in only one correct orientation. DO NOT force the CPU into the socket to prevent bending the connectors on the socket and damaging the CPU!

1.5.1 Installing the CPU

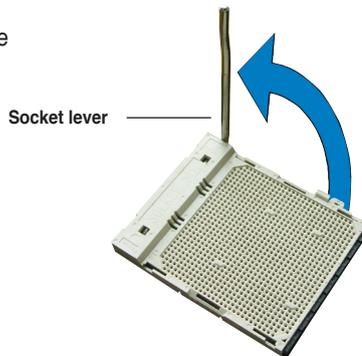
To install a CPU:

1. Locate the CPU socket on the motherboard.



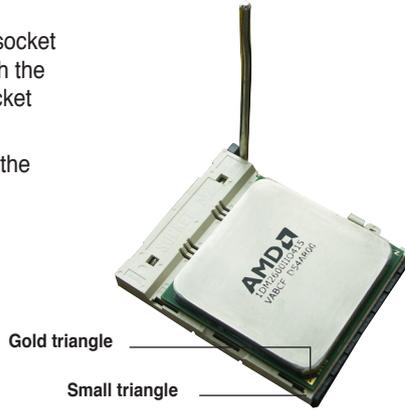
M2NS-NVM CPU Socket AM2

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



Make sure that the socket lever is lifted up to a 90° 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.



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.



1.5.2 Installing the heatsink and fan

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



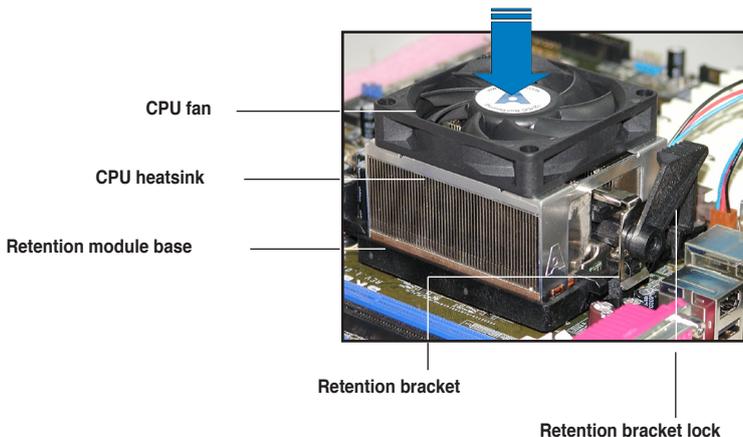
Make sure that you use only AMD-certified heatsink and fan assembly.

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.

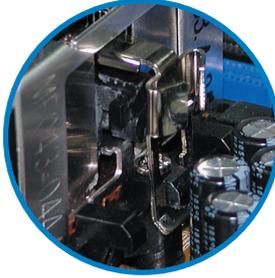


-
- The retention module base is already installed on the motherboard upon purchase.
 - You do not have to remove the retention module base when installing the CPU or installing other motherboard components.
 - If you purchased a separate CPU heatsink and fan assembly, make sure that a Thermal Interface Material is properly applied to the CPU heatsink or CPU before you install the heatsink and fan assembly.
-



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.



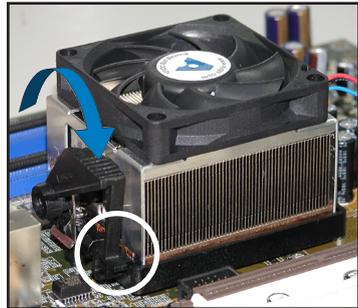
3. Align the other end of the retention bracket (near the retention bracket lock) to the retention module base. A clicking sound denotes that the retention bracket is in place.



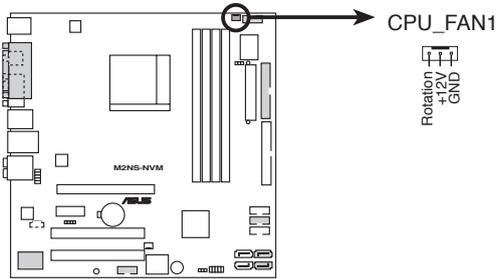
Make sure that the fan and heatsink assembly perfectly fits the retention mechanism module base, otherwise you cannot snap the retention bracket in place.



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_FAN1.



M2NS-NVM CPU fan connector



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

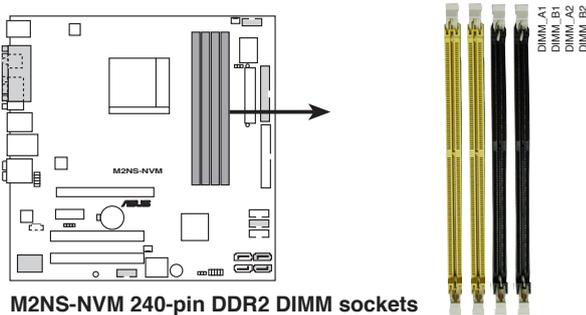
1.6 System memory

1.6.1 DIMM socket location

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:



Channel	Sockets
Channel 1	DIMM_A1 and DIMM_B1
Channel 2	DIMM_A2 and DIMM_B2

2.4.2 Memory configurations

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



- For dual-channel configuration, the total size of memory module(s) installed per channel must be the same (DIMM_A1 + DIMM_B1 = DIMM_A2 + DIMM_B2).
- Always install DIMMs with the same CAS latency. 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.
- When using only one DDR2 DIMM module, install it into slot DIMM_A1 only.
- For single-channel memory configuration, start installing the DDR2 DIMMs from slot DIMM_A1 or DIMM_B1.
- For dual-channel memory configuration, install the DIMMs in slots DIMM_B1 and DIMM_A1 (yellow slots); install another pair of DIMMs in slots DIMM_B2 and DIMM_A2 (black slots).



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.**”

General Search	
Please Select the Product	
<input type="radio"/> Motherboard	▼
<input type="radio"/> Socket 939	▼
<input type="radio"/> A8N32-SLI Deluxe	▼
<input type="button" value="Search"/>	

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>

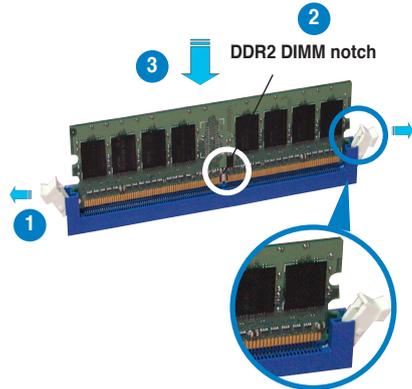
1.6.3 Installing a DIMM



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.



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.

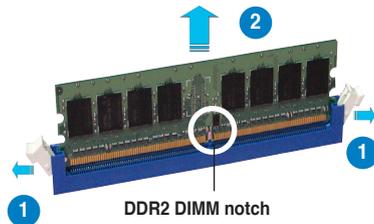
1.6.4 Removing a DIMM

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.



2. Remove the DIMM from the socket.

1.7 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.

1.7.1 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.

1.7.2 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.

1.7.3 Interrupt assignments

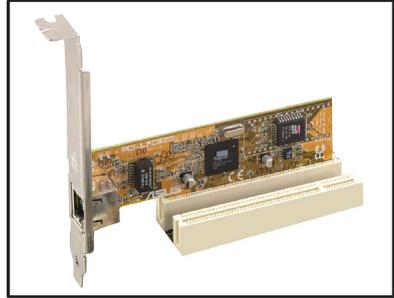
Standard interrupt assignments

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.

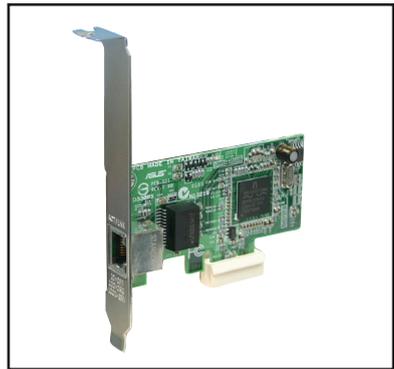
1.7.4 PCI slots

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.



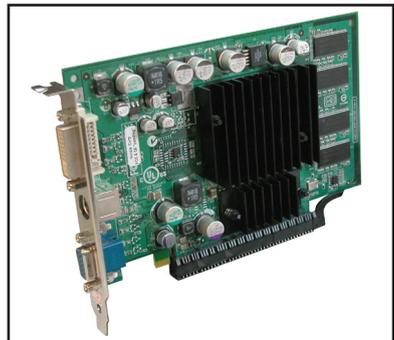
1.7.5 PCI Express x1 slot

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



1.7.6 PCI Express x16 slot

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



1.8 Jumper

Clear RTC RAM (CLRRTC)

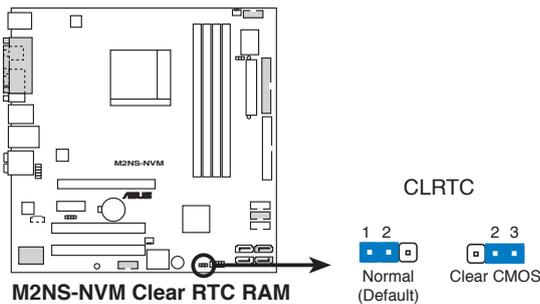
This jumper allows you to clear the Real Time Clock (RTC) RAM in CMOS. You can clear the CMOS memory of date, time, and system setup parameters by erasing the CMOS RTC RAM data. The onboard button cell battery powers the RAM data in CMOS, which include system setup information such as system passwords.

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 key during the boot process and enter BIOS setup to re-enter data.



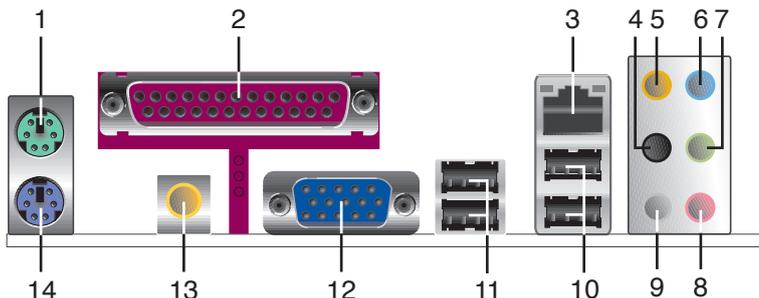
Except when clearing the RTC RAM, never remove the cap on CLRRTC jumper default position. Removing the cap will cause system boot failure!



- Make sure to re-enter your previous BIOS settings after you clear the CMOS.

1.9 Connectors

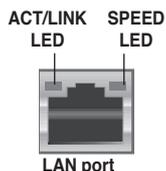
1.9.1 Rear panel connectors



1. **PS/2 mouse port (green).** This port is for a PS/2 mouse.
2. **Parallel port (optional).** This 25-pin port connects a parallel printer, a scanner, or other devices.
3. **LAN (RJ-45) port.** Supported by 10/100 Gigabit LAN controller, 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



4. **Rear Speaker Out port (black).** This port connects the rear speakers in a 4-channel, 6-channel, or 8-channel audio configuration.
5. **Center/Subwoofer port (orange).** This port connects the center/subwoofer speakers.
6. **Line In port (light blue).** This port connects the tape, CD, DVD player, or other audio sources.
7. **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.
8. **Microphone port (pink).** This port connects a microphone.
9. **Side Speaker Out port (gray).** This port connects the side speakers in an 8-channel audio configuration.



Refer to the audio configuration table below for the function of the audio ports in 2, 4, 6, or 8-channel configuration.

Audio 2, 4, 6, or 8-channel configuration

Port	Headset 2-channel	4-channel	6-channel	8-channel
Light Blue	Line In	Line In	Line In	Line In
Lime	Line Out	Front Speaker Out	Front Speaker Out	Front Speaker Out
Pink	Mic In	Mic In	Mic In	Mic In
Gray	–	–	–	Side Speaker Out
Black	–	Rear Speaker Out	Rear Speaker Out	Rear Speaker Out
Orange	–	–	Center/Subwoofer	Center/Subwoofer

- 10. USB 2.0 ports 3 and 4.** These two 4-pin Universal Serial Bus (USB) ports are available for connecting USB 2.0 devices.
- 11. USB 2.0 ports 1 and 2.** These two 4-pin Universal Serial Bus (USB) ports are available for connecting USB 2.0 devices.
- 12. Video Graphics Adapter (VGA) port.** This port is for a VGA monitor or other VGA-compatible devices.
- 13. Coaxial S/PDIF Out port (optional).** This port connects an external audio output device via an coaxial S/PDIF cable.
- 14. PS/2 keyboard port (purple).** This port is for a PS/2 keyboard.

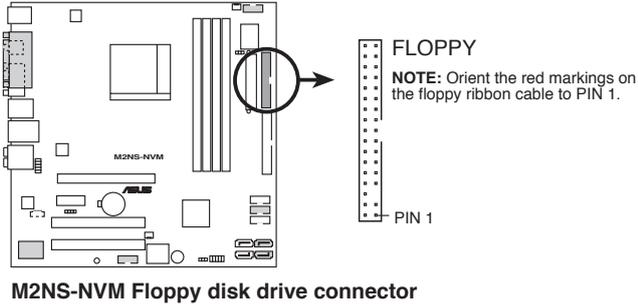
1.9.2 Internal connectors

1. Floppy disk drive connector (34-1 pin FLOPPY) [Optional]

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.

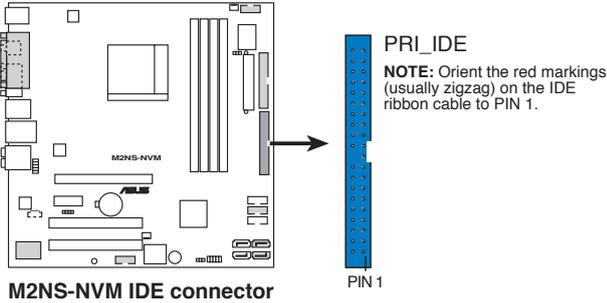


Pin 5 on the connector is removed to prevent incorrect cable connection when using a FDD cable with a covered Pin 5.



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	



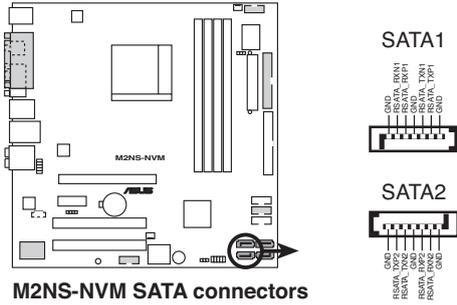
- Pin 20 on the IDE connector is removed to match the covered hole on the Ultra DMA cable connector. This prevents incorrect insertion when you connect the IDE cable.
- Use the 80-conductor IDE cable for Ultra DMA 100/66 IDE devices.



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

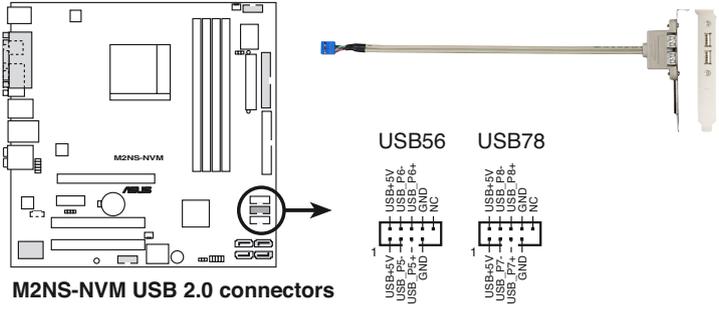
3. Serial ATA connectors (7-pin SATA1, SATA2)

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.



4. USB connectors (10-1 pin USB56, USB78)

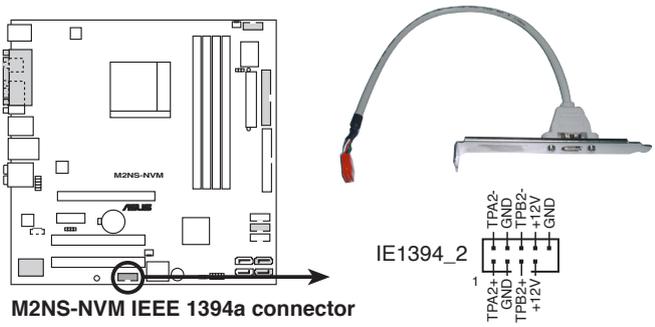
These connectors are for USB 2.0 ports. Connect the USB module cable to any of these connectors, then install the module to a slot opening at the back of the system chassis. These USB connectors comply with USB 2.0 specification that supports up to 480 Mbps connection speed.



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

5. IEEE 1394a port connector (10-1 pin IE1394_2) [Optional]

This connector is for an IEEE 1394a port. Connect the IEEE 1394a module cable to the connector, then install the module to a slot opening at the back of the system chassis.



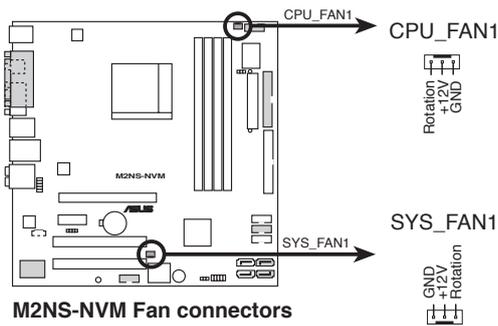
Never connect a USB cable to the IEEE 1394a connector. Doing so will damage the motherboard!

6. CPU and Power Fan connectors (3-pin CPU_FAN1, 3-pin SYS_FAN1)

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.

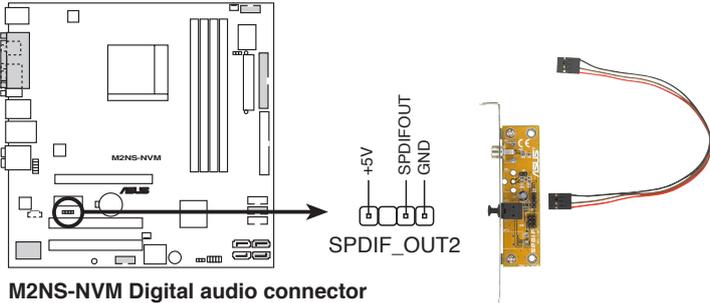


Do not forget to connect the fan cables to the fan connectors. Insufficient air flow inside the system may damage the motherboard components. These are not jumpers! Do not place jumper caps on the fan connectors!



7. Digital Audio connector (4-1 pin SPDIF_OUT2) [Optional]

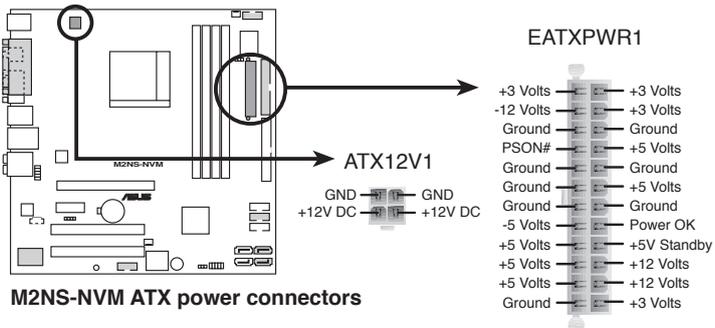
This connector is for the S/PDIF audio module to allow digital sound output. Connect one end of the S/PDIF audio cable to this connector and the other end to the S/PDIF module.



M2NS-NVM Digital audio connector

8. ATX power connectors (24-pin EATXPWR1, 4-pin ATX12V1)

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.



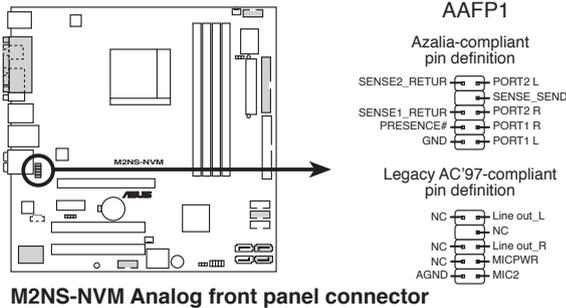
M2NS-NVM ATX power connectors



- 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.

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

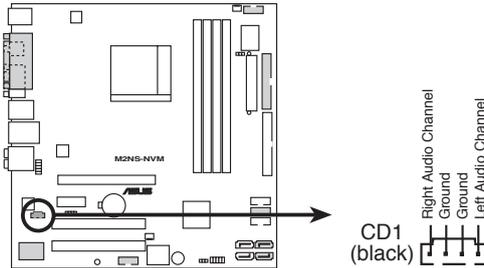
This connector is for a chassis-mounted front panel audio I/O module that supports either HD Audio or legacy AC'97 standard. Connect one end of the front panel audio I/O module cable to this connector.



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.

10. Internal audio connector (4-pin CD [Black])

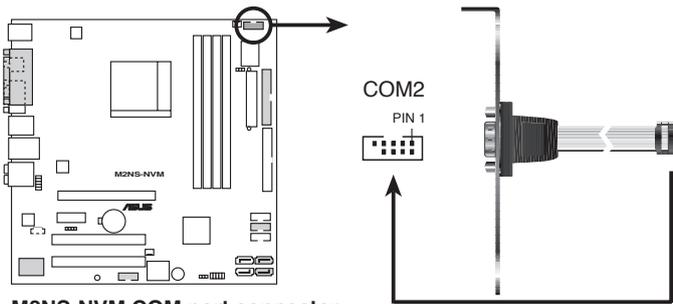
This connector allows you to receive stereo audio input from sound sources such as a CD-ROM, TV tuner, or MPEG card.



M2NS-NVM Internal audio connector

11 Serial port connector (10-1 pin COM2) [Optional]

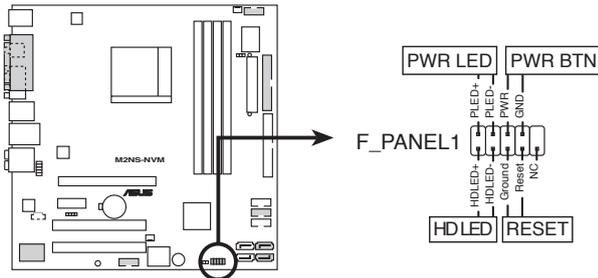
This connector is for a serial (COM) port. Connect the serial port module cable to this connector, then install the module to a slot opening at the back of the system chassis.



M2NS-NVM COM port connector

12. System panel connector (10-1 pin F_PANEL1)

This connector supports several chassis-mounted functions.



M2NS-NVM System panel connector

- **System power LED (2-pin PWR_LED)**

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 HD_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.

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

This 2-pin 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.

2.1 Managing and updating your BIOS

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

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

Refer to the corresponding sections for details on these utilities.



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

2.1.1 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.

2.1.2 ASUS EZ Flash utility

The ASUS EZ Flash 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 utility is built-in the BIOS chip so it is accessible by pressing <Alt> + <F2> during the Power-On Self Tests (POST).

To update the BIOS using EZ Flash:

1. Visit the ASUS website (www.asus.com) to download the latest BIOS file for the motherboard and rename the same to A8R32-MVP.ROM.
2. Save the BIOS file to a floppy disk, then restart the system.
3. Press <Alt> + <F2> during POST to display the following.

```
EZFlash starting BIOS update
Checking for floppy...
```

4. Insert the floppy disk that contains the BIOS file to the floppy disk drive. When the correct BIOS file is found, EZ Flash performs the BIOS update process and automatically reboots the system when done.

```
EZFlash starting BIOS update
Checking for floppy...
Floppy found!
Reading file "A8R32-MVP.ROM". Completed.
Start erasing.....|
Start programming...|
Flashed successfully. Rebooting.
```



- Do not shut down or reset the system while updating the BIOS to prevent system boot failure!
- A "Floppy not found!" error message appears if there is no floppy disk in the drive. A "A8R32-MVP.ROM not found!" error message appears if the correct BIOS file is not found in the floppy disk. Make sure that you rename the BIOS file to A8R32-MVP.ROM.

2.1.3 Updating the BIOS

The Basic Input/Output System (BIOS) can be updated using the AwardBIOS Flash Utility. Follow these instructions to update the BIOS using this utility.

1. Download the latest BIOS file from the ASUS web site. Rename the file to M2N32-WS.BIN and save it to a floppy disk, CD ROM or a USB flash disk in FAT 16/12 format.



Save only the updated BIOS file in the floppy disk to avoid loading the wrong BIOS file.

2. Copy the AwardBIOS Flash Utility (awdfash.exe) from the Software folder of the support CD to the floppy disk, CD ROM or a USB flash disk with the latest BIOS file.
3. Boot the system in DOS mode using the bootable floppy disk, CD ROM or a USB flash disk you created earlier.
4. Under the DOS mode, use <X:> (X stands for the name of the disk assignment) to switch to the folder of floppy disk, CD ROM or USB flash disk you saved the BIOS file and Award BIOS Flash Utility.
5. At the prompt, type awdfash then press <Enter>. The Award BIOS Flash Utility screen appears.

```
AwardBIOS Flash Utility for ASUS V1.14
(C) Phoenix Technologies Ltd. All Rights Reserved

For C51XEMCP55PXE-M2N32-WS-00    DATE:04/13/2006
Flash Type - Unknown Flash

File Name to Program: 

Message: Please input File Name!
```

6. Type the BIOS file name in the File Name to Program field, then press <Enter>.

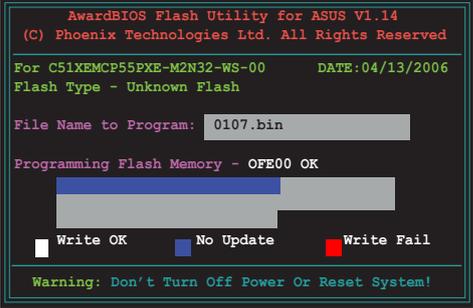
```
AwardBIOS Flash Utility for ASUS V1.14
(C) Phoenix Technologies Ltd. All Rights Reserved

For C51XEMCP55PXE-M2N32-WS-00    DATE:04/13/2006
Flash Type - Unknown Flash

File Name to Program: 

Message: Do You Want To Save Bios (Y/N)
```

- Press <N> when the utility prompts you to save the current BIOS file. The following screen appears.
- The utility verifies the BIOS file in the floppy disk, CD ROM or a USB flash disk and starts flashing the BIOS file.



```
AwardBIOS Flash Utility for ASUS V1.14
(C) Phoenix Technologies Ltd. All Rights Reserved

For C51XEMCP55PXE-M2N32-WS-00    DATE:04/13/2006
Flash Type - Unknown Flash

File Name to Program: 0107.bin

Programming Flash Memory - OFE00 OK

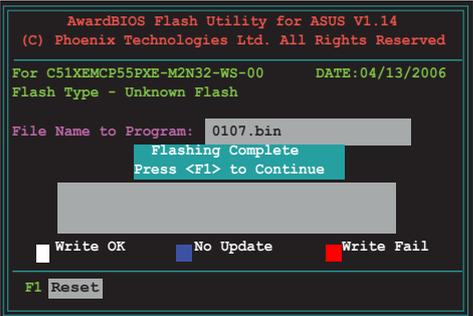
Write OK      No Update      Write Fail

Warning: Don't Turn Off Power Or Reset System!
```



Do not turn off or reset the system during the flashing process!

- The utility displays a Flashing Complete message indicating that you have successfully flashed the BIOS file. Remove the floppy disk then press <F1> to restart the system.



```
AwardBIOS Flash Utility for ASUS V1.14
(C) Phoenix Technologies Ltd. All Rights Reserved

For C51XEMCP55PXE-M2N32-WS-00    DATE:04/13/2006
Flash Type - Unknown Flash

File Name to Program: 0107.bin

Flashing Complete
Press <F1> to Continue

Write OK      No Update      Write Fail

F1 Reset
```

2.1.4 Saving the current BIOS file

You can use the AwardBIOS Flash Utility to save the current BIOS file. You can load the current BIOS file when the BIOS file gets corrupted during the flashing process.



Make sure that the floppy disk, CD ROM or a USB flash disk has enough disk space to save the file.

To save the current BIOS file using the AwardBIOS Flash Utility:

1. Follow steps 1 to 6 of the previous section.
2. Press <Y> when the utility prompts you to save the current BIOS file. The following screen appears.

```
AwardBIOS Flash Utility for ASUS V1.14
(C) Phoenix Technologies Ltd. All Rights Reserved

For C51XEMCP55PXE-M2N32-WS-00    DATE:04/13/2006
Flash Type - Unknown Flash

File Name to Program: 0107.bin
Save current BIOS as:

Message:
```

3. Type a filename for the current BIOS file in the Save current BIOS as field, then press <Enter>.

```
AwardBIOS Flash Utility for ASUS V1.14
(C) Phoenix Technologies Ltd. All Rights Reserved

For C51XEMCP55PXE-M2N32-WS-00    DATE:04/13/2006
Flash Type - Unknown Flash

File Name to Program:
Checksum: D800H
Save current BIOS as:

Message: Please Wait!
```

4. The utility saves the current BIOS file to the floppy disk, then returns to the BIOS flashing process.

```
AwardBIOS Flash Utility for ASUS V1.14
(C) Phoenix Technologies Ltd. All Rights Reserved

For C51XEMCP55PXE-M2N32-WS-00    DATE:04/13/2006
Flash Type - Unknown Flash

File Name to Program: 0107.bin
Now Backup System BIOS to
File!

Message: Please Wait!
```

2.1.5 ASUS CrashFree BIOS 2 utility

The ASUS CrashFree BIOS 2 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 or the floppy disk that contains the updated BIOS file.



- Prepare the motherboard support CD 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 to A8R32-MVP.ROM.

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 "A8R32-MVP.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 "A8R32-MVP.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.

2.2 BIOS setup program

This motherboard supports a programmable Low-Pin Count (LPC) chip that you can update using the provided utility described in section “2.1 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 LPC chip.

The LPC 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 during the Power-On Self-Test (POST) to enter the Setup utility; otherwise, POST continues with its test routines.

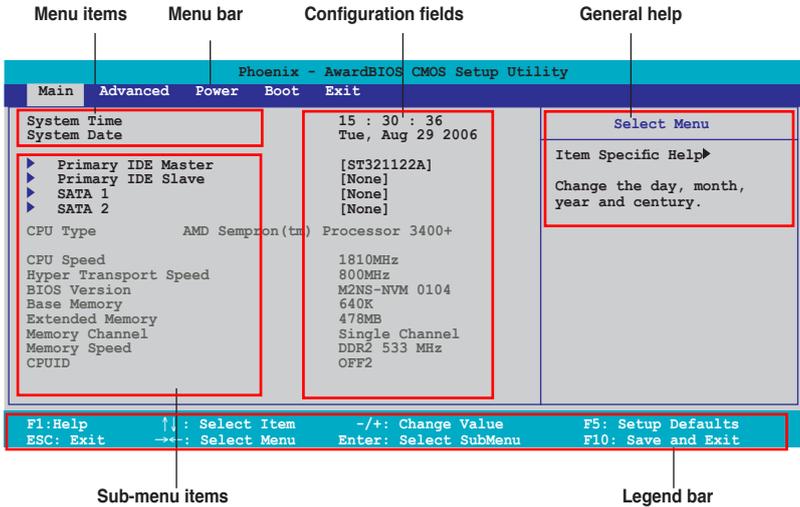
If you wish to enter Setup after POST, restart the system by pressing <Ctrl+Alt+Delete>, or by pressing the reset button on the system chassis. You can also restart by turning the system off and then back on. Do this last option only if the first two failed.

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 Default Settings** item under the Exit Menu. See section “2.7 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.
-

2.2.1 BIOS menu screen



2.2.2 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
- 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.



- The BIOS setup screens shown in this chapter 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 information.

2.2.3 Legend bar

At the bottom of the Setup screen is a legend bar. The keys in the legend bar allow you to navigate through the various setup menus. The following table lists the keys found in the legend bar with their corresponding functions.

Navigation Key	Function
<F1>	Displays the General Help screen
<F5>	Loads setup default values
<Esc>	Exits the BIOS setup or returns to the main menu from a sub-menu
Left or Right arrow	Selects the menu item to the left or right
Up or Down arrow	Moves the highlight up or down between fields
Page Down or - (minus)	Scrolls backward through the values for the highlighted field
Page Up or + (plus)	Scrolls forward through the values for the highlighted field
<Enter>	Brings up a selection menu for the highlighted field
<F10>	Saves changes and exit

2.2.4 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, and Exit) on the menu bar have their respective menu items.

2.2.5 Sub-menu items

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

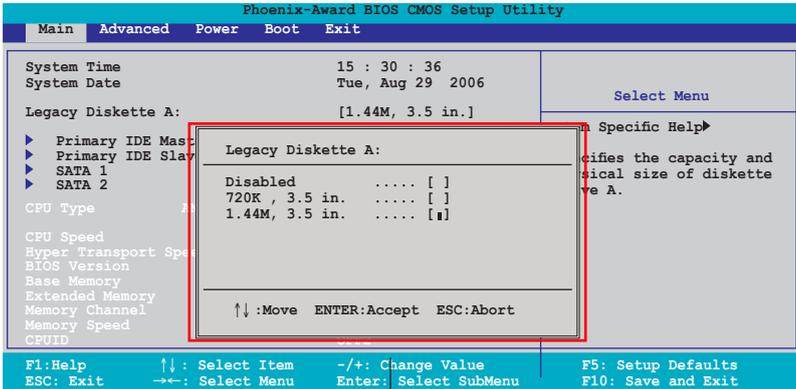
2.2.6 Configuration fields

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.”

2.2.7 Pop-up window

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



Pop-up menu

2.2.8 General help

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

2.3 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 “2.2.1 BIOS menu screen” for information on the menu screen items and how to navigate through them.

Phoenix-Award BIOS CMOS Setup Utility				
Main	Advanced	Power	Boot	Exit
System Time			15 : 30 : 36	
System Date			Tue, Aug 29 2006	Select Menu
▶ Primary IDE Master			[ST321122A]	Item Specific Help▶
▶ Primary IDE Slave			[None]	
▶ SATA 1			[None]	Change the day, month, year and century.
▶ SATA 2			[None]	
CPU Type	AMD Sempron(tm)		Processor 3400+	
CPU Speed			1810MHz	
Hyper Transport Speed			800MHz	
BIOS Version			M2NS-NVM 0104	
Base Memory			640K	
Extended Memory			478MB	
Memory Channel			Single Channel	
Memory Speed			DDR2 533 MHz	
CPUID			OFF2	
F1:Help	↑↓: Select Item	-/+ : Change Value	F5: Setup Defaults	
ESC: Exit	→←: Select Menu	Enter: Select SubMenu	F10: Save and Exit	

2.3.1 System Time [xx:xx:xx]

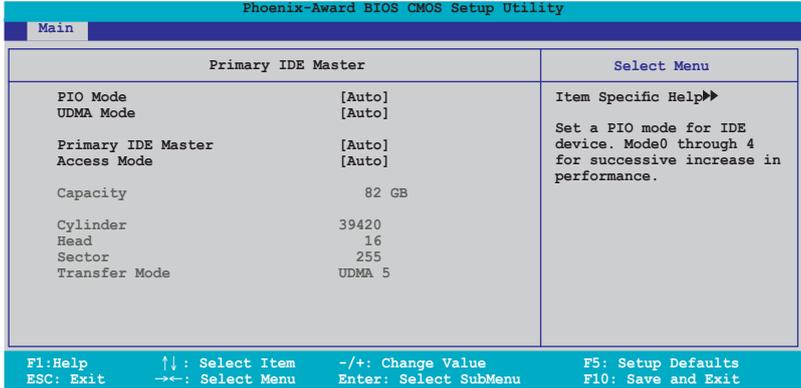
Allows you to set the system time.

2.3.2 System Date [Day xx/xx/xxxx]

Allows you to set the system date.

2.3.3 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 (Capacity, Cylinder, Head, Sector and Transfer Mode). These values are not user-configurable. These items show N/A if no IDE device is installed in the system.

PIO Mode [Auto]

Sets the PIO mode for the IDE device.

Configuration options: [Auto] [Mode 0] [Mode 1] [Mode 2] [Mode 3] [Mode 4]

UDMA Mode [Auto]

Disables or sets the UDMA mode. Configuration options: [Disable] [Auto]

Primary IDE Master/Slave [Auto]

Select [Auto] to automatically detect an IDE hard disk drive. If automatic detection is successful, the BIOS automatically fills in the correct values for the remaining fields on this sub-menu. If the hard disk was already formatted on a previous system, the setup BIOS may detect incorrect parameters. Select [Manual] to manually enter the IDE hard disk drive parameters. If no drive is installed select [None]. Configuration options: [None] [Auto] [Manual]

Access Mode [Auto]

The default [Auto] allows automatic detection of an IDE hard disk drive. Select [CHS] for this item if you set the IDE Primary Master/Slave to [Manual]. Configuration options: [CHS] [LBA] [Large] [Auto]



Before attempting to configure a hard disk drive, make sure you have the correct configuration information supplied by the drive manufacturer. Incorrect settings may cause the system to fail to recognize the installed hard disk.

Capacity

Displays the auto-detected hard disk capacity. This item is not configurable.

Cylinder

Shows the number of the hard disk cylinders. This item is not configurable.

Head

Shows the number of the hard disk read/write heads. This item is not configurable.

Sector

Shows the number of sectors per track. This item is not configurable.

Transfer Mode

Shows the Transfer mode. This item is not configurable.



After entering the IDE hard disk drive information into BIOS, use a disk utility, such as FDISK, to partition and format new IDE hard disk drives. This is necessary so that you can write or read data from the hard disk. Make sure to set the partition of the Primary IDE hard disk drives to active.

2.3.4 SATA 1-2

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

Phoenix-Award BIOS CMOS Setup Utility		
Main		
SATA 1		Select Menu
Extended IDE Drive Access Mode	[Auto] [Auto]	Item Specific Help▶▶
Capacity	0 MB	Selects the type of fixed disk connected to the system.
Cylinder	0	
Head	0	
Precomp	0	
Landing Zone	0	
Sector	0	
Transfer Mode	None	

F1: Help ↑↓: Select Item -/+ : Change Value F5: Setup Defaults
ESC: Exit →←: Select Menu Enter: Select SubMenu F10: Save and Exit

The BIOS automatically detects the values opposite the dimmed items (Capacity, Cylinder, Head, Landing Zone and Sector). These values are not user-configurable. These items show 0 if no SATA device is installed in the system.

Extended IDE Drive [Auto]

Selects the type of fixed disk connected to the system.

Configuration options: [None] [Auto]

Access Mode [Auto]

Sets the sector addressing mode. Configuration options: [Large] [Auto]



Before attempting to configure a hard disk drive, make sure you have the correct configuration information supplied by the drive manufacturer. Incorrect settings may cause the system to fail to recognize the installed hard disk.

Capacity

Displays the auto-detected hard disk capacity. This item is not configurable.

Cylinder

Shows the number of the hard disk cylinders. This item is not configurable.

Head

Shows the number of the hard disk read/write heads. This item is not configurable.

Precomp**Landing Zone**

Shows the number of landing zone per track. This item is not configurable.

Sector

Shows the number of sectors per track. This item is not configurable.



After entering the IDE hard disk drive information into BIOS, use a disk utility, such as FDISK, to partition and format new IDE hard disk drives. This is necessary so that you can write or read data from the hard disk. Make sure to set the partition of the Primary IDE hard disk drives to active.

2.4 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.

Phoenix-Award BIOS CMOS Setup Utility			
Main	Advanced	Power	Boot Exit
▶ Onboard Device Configuration ▶ PCI/PnP ▶ Event Log Configuration		Select Menu Item Specific Help▶ Onboard IO, IRQ, DMA Assignment...	
F1: Help	↑↓: Select Item	-/+ : Change Value	F5: Setup Defaults
ESC: Exit	→←: Select Menu	Enter: Select SubMenu	F10: Save and Exit

2.4.1 Onboard Device Configuration

Phoenix-Award BIOS CMOS Setup Utility			
Advanced			
Onboard Device Configuration		Select Menu	
▶ IDE Function Setup ▶ USB Configuration Onboard Video Memory [32M] HD Audio [Enable] Onboard LAN [Enabled] Onboard LAN Boot ROM [Enabled]		Item Specific Help▶▶ Press [Enter] to set IDE controller function	
F1: Help	↑↓: Select Item	-/+ : Change Value	F5: Setup Defaults
ESC: Exit	→←: Select Menu	Enter: Select SubMenu	F10: Save and Exit

IDE Function Setup

This sub-menu contains IDE function-related items. Select an item then press <Enter> to edit.

Phoenix-Award BIOS CMOS Setup Utility		
Advanced		
IDE Function Setup		Select Menu
OnChip IDE Channel0	[Enabled]	Item Specific Help▶▶▶
IDE DMA transfer access	[Enabled]	
SATA Controller	[SATA-1]	
IDE Prefetch Mode	[Enabled]	

OnChip IDE Channel0 [Enabled]

Allows you to enable or disable the onchip IDE channel 0 controller .

Configuration options: [Disabled] [Enabled]

IDE DMA transfer access [Enabled]

Allows you to enable or disable the IDE DMA transfer access.

Configuration options: [Disabled] [Enabled]

SATA Controller [SATA-1]

Allows you to enable or disable the onboard SATA controller.

Configuration options: [Disabled] [SATA-1]

IDE Prefetch Mode [Enabled]

Allows you to enable or disable the IDE PIO read prefetch mode.

Configuration options: [Disabled] [Enabled]

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.

Phoenix-Award BIOS CMOS Setup Utility		
Advanced		
USB Configuration		Select Menu
USB Controller	[Enabled]	Item Specific Help▶▶▶
USB2.0 Controller	[Enabled]	
USB Legacy support	[Enabled]	
		Enable or Disable the USB 1.1 and 2.0 Controller.

USB Controller [Enabled]

Allows you to enable or disable the onchip USB controller.

Configuration options: [Disabled] [Enabled]

USB 2.0 Controller [Enabled]

Allows you to enable or disable the USB 2.0 controller.

Configuration options: [Disabled] [Enabled]

USB Legacy Support [Enabled]

Allows you to enable or disable support for USB devices on legacy operating systems (OS). Configuration options: [Disabled] [Enabled]

OnBoard Video Memory [32M]

Allows you to select or disable the VGA Share Memory Size.

Configuration options: [16M] [32M] [64M] [128M] [256M] [Disabled]

HD Audio [Enable]

Allows you to enable or disable the High-Definition audio function.

Configuration options: [Enable] [Disabled]

Onboard LAN [Enabled]

Allows you to enable or disable the onboard LAN controller.

Configuration options: [Enable] [Disabled]

Onboard LAN Boot ROM [Enabled]

Allows you to enable or disable the onboard LAN boot ROM.

Configuration options: [Enabled] [Disabled]

2.4.2 PCIPnP

Phoenix-Award BIOS CMOS Setup Utility		
Advanced		
PCIPnP		Select Menu
Init Display First	[PCIE Slot]	Item Specific Help▶▶▶
Resources Controlled By	[Auto]	Select which graphics controller to use as the primary device.
x IRQ Resources		
PCI/VGA Palette Snoop	[Disabled]	

Init Display First [PCIE Slot]

Selects which graphics controller to use as the primary device.

Configuration options: [PCI Slot] [PCIE Slot]

Resources Controlled By [Auto]

When set to [Auto], the BIOS automatically configures all the boot and Plug and Play compatible devices. Set to [Manual] if you want to assign the IRQ DMA and memory base address fields. Configuration options: [Auto] [Manual]



The item **IRQ Resources** becomes user-configurable when you set **Resources Controlled By** to [Manual].

IRQ Resources

Phoenix-Award BIOS CMOS Setup Utility		
Advanced		
IRQ Resources		Select Menu
		Item Specific Help▶▶▶
IRQ-5 assigned to	[PCI Device]	Legacy ISA for devices compliant with the original PC AT bus specification, PCI/ISA PnP for devices compliant with the Plug and Play standard whether designed for PCI or ISA bus architecture.
IRQ-7 assigned to	[PCI Device]	
IRQ-9 assigned to	[PCI Device]	
IRQ-10 assigned to	[PCI Device]	
IRQ-11 assigned to	[PCI Device]	
IRQ-14 assigned to	[PCI Device]	
IRQ-15 assigned to	[PCI Device]	

IRQ-xx assigned to

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]

PCI/VGA Palette Snoop [Disabled]

When set to [Enabled], the palette 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]

2.4.3 Event Log Configuration

Phoenix-Award BIOS CMOS Setup Utility		
Advanced		
Event Log Configuration		Select Menu
DMI Event Log	[Enabled]	Item Specific Help▶▶ [Enabled] Store POST error messages to the DMI Event log. [Disabled] Don't store POST error messages to the DMI Event log.
Clear All DMI Event Log	[Yes]	
View DMI Event Log	[Enter]	
Mark DMI Events as Read	[Enter]	
Event Log Capacity	Space Available	
Event Log Validity	Valid	

DMI Event Log [Enabled]

Allows you to enable or disable logging of DMI events.
Configuration options: [Disabled] [Enabled]

Clear All DMI Event Log [Yes]

Selecting [Yes] will clear the DMI event log after rebooting.
Configuration options: [No] [Yes]

View DMI Event Log [Enter]

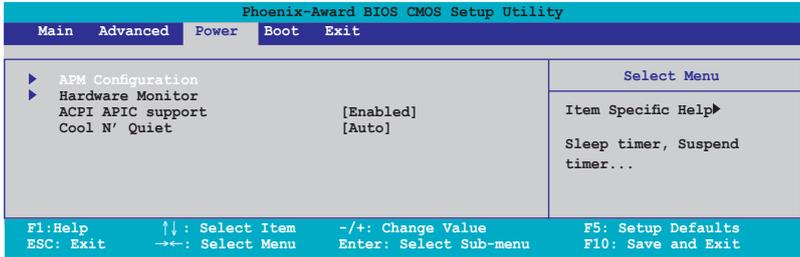
Allows you to view the contents of the DMI event log.

Mark DMI Events as Read [Enter]

Press Enter to mark all DMI events in the event log as read.

2.5 Power menu

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



2.5.1 APM Configuration

Phoenix-Award BIOS CMOS Setup Utility		
Power		
APM Configuration		Select Menu
AC Power Recovery	[System Off]	Item Specific Help▶▶ Press [Enter] to select whether or not to restart the system after AC power loss.
Power Management	[User Define]	
HDD Power Down	[Disabled]	
PWR Button < 4 secs	[Instant-Off]	
WOL(PME#) From Soft-Off	[Enabled]	
Wake on PS2 from S3	[Enabled]	
HPET Support	[Enabled]	
Wake on USB from S3	[Enabled]	
Power On by RTC Alarm	[Disabled]	
x Date (of Month) Alarm	0	
x Time (hh:mm:ss) Alarm	0 : 0 : 0	
F1: Help ↑↓ : Select Item -/+ : Change Value F5: Setup Defaults ESC: Exit ←← : Select Menu Enter: Select SubMenu F10: Save and Exit		

AC Power Recovery [System Off]

When set to [System Off], the system goes into "off state" after an AC power interruption. When set to [System On], the system turns on automatically after a power interruption. When set to [Former Sts], the system goes into whatever was the system state (on or off) before the power interruption.
 Configuration options: [System Off] [System On] [Former Sts]

Power Management [User Define]

Allows you to set the automatic power saving features.
 Configuration options: [User Define] [Min Saving] [Max Saving]

HDD Power Down [Disabled]

Allows you to set the time out value for shutting down any IDE hard disk drives in the system after a period of inactivity. Configuration: [Disabled] [1 Min] [2 Min][14 Min] [15Min]

PWR Button < 4 secs [Instant-Off]

Allows you to set the event after the power button is pressed for more than 4 seconds. Configuration options: [Suspend] [Instant-Off]

WOL(PME#) From Soft-Off [Enabled]

Allows you to enable or disable the PME to wake up from S5 by PCI/PCIE devices & NV Onboard LAN. Configuration options: [Disabled] [Enabled]

Wake on PS2 from S3 [Enabled]

Allows you to enable or disable Wake on PS2 from S3.
 Configuration options: [Disabled] [Enabled]

HPET Support [Enabled]

Allows you to enable or disable the HPET Support function.

Configuration options: [Disabled] [Enabled]

Wake on USB from S3 [Enabled]

Allows you to enable or disable Wake on USB from S3.

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 **Date of Month Alarm** and **Time (hh:mm:ss) Alarm** become user-configurable with set values.

Configuration options: [Disabled] [Enabled]

Date of Month Alarm [Disabled]

To set the date of alarm, highlight this item and press <Enter> to display the Date of Month Alarm pop-up menu. Key-in a value within the specified range then press <Enter>. Configuration options: [Min=0] [Max=31]

Time (hh:mm:ss) Alarm [Disabled]

To set the time of alarm:

1. Highlight this item and press <Enter> to display a pop-up menu for the hour field.
2. Key-in a value (Min=0, Max=23), then press <Enter>.
3. Press <TAB> to move to the minutes field then press <Enter>.
4. Key-in a minute value (Min=0, Max=59), then press <Enter>.
5. Press <TAB> to move to the seconds field then press <Enter>.
6. Key-in a value (Min=0, Max=59), then press <Enter>.

2.5.2 Hardware Monitor

The items in this sub-menu displays the hardware monitor values automatically detected by the BIOS. It also allows you to change CPU Q-Fan feature-related parameters. Select an item then press <Enter> to display the configuration options.

Phoenix-Award BIOS CMOS Setup Utility			
Power			
Hardware Monitor		Select Menu	
CPU Temperature	48°C	Item Specific Help▶▶ Press [Enter] to enable or disable.	
CPU Temperature offset	41°C		
SIO Read Temperature	51°C		
System Temperature	40°C		
VCORE Voltage	1.40V		
3.3V Voltage	3.24V		
5V Voltage	5.02V		
12V Voltage	11.84V		
CPU Fan Speed	1767 RPM		
SYS Fan Speed	0 RPM		
CPU Fan Regulation	[Enabled]		
F1: Help	↑↓: Select Item	-/+ : Change Value	F5: Setup Defaults
ESC: Exit	→←: Select Menu	Enter: Select SubMenu	F10: Save and Exit

CPU Temperature

CPU Temperature offset

SIO Read Temperature

System Temperature

These fields show the auto-detected values and are not user-configurable.

Vcore Voltage, 3.3V Voltage, 5V Voltage, 12V Voltage

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

CPU Fan Speed [xxx RPM]

SYS Fan Speed [xxx RPM]

The onboard hardware monitor automatically detects and displays the CPU and system fan speeds in rotations per minute (RPM). If any of the fans is not connected to the motherboard, the field shows 0. These items are not user-configurable.

CPU Fan Regulation [Enabled]

Allows you to disable or enabled the CPU fan regulation.

Configuration options: [Disabled] [Enabled]

2.5.3 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]

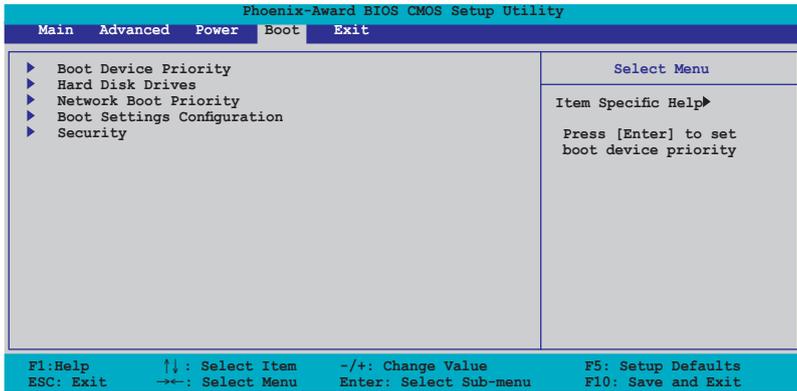
2.5.4 Cool “N” Quiet [Enabled]

Enables or disables the AMD Cool “n” Quiet technology.

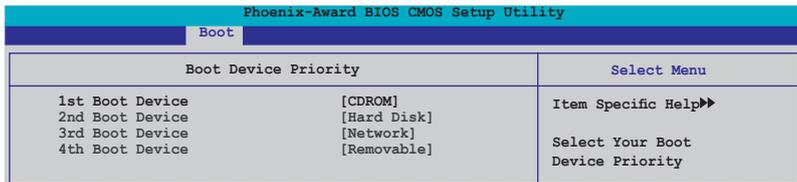
Configuration options: [Auto] [Disabled]

2.6 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.



2.6.1 Boot Device Priority



1st ~ 4th Boot Device [Removable]

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: [Removable] [Hard Disk] [CDROM] [Network] [Disabled]

2.6.2 Hard Disk Drives

Phoenix-Award BIOS CMOS Setup Utility	
Boot	
Hard Disk Drives	Select Menu
1. 1st Master: XXXXXXXXX	Item Specific Help▶▶

1. Floppy Disks

Allows you to assign a removable drive attached to the system.

2.6.3 Network Boot Priority

Phoenix-Award BIOS CMOS Setup Utility	
Boot	
Network Boot Priority	Select Menu
1. Network 0: xxxxxxxxxxxx	Item Specific Help▶▶

1. Network 0: XXXXXXXXXX

Allows you to assign the network boot priority.

2.6.4 Boot Settings Configuration

Phoenix-Award BIOS CMOS Setup Utility	
Boot	
Boot Settings Configuration	Select Menu
Recovery Boot [Enabled]	Item Specific Help▶▶ Press [Enter] to enable or disable.
Boot Virus Detection [Disabled]	
Quick Boot [Enabled]	
Bootup Num-Lock [On]	
Plug & Play O/S [Yes]	
Full Screen LOGO [Enabled]	
Summary Screen Show [Disabled]	
Halt On [S11, But KB/Mouse]	
HDD SMART Monitoring [Disabled]	

F1: Help	↑↓: Select Item	-/+ : Change Value	F5: Setup Defaults
ESC: Exit	→←: Select Menu	Enter: Select Sub-menu	F10: Save and Exit

Recovery Boot [Enabled]

Enables or disables the recovery boot function.

Configuration options: [Disabled] [Enabled]

Boot Virus Detection [Disabled]

Enables or disables the boot virus detection function.

Configuration options: [Disabled] [Enabled]

Quick Boot [Enabled]

Allows you to enable or disable the system quick boot feature. When Enabled, the system skips certain tests while booting.

Configuration options: [Disabled] [Enabled]

Bootup Num-Lock [On]

Allows you to select the power-on state for the NumLock.

Configuration options: [Off] [On]

Plug & Play O/S [Yes]

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]

Full Screen LOGO [Enabled]

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.

Summary Screen Show [Disabled]

Allows you to enable or disable the summary screen show feature.

Configuration options: [Disabled] [Enabled]

Halt On [All, But KB/Mouse]

Allows you to select the error report type.

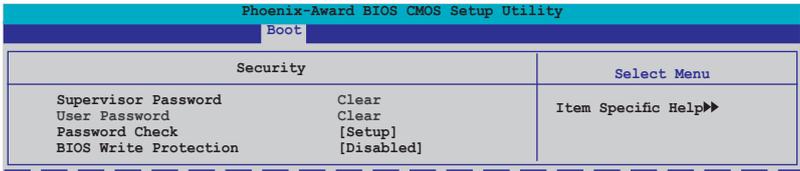
Configuration options: [All Errors] [No Errors] [All, But KB/Mouse]

HDD SMART Monitoring [Disabled]

Allows you to enable or disable the HDD Self-Monitoring Analysis and Reporting Technology (SMART) feature.

Configuration options: [Disabled] [Enabled]

2.6.5 Security



The screenshot shows the Phoenix-Award BIOS CMOS Setup Utility interface. At the top, there is a blue header with the text "Phoenix-Award BIOS CMOS Setup Utility". Below this is a dark blue bar with the word "Boot" in white. The main area is a light gray table with two columns. The left column is titled "Security" and contains four rows: "Supervisor Password" with "Clear" to its right, "User Password" with "Clear" to its right, "Password Check" with "[Setup]" to its right, and "BIOS Write Protection" with "[Disabled]" to its right. The right column is titled "Select Menu" and contains one row: "Item Specific Help▶".

Security		Select Menu
Supervisor Password	Clear	Item Specific Help▶
User Password	Clear	
Password Check	[Setup]	
BIOS Write Protection	[Disabled]	

Supervisor Password

User Password

These fields allow you to set passwords:

To set a password:

1. Select an item then press <Enter>.
2. Type in a password using a combination of a maximum of eight (8) alphanumeric characters, then press <Enter>.
3. When prompted, confirm the password by typing the exact characters again, then press <Enter>. The password field setting is changed to Set.

To clear the password:

1. Select the password field and press <Enter> twice. The following message appears:



A black rectangular box with a white border containing the text: "PASSWORD DISABLED !!!" on the first line and "Press any key to continue..." on the second line.

2. Press any key to continue. The password field setting is changed to Clear.

A note about passwords

The Supervisor password is required to enter the BIOS Setup program preventing unauthorized access. The User password is required to boot the system preventing unauthorized use.

Forgot your password?

If you forget your password, you can clear it by erasing the CMOS Real Time Clock (RTC) RAM. The RAM data containing the password information is powered by the onboard button cell battery. If you need to erase the CMOS RAM, refer to section "2.6 Jumper" for instructions.

Password Check

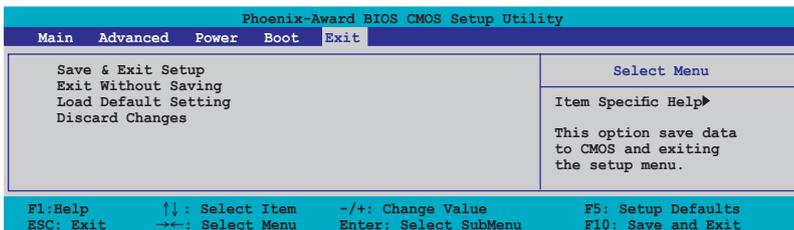
This field requires you to enter the password before entering the BIOS setup or the system. Select [Setup] to require the password before entering the BIOS Setup. Select [System] to require the password before entering the system. Configuration options: [Setup] [System]

BIOS Write Protection [Disabled]

Set the item to [Disabled] if you are updating BIOS. Configuration options: [Disabled] [Enabled]

2.7 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.



Pressing <Esc> does not immediately exit this menu. Select one of the options from this menu or <F10> from the legend bar to exit.

Save & Exit Setup

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 YES 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 & Without Saving

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.

Load Defaults Setting

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 YES to load default values. Select Save & Exit Setup or make other changes before saving the values to the non-volatile RAM.

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 YES to discard any changes and load the previously saved values.

