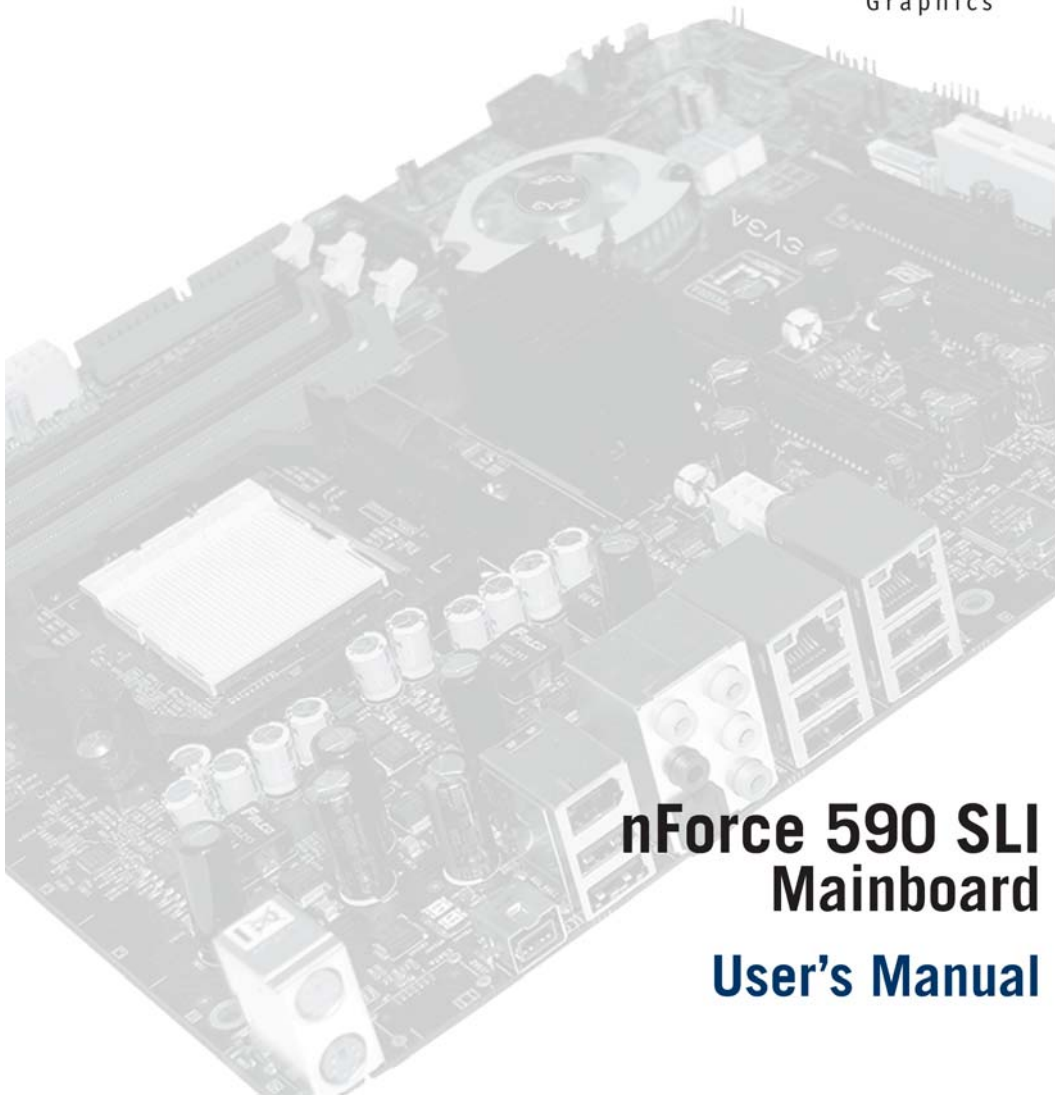


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**nForce 590 SLI
Mainboard
User's Manual**

USER'S MANUAL FOR

EVGA NFORCE 590 SLI MOTHERBOARD

MODELS: 122-M2-NF59-AX

Notice:

Specifications and information contained in this documentation are furnished for informational use only, and are subject to change at any time without notice, and should not be construed as a commitment by the manufacturer.

This manual covers the following motherboards from EVGA CORP.

122-M2-NF59-AX

CPU SUPPORT

The 122-M2-NF59-AX motherboard will support the following AMD AM2 CPUs:

- Athlon 64 FX
- Athlon 64 X2 (Dual Core)
- Athlon 64
- Sempron

122-M2-NF59 MANUAL - REV 1.0 - REV DATE 23 AUG 2006

EVGA Corporation 2900 Saturn St. Suite B, Brea, CA 92821
Phone: 888 / 881-EVGA - 714 / 528-4500 - Fax: 714 / 528-4501

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Introduction of nForce 590 Motherboards

Motherboard Features

Motherboards based on NVIDIA nForce 590 SLI x16 technology support the innovative 64-bit AMD Athlon64 FX and dual core multi-tasking Athlon64 X2 processors with HyperTransport Technology. The SLI x16 version of the motherboard series delivers leading-edge performance with both of the benefits from 64-bit multi-tasking dual core AMD processors and NVIDIA Scalable Link Interface (SLI) Technology with the latest Dual PCI-Express for NVIDIA Dual Graphic Processing Unit ready platform. Utilizing the 64-bit multi-tasking socket AM2 solution and dual channel DDR2 800, memory size expandable to 8.0GB, this motherboard series meets the demands of computing in the future.

The NVIDIA nForce 590 SLI chipset offers **ULTRA ATA 133** and **Serial ATA RAID 0, 1, 0+1** functions to accelerate hard disk drives and guarantee data security without failure in advanced computing applications.

The motherboard provides dual Gigabit LAN by using two NVIDIA Giga-LAN controllers both supporting 10M/100M/1Gbps data transfer rate and full duplex or half duplex transportation. The embedded 8-channel AC'97 CODEC is fully compatible with Sound Blaster Pro™ standards and offers you home cinema quality and complete software compatibility.

Two 16X PCI-Express graphics slots deliver up to 4Gbyte/sec data transfer rate at each relative direction which is fully compatible with the latest NVIDIA SLI Technology. And, two PCI-Express x1 slots offers expandability for future PCI-E devices at 512Mbyte/sec concurrently, over 3.5 times more bandwidth than PCI at 133Mbyte/sec, tackling the most demanding multimedia tasks.

The embedded USB controller has the capability to support up to 10 USB 2.0 ports, delivering 480Mb/s bandwidth each and the embedded Firewire controller allows connection and use of IEEE1394 compliant devices.

Special Features of the Motherboard

CPU Thermal Throttling Technology

To prevent increasing heat from damaging the CPU or causing accidental shutdown while under high workloads, the CPU Thermal Throttling Technology will force the CPU to enter an idle mode from 87.5% to 12.5% according to preset CPU operating temperatures in the BIOS (from 40° to 90°). When the system senses the CPU operating temperature reaching the preset value, the CPU operating bandwidth will be decreased to the preset idle percentage allowing the processor to cool down. When in throttling mode, a beeper sound can be optionally selected to indicate it has reduced the CPU performance. *(for detailed settings, please read the BIOS PDF located on the CD)*

Debug Port

The embedded Hardware Debug Port offers you a real-time visual system for monitoring of your hardware. The embedded Debug Port will turn you into a well trained hardware professional, allowing you to diagnose many hardware issues. (For details please refer to Appendix A)

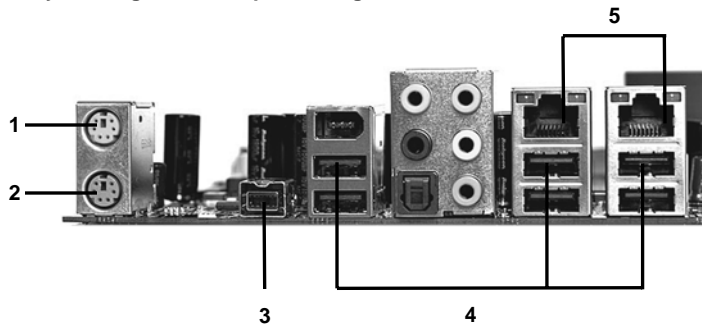
CPU Smart Fan

It's never been a good idea to improve system performance by sacrificing acoustics. The CPU Smart Fan Noise Management System is the answer to control those noise levels. The system will automatically increase the fan speed when the CPU operating load is high, and after the CPU returns to normal operating condition, the system will slow the fan speed down to allow for a silent operating environment.

Specifications

Spec	Description
Design	ATX form factor 6 layers PCB size: 30.5 x 24.4cm
Chipset	NVIDIA nForce 590 SLI X16 Technology
CPU Socket AM2	Supports 64bit AMD Athlon64 Socket AM2 processors Athlon 64 FX/ Athlon 64 X2/ Athlon 64/ and AM2 Sempron
Memory Sockets	Four 240-pin DIMM slots Support Dual-Channel DDR2 533/667/800 Supports up to 8GB DDR2 memory
Expansion Slots	PCI-Express x16 slot x 2 PCI-Express x1 slot x 1 PCI-Express x4 slot x 1 32 bit PCI slots x 2
Integrated IDE and Serial ATA RAID	One PCI IDE controller support PCI Bus Mastering, ATA PIO/DMA and the ULTRA DMA 33/66/100/133 functions that deliver the data transfer rate up to 133 MB/s; Six Serial ATA ports provide 300 MB/sec data transfer rate for six Serial ATA Devices and offer RAID 0, 1, 0+1 functions
LAN	Integrated dual 10Mb/100Mb/ 1Gb /s NVIDIA LAN's
8CH-Audio	8-channel AC'97 Digital HD Audio controller integrated SPDIF-In/ SPDIF-Out Optical support
BIOS	Award 4MB Flash ROM
Multi I/O	PS/2 keyboard and PS/2 mouse connectors Serial port x1 USB2.0 port x 6 Audio connector (Line-in, Line-out, MIC/ 8CH Audio) IEEE 1394a/b Firewire Support S/PDIF Out 1x Optical

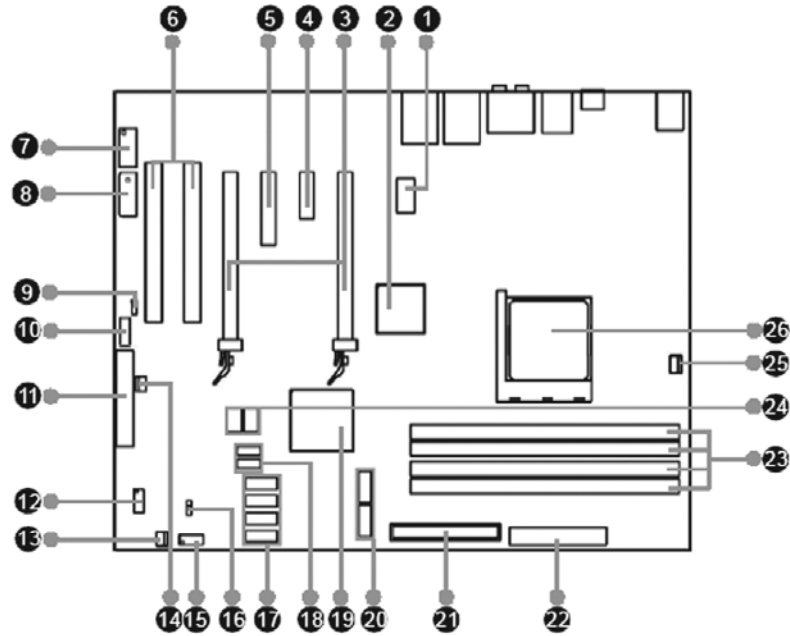
Layout Diagram & Jumper Settings



1. PS/2 Mouse Port
This port is used to connect a PS/2 mouse
2. PS/2 Keyboard Port
This port is used to connect a PS/2 keyboard
3. IEEE1394b Port
This port is used to connect a 1394b device
4. USB 2.0 Ports
The six ports are used to connect USB 2.0 devices
5. LAN Ports
The left LED is no function (always off).
The right LED function sees below table



JUMPERS, CONNECTORS, HEADERS, AND SOCKETS



- | | |
|----------------------------------|----------------------------------|
| 1. 8-pin ATX_12V Power Connector | 14. MCP Fan Connector |
| 2. C51XE | 15. Front Panel Connector |
| 3. PCI Express x16 Slots | 16. Clear CMOS Jumper |
| 4. PCI Express x1 Slot | 17. Serial ATA II Connectors |
| 5. PCI Express x4 Slot | 18. USB Connectors |
| 6. PCI Slots | 19. MCP55P XE |
| 7. IEEE1394a Connector | 20. Serial ATA II Connectors |
| 8. AUX PEX PWR Connector | 21. ATA 133/100/66 IDE Connector |
| 9. Speaker Connector | 22. 24-pin ATX Power Connector |
| 10. Front Audio Connector | 23. DDR2 DIMM Slots |
| 11. FDD Connector | 24. Debug LED (optional) |
| 12. COM1 Connector | 25. CPU FAN Connector |
| 13. SYS Fan Connector | 26. Socket AM2 |

Hardware Installation

Hardware Installation Steps

Before using your computer, please complete the following steps:

1. Check motherboard jumper settings
2. Install CPU and Fan
3. Install System Memory (DIMM)
4. Install Expansion cards
5. Connect IDE and Floppy cables, Front /Back Panel cables
6. Connect ATX Power cable
7. Power-On and Load Standard Default BIOS Settings
8. Reboot
9. Install Operating System
10. Install Motherboard Drivers and Utilities

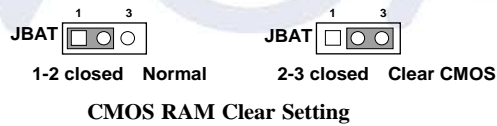
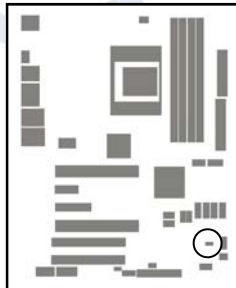
Checking the Motherboard's Jumper Settings

CMOS RAM Clear (3-pin) : JBAT

A battery must be used to retain the motherboard configuration in CMOS RAM short 1-2 pins of JBAT to store the CMOS data.

To clear the CMOS, follow the procedure below:

1. Turn off the system and unplug the AC power
2. Remove the ATX power cable from the ATX power connector
3. Locate JBAT and short pins 2-3 for a few seconds
4. Return JBAT to its normal setting by shorting pins 1-2
5. Connect the ATX power cable back to the ATX power connector



Install CPU

Glossary

Chipset (or core logic) - one or more integrated circuits which control the interfaces between the system processor, RAM, I/O devices, and adapter cards.

Processor slot/socket - the slot or socket used to mount the system processor on the motherboard.

Slot (PCI-E, PCI, RAM) - the slots used to mount adapter cards and system RAM.

PCI - Peripheral Component Interconnect - a high speed interface for video cards, sound cards, network interface cards, and modems; runs at 33MHz.

PCI-Express- Peripheral Component Interconnect Express- a high speed interface for video cards, sound cards, network interface cards, and modems.

Serial Port - a low speed interface typically used for mouse and external modems.

Parallel Port - a low speed interface typically used for printers.

PS/2 - a low speed interface used for mouse and keyboards.

USB - Universal Serial Bus - a medium speed interface typically used for mouse, keyboards, scanners, and some digital cameras.

Sound (interface) - the interface between the sound card or integrated sound connectors and speakers, MIC, game controllers, and MIDI sound devices.

LAN (interface) - Local Area Network - the interface to your local area network.

BIOS (Basic Input/Output System) - the program logic used to boot up a computer and establish the relationship between the various components.

Driver - software, which defines the characteristics of a device for use by another device or other software.

Processor - the "central processing unit" (CPU); the principal integrated circuit used for doing the "computing" in "personal computer"

Front Side Bus Frequency - the working frequency of the motherboard, which is generated by the clock generator for CPU, DRAM and PCI BUS.

CPU L2 Cache - the flash memory inside the CPU, normal it depend on CPU type.

About AMD Athlon64 AM2 CPUs

This motherboard provides an AM2 socket surface mount, Zero Insertion Force (ZIF) socket, referred to as the mPGA940 socket supporting AMD Athlon64 processors in the AM2 package utilizing Flip-Chip Pin Grid Array technology.

The CPU that you use with the motherboard should have a cooling FAN attached to prevent overheating. If this is not the case, then purchase the correct cooling FAN before you turn on your system. To install a CPU, locate the ZIF socket and open it by first pulling the lever sideways away from the socket then upward to a 90-degree angle. Insert the CPU with the correct orientation as shown on the previous page. The notched corner should point toward the end of the lever. Because the CPU has a corner pin for two of the four corners, the CPU will only fit in the orientation as shown.

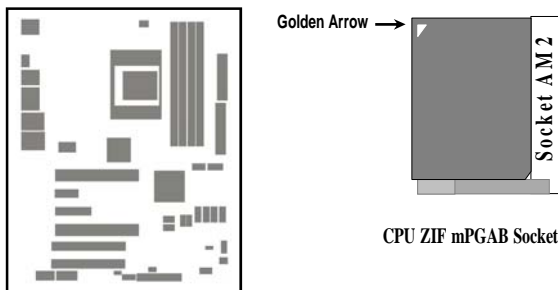
When you put the CPU into the ZIF socket. No force is required to insert the CPU. Press the lever to Locate position slightly without any extra force.

Install Memory

This motherboard provides **four** 240-pin DDR2 DUAL INLINE MEMORY MODULES (DIMM) slots for DDR2 memory expansion available from minimum memory size of 256MB to maximum memory size of 8.0GB DDR SDRAM.

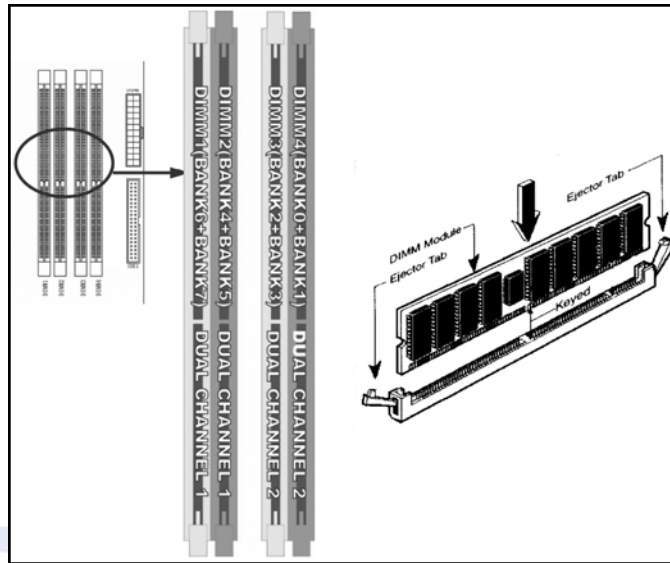
Valid Memory Configurations

Generally, installing DDR2 SDRAM modules to your motherboard is very easy, you can refer to the following page to see what a 240-Pin DDR2 module looks like.



WARNING!

Be sure that there is sufficient air circulation across the processor's heatsink and CPU cooling FAN is working correctly, otherwise it may cause the processor and motherboard to overheat and damage your system, you may install an auxiliary cooling FAN, if necessary.



Bank	184-Pin DIMM	PCS	Total Memory
Bank 0, 1 (DIMM1)	DDR2 533/667/800 DDR2 SDRAM Module	X1	256MB-2.0GB
Bank 2, 3 (DIMM2)	DDR2 533/667/800 DDR2 SDRAM Module	X1	256MB-2.0GB
Bank 4, 5 (DIMM3)	DDR2 533/667/800 DDR2 SDRAM Module	X1	256MB-2.0GB
Bank 6,7 (DIMM4)	DDR2 533/667/800 DDR2 SDRAM Module	X1	256MB-2.0GB
Total	System Memory (Max. 8.0GB)	4	256MB-2.0GB

For Dual Channel Memory

Dual channel only operates when 2 DIMM Modules are plugged into either DIMM1 & DIMM3 or DIMM2 & DIMM4, or four DIMM Modules are plugged into DIMM1~DIMM4.

DIMM1 & DIMM3, or DIMM2 & DIMM4 must be the same type, same size, and same frequency for dual channel to function.

Note: Place Memory DIMM's into matching color slots for Dual Channel. Computer will not boot if RAM is in 3 and 4 only.

Expansion Cards

WARNING! Turn off your system power when adding or removing expansion cards or other system components. Failure to do so may cause severe damage to both your motherboard and expansion cards.

Procedure For Expansion Card Installation

Read the documentation for your expansion card and make any necessary hardware or software setting for your expansion card such as jumpers.

Remove your computer's cover and the bracket plate on the slot you intend to use.

- Align the card's connectors and press firmly.
- Secure the card on the slot with the screen you remove above.
- Replace the computer system's cover.
- Set up the BIOS if necessary.
- Install the necessary software driver for your expansion card.

Assigning IRQs For Expansion Card

Some expansion cards need an IRQ to operate. Generally, an IRQ must be exclusively assigned. In a standard design, there are 16 IRQs available but most of them are already in use. The following table will show you the default assignment of IRQs.

It should be noted that in most modern Plug and Play Operating Systems, that IRQ assignment is handled by the computer itself automatically. This automatic assignment is generally very effective and you should only have to resort to manual assignment in the most extreme cases.

Interrupt Request Table For This Motherboard

Interrupt requests are shared as shown in the table below:

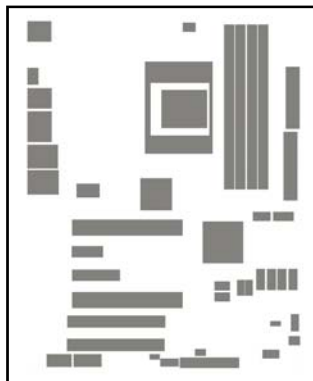
	INT A	INT B	INT C	INT D	INT E	INT F	INT G	INT H
Slot 1		X						
Slot 2			X					
Slot 3				X				
Onboard USB 1	X							
Onboard USB 2		X						
AC97/MC97			X					

IMPORTANT!

If using PCI cards on shared slots, make sure that the drivers support "Shared IRQ" or that the cards don't need IRQ assignments. Conflicts will arise between the two PCI groups that will make the system unstable or cards inoperable.

PCI-Express Slots

This motherboard provides two PCI-Express slots intended for Graphics (Two symmetrical PCI-Express x16 graphics slots deliver up to 4Gbyte/sec data transfer rate at each relative direction which is fully compatible with the latest NVIDIA SLI Technology [SLI version only]. There is also a x1 PCI-Express slot and a x4 PCI-Express slot. Fully compliant to the *PCI-Express Base Specification revision 1.0a*, supporting PCI-Express VGA cards, and other PCI-Express devices.



FROM TOP TO BOTTOM

- 16x PCI-E
- 1x PCI-E
- 4x PCI-E
- 16x PCI-E

Standard Interrupt Assignments

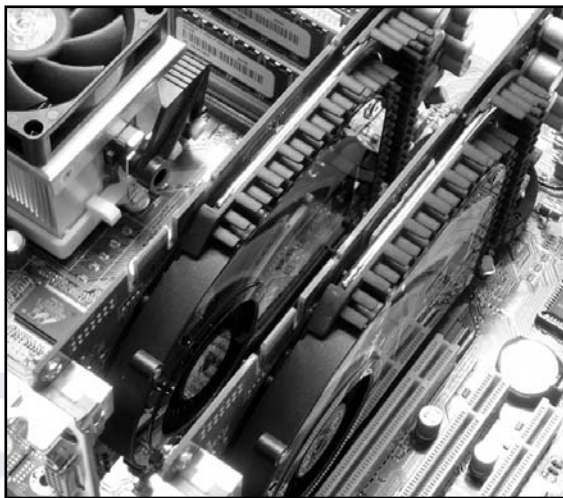
IRQ	Priority	Standard function
0	N/A	System Timer
1	N/A	Keyboard Controller
2	N/A	Programmable Interrupt
3 *	8	Communications Port (COM2)
4 *	9	Communications Port (COM1)
5 *	6	Sound Card (sometimes LPT2)
6 *	11	Floppy Disk Controller
7 *	7	Printer Port (LPT1)
8	N/A	System CMOS/Real Time Clock
9 *	10	ACPI Mode when enabled
10 *	3	IRQ Holder for PCI Steering
11 *	2	IRQ Holder for PCI Steering
12 *	4	PS/2 Compatible Mouse Port
13	N/A	Numeric Data Processor
14 *	5	Primary IDE Channel
15 *	1	Secondary IDE Channel

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

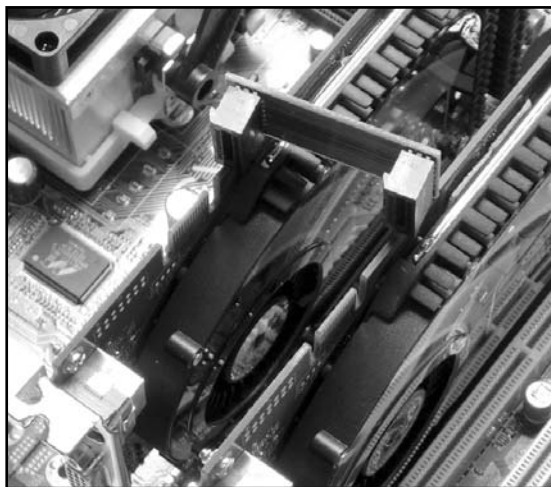
SLI Bridge for NVIDIA SLI Supported VGA Cards

In order to activate the NVIDIA SLI technology (SLI version only), you have to install the included SLI Bridge for your NVIDIA SLI Supported VGA Cards before you can activate the advanced multi-GPU functions.

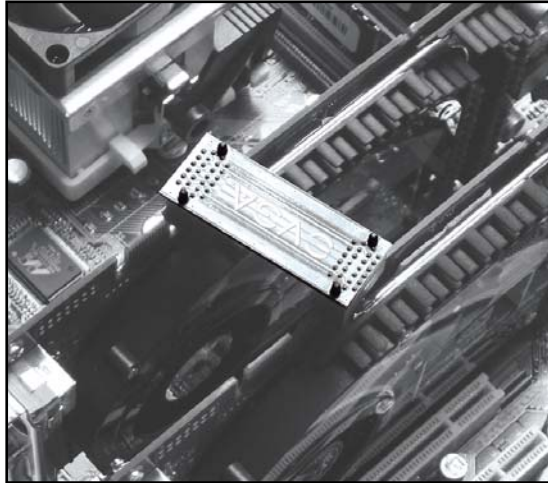
STEP 1 - Install your NVIDIA SLI Supported VGA Cards in the PCI-E x8 slots located on the left and right, leaving the center PCI-E slot vacant.



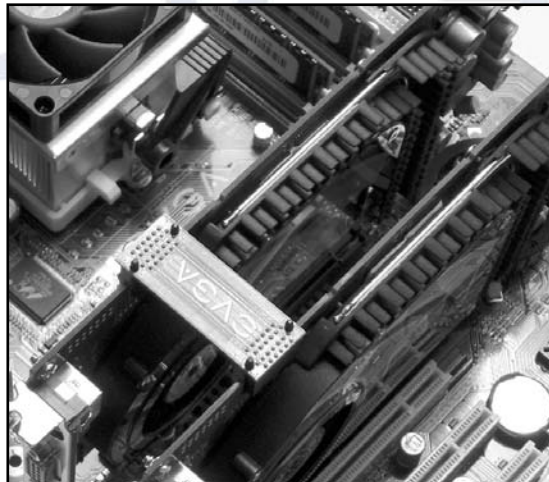
STEP 2 - Prepare to install the SLI Bridge with your NVIDIA SLI Supported VGA Cards



STEP 3 - Be careful with the pins as to not damage the adapter or graphics cards during installation.



STEP 4 - Plug the SLI Bridge adapter onto both of the NVIDIA SLI Supported VGA Cards



Connectors and Headers

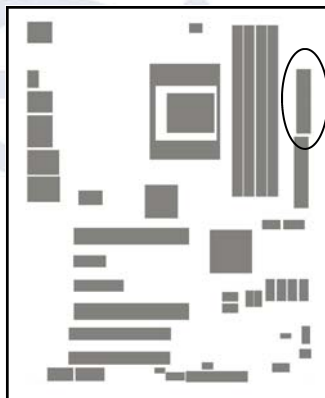
Connectors

Power Connector (24-pin block) : ATXPWR

ATX Power Supply connector. This is a newly defined 24-pin connector that usually comes with an ATX case. The ATX Power Supply allows you to use soft power on momentary switch that connects from the front panel switch to 2-pins Power On jumper pole on the motherboard. When the power switch on the back of the ATX power supply is turned on, the full power will not come into the system board until the front panel switch is momentarily pressed. Press this switch again to turn off the power to the system board.

We recommend that you use an ATX 12V Specification 2.0-compliant power supply unit (PSU) with a minimum of 350W power rating. This type has both 24-pin and the 4-pin power plugs needed.

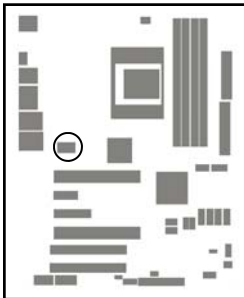
If you intend to use a PSU with 20-pin and 4-pin power plugs, make sure that the 20-pin power plug can provide at least 15A on +12V and the power supply unit has a minimum power rating of 350W. The system may become unstable or may not boot up if the power is inadequate.



PIN	ROW1	ROW2
1	3.3V	3.3V
2	3.3V	-12V
3	GND	GND
4	5V	Soft Power On
5	GND	GND
6	5V	GND
7	GND	GND
8	Power OK	-5V
9	+5V (for Soft Logic)	+5V
10	+12V	+5V
11	+12V	+5V
12	+3V	GND

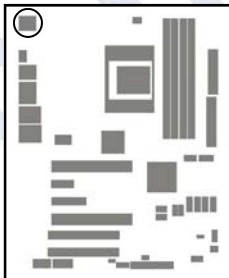
ATX 12V Power Connector (8-pin block) : ATX12V

This is a newly defined 8-pin connector that usually comes with the ATX Power Supply. The ATX Power Supply which fully supports the extra 12V voltage to maintain system power consumption. Without this connector the system will become unstable because the power supply can not provide sufficient current for all the system components



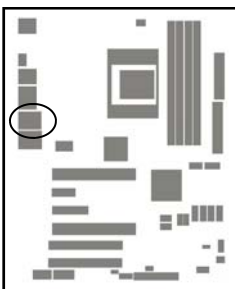
PS/2 Mouse & PS/2 Keyboard Connector: KB

The connectors for PS/2 keyboard and PS/2 Mouse.



LAN Port connector: UL1

This connector is standard RJ45 connector for Ethernet connections.



LAN Port connector: UL2

This connector is standard RJ45 connector for Ethernet connections.



Audio Line-In, Lin-Out, MIC, Surrback, Surround, CEN/LEF Connector : J1

This Connector has 6 audio jacks for LINE-OUT, LINE-IN, MIC, Surrback, Surround, CEN/LEF

Line-in (BLUE)

Line-out (GREEN)

MIC (PINK)

Surrback (ORANGE)

CEN/LEF (BLACKNESS)

Surround (GRAY)

Audio input to sound chip

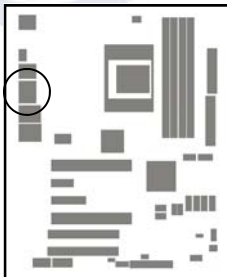
Audio output to speaker

Microphone Connector

Rear speaker out

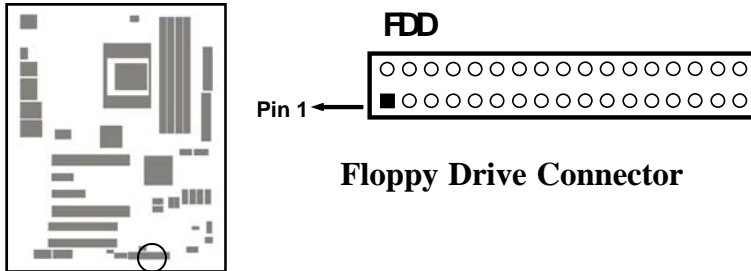
Center/Subwoofer speaker out

Side speaker out



Floppy drive Connector (34-pin block): FDD

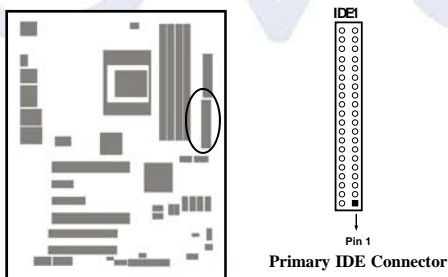
This connector supports the provided floppy drive ribbon cable. After connecting the single plug end to motherboard, connect the two plugs at other end to the floppy drives.



Floppy Drive Connector

Primary IDE Connector (40-pin block): IDE1

This connector supports the provided IDE hard disk ribbon cable. After connecting the single plug end to motherboard, connect the two plugs at the other end to your hard disk(s). If you install two hard disks, you must configure the second drive to Slave mode by setting its jumpers accordingly. Please refer to the documentation of your hard disk for the jumper settings.



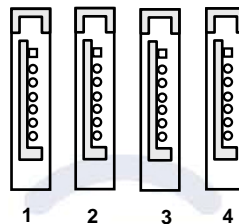
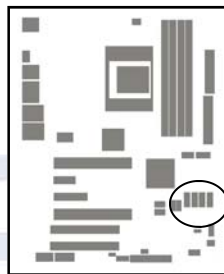
Primary IDE Connector

Two hard disks can be connected to each connector. The first HDD is referred to as the "Master" and the second HDD is referred to as the "Slave".

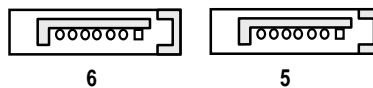
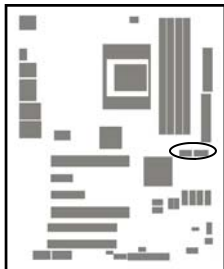
For best performance, we strongly suggest you don't install a CD-ROM or DVD-ROM drive on the same IDE channel as a hard disk. Otherwise, the system performance on this channel will not be able to achieve its maximum ATA133 speed.

Serial-ATA Port: SATA1 / SATA2 / SATA3/ SATA4/ SATA5 /SATA 6

This connector support the provided Serial ATA IDE hard disk cable to connecting the motherboard and serial ATA hard disk. The motherboard will support both SATA 150 and 300 standards.



Serial-ATA Port Connectors

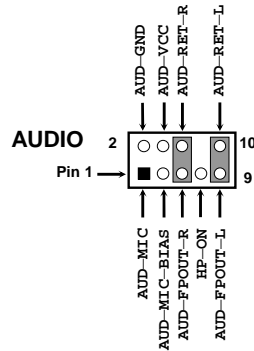
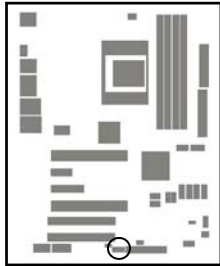


Serial-ATA Port Connectors

Headers

Line-Out/MIC Header for Front Panel (9-pin): AUDIO

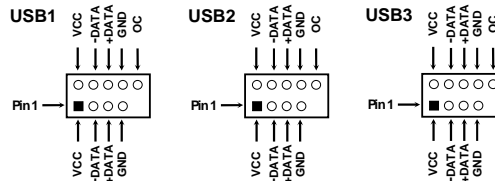
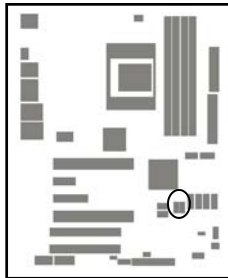
This header connects to Front Panel Line-out, MIC connector with cable. Without installing this cable, this header default setting is 5-6 short, 9-10 short. When you install the cable you have take off these jumpers.



Line-Out, MIC Headers

USB Port Headers (9-pin) : USB1/USB2/USB3

These headers are used for connecting the additional USB port plug. By attaching an optional USB cable, your can be provided with two additional USB plugs affixed to the back panel.



USB Port Headers

Speaker connector: SPEAK

This 4-pin connector connects to the case-mounted speaker. See the figure below.

Power LED: PWR LED

The Power LED is light on while the system power is on. Connect the Power LED from the system case to this pin.

IDE Activity LED: HD LED

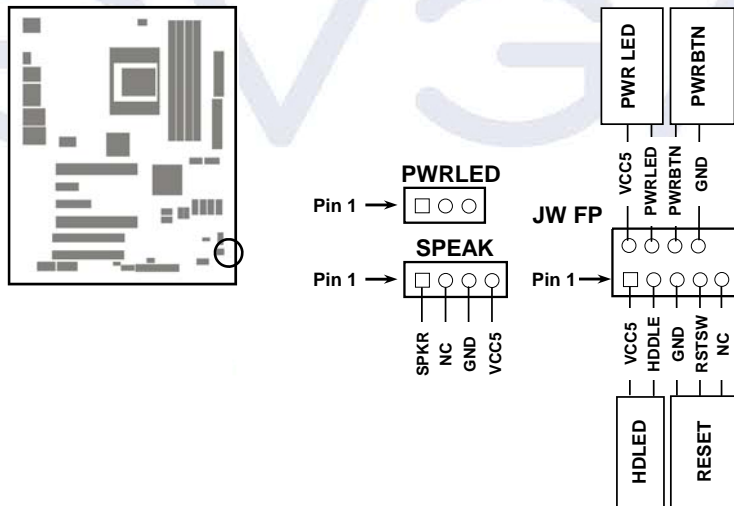
This connector connects to the hard disk activity indicator light on the case.

Reset switch lead: RESET

This 2-pin connector connects to the case-mounted reset switch for rebooting your computer without having to turn off your power switch. This is a preferred method of rebooting in order to prolong the life of the system's power supply. See the figure below.

Power switch: PWR BTN

This 2-pin connector connects to the case-mounted power switch to power ON/OFF the system.



System Case Connections

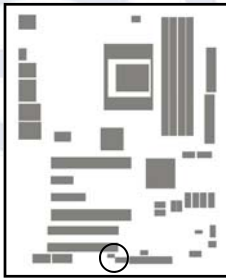
FAN Headers (3-pin) : CPUFAN, SYSFAN1

These connectors support cooling fans of 350mA (4.2 Watts) or less, depending on the fan manufacturer, the wire and plug may be different. The red wire should be positive, while the black should be ground. Connect the fan's plug to the board taking into consideration the polarity of connector.



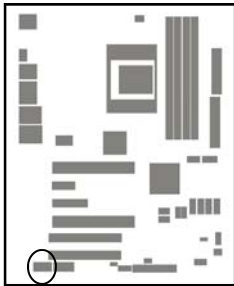
CD Audio-In Headers (4-pin) : CDIN

CDIN are the connectors for CD-Audio Input signal. Please connect it to CD-ROM CD-Audio output connector.



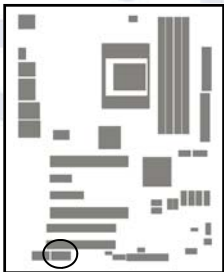
Firewire Connectors : 1394A-B

These connectors support the connection of firewire (IEEE1394) devices.



Supplemental SLI Power: J2

This 4-pin Molex type power connector is only required when running the system in an SLI configuration(SLI EZ-Plug). This allows additional power to be channeled to the video cards in order to better maintain stability.



Starting Up Your Computer

After all connections are made, close your computer case cover.

Be sure all the switches are off, and check that the power supply input voltage is set to proper position, usually input voltage is 110V~120V or 220V~240V depending on your country's voltage used. In the United States, this is 110V~120V - typically the switch on a computer power supply will be marked with 115V to indicate this setting.

Connect the power supply cord into the power supply located on the back of your system case according to your system user's manual.

Turn on your peripherals in the following order:

- Your monitor.
- Other external peripheral (Printer, Scanner, External Modem etc...)
- Your system power. For ATX power supplies, you need to turn on the power supply and press the ATX power switch on the front side of the case.

The power LED on the front panel of the system case will light up. The LED on the monitor may light up or switch between orange and green after the system is on. If it complies with green standards or if it has a power standby feature. The system will then run power-on test.

If you do not see any thing within 30 seconds from the time you turn on the power. The system may have failed on power-on test. Recheck your jumper settings and connections or call your retailer for assistance.

If there are any errors during start up, your computer will issue a series of beep codes in addition to displaying the last BIOS operation on the POST code diagnostic LED. A list of common beep codes follows:

Beep	Meaning
One short beep when displaying logo	No error during POST
Long beeps in an endless loop	No DRAM install or detected
One long beep followed by three short beeps	Video card not found or video card memory bad
High frequency beeps when system is working	CPU overheated System running at a lower frequency

During power-on, press **<Delete>** key to enter BIOS setup. Follow the instructions in the BIOS PDF located in the Manuals Section of the Installation CD.

BIOS Description

Enter BIOS Setup

The BIOS is the communication bridge between the hardware and software, correctly setting up the BIOS parameters is critical to maintain optimal system performance. Power on the computer, when the following message briefly appears at the bottom of the screen during the POST (Power On Self Test), press key to enter the Award BIOS CMOS Setup Utility.

Press F1 to continue, DEL to enter Setup.

Note: It is recommended that the default settings in the BIOS are not changed. The user accepts all responsibility for any damage that results from changing the default settings.

Main Menu

The main menu allows you to select from the list of setup functions and two exit choices. Use the arrow keys to select among the items and press <ENTER> to accept or go to the sub-menu.

The items in the main menu are:

Standard CMOS Features

The basic system configuration can be setup through this menu.

Advanced BIOS Features

The advanced system features and boot sequence can be setup through this menu.

Advanced Chipset Features

Optimize system performance through this menu. Configure clocks, voltages, memory timings, and more.

Integrated Peripherals

Onboard peripherals such as RAID, USB, and MAC control can be setup through this menu.

Power Management Setup

Configure power management, power-on, and sleep features through this menu.

PnP/PCI Configurations

The system's Plug-and-Play and PCI configurations can be modified through this menu.

System Monitor

Monitor the real-time system status of your PC, including temperature, voltage, and fan speed.

Load Defaults

Load the NVIDIA LinkBoost™ Technology settings for LinkBoost™ enabled systems. Load default system settings for standard systems.

Set Password

Set the password to access the BIOS menu.

Set User Name

Set the BIOS Welcome screen name.

Save & Exit Setup

Save settings and exit setup.

Exit Without Saving

Abandon all setting changes and exit setup.

Standard CMOS Features

This sub-menu is used to setup the standard CMOS features, such as the date, time, and HDD model. Use the arrow keys to select the item to setup, and then use the <PgUp> or <PgDn> keys to choose the setting values.

Date

This option allows you to set the desired date with the <month><date><year> format.

Time

This option allows you to setup the desired time with <hour><minute><second> format.

- “None” means no HDD is installed or set.
- “Auto” means the system can auto-detect the hard disk when booting up
- “Manual” mean the information can be entered manually. Note: “Access Mode” must also be set to “CHS” to enable manual entry.

Cylinder Number of cylinders
 Head Number of heads
 Precomp Write pre-compensation
 Landing Zone Landing zone
 Sector Number of sectors

Award (Phoenix) BIOS can support 3 HDD modules: CHS, LBA, and Large or Auto mode.

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

Floppy Drive A

This option allows you to select the kind of FDD to be installed, including “None”.

Halt On

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

All Errors Whenever the BIOS detects a nonfatal error, the system will stop and you will be prompted.

No Errors The system boot will not stop for any errors that may be detected.

All, But Keyboard The system boot will not stop for a keyboard error; but it will stop for all other errors.

All, But Diskette The system boot will not stop for a diskette error; but it will stop for all other errors.

All, But Disk/Key The system boot will not stop for a keyboard or disk error, but it will stop for all other errors.

Memory

This is a Display-Only category determined by POST (Power On Self Test) of the BIOS.

Base Memory

The BIOS POST will determine the amount of base (or conventional) memory installed in the system.

Extended Memory

The BIOS determines how much extended memory is present during the POST.

Total Memory

Total memory of the system.

Advanced BIOS Features



Removable Device Priority

This option is used to select the priority for Removable device startup. After pressing <Enter>, you can select the removable device using the <PageUp>/<PageDn> are arrow keys, and change the removable device priority using <+> or <->.

Hard Disk Boot Priority

This option is used to select the priority for HDD startup. After pressing <Enter>, you can select the HDD using the <PageUp>/<PageDn> are arrow keys, and change the HDD priority using <+> or <->.

Network Boot Priority

This option is used to select the priority for Network startup. After pressing <Enter>, you can select the Network using the <PageUp>/<PageDn> are arrow keys, and change the Network priority using <+> or <->.

CPU Internal Cache

This option enables or disables the CPU internal caches.

Quick Power On Self Test

Enable to reduce the time for power on self test

First/Second/Third Boot Device

This option allows you to set the boot device's sequence.

Boot Other Device

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

Boot Up NumLock Status

This item defines if the keyboard Num Lock key is active when your system is started.

Security Option

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

APIC Mode

This option is used to enabled or disable APIC function.

MPS Version Control for OS

This option is used to setup the version of MPS Table used in NT4.0 OS.

Full Screen Logo Show

This option allows you to enabled or disable to full-screen logo.

Advanced Chipset Features

Use this section to control chipset features, specifically clocks, voltages, and memory timings.



System Clocks

Use this menu to control system clocks (see System Clocks section below)

System Voltages

Use this menu to control system voltages (see System Voltages section below)

Memory Configuration

Use this menu to control memory settings (see Memory Configuration section below)

PCI Clocks

Use this menu to turn off the PCI clock on the unused PCI slot

LPC P2P P2P

Decoding mode for LPC and P2P

SSE/SSE2 Instructions

Enable/Disable Stream SIMD Extensions

System BIOS Cacheable

Enable the memory cache function for BIOS

Load timing/voltage settings

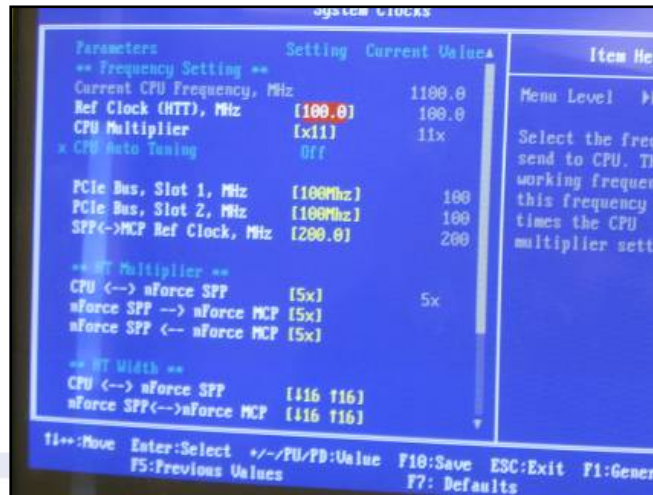
Load timing and voltage settings from a profile

Save timing/voltage settings

Save timing and voltage settings to a profile

System Clocks

Use this section to control chipset features, specifically clocks, voltages, and memory timings.



Frequency Settings

Ref Clock (HTT)

Reference clock frequency

CPU Multiplier

The value of the CPU multiplier

PCIe Bus, Slot 1

The frequency of the PCI-Express Bus, Slot 1

PCIe Bus, Slot 2

The frequency of the PCI-Express Bus, Slot 2

SPP <> MCP Ref Clock

The frequency of the reference clock between SPP and MCP chips

HT Multiplier

CPU <> nForce SPP

The HT multiplier between the CPU and the SPP

nForce SPP > nForce MCP

The HT multiplier from the SPP to the MCP

HT Width

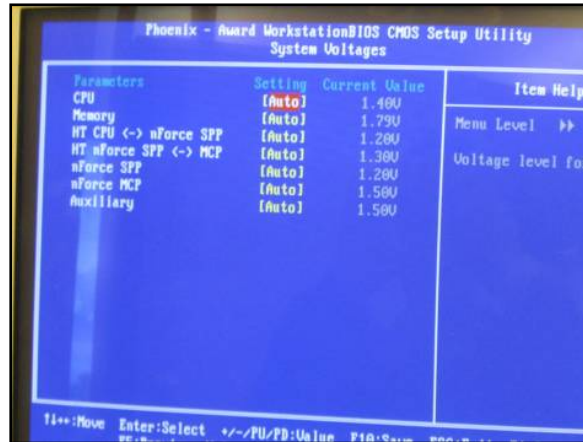
CPU <> nForce SPP

The HT width between the CPU and the SPP

nForce SPP <> nForce MCP

The HT width between the SPP and the MCP

System Voltages



CPU

Voltage to the CPU

Memory

Voltage to the DRAM

HT CPU <-> nForce SPP

Voltage of the HT link between the CPU and the SPP

HT nForce SPP <-> MCP

Voltage of the HT link between the SPP and the MCP

nForce SPP

Voltage of the nForce SPP

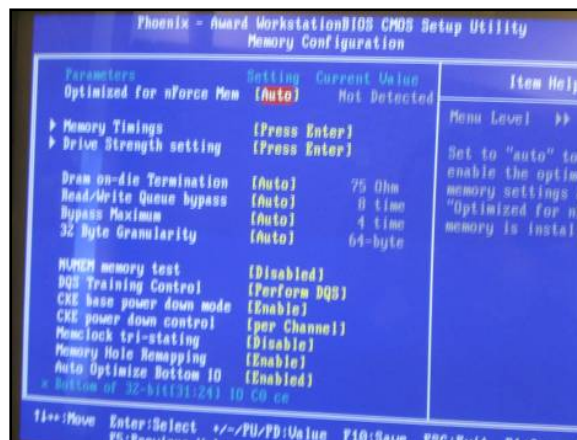
nForce MCP

Voltage of the nForce MCP

Auxiliary

Voltage of the SPP auxiliary

Memory Configuration



Memory Configuration

Optimized for nForce Mem

Enable memory settings that are Optimized for nForce (only functional with DRAM that is Optimized for nForce).

Memory Timings

Use this menu to control memory timings (see Memory Timings section below)

Drive Strength setting

Use this menu to control drive strength settings (see Drive Strength settings section below)

Dram on-die termination

Resistance of the on-die termination resistors

Read/Write queue bypass

Number of times to bypass the read/write queue

Bypass Maximum

Max number of times that the oldest memory access request can be bypassed

32 Byte Granularity

32/64 byte DRAM access granularity

NVMEM memory test

Run NVIDIA memory testing module during POST

DQS Training Control

Perform/Skip DQS training

CKE base power down mode

Enable/Disable CKE base power down mode

CKE power down control

CKE power down mode selection. It should be set to "per channel" for non mobile systems.

Memclock tri-stating

Memclock tri-stating during C3 and Alt VID

Memory Hole remapping

Enable/Disable memory hole remapping

Auto Optimize Bottom IO

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

Memory Timings

Parameters	Setting	Current Value	Item Help
Timing Mode	[Auto by SPD]		
x Memory Clock Limit	3982	468	Menu Level >>>>
tCL (CAS Latency)	[Auto]	4 clock	
tRCD	[Auto]	4 clock	Auto, no user limit
tRP	[Auto]	4 clock	MaxMemClk, limit by
tRAS	[18 clock]	18 clock	Memory Clock value
Command Per Clock (CMB)	[Auto]	2 clock	
== Advanced Memory Settings ==			
tRRD	[Auto]	4 clock	
MemLat	[Auto]	4 nS	
tRC	[Auto]	28 clock	
tMR	[Auto]	5 clock	
tMTR	[Auto]	4 clock	
tMTR	[Auto]	3 clock	
Read DQS Show	[Auto]	3.9 nS	
Read delay from Rx FIFO	[Auto]	2.5 clock	

Ti: Show Enter>Select +/-/PB/PB-Value F10:Save ESC:Exit F1:General H
F5:Previous Values F7:Defaults

Memory Timings

Standard Memory Settings

Timing mode

Select automatic or manual set memory timing

tCL (CAS Latency)

CAS Latency (CAS# to read data valid)

tRCD

RAS# to CAS# delay for a RD/WR command to the same bank

tRP

Row Precharge time Precharge-to-Active or Auto-Refresh of the same bank

tRAS

Minimum RAS# active time

Command Per Clock (CMD)

Command timing setting (per clock unit)

Advance Memory Settings

tRRD

RAS# to RAS# delay of different banks

AsyncLat

Max round trip latency from the CPU to the DRAM

tRC

RAS# to RAS# or auto refresh time of the same bank

tWR

Write recovery time

tRWT

Minimum read to write turnaround time

tWTR

Minimum write to read delay with same chip select

tREF

DRAM refresh rate

Read DQS Skew

Read DQS delayed with respect to the data. 1/96 MEMCLK per unit.

Read delay from Rx FIFO

Delay from DQS receiver enable to first data read from Rx FIFO.

Drive Strength Setting

Parameters	Setting	Current Value	Item Help
DRAM driver weak mode	(Auto)	Normal	
CKE drive strength	(Auto)	1.50x	Menu Level >>>>
CS drive strength	(Auto)	1.50x	
PA drive strength	(Auto)	1.50x	DRAM data drive strength on DRAM
MCLE drive strength	(Auto)	1.0 x	
MD drive strength	(Auto)	1.0 x	
DQS drive strength	(Auto)	1.0 x	

DRAM driver weak mode

DRAM data drive strength on DRAM

CKE drive strength

Drive strength of the CKE pins

CS drive strength

Drive strength of the CS and ODT pins

MA drive strength

Drive strength of the Address, RAS, CAS, WE, and parity pins

MCLK drive strength

Drive strength of the MEMCLK pins

MD drive strength

Drive strength of the Data pins

DQS drive strength

Drive strength of the DQS pins

Integrated Peripherals



IDE Function Setup

Use this menu to setup the data flow control for IDE

RAID Config

Use this menu to enable/disable SATA RAID

USB Config

Use this menu to setup USB interface

MAC Config

Use this menu to turn off MAC

IEEE1394 controller

Use this setting to set whether the IEEE 1394 function is enabled.

HD Audio

Use this setting to configure HD Audio

IDE HDD Block Mode

Use this setting to configure HDD Block Mode

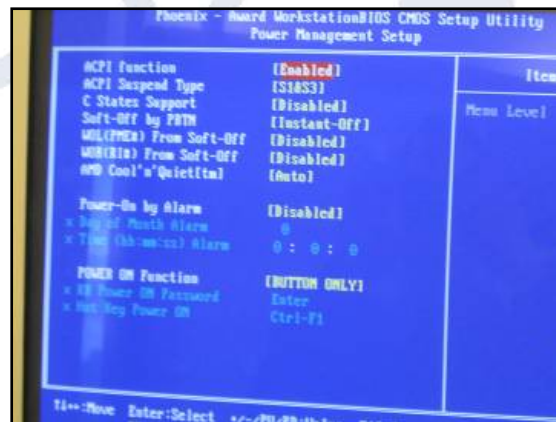
Onboard FDC Controller

This option is used to set whether the Onboard FDC Controller is enabled.

Onboard Serial Port 1

This option is used to assign the I/O address and IRQ for onboard serial port 1.

Power Management Setup



ACPI Suspend Type

This option is used to set the energy saving mode of the ACPI function. When you select "S1 (POS)" mode, the power will not shut off and the supply status will remain as it is. In S1 mode the computer can be resumed at any time. When you select "S3(STR)" mode, the power will be cut off after a delay period. The status of the computer before it enters STR will be saved in memory, and the computer can quickly return to the previous state when the STR function wakes. When you select "S1 & S3" mode, the system will automatically select the delay time.

C States Support

CPU power state selection

Soft-Off by PBTN

This option is used to set the power down method. This function is only valid for system using an ATX power supply.

When "Instant-Off" is selected, press the power switch to immediately turn off power.

When "Delay 4 Sec" is selected, press and hold the power button for four seconds to turn off power.

WOL(PME#) From Soft-Off

This item is used to set the system to wake-up on LAN.

WOR(RI#) From Soft-Off

This item is used to set the system to wake-up on ring.

AMD Cool'n'Quiet

Use this option to enable or disable AMD Cool'n'Quiet™ Technology.

Power-on by Alarm

This item is used to set the timing of the power-on function.

POWER ON Function

This option is used to set the power on method for your PC.

PnP/PCI Configurations



Init Display First

This option is used to set which display device will be used first when your PC starts up.

Reset Configuration Data

This option is used to set whether the system is permitted to automatically distribute IRQ, DMA, and I/O addresses each time the machine is turned on.

Resources Controlled by

Use this option to determine if IRQ resources are automatically assigned or manually assigned

IRQ Resources

Press <Enter> to manually assign IRQ resources.

PCI/VGA Palette Snoop

If you use a non-standard VGA card, use this option to solve graphic acceleration card or MPEG audio card problems (e.g. colors not accurately displayed).

Maximum Payload Size

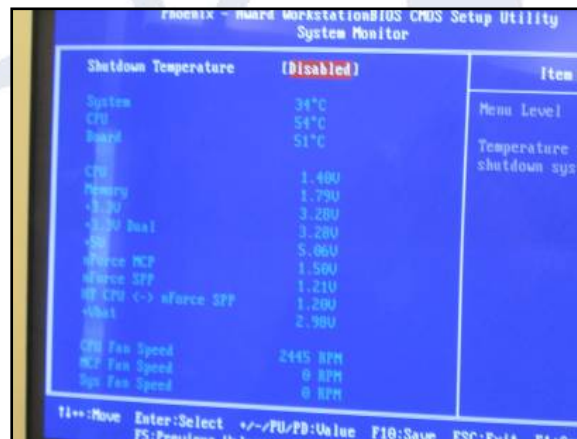
This option is used to set maximum TLP payload size for PCI Express devices.

Maximum ASPM

Enable/Disable Advance State Power Management

System Monitor

The “System Monitor” screen displays real-time temperatures, voltages, and fan speeds.



Temperature Values

This option is used to set which display device will be used first when your PC starts up.

System

The temperature of the system

CPU

The temperature of the CPU

Board

The temperature of the motherboard

Voltage values

CPU

The voltage of the CPU

Memory

The voltage of the Memory

+3.3V

The voltage of the +3.3V

+3.3V Dual

The voltage of the +3.3V Dual

+5V

The voltage of the +5V

nForce MCP

The voltage of the nForce MCP chip

nForce SPP

The voltage of the nForce SPP chip

HT CPU <-> nForce SPP

The voltage of the HT between the CPU and the nForce SPP chip

+Vbat

The voltage of +Vbat

Fan Speed values

CPU Fan Speed

The CPU fan speed

MCP Fan Speed

The MCP fan speed

Sys Fan Speed

The system fan speed

Load Defaults

The BIOS defaults sets the basic system functions that ensure system stability. If the system is NVIDIA LinkBoost™ enabled, the default settings are the LinkBoost settings. If your computer cannot POST properly, you should load the Defaults to restore the original settings.

Set Password

The password can be used to start the system or modify the CMOS settings. When you select the Set Password option, the following message will appear in the center of the screen:

Enter Password:

Enter your password, not exceeding 8 characters, then press <Enter>. The password you enter will replace any previous password. When prompted, key in the new password and press <Enter>. If you do not want to set a password, just press <Enter> when prompted to enter a password, and in the screen the following message will appear. If no password is keyed in, any user can enter the system and view/modify the CMOS settings.

Password Disabled!!!

Press any key to continue...

Save & Exit Setup

When you select this option and press <Enter>, the following message will appear in the center of the screen:

SAVE to CMOS and EXIT (Y/N)?

Press <Y> to save your changes in CMOS and exit the program; press <N> or <ESC> to return to the main menu.

Exit Without Saving

If you select this option and press <Enter>, the following message will appear in the center of the screen:

Quit Without Saving (Y/N)?

Press <Y> to exit CMOS without saving your modifications; press <N> or <ESC> to return to the main menu

NVIDIA Networking Guide

Launching NVIDIA Networking

Click on Start > All Programs > NVIDIA Corporation > NVIDIA Control Panel.

The following GUI appears:

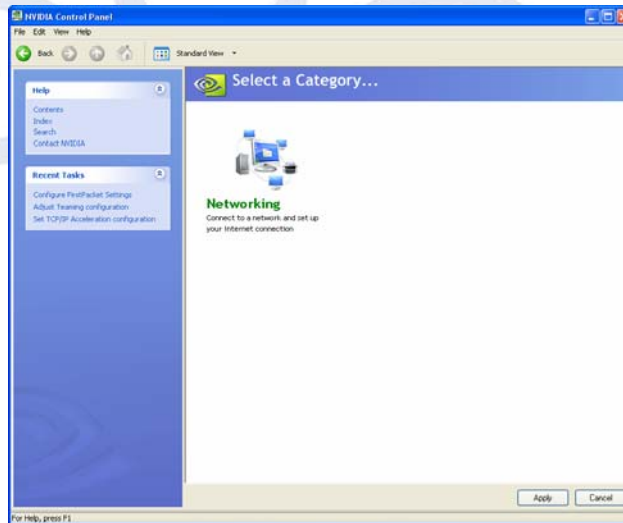


Figure 1 Networking Control Panel Intro Page

Click on Networking; the following GUI appears:

Configuring FirstPacket:
 Click on "Enable FirstPacket (recommended)" to enable FirstPacket.
 The following screen appears

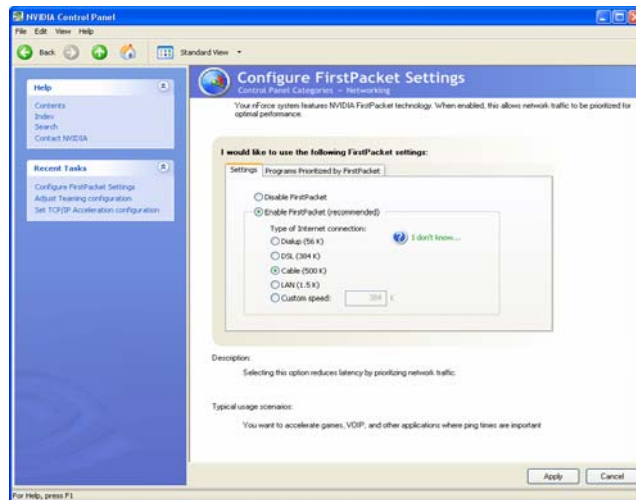


Figure 4 Enabling FirstPacket

Select the appropriate speed for your network.
 To define a custom speed do the following:
 Click on "Custom speed".
 Enter the exact speed of your network.
 Click on "Apply".

In order to select which application is to be accelerated, do the following:
 Click on "Program Prioritized by FirstPacket"; the following screen appears

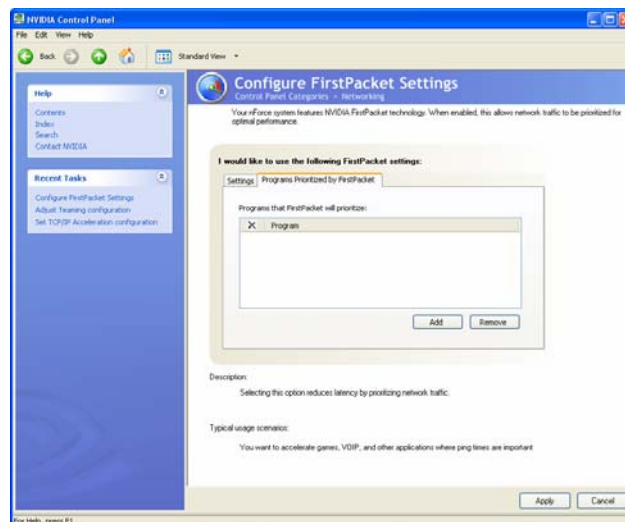


Figure 5 FirstPacket Application Selection Page

Click on "Add" to select the executable of the game or application that you want to accelerate. For example, if you want to accelerate a game such as Serious Sam 2, look for the Sam2.exe and add it.

Click on "Apply".

Only applications that are added to the "Programs Prioritized by FirstPacket" section are prioritized. All other traffic is treated as second class traffic.

Configuring TCP/IP Acceleration:

To configure TCP/IP acceleration, do the following:

Click on "Set TCP/IP Acceleration configuration"; the following screen appears

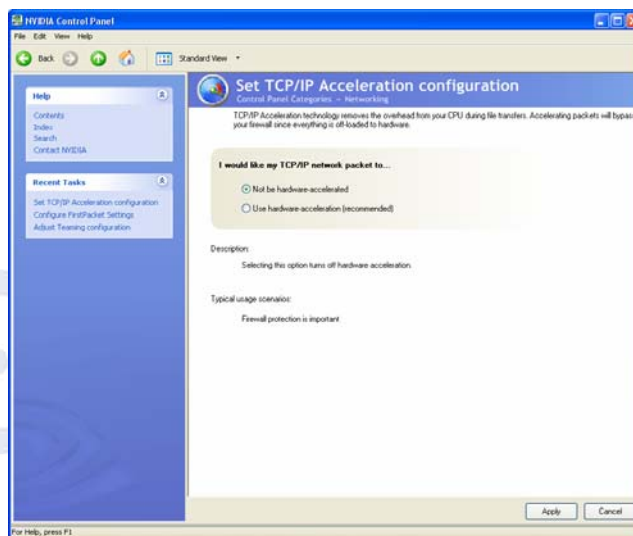


Figure 6 TCP/IP Acceleration Configuration Page

By default, TCP/IP acceleration is turned off.

Click on "Use hardware acceleration (recommended)" in order to enable it.

Click on "Apply".

Configuring Teaming:

To configure teaming, do the following:
 Click on "Adjust Teaming configuration"; the following screen appears:

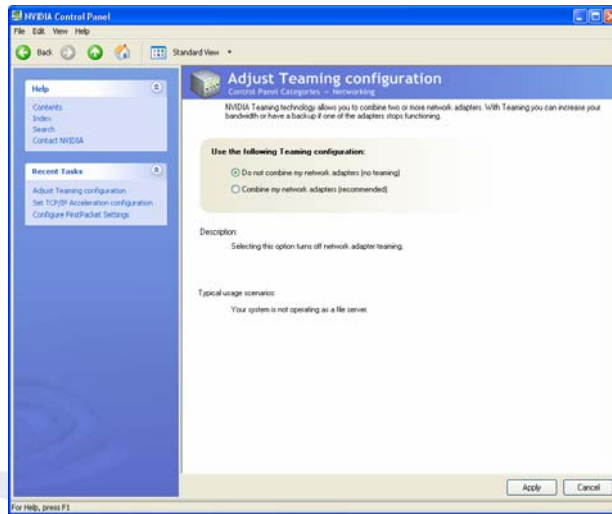


Figure 7 Teaming Configuration Page
 By default, teaming is disabled.
 Click on "Combine my network adapters (recommended)" to enable it.,
 Click on "Apply".

MediaShield RAID Manager:

Launching MediaShield
 To launch MediaShield, click Storage in the NVIDIA Control Panel.



Figure 1. Launching MediaShield

Create RAID Arrays:

Use the MediaShield Creation Wizard to configure your available storage. After launching MediaShield, start the wizard. Under Management, click Create array (Figure 2).

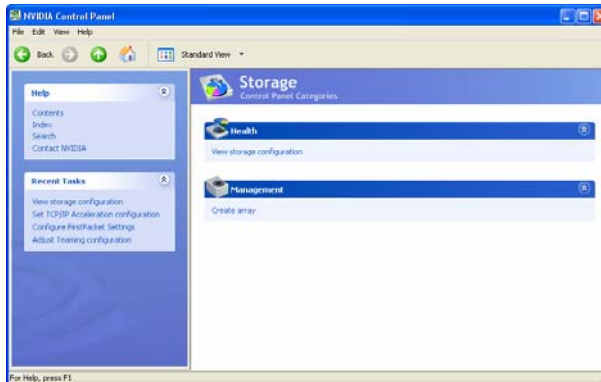


Figure 2. Storage Control Panel

2. On the wizard's **Welcome** screen, note the number of disks available for configuration (Figure 3).

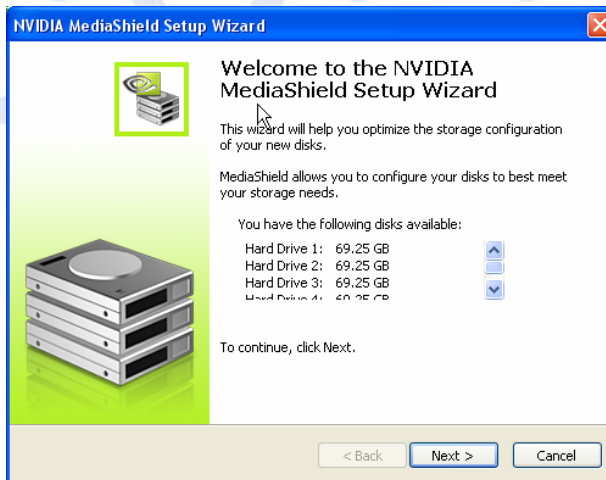


Figure 3. MediaShield Welcome Screen

3. Click **Next** to go to the Select Configuration screen (Figure 4).

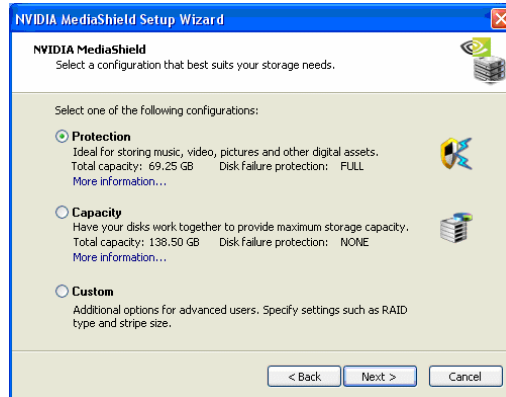


Figure 4. Select Configuration Screen

You will only see the screen in Figure 4 if your system has one to three free disks. If four or more free disks are available, you'll automatically proceed to **Custom** setup.

Configuration Options

4. Select a configuration that fits your storage needs.

Select the **Protection** option to automatically configure the best RAID option based on the number of drives, with the criteria that if a drive fails you will not lose your data.

Select the **Capacity** option to automatically configure the best RAID option based on the number of drives and the desire for maximum capacity. This array is not fault-tolerant, so choose this option only if your data is noncritical or is backed up.

Select the **Custom** option to create one of these custom RAID arrays:

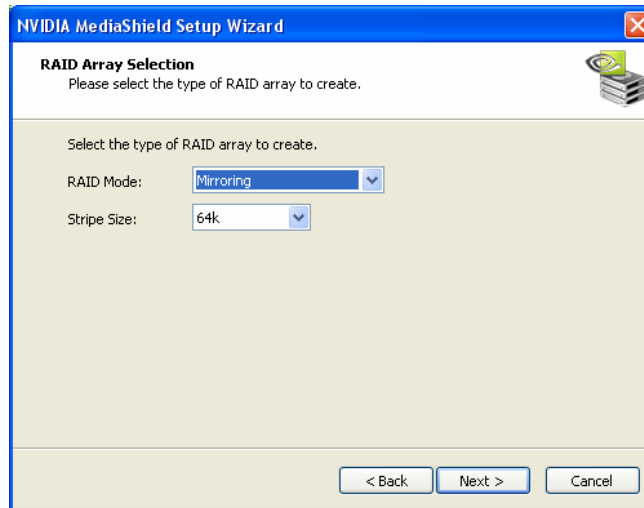
- Mirrored
- Striped
- Stripe mirrored
- Spanning
- RAID 5

Setting Up a Custom Array

5. If you have four or more arrays, set up a Custom array.

To set up a custom mirrored array, select Mirroring as the RAID mode and leave Stripe Size with its default value, as shown in Figure 5. (Next Page)

Figure 5. Creating a Mirrored Array



To select a Striped array, select **Striping** as the RAID mode and leave Stripe Size as the default.

To select a Striped Mirrored array, select **Stripe Mirroring** as the RAID mode and leave Stripe Size as the default.

To select a Spanning array, select **Spanning** as the RAID mode and leave Stripe Size as the default.

To select a RAID 5 array, select **RAID 5** as the RAID mode and leave Stripe Size as the default.

6. After selecting the RAID mode, click Next and the Free Disk Selection screen appears (Figure 6).

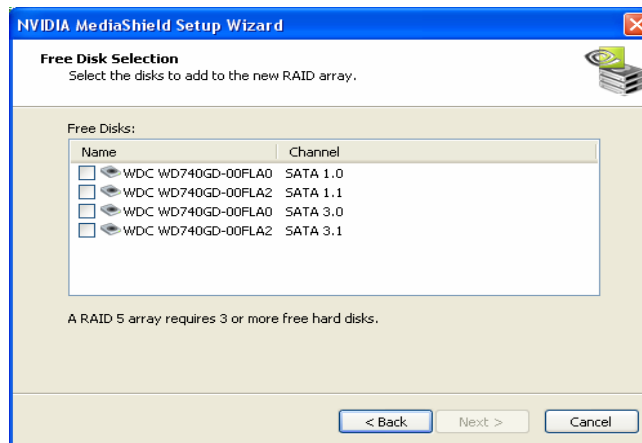


Figure 6. Selecting Disks

Figure 6. Selecting Disks

7. Select the disks you want to include in the Striped set.
8. Follow directions in the next few wizard screens to finish creating the array.

View RAID Arrays

To view your RAID configuration from Windows, perform this step:

1. Under **Health**, select **View storage configuration**, as shown in Figure 7.

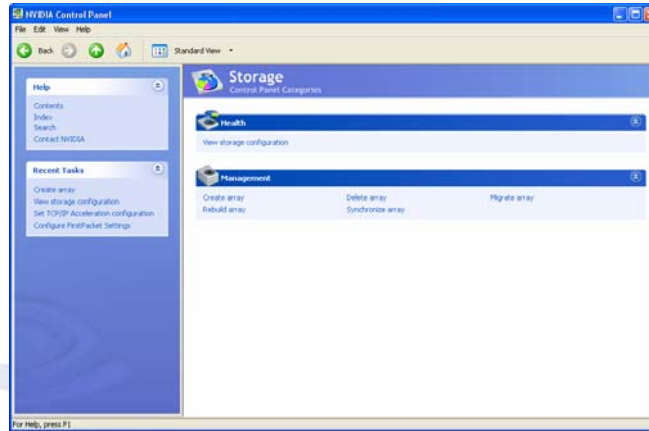


Figure 7. Viewing RAID Arrays

The RAID configuration information appears, as shown in Figure 8.

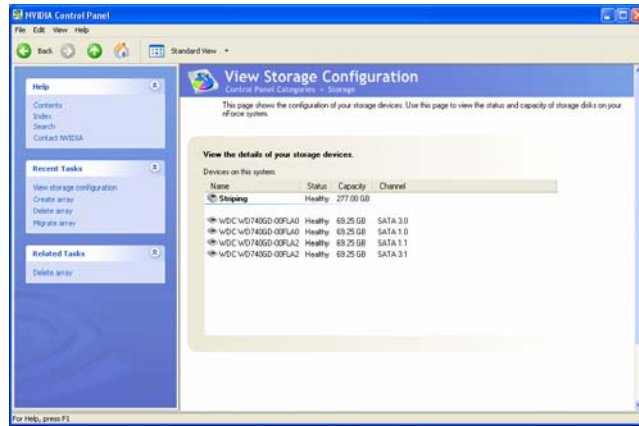


Figure 8. RAID Configuration Information

Delete RAID Arrays

To delete an array, perform these steps:

1. Select Delete array from the Storage Control Panel. This brings up the Delete Array Wizard, as shown in Figure 9.

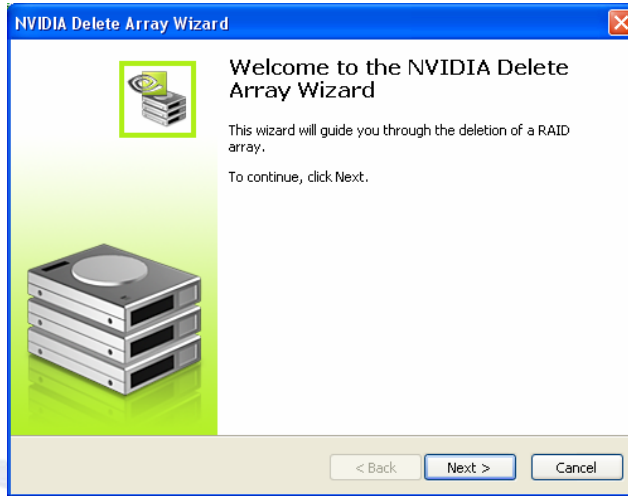


Figure 9. Delete Array Wizard

2. Follow directions in the next few wizard screens to finish deleting the array. As shown in Figure 10, the array has been deleted and you see only free disks.

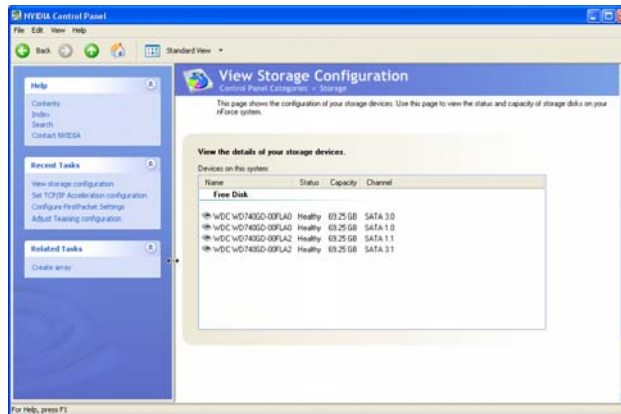


Figure 10. Deleted RAID Array

Setting Up a Spare RAID Disk

You can designate a hard drive to be used as a spare drive for a RAID 1, RAID 0+1, or RAID 5 array². The spare drive can take over for a failed disk.

MediaShield RAID supports two types of spare drives: free disk and dedicated disk.

Free Disk

A free disk is not part of any RAID array, but can be used by any available RAID 1, RAID 0+1, or RAID 5 array that requires a particular disk when one of its disks crashes or becomes unusable. The process is automatic and doesn't require any user interaction.

Dedicated Disk

A dedicated free disk is assigned to a RAID 1, RAID 0+1, or RAID 5 array and is used by that array only when needed—for example during a system crash when a RAID mirrored drive is broken. The dedicated disk can be used only by the array that it is assigned to, and not by any other array.

Assigning a Free Disk

To mark a disk as free, or not a part of any array, perform these steps:

1. Enter the system BIOS setup and make sure that the drive that you want to mark as free is RAID-enabled.
2. Enter the RAID BIOS and make sure that the drive is not part of any array (if one exists).
3. Boot into Windows and view the array configuration.

The drive appears under Free Disk (Figure 11).

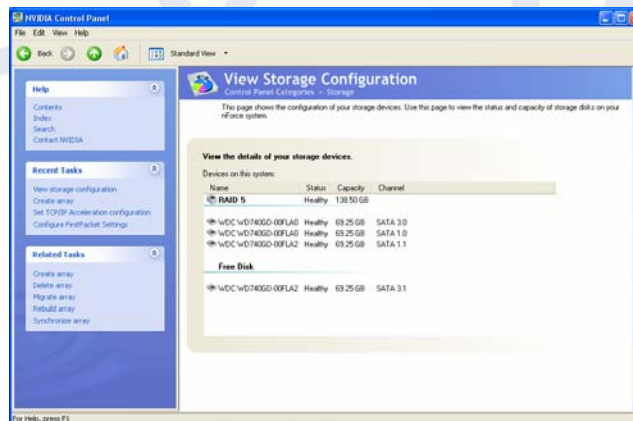
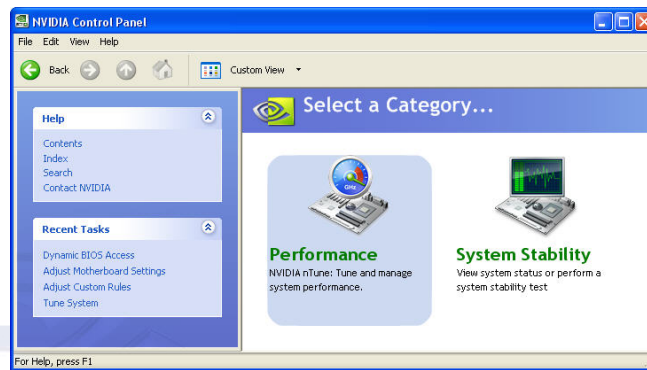


Figure 11. Free Disks

Nvidia nTune 5.0

NVIDIA nTune™ 5.0 is a full-featured application for accessing, monitoring, and adjusting your system components, including bus speeds and voltages, with clear, user-friendly control panels. Overclock your system for highest performance or underclock it for near silent operation. All changes are performed within the Microsoft® Windows® interface, enabling full functionality without the need to make changes in the BIOS and reboot your system.

Starting nTune



You can start NVIDIA nTune in several ways:

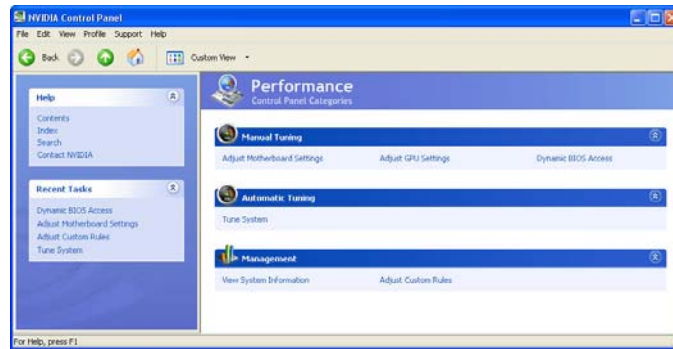
From the Windows desktop, click **Start**, then click **All Programs->NVIDIA Corporation->NVIDIA Control Panel** - and then click **nTune**, or

Right-click the Windows desktop, click NVIDIA Control Panel from the pop-up menu, then from the **Select a Category** page, click **Performance**, or

From the Windows Control Panel, double-click the NVIDIA Control Panel icon, then from the **Select a Category** page, click **Performance**.

Once nTune is launched, two category choices are available; **Performance** and **System Stability**.

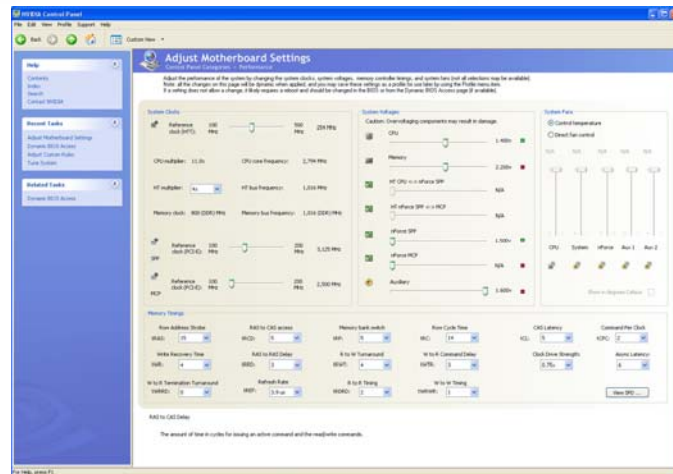
Performance Category



The subcategories available under the Performance category include Manual Tuning, Automatic Tuning, and Management. Underneath each of these is the following:

- Adjust Motherboard Settings
- Adjust GPU Settings
- Dynamic BIOS Access
- Tune System
- View System Information
- Adjust Custom Rules

Adjust Motherboard Settings



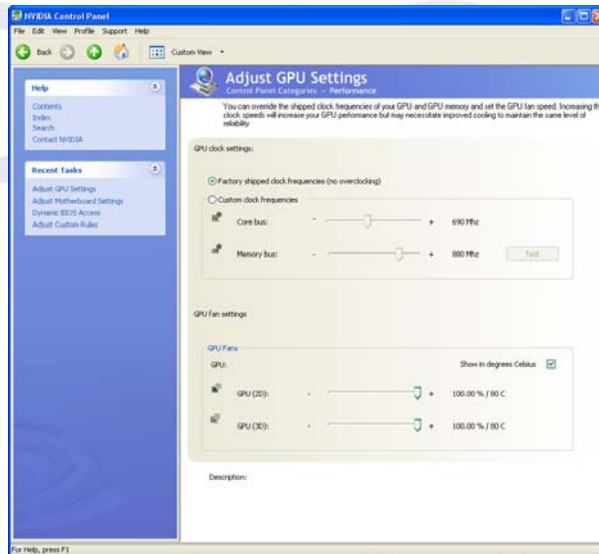
The controls located in the Adjust Motherboard Timings screen allow the bus speeds to be adjusted manually to increase performance for gaming, or lower performance to conserve power and create a quieter user environment. The number to the right of the slider is the new bus speed that will be applied. Adjustments can be made by using the mouse to drag the slider. All changes will take effect immediately after selecting Apply; however, these setting will only remain active for the current Windows session. This will allow a user to safely return to Windows in the event of a crash, without any possibility of boot issues since the changes are not made directly to the BIOS settings.

Note: all the changes on this page will be dynamic when applied, and will only remain active for the current Windows session. You may save these settings as a profile for use later by using the Profile menu item. If a setting does not allow a change, it likely requires a reboot and should be changed in the BIOS or from the Dynamic BIOS Access page (if available).

Caution:

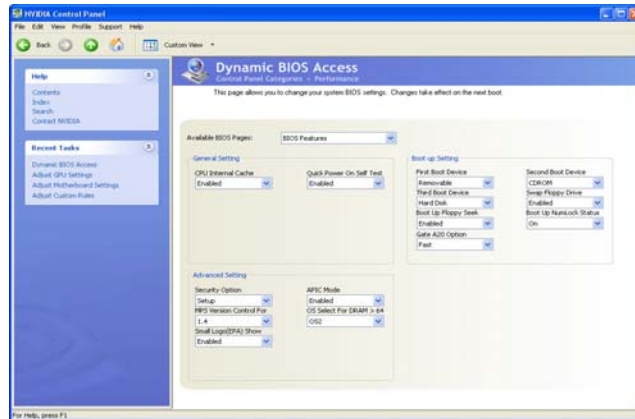
Increasing the voltage or the clock speed of a component may void its warranty due to exceeding recommended specifications. NVIDIA and the board manufacturer are **not** responsible for damage that may occur when component tolerances are exceeded.

Adjust GPU Settings



The graphics processing unit (GPU) located on your video card(s) can be adjusted using this interface. You can override the shipped clock frequencies of your GPU and GPU memory and set the GPU fan speed. Increasing the clock speeds will increase your GPU performance but may necessitate improved cooling to maintain the same level of reliability.

Dynamic BIOS Access

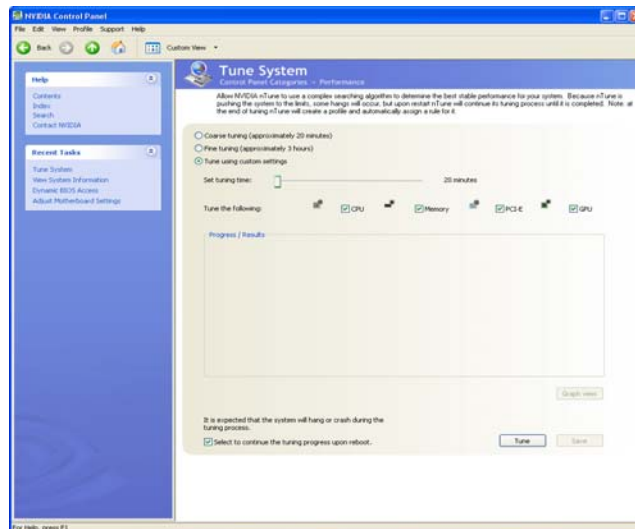


This page allows you to change your system BIOS settings. The changes do not go into effect until after you reboot your system. Since these changes are made to actual BIOS settings in the CMOS, the settings remain active until you change them again or restore the CMOS to the default settings.

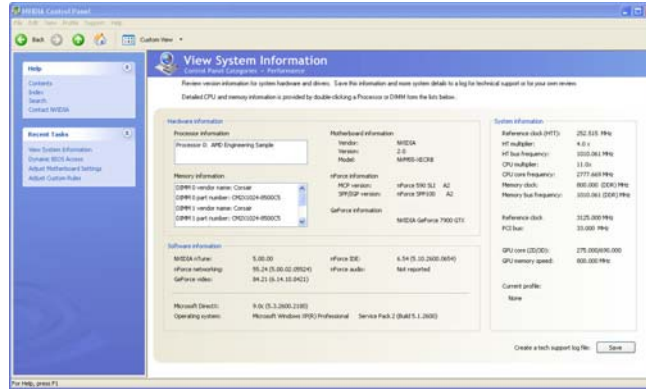
In the Dynamic BIOS Access page, click the Available BIOS Pages list arrow and click the BIOS page that you want to edit. The BIOS page chosen determines which items on the page are available for changing. To edit an item, click the corresponding list arrow and then click one of the values from the list. When finished making your changes, click the OK or Apply.

NOTE: This feature is available only with BIOS support from the motherboard manufacturer.

Tune System

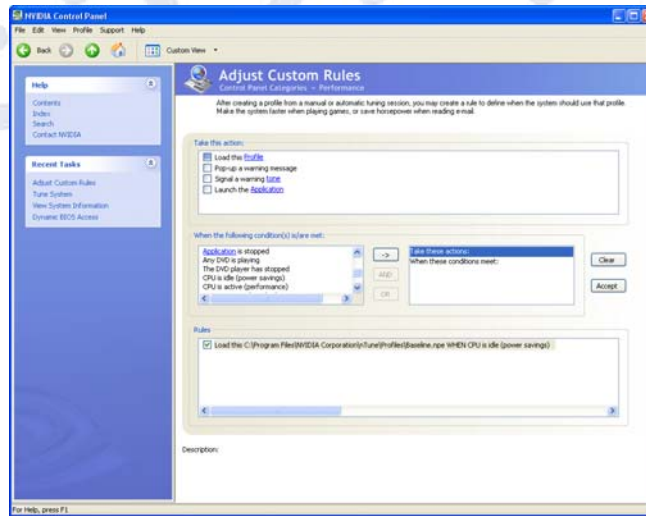


View System Information



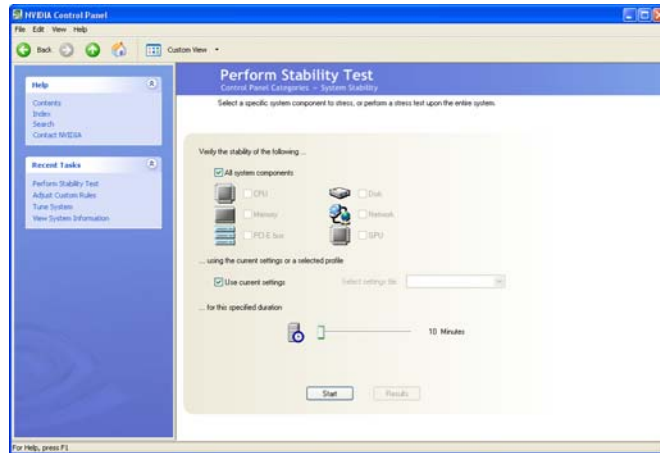
Hardware and driver version information can be viewed and saved using this interface. The status of the system including current system clock speeds, system temperatures, memory timings, and system voltages is presented with View System Information. Detailed CPU and memory information is provided by double-clicking a Processor or DIMM from the lists below.

Adjust Custom Rules



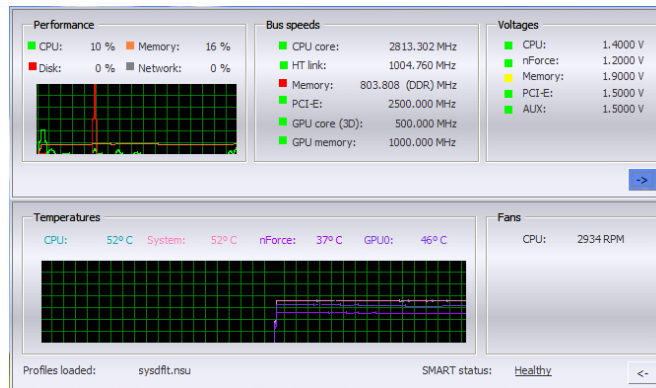
NVIDIA nTune allows you to create rules for how the system uses nTune profiles (.nsu files or .npe files). After you create the rule, the system will select an enabled profile automatically according to the criteria set up within the rule (s). With custom rules, you can make your system run faster when playing games or make it run quieter when surfing the Internet.

Perform Stability Test



Perform Stability Test is located in the System Stability Category. Use this to quickly diagnose potential system performance issues and to gather troubleshooting data. Stability Test performs a series of quick checks to identify probable causes of performance issues and then creates a list of the results, providing recommendations for improvements.

NVIDIA Monitor



NVIDIA Monitor displays performance for individual components including CPU, Network, Disk, and Memory. Bus speeds for CPU, Memory, HyperTransport (HT), and PCI Express (PCX) can be monitored along with temperature and voltages.

DRIVER INSTALLATION

After your computer's Operating System is installed, you will need to install drivers for your motherboard in order to gain full operation. Insert the Driver Installation CD into your computer's CD or DVD ROM drive and allow the autorun function to bring up the installation menu.

If the autorun function is disabled on your computer, simply navigate to the CD or DVD ROM drive that the Driver Installation CD is located in and double-click the autorun.exe file.

From the installation menu choose the following options that will install the following drivers:

- NVIDIA Motherboard Drivers
- Audio Driver

After your computer finishes this installation, it will need to reboot in order for the new drivers to take effect.

NOTE: If you are installing drivers under the Windows XP x64 operating system, please explore the Driver CD and navigate to Drivers\WFORCE 64Bit\Chipset and run setup.exe.

RAID INSTALLATION

The drivers for the NVIDIA RAID controller are located on the included RAID DRIVER floppy disk. They can be installed either at the time of Operating System installation or after the operating system has already been installed on a conventional IDE drive.

It is important to note that before you install and configure a RAID system, either after OS installation or during, you will need to enable RAID in your motherboard BIOS. To do this, reboot the computer and press the **<Delete>** key as it starts, this will take you to the BIOS configuration screens. From there you will need to make changes as indicated in the BIOS PDF that you can find in the Manuals Section of the Installation CD.

If you wish to install the SATA/RAID drivers at the same time you are installing the Operating System, simply wait for the Windows Installer to display "**Press F6 if you need to install a third party SCSI or RAID driver...**" - and press F6 at that time. Then insert the floppy disk and follow all of the on-screen instructions.

NOTE: The included floppy disk with RAID drivers supports Windows XP (32 bit version) and Windows 2000 only. If you are installing RAID under Windows XP x64, you will need to make a RAID driver disk. We have made this very easy to do, simply follow the instructions listed below:

Requirements: Windows (95/98/ME/NT/2K/XP) based computer with both a CD ROM drive and a 3.5 inch 1.44MB floppy, and one blank 3.5 inch 1.44MB floppy disk.

- Insert the Driver CD into the computer. If the autorun menu appears, close it.
- Browse to the Driver CD and open the folder named "RAID"
- Browse to the folder for the operating system that you wish to make the driver disk for: XP2K for Windows XP or Windows 2000, or XPx64 for Windows XP x64
- Execute by double-clicking the executable file in that directory: XP2KRAID.EXE for Windows XP and Windows 2000, or XPX64RAID.EXE for Windows XP x64
- This program will prompt you to insert your floppy disk and click on the Create Floppy button. Follow these instructions and it will automatically create the SATA RAID driver disk for you to use during installation.



APPENDIX 1

Quick Debug Port Post Codes

Please refer to the following Quick Debug table to assist in troubleshooting problems that are revealed through the motherboard's Debug Port. If you need more detailed information, you can refer to the Detailed Debug tables in the following pages.

Code (hex)	Name	Description
01	Reserved	
02	Jumps to E000 segment	Execution of POST routines in E000
03	Early Superio	Init Early Initialized the super IO
04	Reserved	
05	Blank video	Reset Video controller
06	Reserved	
07	Init KBC	Keyboard controller init
08	KB test	Test the Keyboard
09	Reserved	
0A	Mouse Init	Initialized the mouse
0B	Reserved	
0C	Reserved	
0D	Reserved	
0E	Checksum Check	Check the integrity of the ROM, BIOS and message
0F	Reserved	
10	Autodetect EEPROM	Check Flash type and copy flash write/erase routines
11	Reserved	
12	Test CMOS	Test and Reset CMOS
13	Reserved	
14	Load Chipset	Load Chipset Defaults
15	Reserved	
16	Init Clock	Initialize onboard clock generator
17	Reserved	
18	Init CPU	CPU ID and initialize L1/L2 cache
19	Reserved	
1A	Reserved	
1B	Setup Interrupt Vector Table	Initialize first 120 interrupt vectors with SPURIOUS_INT_HDLR and initialize INT 00h-1Fh according to INT TBL
1C	CMOS Battery Check	Test CMOS and check Battery Fail
1D	Early PM	Early PM initialization
1E	Reserved	
1F	Re-initial KB	Load keyboard matrix
20	Reserved	
21	HPM init	Init Heuristic Power Management (HPM)
22	Reserved	
23	Program chipset	Early Programming of chipset registers
24	Init PNP	Init PNP
25	Shadow VBIOS	Shadow system/video BIOS
26	Clock Gen	Init onboard clock generator and sensor
27	Setup BDA	Setup BIOS DATA AREA (BDA)
28	Reserved	
29	CPU Speed detect	Chipset programming and CPU Speed detect
2A	Reserved	
2B	Init video	Initialize Video
2C	Reserved	
2D	Video memory test	Test Video Memory and display Logos
2E	Reserved	
2F	Reserved	
30	Reserved	

31	Reserved	
32	Reserved	
33	Early keyboard reset	Early Keyboard Reset
34	Reserved	
35	Test DMA Controller 0	Test DMA channel 0
36	Reserved	
37	Test DMA Controller 1	Test DMA channel 1
38	Reserved	
39	Test DMA Page Registers	Test DMA Page Registers
3A	Reserved	
3B	Reserved	
3C	Test Timer	Test 8254 Timer 0 Counter 2.
3D	Reserved	
3E	Test 8259-1 Mask	Verify 8259 Channel 1 masked interrupts by alternately turning off and on the interrupt lines.
3F	Reserved	
40	Test 8259-2 Mask	Verify 8259 Channel 2 masked interrupts by alternately turning off and on the interrupt lines.
41	Reserved	
42	Reserved	
43	Test Stuck Interrupt	Turn off interrupts then verify no 8259's Interrupt interrupt mask register is on. Test 8259 Force an interrupt and verify the interrupt occurred.
44	Reserved	
45	Reinit serial port	Reinitialize Preboot agent serial port
46	Reserved	
47	EISA Test	If EISA non-volatile memory checksum is good, execute EISA initialization. If not, execute ISA tests and clear EISA mode flag.
48	Reserved	
49	Size Memory	Size base memory from 256K to 640K and extended memory above 1MB.
4A	Reserved	
4B	Reserved	
4C	Reserved	
4D	Reserved	
4E	Init APIC	Initialize APIC and set MTRR
4F	Reserved	
50	USB init	Initialize USB controller
51	Reserved	
52	Memory Test	Test all memory of memory above 1MB using Virtual 8086 mode, page mode and clear the memory
53	Reserved	
54	Reserved	
55	CPU display	Detect CPU speed and display CPU vendor specific version string and turn on all necessary CPU features
56	Reserved	
57	PnP Init Display	PnP logo and PnP early init

58	Reserved	
59	Setup Virus	Setup virus protect according to Protect Setup
5A	Reserved	
5B	Awdflash Load	If required, will auto load Awdflash.exe in POST
5C	Reserved	
5D	Onboard I/O	Init Initializing onboard superIO
5E	Reserved	
5F	Reserved	
60	Setup enable	Display setup message and enable setup functions
61	Reserved	
62	Reserved	
63	Initialize Mouse	Detect if mouse is present, initialize mouse, install interrupt vectors.
64	Reserved	
65	PS2 Mouse special	Special treatment to PS2 Mouse port
66	Reserved	
67	ACPI init	ACPI sub-system initializing
68	Reserved	
69	Init Cache	Initialize cache controller
6A	Reserved	
6B	Setup	Enter setup check and autoconfiguration check up
6C	Reserved	
6D	Initialize Floppy	Initialize floppy disk drive
6E	Reserved	
6F	FDD install	Install FDD and setup BIOS data area parameters
70	Reserved	
71	Reserved	
72	Reserved	
73	Initialize Hard Drive	Initialize hard drive controller
74	Reserved	
75	Detect HDD	IDE device detection
76	Reserved	
77	Detect serial ports	Initialize serial ports.
78	Reserved	
79	Reserved	
7A	Detect parallel ports	Initialize parallel ports.
7B	Reserved	
7C	HDD Write Protect	HDD check for write protection
7D	Reserved	
7E	Reserved	
7F	POST error check	Check POST error and display them and ask for user intervention
80	Reserved	
81	Reserved	
82	Security Check	Ask password security.
83	Write CMOS	Write all CMOS values back to RAM and clear screen.
84	Display PNP	Display PNP devices
85	USB Final Init	Final USB initialization
86	Reserved	

87	Reserved	
88	Reserved	
89	Setup ACPI tables	Setup ACPI tables
8A	Reserved	
8B	Option ROM Detect	Scan for Option ROMs
8C	Reserved	
8D	Enable Parity Check	Enable Parity Check
8E	Reserved	
8F	IRQ12 Enable	Enable IRQ12 if mouse present
90	Reserved	
91	Reserved	
92	Reserved	
93	Boot Medium Read	Detect and store boot partition head and cylinders values in RAM
94	Final Init	Final init for last micro details before boot
95	NumLock	Set NumLock status according to Setup
96	Boot Attempt	Set low stack Boot via INT 19h.
C0	Base CPU test	Read/Write CPU registers
C1	Memory Presence	Base memory detect
C2	Early Memory	Board Initialization
C3	Extend Memory	Turn on extended memory, cache initialization
C4	Special Display	First display initialization
C5	Early Shadow	Early shadow enable for fast boot
C6	Cache presence	External cache size detection
CF	CMOS Check	CMOS checkup
F0	HW Ident	Identify HW in the system
F1	SLAM Table	Register the slam tables
F2	Early SLAM table	Early SLAM table
F3	Init Com Port	COM port initialization
00	HW Init	Initialize hardware devices
01	Override Parameters	Override input parameters etc. before QUERY
04	Process SPD	Read SPD & fill in arrays
08	Query HW	Query the hardware devices
0C	Load ROM Table	ROM table pointer
10	Init Memory Controller	Initialize the Memory Controller
20	Init PCI Express	PCI Express Initialization
30	Init Spread Spectrum	Load Spread Spectrum tables
40	Set Top-Of-Memory	Set Top-Of-Memory registers
44	Late SLAM table	Late SLAM table
48	Previous Power State SLAM table	Previous Power State SLAM table
4C	Hardware Workarounds	Hardware Workarounds
50	NVMM	Restore, and exit NVMM
54	NV Memory Test	NV Memory Test
FE	ERROR handler	ERROR handler
FF	Boot	

APPENDIX 2

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FCC Compliance Information

This device complies with FCC Rules Part 15, 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 the 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: 1) Increase the separation between the equipment and signal source, 2) Connect the equipment to an outlet on a circuit different from that to which the signal source is connected, 3) Consult the dealer or an experienced computer technician for help. The use of shielded cables for connection of the monitor to the graphics card is required to ensure 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.

CE Compliance Information

EMC Directive 89/336/EEC And Amendment 92/31/EEC, Class B Digital Device EN 50081-14, Generic Emissions Standard for Residential, Commercial and Light Industrial Products (EN 55022/CISPR 22, Limits and Methods of measurement of Radio). (EN 55022/CISPR 22, Limits and Method of Measurement of Radio Interference Characteristics Information Technology Equipment) Warning: This is a Class B product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measure. EN 50082-1, Generic Immunity Standard for Residential, Commercial and Light Industrial Products (IEC 801-2, IEC 801-3, IEC 801-4)

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APPENDIX 3

USEFUL INFORMATION

Contacting Customer Service

EVGA is dedicated to supporting our products. Contacting EVGA Customer Service is easy! We can be reached by phone, fax, and on the web. Before contacting Customer Service, please review this manual. If you need to contact Customer Service, please have your system configuration as well as your motherboard's model number and serial number ready. You will need to register your product before a support technician can assist you. You may register your product online at <http://www.evga.com/register>, or when you call for support, a staff member will register it for you.

- Hours of Operation: 9 AM to 5:30 PM Monday to Friday, PST
- Phone Support: 888-881-EVGA (3842)
- Fax Support: 714-528-4501
- Tech Support Web Site: <http://www.evga.com/support>

Information to Keep Handy Before Calling

Motherboard Model Number _____

Motherboard Chipset _____

Processor Type and Speed _____

Operating System _____

Installed Service Packs _____

Other Installed Hardware _____



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