TÜV CERT

CERTIFICATE

The TÜV CERT Certification Body for QM Systems of RWTÜV Systems GmbH

hereby certifies in accordance with TÜV CERT procedure that

ELITEGROUP COMPUTER SYSTEMS CO., LTD.
ECS MANUFACTURING (SHENZHEN) CO., LTD.
ELITE TECHNOLOGY (SHENZHEN) CO., LTD.

2F, No. 240, Sec. 1, Nei Hu Road, Taipei, Taiwan 114
No. 22, Alley 38, Lane 91, Sec. 1, Nei Hu Road, Taipei, Taiwan 114
No. 20 & No. 26, Free Trade Zone, Shatoujiao, Shenzhen City, GuangDong Province, China

has established and applies a quality system for

Design, Manufacturing and Sales of Mainboards, Personal Computers, Notebooks and Peripheral Cards

An audit was performed, Report No. **2.5-1585/2000**

Proof has been furnished that the requirements according to

ISO 9001 : 2000 / EN ISO 9001 : 2000 / JIS Q 9001 : 2000 / ANSI/ASQC Q9001 : 2000

are fulfilled. The certificate is valid until **27 January 2007**

Certificate Registration No. **04100 2000 1325**

The company has been certified since **2000**

Essen, 04.02.2004

RWTÜV

The TÜV CERT Certification Body for QM Systems of RWTÜV Systems GmbH

CERTIFICATION

ISO14001 CERTIFICATE

Certificate No.: 061-04-E1-0065-R1-L

We hereby certify that

ECS MANUFACTURING (SHANZHEN) CO., LTD.

by reason of its

Environmental Management System

has been awarded this certificate for compliance with the standard

ISO14001:1996

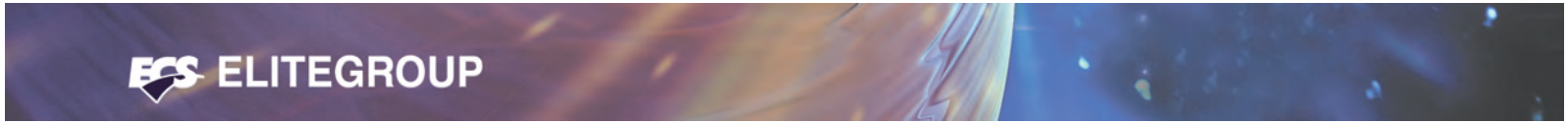
The Environmental Management System applies in the following area:

ECS MANUFACTURING (SHANZHEN) CO., LTD. located at No. 20 & 26 (except 1F, 2F), Free Trade Zone, Shatoujiao, Shenzhen City, Guangdong Province, P. R. China. is engaged in manufacturing of Mother Board and Peripheral Card, and interrelated managerial activities.

Date of issue: 28th Sept. 2004
Date of expiry: 27th Sept. 2007
Signed by:

CNAB

SHENZHEN SOUTHERN CERTIFICATION CO., LTD.



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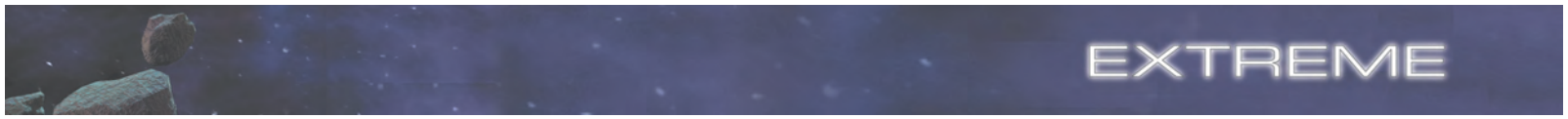
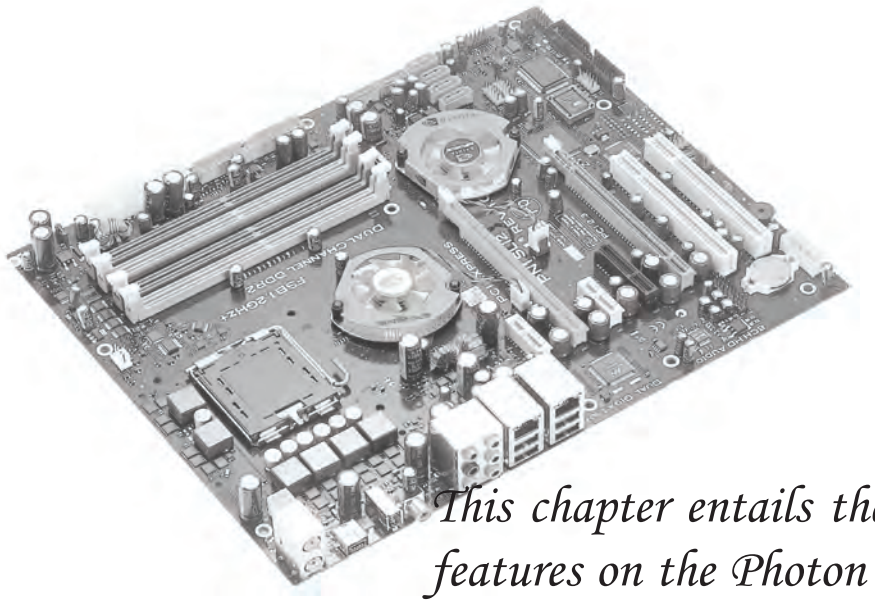




This chapter entails the newest technology and rich features on the Photon Extreme motherboard.

Reference

1.1 Introduction

Thank you for choosing the ECS PN1 SLI2 Extreme motherboard

The PN1 SLI2 Extreme is the next generation of high performance motherboard designed to support the Intel Core™ 2 Extreme/Core™ 2 Duo/Pentium D/Pentium 4 CPUs.

This motherboard has an ATX form factor that uses a 4-layer printed circuit board and measures 305 mm x 244 mm.

This motherboard is based on the NVIDIA® nForce 590 SLI Crush19 Northbridge and NVIDIA® MCP55 Southbridge chipsets to set a new benchmark for best desktop platform solution. Supporting up to 16 GB of system memory with Dual-Channel DDR2 667/533/400 DDR2 DIMMs, high resolution graphics via PCI Express slots, Dual Giga LAN, USB 2.0, 8-channel audio, IEEE 1394, SATAII 3.0 Gb/s support with RAID function.

1.2 Package Check List

Motherboard

User's Guide

Installation CD

SATA Power Cable

I/O Shield

SATA Cable

eSATA cable

Cross Over Cable

SLI Card Bridge

HDD, CD-ROM, and FDD Cables

USB+1394 PCI Bracket & housing

Bracket for SLI

All pictures are for reference only.

1.3 Feature Summary

CPU	• Socket Intel Core™ 2 Extreme/Core™ 2 Duo/ Pentium D/Pentium 4 CPUs • High-performance HyperThreading CPU Interface • Supports up to 1066/800/533 FSB
Chipset	• NVIDIA® nForce 590 SLI Crush19 & MCP55 -North bridge: NVIDIA® nForce 590 SLI Crush19 -South bridge: NVIDIA® MCP55
Memory	• Dual-channel DDR2 memory architecture • 4 x 240-pin DDR2 SDRAM DIMM sockets support up to 16 GB • Support DDR2 667/533/400 • Non-ECC, unbuffered DDR2 DIMMs
Expansion Slots	• 2 x PCI Express x16 slots (SLI mode: 2 x16) • 2 x PCI Express x1 slots • 1 x PCI Express x4 slot • 2 x PCI slots
Storage	• Supported by NVIDIA® MCP55 Southbridge - 1 x Ultra DMA133/100/66/33 device - 6 x SATAII 3.0 Gb/s devices - RAID0, RAID1, RAID0+1, RAID5, JBOD configuration

IEEE 1394b	• TI IEEE1394b controller • Supports 2 x IEEE1394b cable ports up to 800Mb/s
Audio	• Realtek 8-channel audio CODEC • Compliant with High Definition Audio Codec
Dual LAN	• 2 x Marvell Giga LAN PHY
Rear panel I/O	• 1 x PS/2 keyboard connector • 1 x PS/2 mouse connector • 4 x USB ports • 2 x RJ45 LAN connectors • 1 x 1394b port • 1 x 1394a port • 1 x SPDIF out port • Audio jacks for Line-in, Microphone, and 8-channel line out
BIOS features	• Award BIOS with 4 Mb Flash ROM • Supports Plug and Play 1.0A, APM 1.2, Multi Boot, DMI • Supports ACPI revision 2.0 specificaion

Internal I/O	• 1 x 24-pin ATX Power Supply Connector • 1 x 8-pin 12V Connector • 1 x Auxiliary 4-pin + 12V connector for graphics cards • 1 x Floppy connector- supports 360K ~ 2.88M Bytes, 3 Mode FDDs • 1 x Serial header • 1 x J1C1 header • 1 x IDE connector • 6 x Serial ATA connectors • 3 x USB 2.0 headers support additional 6 USB ports • 1 x 1394b header • 1 x Front panel switch/LED header • 1 x Front panel audio header • 1 x MCP55 FAN/1 x C19 FAN/1 x CPU FAN/2 x SYSFAN connectors
Form Factor	• ATX size • 305mm x 244mm

1.4 Special Features

Extreme Power

Double bandwidth SATA!

Slash memory access time!

One-key boot device selection!

Awesome overclocking!

Enjoy high-end sound system on your PC!

Overdrive your HDD performance with NCQ!

The most efficient algorithm!

The most powerful engine!

Increased, supercharged 3D graphics & performance!

Extreme Guardian

Auto restart after power loss!

Connect with external Multiple devices with FIS based switching function!

A "time machine" to protect and restore files!

Memory module alert!

PC protection toolkit!

Extreme Link

Add peripherals and consumer electronics devices!

PCI 2.3 support!

Smart LAN!

More port options!

A cooling channel with a fansink placed on top of the PWM controller!

Server class dual Giga LAN for both Internet and Intranet!

All the USB 2.0 connectivity you'll ever need!

More options for data storage!

Double digital audio!

Industrial-strenghth LAN power!

NVIDIA

The fastest connection with efficiency and performance!

Professional-grade firewall utility!

Easy, safe and high performance over-clocking available!

NEW Gerneration I/O interface!

Multiple RAID function plus unique recovery mechanism

Extreme Genius

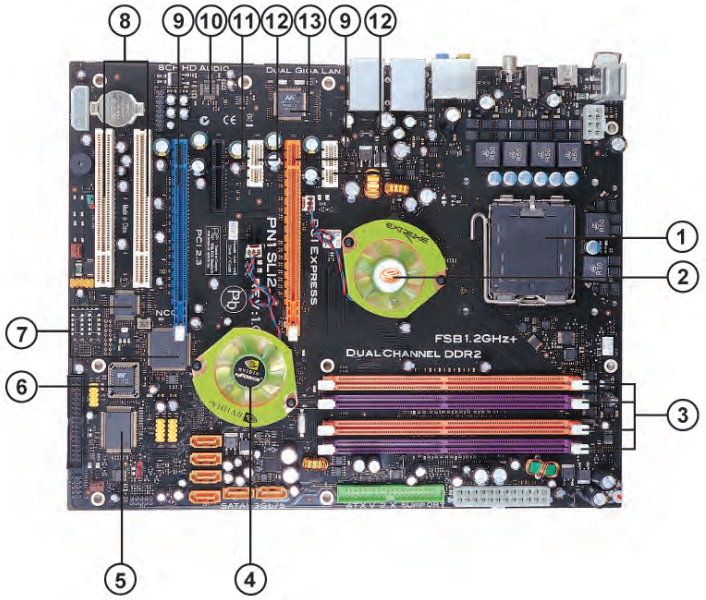
Color-coding for easy connections!

Rounded corners for strength and safety!

Eliminate data highway roadblocks!

Clear and Clean!

1.5 Major Components



1. ***CPU Socket***
   LGA775 surface mount, Zero Insertion Force socket for Intel Core™ 2 Extreme/Core™ 2 Duo/Pentium D/Pentium 4 Processors support FSB 1066/800/533 MHz that allows up to 8.53 GB/s data transfer rate.
2. ***Northbrige controller***
   The NVIDIA Crush 19 (C19) is a highly integrated, high-performance processor supporting HyperThreading link, up to 1066 MT/s, for a total bandwidth up to 8.5 GB/s. It has five separate PCI Express controllers with 20 total lanes, configured as two x16, one x4 and two x1 PCI Express lanes.
3. ***Dual channel DDR2 DIMM sockets***
   These four 240-pin DIMM sockets support up to 16 GB system memory using unbuffered DDR2 667/533/400 modules.
4. ***Southbridge Controller***
   The NVIDIA MCP55 features a 1 GHz HyperTransport link, dual enterprise-class native Gigabit Ethernet MACs, PCI 2.3 compliant, Serial ATA 2 Interface, ATA-133 support and USB 2.0.
5. ***Super I/O Controller***
   This Super I/O provides the commonly used functionality. The chipset supports a high performance floppy disk controller, a multimode parallel port, one serial port, a game port, the mouse and keyboard interface.

6. *Flash ROM*

This flash ROM contains the programmable BIOS program.

7. *IEEE 1394b controller*

The IEEE 1394b controller provides high-speed and flexible PC connectivity to a wide range of peripherals and devices compliant to IEEE 1394b standards. The IEEE 1394b interface allows up to 800 Mbps tranfer rates.

8. *PCI slots*

These two 32-bit PCI 2.3 expansion slots support bus master PCI cards like SCSI or LAN cards with 33MB/s maximum throughput.

9. *PCI Express x16 slots*

The motherboard has two x16 PCI Express slots, which are intended for external PCI Express graphics cards.

10. *Audio CODEC*

The audio CODEC is compliant with High Definition Audio Codec and supports 8-channel audio.

11. *PCI Express x4 slot*

The motherboard has one x4 PCI Express slot, which is intended for external PCI Express graphics cards.

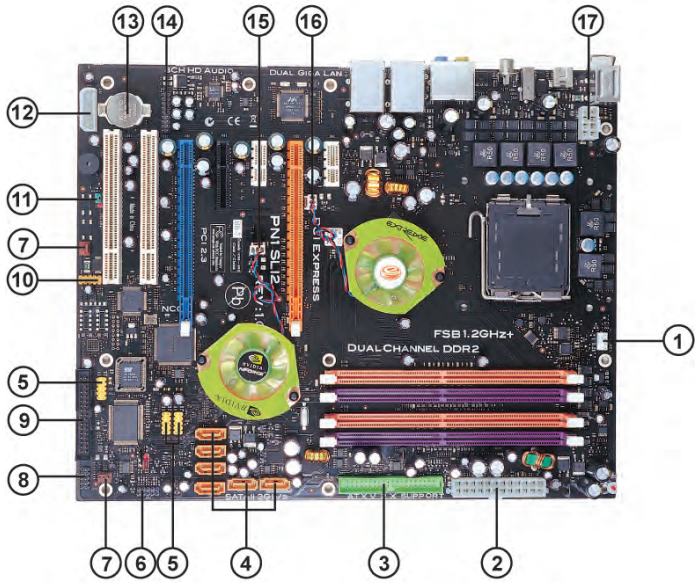
12. *PCI Express x1 slot*

There are two PCI Express x1 slots that are fully compliant to the PCI Express Base Specification revision 1.0a.

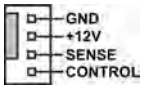
13. *Giga LAN PHY*

The Giga LAN PHY delivers a transfer rates up to 10/100/1000 Mbps. Ideal for handling large amounts of data such as video, audio and voice.

1.6 Headers and Connectors

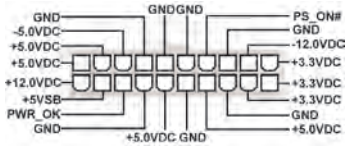


1. CPU FAN (CPU Fan Connector, 4 pin)



Please note, a proper installation of the CPU cooler is essential to prevent the CPU from running under abnormal conditions or being damaged by overheating. The CPU fan connector supports the CPU cooling fan of 1.1A~2.2A (26.4W max.) at +12V.

2. ATX _PWR (Power Connector, 24 pin)



AC power cord should only be connected to your power supply until after ATX power cable and other related devices are firmly connected to the motherboard. Make sure that your ATX12V power supply can provide 8A of 12V and at least 1A on the +5V standby. The minimum recommended power is 350W or above. If not, the system may become unstable or may not even boot up.

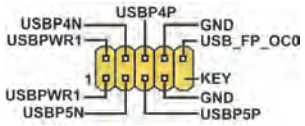
3. IDE 1 Connector, 40-1 pin)

This is supported by NVIDIA® MCP55. Please connect the first hard disk to IDE 1. The streamline IDE cable must be the same side with the Pin 1.

4. SATA A0/B0/C0/A1/B1/C1 (Serial ATA Connectors, 7 pin)

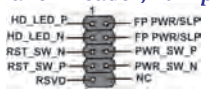
These next generation connectors delivered by the NVIDIA® MCP55 supporting Serial ATA hard disks. Each channel can operate at 3.0 Gb/s per direction. Full Tagged Command Queuing (TCQ), Native Command Queuing (NCQ), and Hot plug are supported.

5. USB 0/1, 2/3/,4/5 (Front USB Headers, 10-1 pin)



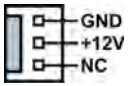
If the USB ports on the rear panel are inadequate, three USB headers are available for additional USB ports. The USB headers complies with USB 2.0 specification that supports up to 480 Mbps connection speed.

6. FRT PNL (Front Panel Header, 10-1 pin)



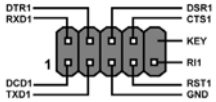
The front panel connector provides a standard set of switch and LED connectors commonly found on ATX or micro-ATX cases.

7. SYSFAN 1~2 (Cooling Fan Connectors, 3 pin)



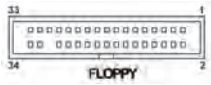
These connectors allow you to link with the cooling fans to lower the system temperature.

8. SERIAL



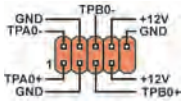
Connect the serial device to this header.

9. FLOPPY (Floppy Connector, 34-1 pin)



Please connect the floppy drive ribbon cables to FDD. It supports 360K, 12M, 720K, 1.44M and 2.88M bytes floppy disk types.

10. IEEE 1394 (10-1 pin Headers)

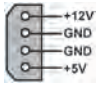


Attach the 10-1 pin 1394 cable plug from the device to this connector. You may also connect a 1394-compliant internal hard disk to this connector.

11. J1C1 (Buzzer control Header, 3-pin)

Boot Mode:
1-2 : *User Mode 2-3 : Safe Mode *Default

12. ATX PWR (Auxiliary power connector for graphics cards)

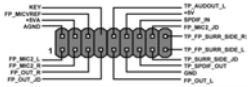


ATX PWR power connector is for power supply plug; it offers adequate supply of power to the motherboard. The power supply plug is designed to fit connector in only one orientation. When installing two graphics cards, do not forget to connect the 4-pin power plug to the ATX PWR. If not, the system may become unstable.

13. Battery

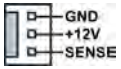
Danger of explosion if battery is incorrectly replaced. Replace only with the same of equivalent type recommended by the manufacturer.

14. FP_AUD (Front Panel Audio Header, 18-1 pin)



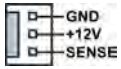
This is an interface for the Intel front panel audio cable that allows convenient connection and control of audio devices.

15. MCP55 FAN (Southbridge Fan Connector, 3 pin)



Please connect the southbridge cooling fan connector to MCP55 FAN and match the black wire to the ground pin.

16. C19 FAN (Northbridge Fan Connector, 3 pin)

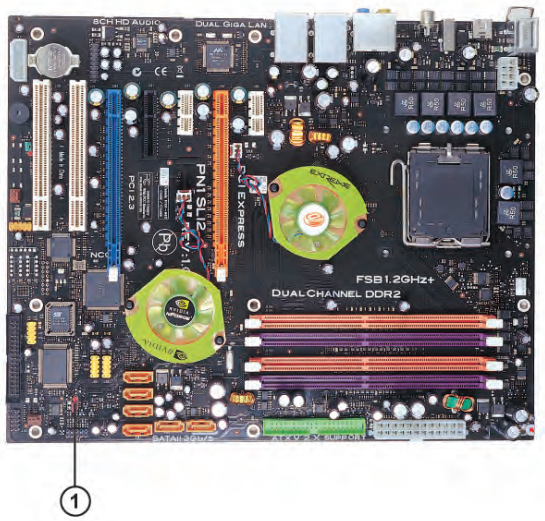


Please connect the Northbridge cooling fan connector to C19 FAN and match the black wire to the ground pin.

17. CPU PWR (CPU Power Connector, 8 pin)

This connector supplies the CPU operation voltage (Vcore). Don't forget to connect the 8-pin CPU PWR connector, otherwise the system cannot boot up.

1.7 Jumpers



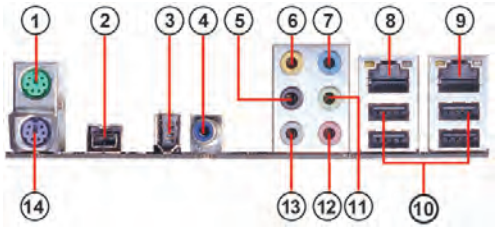
1. CLR CMOS (CLEAR CMOS)

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. Before clearing the CMOS data, make sure to turn the system off.

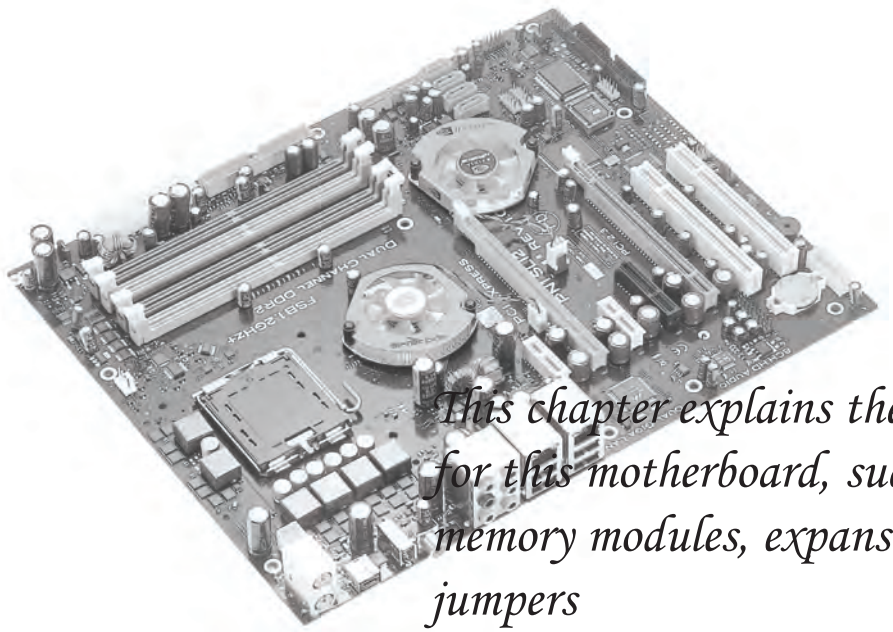
1-2: CLEAR

2-3: NORMAL (Default)

1.8 Rear Panel



1. ***PS/2 mouse port***
   This 6-pin connector is for connecting PS/2 mouse.
2. ***1394b port***
   Use the 1394b port to connect any Firewire device.
3. ***1394a port***
   Use the 1394a port to connect any Firewire device.
4. ***SPDIFO port***
   This jack connects to external digital audio output devices.
5. ***Back Surround Jack ****
   This jack connects a tape player or other audio sources. In 8-channel mode, the function of this jack is Back-Surround speaker out.
6. ***Center/Bass Jack ****
   This jack connects a tape player or other audio sources. In 8-channel mode, the function of this jack is Center/Bass speaker out.
7. ***Line in jack ****
   The function of the jack is microphone input.
8. ***RJ-45 port***
   This port allows connection to a Local Area Network (LAN) through a network hub. It supports up to Gigabit tranfer rate.
9. ***RJ-45 port***
   This port allows connection to a Local Area Network (LAN) through a network hub. It supports up to Gigabit Mbps transfer rate.
10. ***USB 2.0 ports 1 ~ 4***
    These four Universal Serial Bus (USB) ports are available for connecting USB 2.0.
11. ***Front Out Jack ****
    This jack connects a tape player or other audio sources. In 8-channel mode, the function of this jack is Front speaker out.
12. ***Microphone in Rear jack ****
    The function of the jack is microphone input rear.
13. ***Side Surround Jack ****
    This jack connects a tape player or other audio sources. In 8-channel mode, the function of this jack is Side Surround speaker out.
14. ***PS/2 keyboard port***
    This 6-pin connector is for connecting PS/2 keyboard.



This chapter explains the hardware setup procedure for this motherboard, such as installing the CPU, memory modules, expansion cards, as well as the jumpers

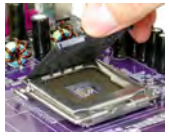
Reference

2.1 Installing the CPU & the CPU cooling fan

A. Read and follow the instructions shown on the sticker on the CPU cap.

B. Unload the cap
- Use thumb & forefinger to hold the lifting tab of the cap.
- Lift the cap up and remove the cap completely from the socket.

C. Open the load plate
- Use thumb & forefinger to hold the hook of the lever, pushing down and pulling aside unlock it.
- Lift up the lever.
- Use thumb to open the load plate. Be careful not to touch the contacts.



D. Install the CPU on the socket
- Orientate CPU package to the socket.

Make sure you match the triangle marker to the pin 1 location.

E. Close the load plate
- Slightly push down the load plate onto the tongue side, and hook the lever.
- CPU is locked completely.

F. Apply thermal grease on top of the CPU.

G. Fasten the cooling fan supporting base onto the CPU socket on the motherboard.

H. Make sure the CPU fan is plugged to the CPU fan connector. Please refer to the CPU cooling fan user's manual for more detailed installation procedure.

1. To achieve better airflow rates and heat dissipation, we suggest that you use a high quality fan with 3800 rpm at least. CPU fan and heatsink installation procedures may vary with the type of CPU fan/heatsink supplied. The form and size of fan/heatsink may also vary.

2 DO NOT remove the CPU cap from the socket before installing a CPU.

3. Return Material Authorization (RMA) requests will be accepted only if the motherboard comes with thecap on the LGA775 socket.

2.2 Installing Memory Module

1. Push the latches on each side of the DIMM slot down.
2. Check that the cutouts on the DIMM module edge connector match the notches in the DIMM slot.
3. Install the DIMM module into the slot and press it firmly down until it seats correctly. The slot latches are levered upwards and latch on to the edges of the DIMM.

Table B: Recommended dual-channel DDR2 configurations

DIMM1	DIMM2	DIMM3	DIMM4	Dual Channel
√		√		√
	√		√	√
√	√	√	√	√

Notes: When using dual channel mode, install only same (same density, DRAM technology and DRAM bus width) module for each dual channel.

Memory module install into one or any four sockets will function in single channel mode.

2.3 Connecting IDE, Floppy and SATA cable

1. Connect the IDE/Floppy disk ribbon cable. Make sure the side of the cable with the red stripe on it is plugged into *pin 1* side of the disk connector.
2. Connect the SATA cable to the SATA hard drive or the connector on the motherboard.

IDE connector

FDD connector

SATA connector

2.4 Installing Motherboard in a case

1. Place the motherboard over the mounting brackets.
2. Secure the motherboard with screws where appropriate.

3. Double check to make sure that the underside of the motherboard is not touching the case or else shorting may occur and make sure that the slots and I/O connectors line up with the holes on the back of the case.
4. Case LED leads are labeled, connect the leads to the panel header on the motherboard.

2.5 Connecting IDE, Floppy & SATA Device

1. If installing two IDE devices on the same ribbon cable, one device must be set to "master" and the other to "slave." Check the accompanying documents for the master/slave settings of IDE Devices, ie.: the hard disk and CD-ROM drives and then set their jumper caps accordingly.
2. Mount the drives in the case.
3. Connect the floppy disk ribbon cable and power cable.
4. Connect the IDE ribbon cable and power cable.

IDE Hard Disk

Floppy Disk Device

SATA Hard Disk

2.6 Installing Expansion cards

1. Open the chassis and then remove the slot bracket from the case where you will be installing the expansion cards.
2. Install your graphics card in the proper slot by pressing the card firmly into the slot.

3. Drive in the screw to secure the slot bracket of the expanson card.
4. Replace your computer's chassis cover.
5. Power on the computer, if necessary, set up BIOS utility of expansion card from BIOS.
6. Install related driver to complete the installation.

Installing two graphics cards

Notes:
1. The two PCI Express slots for graphics cards run in two modes. With only one PCI Express Graphics card, install it into J3B1 slot by default. Having two PCI Express Graphics cards at hand, set them up into J3B1 & J5B2 slots simultaneously.
2. The Scalable D.G.E supports a four-monitor configuration when J3B1 & J5B2 slots are working simultaneously.
3. Please note that the graphics card driver supports Windows 2000/XP only.
4. Make sure to connect a 4-pin ATX power cable to the AUX PWR; otherwise, the system will be unstable.
5. J5B1/J6B1 slot will be disabled when J5B2 slot is installed.

2.7 Connecting the Power supply cable

The ATX power connector is keyed for proper insertion. There are two connectors for 8-pin and 24-pin ATX power cables. The plastic clip on the power connector should lock over the plastic tab on the motherboard power connector.

Connecting 20/24-pin power cable

Users please note that the 20-pin and 24-pin power cables can both be connected to the ATX_PWR connectors. With the 20-pin power cable, just align the 20-pin power cable with the pin 1 of the ATX_PWR connector. However, using 20-pin power cable may cause the system to become unbootable or unstable because of insufficient electricity.

20-pin power cable

With ATX v1.x power supply, users please note that when installing 20-pin power cable, the latche of power cable falls on the left side of the ATX_PWR connector latch, just as the picture shows.

24-pin power cable

With ATX v2.x power supply, users please note that when installing 24-pin power cable, the latches of power cable and the ATX_PWR match perfectly.

Connecting 4/8-pin power cable

Users please note that the 4-pin and 8-pin power cables can both be connected to the CPU PWR connector.

When installing 4-pin power cable, the latch of the power cable falls on the right side of the latch of CPU PWR.

4-pin CPU PWR power connector

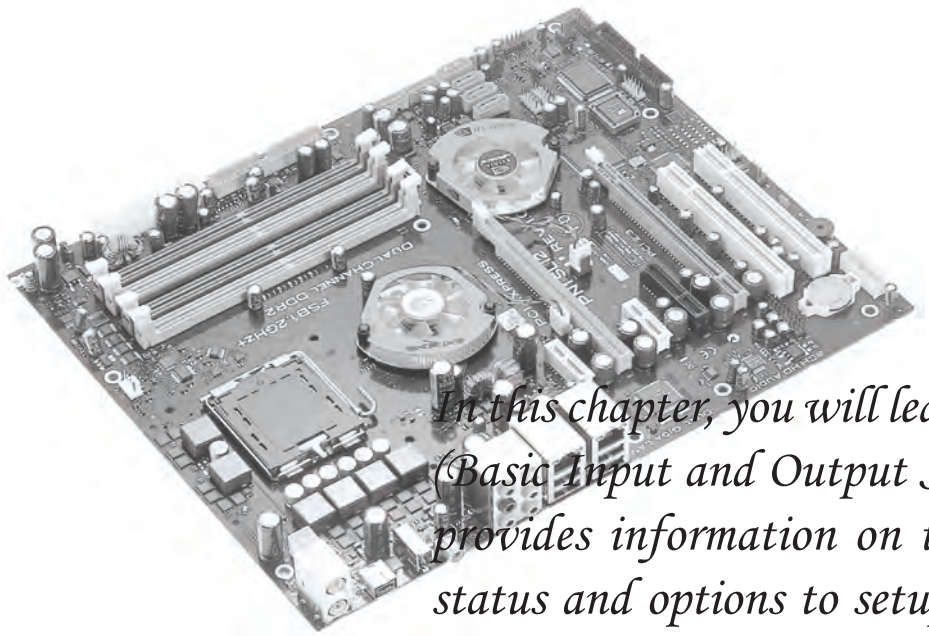
Make sure to remove the cap on the CPU PWR connector before connecting an 8-pin power cable. Connecting other power cables types may cause serious damange to the system.

8-pin CPU PWR power connector

2.8 Powering up

Turn on the power to the monitor and the computer. If necessary, format your hard disk drive and install an operating system.

Memo



In this chapter, you will learn how to adjust the BIOS (Basic Input and Output System) setup menus. It provides information on the system's configuration status and options to setup system parameters.

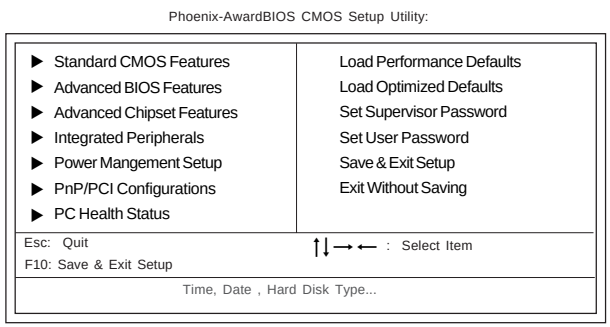
Reference

3.1 Entering the BIOS Setup Menu

When you power on the system, BIOS enters the Power-On Self Test (POST) routines. POST is a series of built-in diagnostics performed by the BIOS. After the POST routines are completed, the following message appears:

Press DEL to enter SETUP

Pressing the delete key accesses the BIOS Setup Utility:



3.2 Updating and Recovering the BIOS

A standard configuration has already been set in the Setup Utility. However, if you encounter a configuration error or you need a better performance. You can update or recover your system BIOS.

3.2-1 Using AWARD Flash to update your BIOS

1. If your motherboard has an item called Firmware Write Protect in Advanced BIOS features, disable it. (Firmware Write Protect prevents BIOS from being overwritten).
2. Create a bootable system disk. (Refer to Windows online help for information on creating a bootable system disk.)
3. Use the Award Flash Utility from the ECS support CD and download the last BIOS file for this motherboard from ECS web site (www.ecs.com.tw). Copy these files to the system diskette you created in step 2.
4. Turn off your computer and insert the system diskette in your computer's diskette drive. (You might need to run the Setup Utility and change the boot priority items on the Advanced BIOS Features Setup page, to force your computer to boot from the floppy diskette drive first.)
5. At the A:\ prompt, type the Flash Utility program name and press <Enter>. You will see a screen similar to the following:

6. Type the filename of the new BIOS in the "File Name to Program" text box. Follow the onscreen directions to update the motherboard BIOS.
7. When the installation is complete, remove the floppy diskette from the diskette drive and restart your computer. If your motherboard has a Flash BIOS jumper, reset the jumper to protect the newly installed BIOS from being overwritten.

3.2-2 Using ECS Top-Hat Flash to recover your BIOS

The ECS Top-Hat Flash kit allow you to restore BIOS from ECS website (www.ecs.com.tw) or ECS support CD, in case you current BIOS on the motherboard or get corrupted, please follow the procedures below to recover your BIOS.

1. Please find the BIOS ROM located on your motherboard. (Figure A)
2. Find the cut edge corner on the Flash ROM. (Figure B)
3. Find the cute edge corner on the Top Hat Flash. (Figure C)
4. Orient the cut edge Top Hat Flash to BIOS ROM's and press the flash ROM into the lower socket of Top Hat Flash. (Figure D & E)
5. Then, power-on your computer.

Figure A

Figure B

Figure C

Figure D

Figure E

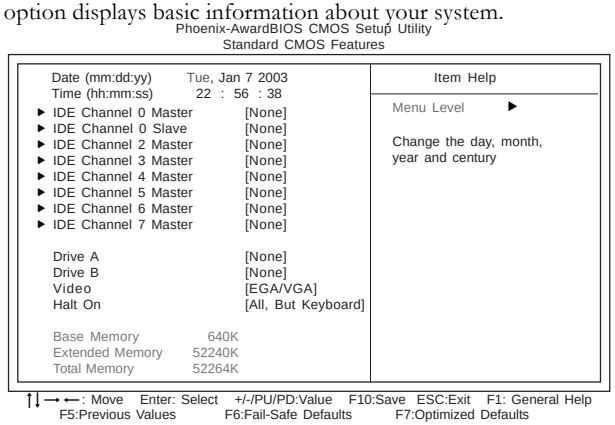
6. After the computer boots up, remove the Top Hat Flash.
7. Download the BIOS file from ECS web site (www.ecs.com.tw) or ECS support CD and use Flash Utility to reflash the original Flash ROM.
8. You can choose either AWARD Flash utility in DOS mode or ECS "EZ Flash Utility" in windows to reflash the BIOS.

3.3 The Main Menu

The main menu of the Setup Utility displays a list of the options that are available. A highlight indicates which option is currently selected. Use the cursor arrow keys to move the highlight to other options. When an option is highlighted, execute the option by pressing <Enter>.

3.3-1 Standard CMOS Features

This option displays basic information about your system.



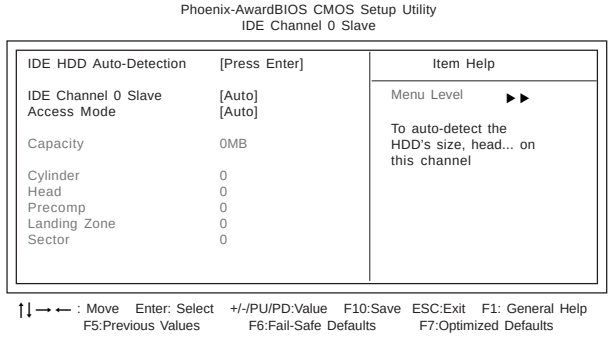
Date and Time

The Date and Time items show the current date and time on the computer. If you are running a Windows OS, these items are automatically updated whenever you make changes to the Windows Date and Time Properties utility.

▶ IDE Devices (None)

Your computer has two IDE channels (Primary and Secondary) and each channel can be installed with one or two devices (Master and Slave). Use these items to configure each device on the IDE channel.

Press <Enter> to display the IDE submenu:



IDE HDD Auto-Detection

Press <Enter> while this item is highlighted to prompt the Setup Utility to automatically detect and configure an IDE device on the IDE channel.

Note: If you are setting up a new hard disk drive that supports LBA mode, more than one line will appear in the parameter box. Choose that lists LBA for an LBA drive.

IDE Channel 0/2/3/4/5/6/7 Master/ IDE Channel 0 Slave(None)

Leave this item at Auto to enable the system to automatically detect and configure IDE devices on the channel. If it fails to find a device, change the value to Manual and then manually configure the drive by entering the characteristics of the drive in the items described below.

Note: Before attempting to configure a hard disk drive, ensure that you have the configuration information supplied by the manufacturer of your hard drive. Incorrect settings can result in your system not recognizing the installed hard disk.

Access Mode

This item defines ways that can be used to access IDE hard disks such as LBA (Large Block Addressing). Leave this value at Auto and the system will automatically decide the fastest way to access the hard disk drive.

Press <Esc> to return to the Standard CMOS Features page.

Drive A/Drive B (None)

This item defines the characteristics of any diskette drive attached to the system.

Video (EGA/VGA)

This item defines the video mode of the system. This motherboard has a built-in VGA graphics system; you must leave this item at the default value.

Halt On (All, But Keyboard)

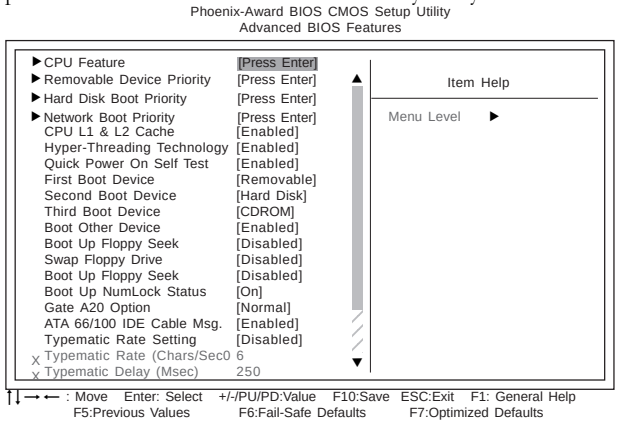
This item defines the operation of the system POST (Power On Self Test) routine. You can use this item to select which types of errors in the POST are sufficient to halt the system.

Base Memory, Extended Memory and Total Memory

These items are automatically detected by the system at start up time. These are display-only fields. You cannot make chanages to these fields.

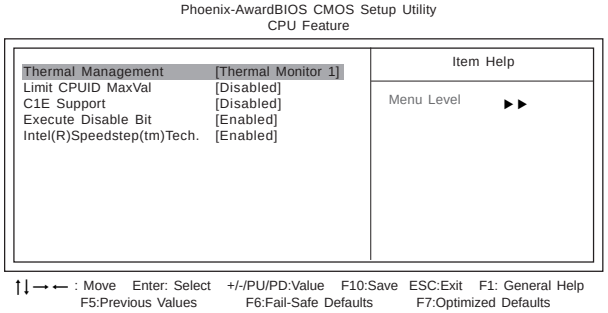
3.3-2 Advanced BIOS Features

This option defines advanced information about your system.



▶CPU Feature (Press Enter)

Scroll to this item and press <Enter> to view the following screen:



Thermal Managememt (Thermal Monitor 1)

This item displays CPU's temperature and enables you to set a safe temperature to Prescott CPU.

Limit CPUID MaxVal (Disabled)

This item can support Prescott CPUs for old OS. Users please note that under NT4.0, it must be set "Enabled", while under WinXP, it must be set "Disabled".

C1E Support (Enabled)

Enable this item to reduce power consumption in idle system.

Execute Disable Bit (Enabled)

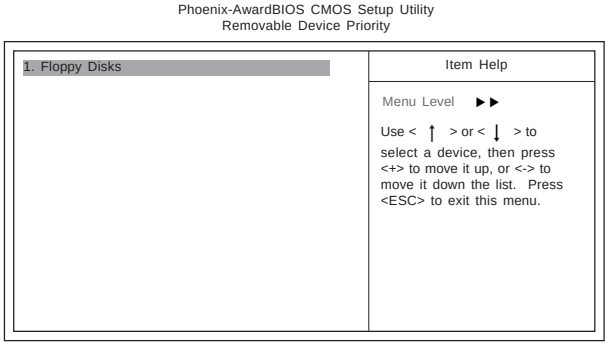
This item allows the processor to classify areas in memory by where application code can execute and where it cannot. when a malicious worm attempts to insert code in the buffer, the processor disables code execution, preventing damage or worm propagation. Replacing older computers with Execute Disable Bit-enabled systems can halt worm attacks, reducing the need for virus related repair.

Intel (R) Speedstep (tm) Tech. (Enabled)

This item enables or disables Intel Speedstep technology.

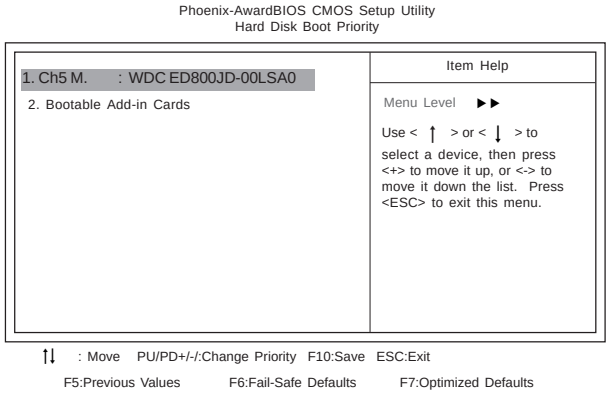
▶CD-ROM Boot Priority (Press Enter)

Scroll to this item and press <Enter> to view the following screen:



▶Hard Disk Boot Priority (Press Enter)

Scroll to this item and press <Enter> to view the following screen:



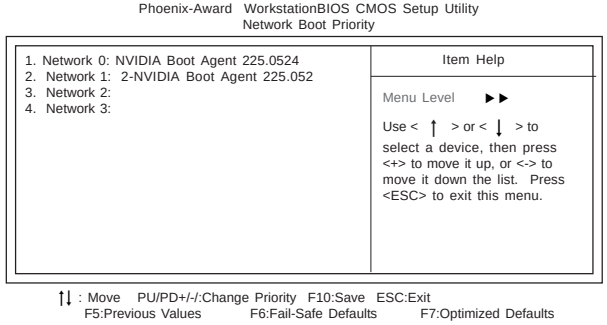
Bootable Add-in Card

This screen enables users to set the sequence of the bootable devices in system.

Press <Esc> to return to the Advanced BIOS Feature page.

▶Network Boot Prioritiy (Press Enter)

Scroll to this item and press <Enter> to view the following screen:



CPU L1 & L2 Cache (Enabled)

All processors that can be installed in this mainboard use internal level 1 (L1) and external level 2 (L2) cache memory to improve performance. Leave this item at the default value for better performance.

Hyper-Threading Technology (Enabled)

This item is only available when the chipset supports Hyper-Threading and you are using a Hyper-Threading CPU.

Quick Power On Self Test (Enabled)

Enable this item to shorten the power on self testing (POST) and have your system start up faster. You might like to enable this item after you confident that your system hardware is operating smoothly.

First/Second/Third Boot Device (Removable/Hard Disk/CDROM)

Use these three items to select the priority and order of the devices that your system searches for an operating system at start-up time.

Boot Other Device (Enabled)

When enabled, the system searches all other possible locations for an operating system if it fails to find one in the devices specified under the First, Second, and Third boot devices.

Swap Floppy Drive (Disabled)

If you have two floppy diskette drives in your system, this item allows you to swap the assigned drive letters so that drive A becomes drive B, and drive B becomes drive A.

Boot Up Floppy Seek (Disabled)

If this item is enabled, it checks the size of the floppy disk drives at start-up time. You don't need to enable this item unless you have a legacy diskette drive with 360K capacity.

Boot Up NumLock Status (On)

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

Gate A20 Option (Normal)

This item defines how the system handles legacy software that was written for an earlier generation of processors. Leave this item at the default value.

ATA 66/100 IDE Cable Msg (Enabled)

Enables or disables the ATA 66/100 IDE Cable Msg. This message will appear during reboot when you use 40-pin cable on your 66/100 hard disks.

Typematic Rate Setting (Disabled)

If this item is enabled, you can use the following two items to set the typematic rate and the typematic delay settings for your keyboard.

- **Typematic Rate (Chars/Sec):** Use this item to define how many characters per second are generated by a held-down key.
- **Typematic Delay (Msec):** Use this item to define how many milliseconds must elapse before a held-down key begins generating repeat characters.

Security Option (Setup)

If you have installed password protection, this item defines if the password is required at system start up, or if it is only required when a user tries to enter the Setup Utility.

APIC Mode (Enabled)

This item allows you to enable or disable the APIC (Advanced Programmable Interrupt Controller) mode. APIC provides symmetric multi-processing (SMP) for systems, allowing support for up to 60 processors.

MPS Version Control For OS (1.4)

This item shows MPS version control for OS.

OS Select For DRAM > 64MB (Non-OS2)

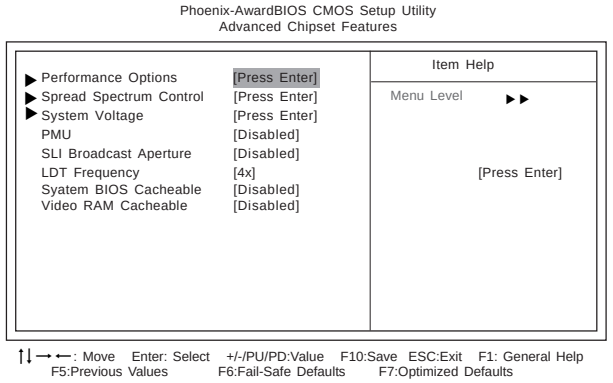
This item is only required if you have installed more than 64 MB of memory and you are running the OS/2 operating system. Otherwise, leave this item at the default.

Small Logo (EPA) Show (Disabled)

This item enables or disables the display of the EPA logo during boot.

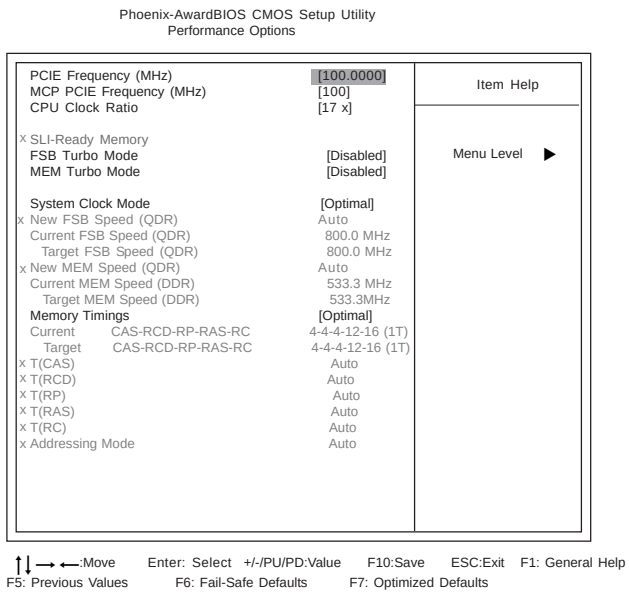
3.3-3 Advanced Chipset Features

These items define critical timing parameters of the mainboard. You should leave the items on this page at their default values unless you are very familiar with the technical specifications of your system hardware. If you change the values incorrectly, this may cause fatal errors or instability into your system.



▶ Performance Options (Press Enter)

Scroll to this item and press <Enter> to view the following screen:



PCIE Frequency (MHz) (100.0000)

This item determines the frequency of PCIE.

MCP PCIE Frequency (MHz) (100.0000)

This item determines the frequency of MCP PCIE.

CPU Clock Ratio (19 x)

This item enables you to set the CPU clock. The CPU clock ratio times the CPU Host/ PCI Clock should equal the core speed of the installed processor. (For unlock Ratio CPU only)

FSB/MEM Turbo Mode (Disabled)

This item enables or disables turbo mode of CPU and memory.

System Clock Mode (Optimal)

This item determines the current and target FSB and memory speed when the system is undertaking the best performance

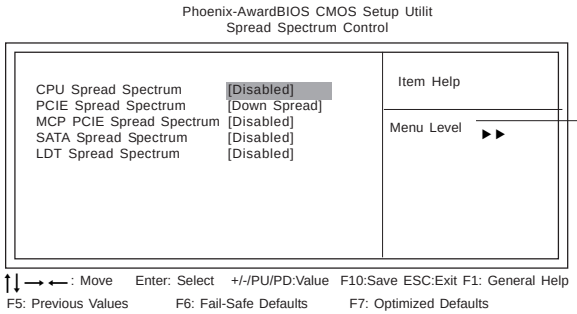
Memory Timings (Optimal)

This item shows the current and target memory performance rates when the system isundertaking the best performance.

Press <Esc> to return to the Advanced Chipset Features page.

▶ **Spread Spectrum Control (Press Enter)**

Scroll to this item and press <Enter> to view the following screen:



CPU Spread Spectrum (Disabled)

This item, when enabled, can significantly reduce the EMI (Electromagnetic Interference) generated by the CPU.

PCIE Spread Spectrum (Down Spread)

This item, when enabled, can significantly reduce the EMI (Electromagnetic Interference) generated by the PCIE.

MCP PCIE Spread Spectrum (Disabled)

This item, when enabled, can significantly reduce the EMI (Electromagnetic Interference) generated by the MCP PCIE.

SATA Spread Spectrum (Disabled)

This item, when enabled, can significantly reduce the EMI (Electromagnetic Interference) generated by the SATA.

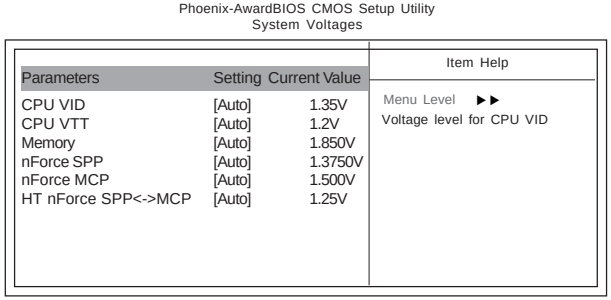
LDT Spread Spectrum (Disabled)

This item, when enabled, can significantly reduce the EMI (Electromagnetic Interference) generated by the LDT.

Press <Esc> to return to the Advanced Chipset Features page.

▶ **Spread Spectrum Control (Press Enter)**

Scroll to this item and press <Enter> to view the following screen:



These items are set for users to overclock by automatically setting CPU VID, CPU VTT, memory, nForce SPP, nForce MCP and HT nForce SPP<->MCP voltage.

Press <Esc> to return to the Advanced Chipset Features page.

PMU (Disabled)

This item enables or disables ACPI power managemant unit function.

SLI Broadcast Aperture (Disabled)

This item enables or disables the SLI Broadcast aperture.

LDT Frequency (5x)

This item determines the frequency of LDT.

System BIOS Cacheable (Disabled)

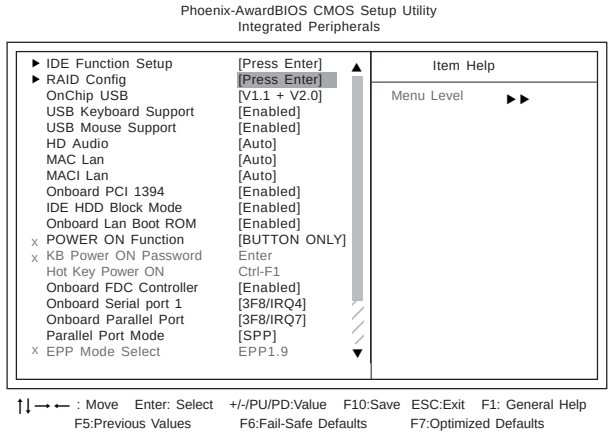
This item allows users to enable or disable the system BIOS cache.

Video RAM Cacheable (Disabled)

This item allows users to enable or disable the video RAM cache.

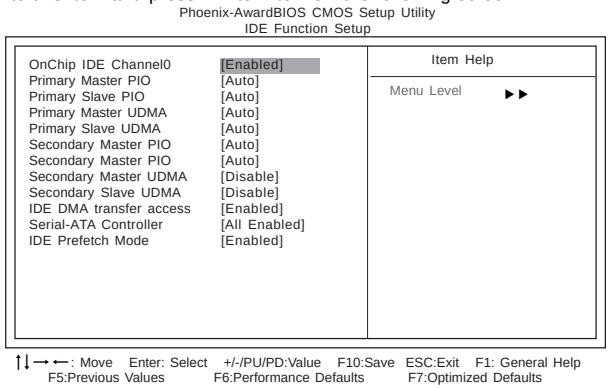
3.3-4 Integrated Peripherals

These options display items that define the operation of peripheral components on the system's input/output ports.



▶ IDE Function Setup (Press Enter)

Scroll to this item and press <Enter> to view the following screen:



On-Chip IDE Channel 0 (Enabled)

Use this item to enable or disable the PCI IDE channels that are integrated on the motherboard.

Primary/Secondary Master/Slave PIO (Auto)

The IDE channel supports a master device and a slave device. These two items let you assign the kind of PIO (Programmed Input/Output) was used by the IDE devices. Choose Auto to let the system auto detect which PIO mode is best, or select a PIO mode from 0-4.

Primary/Secondary Master/Slave UDMA (Auto)

Each IDE channel supports a master device and a slave device. This motherboard supports UltraDMA technology, which provides faster access to IDE devices.

If you install a device that supports UltraDMA, change the appropriate item on this list to Auto. You may have to install the UltraDMA driver supplied with this motherboard in order to use an UltraDMA device.

IDE DMA transfer access (Enabled)

This item allows you to enable the transfer access of the IDE DMA then burst onto the PCI bus and nonburstable transactions do not.

Serial-ATA Controller (All Enabled)

This item allows you to enable or disable the onboard SATA channel devices.

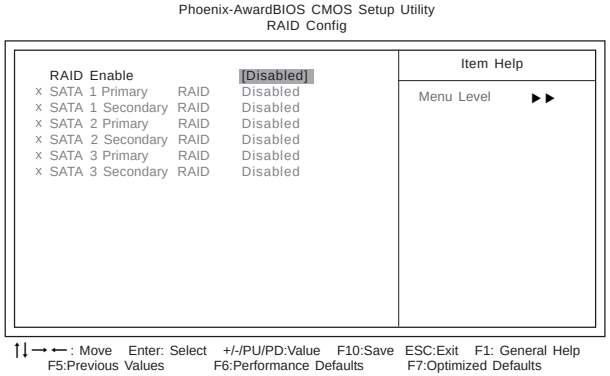
IDE Prefetch Mode (Enabled)

The onboard IDE drive interface supports IDE prefetching, for faster drive access. If you install a primary and secondary add-in IDE interface, set this field to Disabled if the interface does not support prefetching.

Press <Esc> to return to the Integrated Peripherals page.

▶ RAID Config (Press Enter)

Scroll to this item and press <Enter> to view the following screen:



RAID Enable (Disabled)

This item allows you to enable or disable the onboard RAID function of RAID supporting devices.

- **SATA 1/2/3/4 RAID (Disabled):** These four items enable or disable the SATA1/2/3/4 RAID.

Press <Esc> to return to the Integrated Peripherals page.

Onchip USB (V1.1+V2.0)

Use this item to specify the type of USB ports.

USB Keyboard Support (Enabled)

Enable this item if you plan to use a keyboard connected through the USB port in a legacy operating system (such as DOS) that does not support Plug and Play.

USB Mouse Support (Enabled)

Enable this item if you plan to use a mouse connected through the USB port in a legacy operating system (such as DOS) that does not support Plug and Play.

HD Audio(Auto)

Enables or disables the onboard audio chip.

MAC/MAC1 Lan (Auto)

Enables or disables the onboard audio chip.

Onboard PCI 1394(Enabled)

This option is used to enable or disable the onboard 1394.

IDE HDD Block Mode (Enabled)

Enable this field if your IDE hard drive supports block mode. Block mode enables BIOS to automatically detect the optimal number of block read and writes per sector that the drive can support. It also improves the speed of access to IDE devices.

Onboard Lan Boot ROM (Enabled)

This item enables or disables the onboard Lan boot rom.

POWER ON Function (BUTTON ONLY)

Enable or disable the function of waking up the system by the power button.

KB Power On Password (Enter)

Press Enter and key in the password for Keyboard power on.

Hot Key Power ON (Ctrl-F1)

Use this item to allocate the hot key to wake up the system.

Onboard FDC Controller (Enabled)

This option enables the onboard floppy disk drive controller.

Onboard Serial Port 1 (3F8/IRQ4)

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

Onboard Parallel Port (378/IRQ7)

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

Parallel Port Mode (SPP)

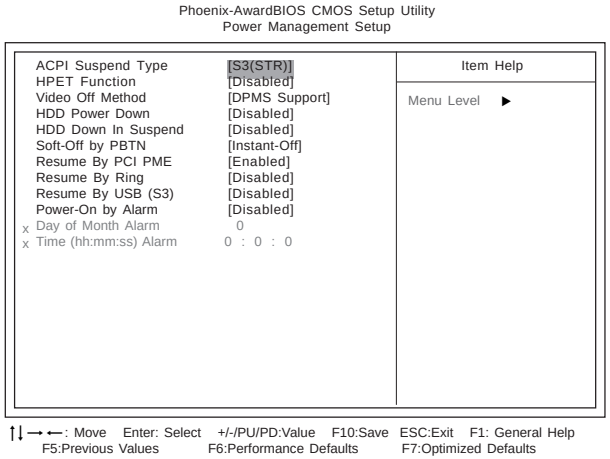
Enables you to set the data transfer protocol for your parallel port. There are four options: SPP (Standard Parallel Port), EPP (Enhanced Parallel Port), ECP (Extended Capabilities Port) and ECP+EPP.

PWRON After PWR-Fail (OFF)

This item enables your computer to automatically restart or return to its last operating status.

3.3-5 Power Management Setup

This option lets you control system power management. The system has various power-saving modes including powering down the hard disk, turning off the video, suspending to RAM, and software power down that allows the system to be automatically resumed by certain events.



ACPI Suspend Type (S3(STR))

Use this item to define how your system suspends. In the default, S3 (STR), the suspend mode is a suspend to RAM, i.e., the system shuts down with the exception of a refresh current to the system memory. If you select S1 (POS), the suspend mode is equivalent to a software power down.

HPET Function (Disabled)

This item enables or disables HPET function.

Video Off Method (DPMS Support)

This selection will cause the system to turn off the vertical and horizontal synchronization ports and write blanks to the video buffer.

HDD Power Down (Disabled)

The IDE hard drive will spin down if it is not accessed within a specified length of time.

HDD Down In Suspend (Disabled)

This item enable or disable whether the IDE hard drive to be down in suspend mode.

Soft-Off by PBTN (Instant-Off)

Under ACPI (Advanced Configuration and Power management Interface) you can create a software power down. In a software power down, the system can be resumed by Wake Up Alarms. This item lets you install a software power down that is controlled by the power button on your system. If the item is set to Instant-Off, then the power button causes a software power down. If the item is set to Delay 4 Sec. then you have to hold the power button down for four seconds to cause a software power down.

Resume By PCI PME (Enabled)

This item allows users to enable or disable PCI activity to wake up the system from a power saving mode.

Resume By Ring (Disabled)

This item allows users to enable or disable modem activity to wake up the system from a power saving mode.

Resume By USB (S3) (Disabled)

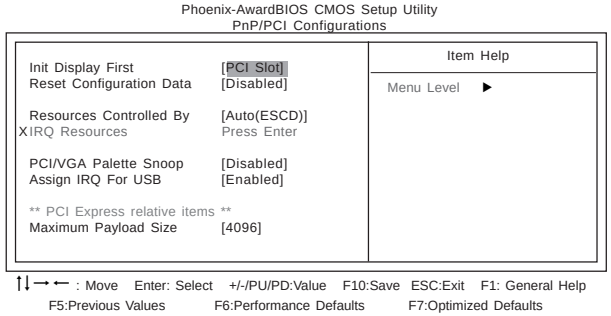
This item allows you to enable or disable the USB device Wakeup function from S3 mode.

Power-On by Alarm (Disabled)

This item allows users to enable or disable the alarm to wake up the system. If set to Enabled, users can specify the specific day of month and the exact time to power up the system.

3.3-6 PnP/PCI Configurations

These options configure how PnP (Plug and Play) and PCI expansion cards operate in your system. Both the the ISA and PCI buses on the motherboard use system IRQs (Interrup ReQuests) and DMAs (Direct Memory Access). You must set up the IRQ and DMA assignments correctly through the PnP/PCI Configurations Setup utility for the motherboard to work properly. Selecting PnP/PCI Configurations on the main program screen displays this menu:



Init Display First (PCIE Slot)

Use this item to specify whether your graphics adapter is installed in one of the PCI slots or is integrated on the motherboard. If a PCI graphics card is installed, the onboard VGA will be disabled.

Reset Configuration Data (Disabled)

If you enable this item and restart the system, any Plug and Play configuration data stored in the BIOS Setup is cleared from memory.

Resources Controlled By (Auto(ESCD))

You should leave this item at the default Auto (ESCD). Under this setting, the system dynamically allocates resources to Plug and Play devices as they are required.

If you cannot get a legacy ISA (Industry Standard Architecture) expansion card to work properly, you might be able to solve the problem by changing this item to Manual, and then opening up the IRQ Resources submenu.

- **IRQ Resources (Press Enter):**In the IRQ Resources submenu, if you assign an IRQ to Legacy ISA, then that Interrupt Request Line is reserved for a legacy ISA expansion card. Press <Esc> to close the IRQ Resources submenu.

PCI/VGA Palette Snoop (Disabled)

This item is designed to overcome problems that can be caused by some non-standard VGA cards. This board includes a built-in VGA system that does not require palette snooping so you must leave this item disabled.

Assign IRQ For USB (Enabled)

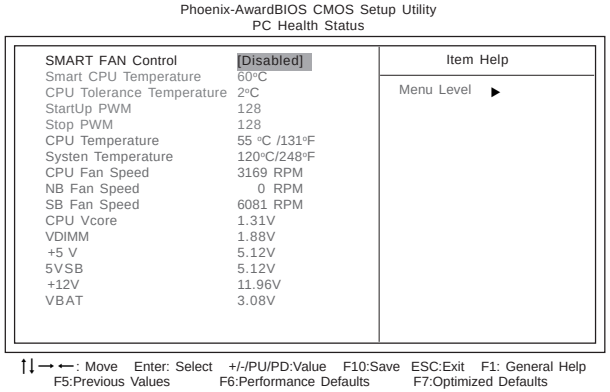
Names the interrupt request(IRQ) line assigned to the USB on your system.Activity of the selected IRQ always awakens the system.

Maximum Payload Size (4096)

This item specifies the maximum payload size for the PCI Express function.

3.3-7 PC Health Status

On motherboards that support hardware monitoring, this item lets you monitor the parameters for critical voltages, temperatures and fan speeds.



Smart Fan Control (Disabled)

This item enables and disables the fan control function. The sub-items display the fan settings installed in your system.

System Component Characteristics

These fields provide you with information about the system's current operating status. You cannot make changes to these fields.

- CPU Temperature
- System Temperature
- CPU Fan Speed
- NB Fan Speed
- SB Fan Speed
- CPU Vcore
- VDIMM
- +5V
- 5VSB
- +12V
- VBAT

Press <Esc> to return to the main menu setting page.

3.3-8 Load Performance Defaults

If you select this item and press Enter a dialog box will appear. If you select [OK], and then Enter, the Setup Utility loads a set of performance default values. These default settings are quite demanding and your system might not function properly if you are using slower CPU, memory, or other low-performance components.

Warning: To load Performance settings may make your system become unstable or unbootable. When loading the Performance Defaults fails, users can choose "either" step to return the motherboard to its defaults BIOS:

1. Power on the system and press "Insert" key. The system will bypass the previous BIOS setting and automatically reload the default BIOS. (This procedure is BIOS setup only!)
2. Apply to the jumper setting reference onboard and proceed with the "Clear CMOS" to recover the default BIOS setting. Please refer to Chapter 2, page 9, to complete the clear CMOS action. (This procedure requires opening the chasis!)

3.3-9 Load Optimized Defaults

This option opens a dialog box that lets you install optimized defaults for all appropriate items in the Setup Utility. Press <Y> and then <Enter> to install the defaults. Press <N> and then <Enter> to not install the defaults. The optimized defaults place demands on the system that may be greater than the performance level of the components, such as the CPU and the memory. When your hardware doesn't support the "Optimized Defaults", fatal system errors or instability may occur. If you only want to install setup defaults for a specific option, select and display that option, and then press <F7>.

Users please use the factory BIOS default setting of "Load optimized Defaults" when install Operation System onto your system.

3.3-10 Set Supervisor/User Password

When this function is selected, the following message appears at the center of the screen to assist you in creating a password.

ENTER PASSWORD

Type the password, up to eight characters, and press <Enter>. The password typed now will clear any previously entered password from CMOS memory. You will be asked to confirm the password. Type the password again and press <Enter>. You may also press <Esc> to abort the selection.

To disable password, just press <Enter> when you are prompted to enter password. A message will confirm the password being disabled. Once the password is disabled, the system will boot and you can enter BIOS Setup freely.

PASSWORD DISABLED

If you have selected "**System**" in "Security Option" of "BIOS Features Setup" menu, you will be prompted for the password every time the system reboots or any time you try to enter BIOS Setup.

If you have selected "**Setup**" at "Security Option" from "BIOS Features Setup" menu, you will be prompted for the password only when you enter BIOS Setup. Supervisor Password has higher priority than User Password. You can use Supervisor Password when booting the system or entering BIOS Setup to modify all settings. Also you can use User Password when booting the system or entering BIOS Setup but can not modify any setting if Supervisor Password is enabled.

3.3-11 Save & Exit Setup

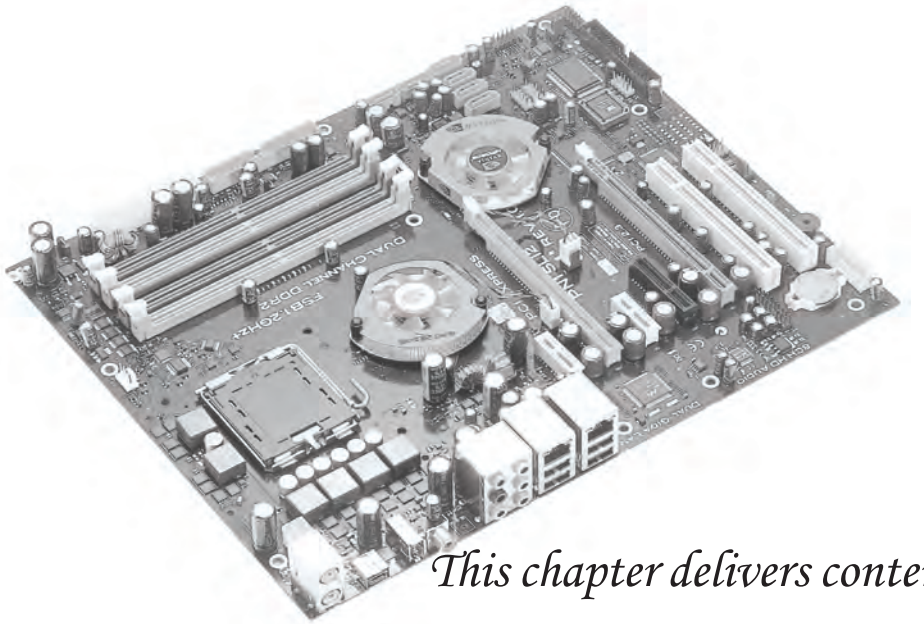
Highlight this item and press <Enter> to save the changes that you have made in the Setup Utility and exit the Setup Utility. When the Save and Exit dialog box appears, press <Y> to save and exit, or press <N> to return to the main menu.

3.3-12 Exit Without Saving

Highlight this item and press <Enter> to discard any changes that you have made in the Setup Utility and exit the Setup Utility. When the Exit Without Saving dialog box appears, press <Y> to discard changes and exit, or press <N> to return to the main menu.

Note: If you have made settings that you do not want to save, use the "Exit Without Saving" item and press <Y> to discard any changes you have made.

Memo



This chapter delivers contents of the ECS support CD.

Reference

4.1 Software CD Information

The support software CD-ROM that is included in the motherboard package contains all the drivers and utility programs needed to properly run the bundled products. Below you can find a brief description of each software program, and the location for your motherboard version. More information on some programs is available in a README file, located in the same directory as the software.

Note: *The Intel High Definition audio functionality unexpectedly quits working in Windows Server 2003 Service Pack 1 or Windows XP Professional x64 Edition. Users need to download and install the update packages from the Microsoft Download Center* ***"before"*** *installing HD audio driver bundled in the driver CD. Please log on to http://support.microsoft.com/default.aspx?scid=kb;en-us;901105#appliesto for more information.*

4.2 Running the Software CD

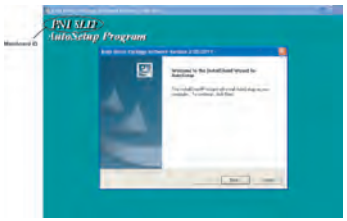
To begin using the software CD, simply insert the CD into your CD-ROM drive. The CD automatically display the multimedia if auto run is enable in your computer.

4.3 Setup Tab

The setup tab shows three buttons - **Setup**, **Browse CD**, **Exit**.

Setup button: Click the **Setup** button to run the software installation program. Select from the menu which software you want to install.

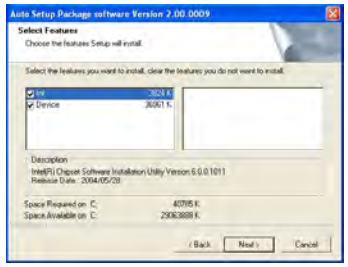
1. *Click* ***Setup****. The installation program begins:*



Note: The following screens are examples only. The screens and driver lists will be different according to the motherboard you are installing.

The motherboard identification is located in the upper left-hand corner.

2. *Click* ***Next****. The following screen appears:*



3. *Follow the instructions on the screen to install the items.*

Drivers and software are automatically installed in sequence. Follow the onscreen instructions, confirm commands and allow the computer to restart a few times to complete the installation.

Browse CD button: The Browse CD button is the standard Windows command that allows you to open Windows Explorer and show the contents of the support CD.

Exit button: The **Exit** button closes the Auto Setup window.

4.4 Application Tab

Lists the software utilities that are available on the CD.

4.5 Read Me Tab

Displays the path for all software and drivers available on the CD.

4.6 Software Utilities Introduction

I'm InTouch

I'm InTouch remote access software allows you to login and work on your far-away computer, just as if you were sitting behind it! Run programs, transfer files, manage e-mail, contacts and calendar events. With I'm InTouch, you always have access to your PC and the important information and programs that you need.

MediaRing Talk - Telephony Software

Go to \UTILITY\MEDIARING EZ NET and run SETUP 331.EXE to install the MediaRing Talk voice modem software for the built-in modem.

WinCinema

- **WinDVD Creator Plus**

WinDVD Creator Plus is designed for people who want to make their own DVDs but who don't want to learn complicated programs. By taking you through 4 DVD-making steps, WinDVD Creator Plus walks you through capturing video, editing it, adding titles, transitions, effects, music, DVD menus and finally burning the finished product. User also can direct-burn to DVD when DVD burner is available.

- **WinDVD**

WinDVD is the world's most popular DVD player and supports over 30 new features and enhancements such as improved picture quality, easier-to-use Time-Stretching, MP3 playback, and Video Desktop - which lets you watchmovies under your desktop icons while you work or check email.

- **WinRIP**

WinRIP lets you record, store, organize, and enjoy you music collection - on your PC, CD player, and portable player. Organize your Music Galleryand create your own playlists. You can switch between simple Player mode or full-featured Jukebox mode.

Pro Magic

This amazing software not only provides users with convenient and instant restoration of your computer, but also restores within seconds important data back to the preferred state at a specific point in time. Pro Magic also combines several other functions including anti-virus, backup, uninstall software and multi-booting to satisfy all your system protection needs.

DPU (Data Process Utility)

Specially designed for file protection, security and management this DPU or data processing utility insures the safety of important data through complete file restoration, eliminating file damage even in case of improper

operation. User can freely edit original files after a set restore time point. The DPU can even restore even deleted files.

Adobe Reader

This item install the Adobe Acrobat Reader. The Acrobat Reader software is for viewing files saved in Portable Document Format (PDF).

Smart LAN

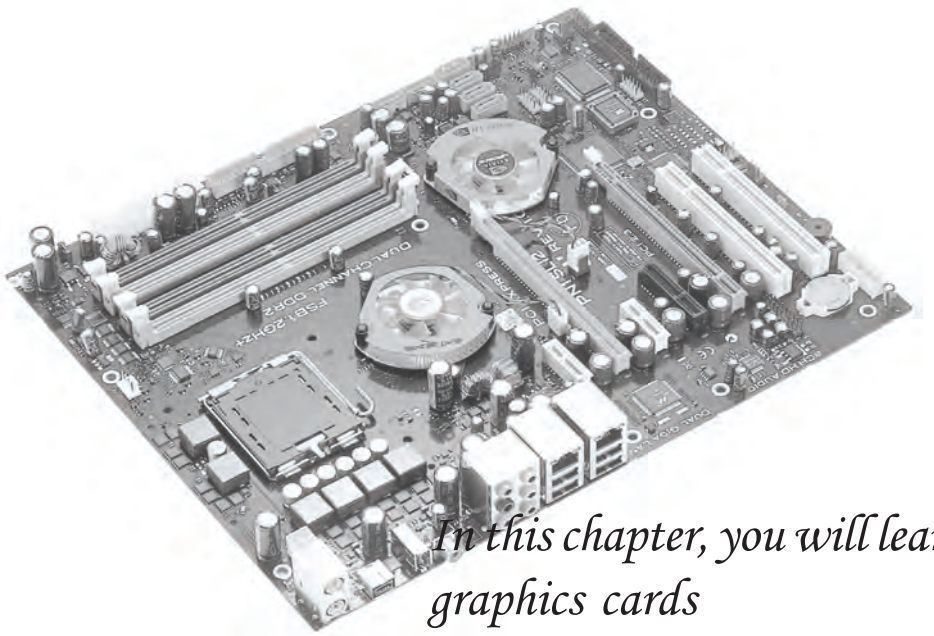
The motherboard support Marvell Virtual Cable Tester (VCT) technology. It enables end users to remotely diagnose the quality and characteristics of the attached cable. With this feature it is possible to detect and report potential cabling issues such as cable opens, cable shorts, and impedance mismatches. The distance of the fault can be reported within one meter.

Show Shifter

ShowShifter, the award winning software, combines viewing TV, video, CD, MP3 and digital pictures into one easy to use application. With a little help from Showshifter your PC will be the ultimate home media center.

NVIDIA nTune

The NVIDIA nTune is the easiest, fastest, and safest performance optimization and monitoring application available for your PC. With NVIDIA nTune your system can automatically adjust to maximum performance settings for intense gaming or will detect that you've inserted a DVD and will set the system to quiet operation. This intelligent application offers the safest way to change bus speeds, memory timings, and even tweak voltages. Changes are made easily within a simple-to-use Windows interface--so you no longer need to make changes to the BIOS or reboot your system.



In this chapter, you will learn how to install SLI-ready graphics cards

Reference

5.1 Overview

This motherboard supports the NVIDIA® SLI™ (Scalable Link Interface) technology that allows you to install two identical PCI Express™ x16 graphics cards. Follow the installation procedures in this section.

Requirements

1. You should have two identical SLI-ready graphics cards that are NVIDIA® certified.
2. Visit the ECS website (www.ecs.com.tw) for a list of qualified SLI-ready graphics cards for this motherboard.
3. Make sure that your graphics card driver supports the NVIDIA® SLI™ technology. Download the latest driver from the NVIDIA website (www.nvidia.com).
4. Make sure that your power supply unit (PSU) can provide at least the minimum power required by your system.

1. The NVIDIA® SLI ™ technology supports Windows® XP™ operating system only.
2. Visit the NVIDIA website for the supported 3D applications and the latest graphics card drivers.

5.2 Installing SLI-ready graphics cards

Install only identical SLI-ready graphics that are NVIDIA® certified. Different types of graphics cards will not work together properly.

To install the graphics cards:

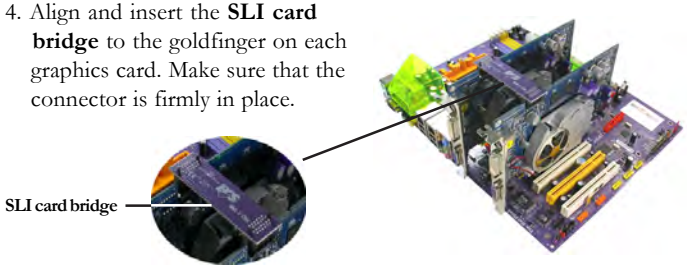
1. Prepare two graphics cards. Each graphics card should have goldfingers for the SLI connector.

2. Insert one graphics card into the orange **PCI EXP X16** slot. Make sure that the card is properly seated on the slot.

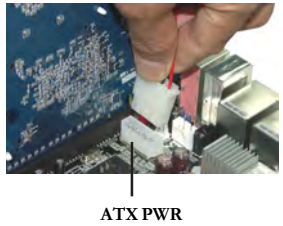
3. Insert the second graphics card into the blue **PCI EXP X16** slot. Make sure that the card is properly seated on the slot.

If required, connect an auxiliary power source to the PCI Express graphics cards.

4. Align and insert the **SLI card bridge** to the goldfinger on each graphics card. Make sure that the connector is firmly in place.

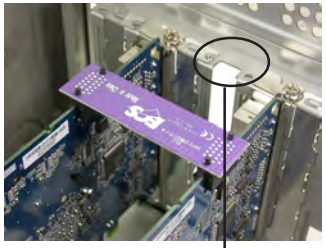


5. Connect a 4-pin ATX power cable to the auxiliary 4-pin power connector labeled **ATX PWR** on this motherboard.



*Make sure to connect a 4-pin ATX power cable to the **ATX PWR**; otherwise, the system will be unstable.*

6. Remove any of the two bracket covers between the graphics cards.



Bracket slot

7. Align and insert the retention bracket into the slot then secure it with a screw.

Retention bracket

Make sure that the retention bracket firmly supports the two graphics cards.

8. Connect a **VGA cable** or a **DVI-I cable** to the graphics card installed on the **PCIE1** PCI Express slot.

5.3 Installing the device driver

Refer to the documentation that came with your graphics card package to install the device drivers.

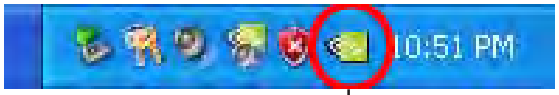
Make sure that your PCI Express graphics card driver supports the NVIDIA SLI technology. Download the latest driver from the NVIDIA website (www.nvidia.com).

5.4 Enabling the multi-GPU feature in Windows

After installing the graphics cards and the device drivers, enable the Multi-Graphics Processing Unit (GPU) feature in the NVIDIA nView properties.

To enable the multi-GPU feature:

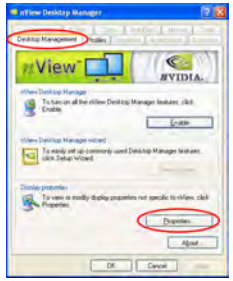
1. Click the **NVIDIA Settings icon** on your Windows taskbar.



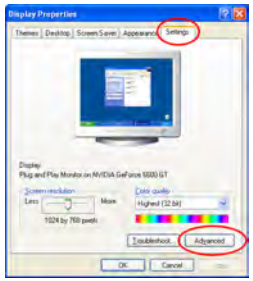
NVIDIA Settings icon

2. From the pop-up menu, select **nView Desktop Manager** then click **nView Properties**.

3. From the nView Desktop Manager window, select the **Desktop Management** tab.
4. Click **Properties** to display the Display Properties dialog box.

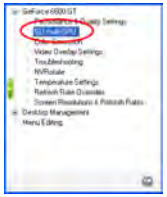


5. From the Display Properties dialog box, select the **Settings** tab then click **Advanced**.



6. Select the **NVIDIA GeForce tab**.

7. Click on the slider to display the following screen, then select the **SLI multi-GPU** item.



Slider

8. Click the **Enable SLI multi-GPU** check box.
9. Click **OK** when done.

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Federal Communications Commision (FCC)

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 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 the receiver.
- Connect the equipment onto 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.

Shielded interconnect cables and a shielded AC power cable must be employed with this equipment to ensure compliance with the pertinent RF emission limits governing this device. Changes or modifications not expressly approved by the system's manufacturer could void the user's authority to operate the equipment.

Declaration of Conformity

This device complies with part 15 of the FCC rules. Operation is subject to the following conditions:

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

Canadian Department of Communications

This class B digital apparatus meets all requirements of the Canadian Interference-causing Equipment Regulations.

Cet appareil numérique de la classe B respecte toutes les exigences du Réglement sur le matériel brouilieur du Canada.