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Table of Contents

CHAPTER 1: INTRODUCTION

1.1   MOTHERBOARD FEATURES

A. Hardware

CPU

- Supports Socket 754.
- Supports AMD Athlon 64 and Sempron processors.
- Supports Front Side Bus up to 1.6G HT.
- AMD 64 architecture enables simultaneous 32 and 64 bit computing.
- Supports HyperTransport Technology and AMD Cool'n'Quiet Technology.

Chipset

- NVIDIA nForce4 4X:
    - Supports NVIDIA Firewall.
    - Supports 10 USB 2.0 ports.
    - Supports NVIDIA nTune Utility.
    - Supports 1 PCI-Express x16 interface graphics slot.
    - Supports 2 PCI-Express x1 interface slots.
    - Supports 4 SATA ports, each channel up to 1.5Gb/s.
    - Supports NVIDIA RAID functions, including RAID 0, RAID 1 and RAID 0+1.
    - Supports 4 IDE disk drives with PIO Mode 5, DMA Mode and Ultra DMA 33/66/100/133 Bus Master Mode.
    - Compliant with AC'97 version2.3 specification.
    - Complaints with PCI-Express Version 1.a specification.

Operating Systems

- Supports Windows 2000 and Windows XP.
    - **Note:** *Do not support Windows 98SE and Windows ME.*
- Supports SCO UNIX.

Dimensions

- ATX Form Factor: 20.82cm (W) x 29.33cm (L)

On-board IDE

- 2 on-board connectors support 4 IDE disk drives.
- Supports PIO mode 4, DMA Mode and Ultra DMA 33/66/100/133 bus master mode.

Main Memory

- Supports Single Channel DDR.
- Supports DDR 266/333/400.
- Maximum memory size is 2GB.

DIMM Socket Location	DDR Module	Total Memory Size
DIMM1	128MB/256MB/512MB/1GB *1	Max is 2 GB.
DIMM2	128MB/256MB/512MB/1GB *1	

Serial ATA

- 4 on-board Serial ATA connectors support 4 serial ATA (SATA) ports.
- Compliant with SATA1.0 specification.
- Data transfer rates up to 1.5Gb/s.
- Supports NVIDIA RAID Technology:
  - RAID 0 disk striping for highest system and application performance
  - RAID 1 disk mirroring support for fault tolerance
    Support for both SATA and ATA-133 disk controller standards
  - RAID 0+1 disk striping and mirroring for highest performance with fault tolerance

Slots

- Four 32bit PCI bus master slots.
- Two PCI-Express x1 slots:
  - PCI Express 1.0a compliant.
  - Bandwidth 250MB/s per direction.
- One PCI-Express x16 slot.
  - PCI Express 1.0a compliant.
  - Maximum theoretical realized bandwidth of 4GB/s simultaneously per direction, for an aggregate of 8GB/s totally.

Super I/O

- Chip: ITE IT8712F.
- Low Pin Count Interface.
- Provides the most commonly used legacy Super I/O functionality.
- Environment Control initiatives,
  - H/W Monitor
  - Fan Speed Controller
  - ITE's "Smart Guardian" function

On-board AC'97 Audio Sound Codec

- Chip: ALC655:
  - Compliant with AC'97 version2.3 specification.
  - Supports 6 channels audio output.

10/100 LAN

- Chip: RTL8201BL / RTL8201CL.
- Supports 10 Mb/s, 100 Mb/s and 1Gb/s auto-negotiation.
- Provides the most commonly used legacy super I/O functionality.
- Environment Control initiatives:
  - H/W Monitor,
  - Fan Speed Controller,
  - ITE "Smart Guardian" function.

Security

- NVIDIA Firewall technology
  - Native firewall solution
- Advanced features
  - Remote access, configuration, monitoring
  - Command line interface (CLI)
  - WMI scripts.

Internal On-board Connectors and Headers

- 1 audio-out header supports audio-out facilities.
- 1 front panel header supports front panel facilities.
- 1 CD-in connector supports CD-ROM audio-in function.
- 1 SPDIF-out connector supports digital audio-out function.
- 1 floppy connector supports 2 FDD devices with 360K, 720K, 1.2M, 1.44M and 2.88Mbytes.
- 2 IDE connectors support 4 IDE disk drives.
- 3 USB headers support 6 USB 2.0 ports at front panel.
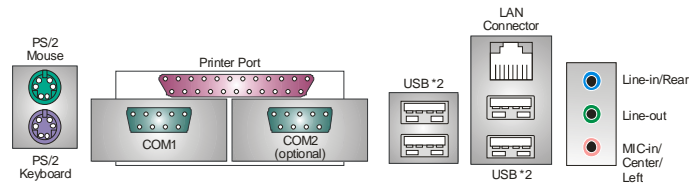- 4 Serial ATA connectors support 4 SATA devices.

Rear (Back Panel) Side Connectors

- 1 PS/2 Mouse port and Keyboard port.
- 1 Printer Port.
- 1 Serial Port. (JCOM2 is optional.)
- 1 RJ-45 LAN jack.
- 4 USB 2.0 Ports.
- 3 audio ports support 6 channels audio-out facilities.

B. BIOS & Software

BIOS

- Award legal BIOS.
- Supports APM1.2.
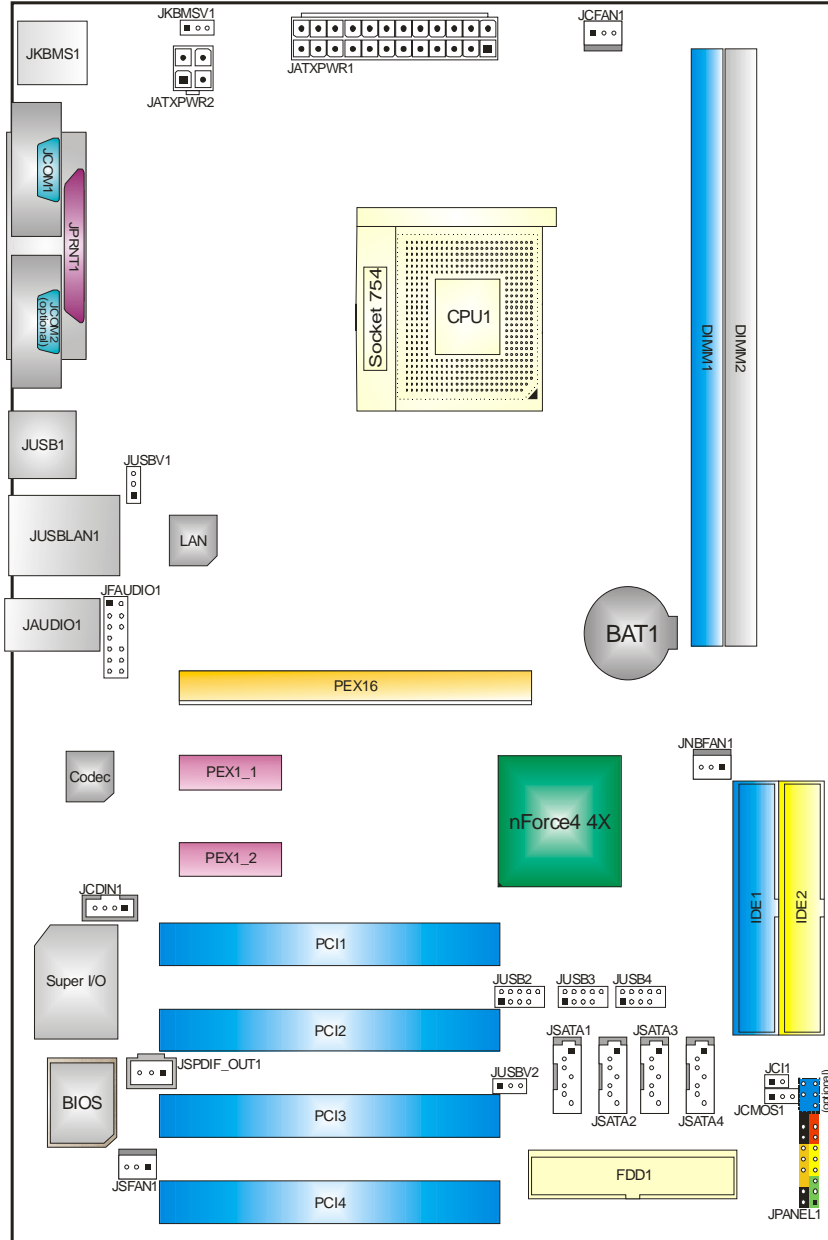- Supports ACPI.
- Supports USB Function.

Bundled Software

- Supports 9th Touch™, WINFLASHER™ and FLASHER™.

1.2 PACKAGE CHECKLIST

- FDD Cable X 1
- HDD Cable X 1
- User's Manual X 1
- Fully Setup Driver CD X 1
- Rear I/O Panel for ATX Case X 1
- S/PDIF Cable X 1 (optional)
- USB 2.0 Cable X1 (optional)
- Serial ATA Cable X 1(optional)
- Serial ATA Power Switch Cable X 1 (optional)

1.3 L*AYOUT* & C*OMPONENTS*

Note: ■ represents the 1st pin.
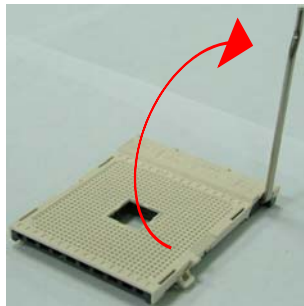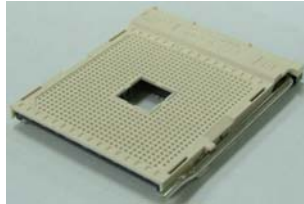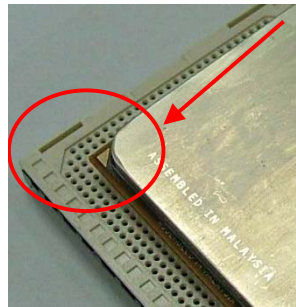
CHAPTER 2: HARDWARE INSTALLATION

2.1   CENTRAL PROCESSING UNIT (CPU)

Step 1: Pull the lever sideways away from the socket and then raise the lever up to a 90-degree angle.

Step 2: Look for the black cut edge on socket, and the white dot on CPU should point forwards this black cut edge. The CPU will fit only in the correct orientation.
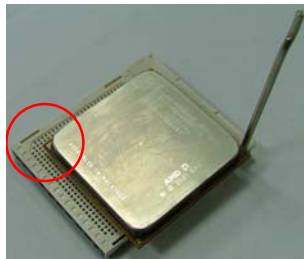
Step 3: Hold the CPU down firmly, and then close the lever to complete the installation.

Step 4: Put the CPU Fan on the CPU and buckle it. Connect the CPU FAN power cable to the JCFAN1. This completes the installation.

2.2   FAN HEADERS

CPU FAN Power Header: JCFAN1

System Fan Power Header: JSFAN1

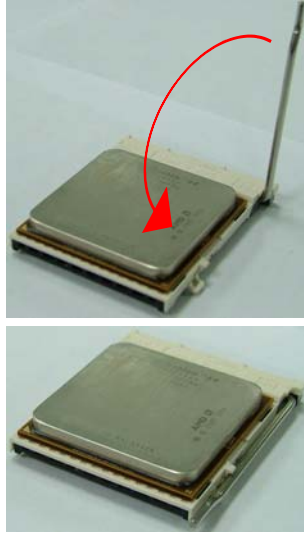**Northbridge Fan Power Header: JNBFAN1**

Pin	Assignment
1	Ground
2	+12V
3	FAN RPM rate sense (Only for JCFAN1 and JSFAN1.)
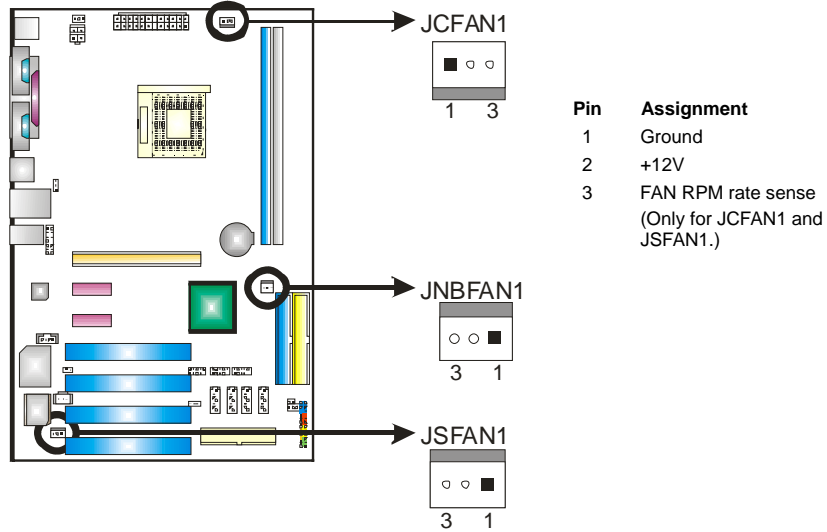
Note: The JCFAN1 and JSFAN1 support system cooling fan with Smart Fan Control utility. It supports 3 pin head connector. When connecting with wires onto connectors, please note that the red wire is the positive and should be connected to pin#2, and the black wire is Ground and should be connected to GND.

2.3 *MEMORY MODULES INSTALLATION*
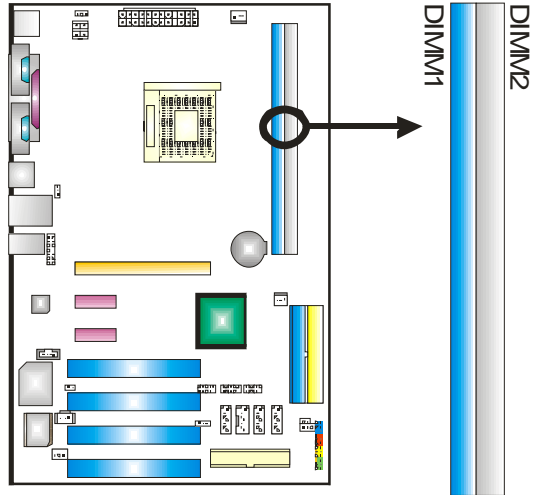
2.3.1 **DDR Module installation**

1. Unlock a DIMM slot by pressing the retaining clips outward. Align a DIMM on the slot such that the notch on the DIMM matches the break on the Slot.
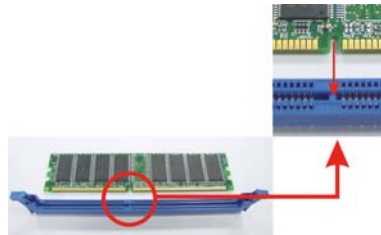
2. Insert the DIMM vertically and firmly into the slot until the retaining chip snap back in place and the DIMM is properly seated.

2.4 *CONNECTORS & SLOTS*

Floppy Disk Connector: FDD1

The motherboard provides a standard floppy disk connector that supports 360K, 720K, 1.2M, 1.44M and 2.88M floppy disk types. This connector supports the provided floppy drive ribbon cables.
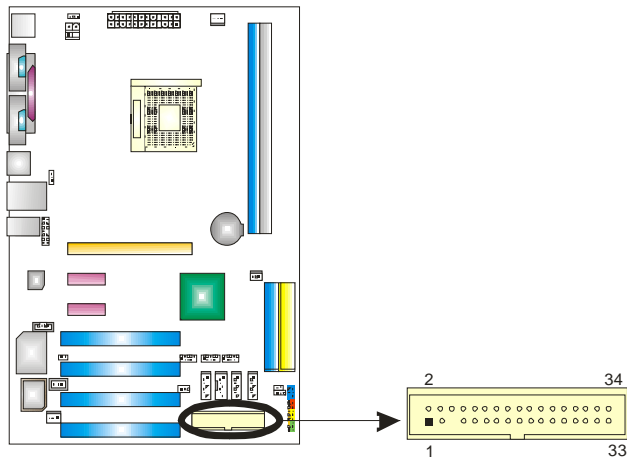
Hard Disk Connectors: IDE1/IDE2

The motherboard has two 32-bit Enhanced PCI IDE Controller that provides PIO Mode 0~5, Bus Master, and Ultra DMA 33/66/100/133 functionality. It has two HDD connectors IDE1 (primary) and IDE2 (secondary). The IDE connectors can connect a master and a slave drive, so you can connect up to four hard disk drives. The first hard drive should always be connected to IDE1.
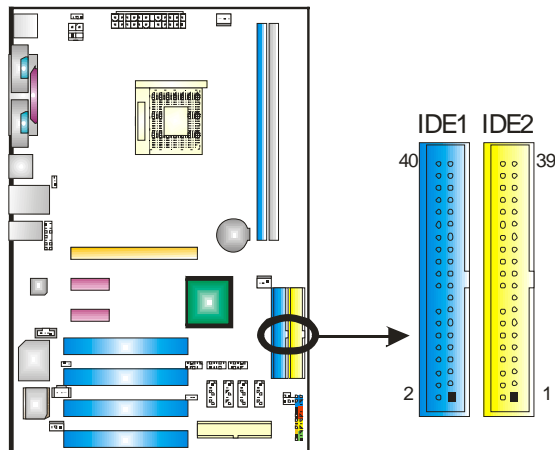
Peripheral Component Interconnect Slots: PCI1~PCI4

This motherboard is equipped with 4 standard PCI slot. PCI stands for Peripheral Component Interconnect, and it is a bus standard for expansion cards. This PCI slot is designated as 32 bits.
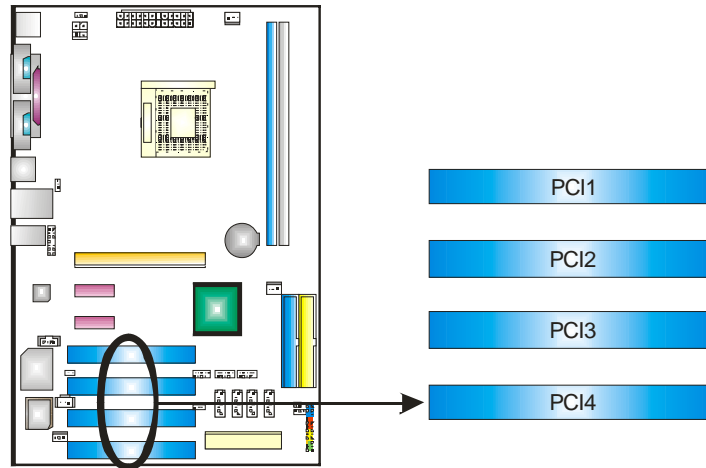
PCI-Express Slots: PEX16/ PEX1_1/PEX1_2

PEX16:
- PCI Express 1.0a compliant.
- Maximum bandwidth is up to 4GB/s per direction.

PEX1_1/PEX1_2:
- PCI Express 1.0a compliant.
- Maximum bandwidth is up to 250MB/s per direction.
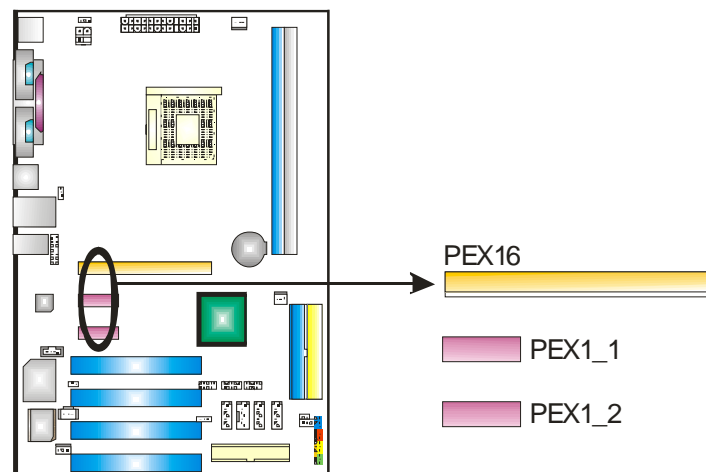
CHAPTER 3: HEADERS & JUMPERS SETUP

3.1 HOW TO SETUP JUMPERS

The illustration shows how to set up jumpers. When the jumper cap is placed on pins, the jumper is "close", if not, that means the jumper is "open".

Pin opened   Pin closed   Pin1-2 closed

3.2 DETAIL SETTINGS

ATX Power Source Connector: JATXPWR1

This connector allows user to connect 24-pin power connector on the ATX power supply.
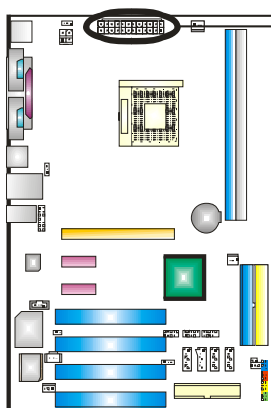
| Pin	Assignment
1	+3.3V
2	+3.3V
3	Ground
4	+5V
5	Ground
6	+5V
7	Ground
8	PW_OK
9	Standby Voltage+5V
10	+12V
11	+12V
12	Detect
13	+3.3V
14	-12V
15	Ground
16	PS_ON
17	Ground
18	Ground
19	Ground
20	-5V
21	+5V
22	+5V
23	+5V
24	Ground

ATX Power Source Connector: JATXPWR2

By connecting this connector, it will provide +12V to CPU power circuit.

Pin	Assignment
1	+12V
2	+12V
3	Ground
4	Ground

Power Source Headers for USB Ports: JUSBV1/JUSBV2

Pin 1-2 Close:

JUSBV1: +5V for USB ports at JUSB1 and JUSBLAN1.

JUSBV2: +5V for front USB headers (JUSB2/JUSB3/JUSB4).

Pin 2-3 Close:

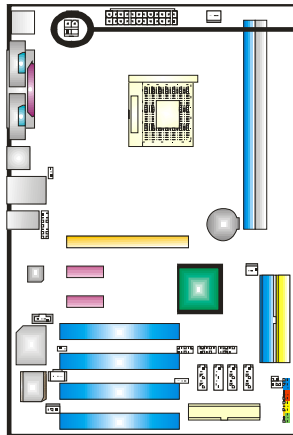JUSBV1: USB ports at JUSB1 and JUSBLAN1 are powered with +5V standby voltage.

JUSBV2: Front USB headers (JUSB2/JUSB3/JUSB4) are powered with +5V standby voltage.

JUSBV1

Pin 1-2 Close

JUSBV2

Pin 2-3 Close

Note: In order to support this function "Power-on system via USB device," "JUSBV1/JUSBV2" jumper cap should be placed on Pin 2-3 individually.

Power Source Header for PS/2 Keyboard/Mouse: JKBMSV1

Pin 1-2 Close: +5V for PS/2 keyboard and mouse.

Pin 2-3 Close: PS/2 keyboard and mouse are powered with +5V standby voltage.
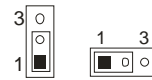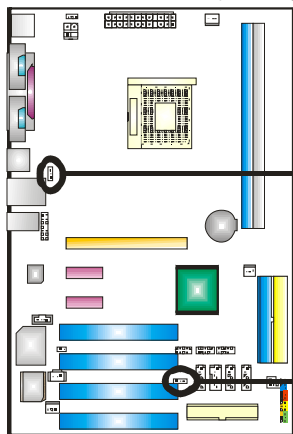
Pin 1-2 close

Pin 2-3 close
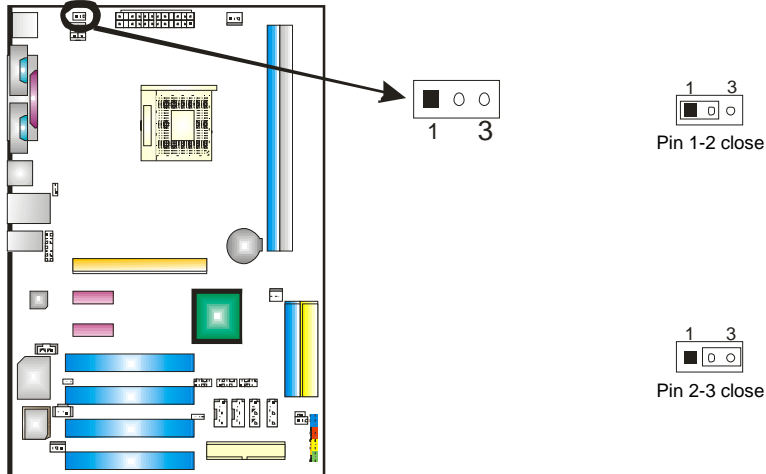
Note: In order to support this function "Power-on system via keyboard and mouse", "JKBMSV1" jumper cap should be placed on Pin 2-3.

Front Panel Audio-out Header: JFAUDIO1

This connector will allow user to connect with the front audio out put headers on the PC case. It will disable the output on back panel audio connectors.

Pin	Assignment
1	MIC-in/ Stereo MIC-in R
2	Ground
3	Stereo MIC-in L
4	Audio power
5	Right line-out/ Speaker-out Right.
6	Right line-out/ Speaker-out Right
7	Reserved
8	Key
9	Left line-out/ Speaker-out Left
10	Left line-out/ Speaker-out Left
11	Right line-in (optional)
12	Right line-in (optional)
13	Left line-in (optional)
14	Left line-in (optional)
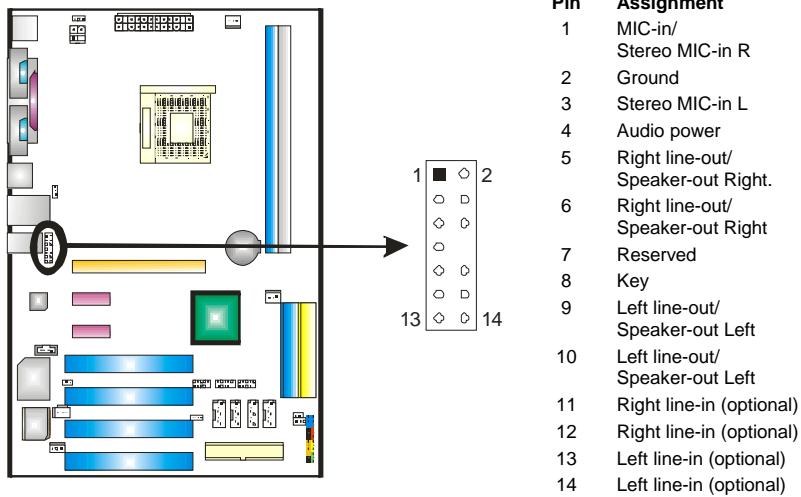
CD-ROM Audio-in Connector: JCDIN1

This connector allows user to connect the audio source from the variety devices, like CD-ROM, DVD-ROM, PCI sound card, PCI TV turner card etc..
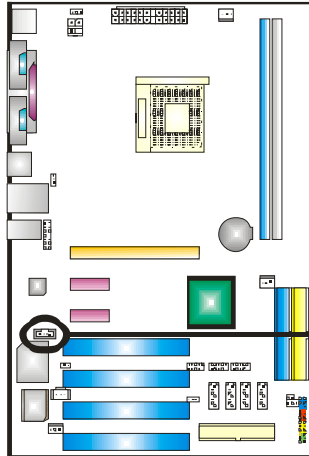
Pin	Assignment
1	Left channel input
2	Ground
3	Ground
4	Right channel input

4   1

Case Open Headers: JCI1

This connector allows system to monitor PC case open status. If the signal has been triggered, it will record to the CMOS and show the message on next boot-up.
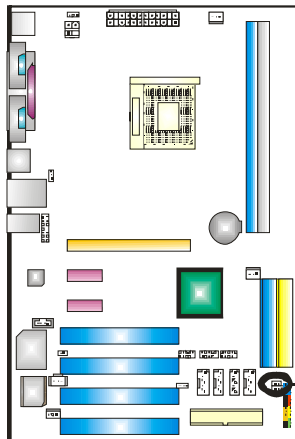
Pin	Assignment
1	Case open signal
2	Ground

JCI1

1   2

Digital Audio-out Connector: JSPDIF_OUT1

These connectors allow user to connect the PCI bracket SPDIF output or input header.
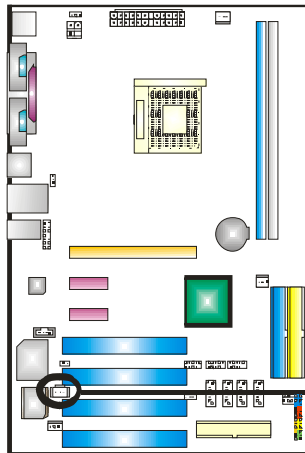
Pin	Assignment
1	+5V
2	SPDIF OUT
3	Ground

3   1

Headers for USB Ports at Front Panel: JUSB2~JUSB4

This connector allows user to connect additional USB cables at PC front panel, and also can be connected with internal USB devices, like USB card reader.
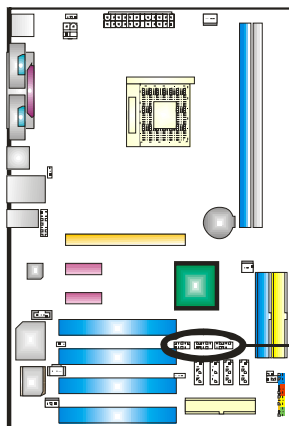
Pin	Assignment
1	+5V (fused)
2	+5V (fused)
3	USB-
4	USB-
5	USB+
6	USB+
7	Ground
8	Ground
9	Key
10	NC

JUSB2   2   10   JUSB4

1   9   JUSB3

Serial ATA Connectors: JSATA1~JSATA4

The motherboard has a SATA Controller in nForce4 4X SLI with 4 channels SATA interface, it satisfies the SATA 1.0 spec and with transfer rate of 1.5Gb/s.

Pin	Assignment
1	Ground
2	TX+
3	TX-
4	Ground
5	RX-
6	RX+
7	Ground
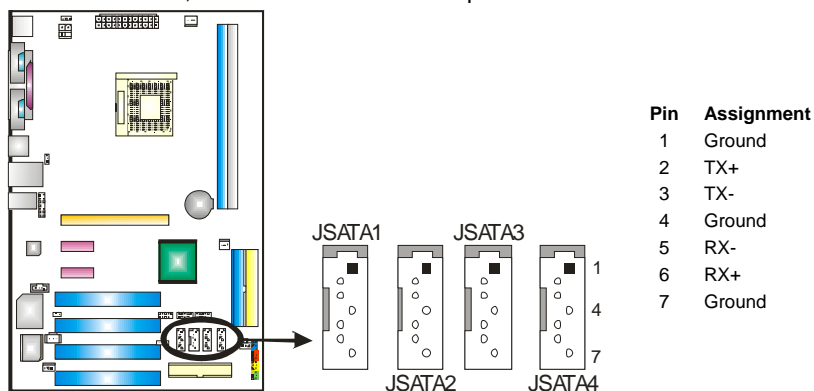
JCMOS1: Clear CMOS Header

By placing the jumper on pin2-3, it allows user to restore the BIOS safe setting and the CMOS data, please carefully follow the procedures to avoid damaging the motherboard.

Pin 1-2 close:
Normal Operation (Default).

Pin 2-3 close:
Clear CMOS data.
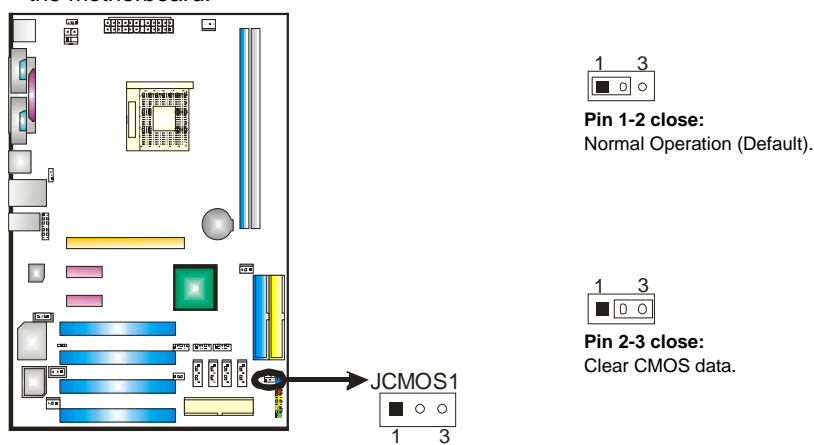
※ Clear CMOS Procedures:

1.   Remove AC power line.
2.   Set the jumper to "Pin 2-3 close".
3.   Wait for five seconds.
4.   Set the jumper to "Pin 1-2 close".
5.   Power on the AC.
6.   Reset your desired password or clear the CMOS data.

JPANEL1: Header for Front Panel Facilities

This 24-pin connector includes Power-on, Reset, HDD LED, Power LED, Sleep button, speaker and IrDA Connection. It allows user to connect the PC case's front panel switch functions.
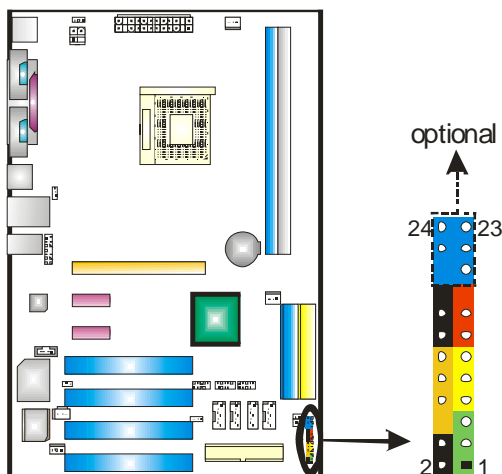
Pin	Assignment	Function	Pin	Assignment	Function
1	+5V	Speaker Connector	2	Sleep control	Sleep button
3	N/A	Speaker Connector	4	Ground	Sleep button
5	N/A	Speaker Connector	6	N/A	N/A
7	Speaker	Speaker Connector	8	Power LED (+)	Power LED
9	HDD LED (+)	Hard drive LED	10	Power LED (+)	Power LED
11	HDD LED (-)	Hard drive LED	12	Power LED (-)	Power LED
13	Ground	Reset button	14	Power button	Power-on button
15	Reset control	Reset button	16	Ground	Power-on button
17	N/A	IrDA Connector (optional)	18	Key	IrDA Connector (optional)
19	N/A	IrDA Connector (optional)	20	Key	IrDA Connector (optional)
21	+5V	IrDA Connector (optional)	22	Ground	IrDA Connector (optional)
23	IRTX	IrDA Connector (optional)	24	IRRX	IrDA Connector (optional)

CHAPTER 4: USEFUL HELP

4.1 AWARD BIOS BEEP CODE

Beep Sound	Meaning
One long beep followed by two short beeps	Video card not found or video card memory bad
High-low siren sound	CPU overheated System will shut down automatically
One Short beep when system boot-up	No error found during POST
Long beeps every other second	No DRAM detected or install

4.2 EXTRA INFORMATION

A. BIOS Update

After you fail to update BIOS or BIOS is invaded by virus, the Boot-Block function will help to restore BIOS. If the following message is shown after boot-up the system, it means the BIOS contents are corrupted.

```
BIOS ROM checksum error
Detecting floppy drive A media...
INSERT SYSTEM DISK AND PRESS ENTER
```
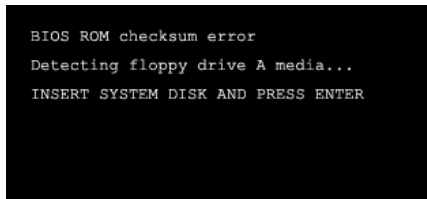
In this Case, please follow the procedure below to restore the BIOS:

1. Make a bootable floppy disk.
2. Download the Flash Utility "AWDFLASH.exe" from the Biostar website: www.biostar.com.tw
3. Confirm motherboard model and download the respectively BIOS from Biostar website.
4. Copy "AWDFLASH.exe" and respectively BIOS into floppy disk.
5. Insert the bootable disk into floppy drive and press Enter.
6. System will boo-up to DOS prompt.
7. Type *"Awdflash xxxx.bf/sn/py/r"* in DOS prompt.
8. System will update BIOS automatically and restart.
9. The BIOS has been recovered and will work properly.

B. CPU Overheated

If the system shutdown automatically after power on system for seconds, that means the CPU protection function has been activated.

When the CPU is over heated, the motherboard will shutdown automatically to avoid a damage of the CPU, and the system may not power on again.

In this case, please double check:
1. The CPU cooler surface is placed evenly with the CPU surface.
2. CPU fan is rotated normally.
3. CPU fan speed is fulfilling with the CPU speed.

After confirmed, please follow steps below to relief the CPU protection function.
1. Remove the power cord from power supply for seconds.
2. Wait for seconds.
3. Plug in the power cord and boot up the system.

Or you can:
1. Clear the CMOS data.
   (See "JCMOS1: Clear CMOS Header" section)
2. Wait for seconds.
3. Power on the system again.

4.3 *TROUBLESHOOTING*

Probable	Solution
1. No power to the system at all Power light don't illuminate, fan inside power supply does not turn on. 2. Indicator light on keyboard does not turn on.	1. Make sure power cable is securely plugged in. 2. Replace cable. 3. Contact technical support.
System inoperative. Keyboard lights are on, power indicator lights are lit, and hard drive is spinning.	Using even pressure on both ends of the DIMM, press down firmly until the module snaps into place.
System does not boot from hard disk drive, can be booted from optical drive.	1. Check cable running from disk to disk controller board. Make sure both ends are securely plugged in; check the drive type in the standard CMOS setup. 2. Backing up the hard drive is extremely important. All hard disks are capable of breaking down at any time.
System only boots from optical drive. Hard disk can be read and applications can be used but booting from hard disk is impossible.	1. Back up data and applications files. 2. Reformat the hard drive. Re-install applications and data using backup disks.
Screen message says "Invalid Configuration" or "CMOS Failure."	Review system's equipment. Make sure correct information is in setup.
Cannot boot system after installing second hard drive.	1. Set master/slave jumpers correctly. 2. Run SETUP program and select correct drive types. Call the drive manufacturers for compatibility with other drives.

CHAPTER 5: WARPSPEEDER™

5.1 INTRODUCTION

[WarpSpeeder™], a new powerful control utility, features three user-friendly functions including Overclock Manager, Overvoltage Manager, and Hardware Monitor.

With the Overclock Manager, users can easily adjust the frequency they prefer or they can get the best CPU performance with just one click. The Overvoltage Manager, on the other hand, helps to power up CPU core voltage and Memory voltage. The cool Hardware Monitor smartly indicates the temperatures, voltage and CPU fan speed as well as the chipset information. Also, in the About panel, you can get detail descriptions about BIOS model and chipsets. In addition, the frequency status of CPU, memory, AGP and PCI along with the CPU speed are synchronically shown on our main panel.

Moreover, to protect users' computer systems if the setting is not appropriate when testing and results in system fail or hang, [WarpSpeeder™] technology assures the system stability by automatically rebooting the computer and then restart to a speed that is either the original system speed or a suitable one.

5.2 SYSTEM REQUIREMENT

OS Support: Windows 98 SE, Windows Me, Windows 2000, Windows XP

DirectX: DirectX 8.1 or above. (The Windows XP operating system includes DirectX 8.1. If you use Windows XP, you do not need to install DirectX 8.1.)

5.3 INSTALLATION

1. Execute the setup execution file, and then the following dialog will pop up. Please click "Next" button and follow the default procedure to install.
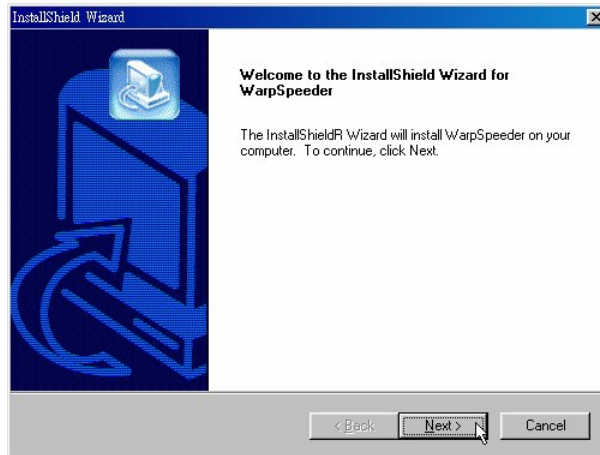
2. When you see the following dialog in setup procedure, it means setup is completed. If the "Launch the WarpSpeeder Tray Utility" checkbox is checked, the Tray Icon utility and [WarpSpeeder™] utility will be automatically and immediately launched after you click "Finish" button.
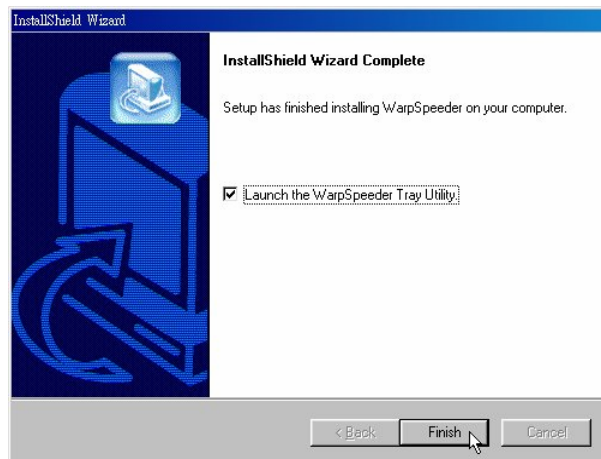
Usage:

The following figures are just only for reference, the screen printed in this user manual will change according to your motherboard on hand.

5.4   [WARPSPEEDER™] INCLUDES 1 TRAY ICON AND 5 PANELS

1. Tray Icon:

Whenever the Tray Icon utility is launched, it will display a little tray icon on the right side of Windows Taskbar.

This utility is responsible for conveniently invoking [WarpSpeeder™] Utility. You can use the mouse by clicking the left button in order to invoke [WarpSpeeder™] directly from the little tray icon or you can right-click the little tray icon to pop up a popup menu as following figure. The "Launch Utility" item in the popup menu has the same function as mouse left-click on tray icon and "Exit" item will close Tray Icon utility if selected.

2. *Main Panel*

If you click the tray icon, [WarpSpeeder™] utility will be invoked. Please refer to the following figure; the utility's first window you will see is Main Panel.

Main Panel contains features as follows:

a. Display the CPU Speed, CPU external clock, Memory clock, AGP clock, and PCI clock information.

b. Contains About, Voltage, Overclock, and Hardware Monitor Buttons for invoking respective panels.

c. With a user-friendly Status Animation, it can represent 3 overclock percentage stages:

Man walking→overclock percentage from 100% ~ 110 %

Panther running→overclock percentage from 110% ~ 120%

Car racing→overclock percentage from 120% ~ above
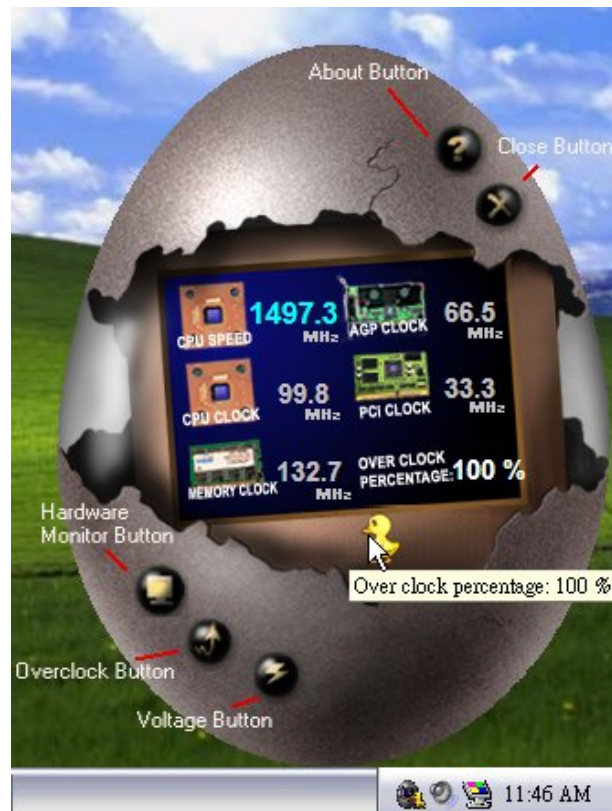
3.   Voltage Panel

Click the Voltage button in Main Panel, the button will be highlighted and the Voltage Panel will slide out to up as the following figure.

In this panel, you can decide to increase CPU core voltage and Memory voltage or not. The default setting is "No". If you want to get the best performance of overclocking, we recommend you click the option "Yes".

4. Overclock Panel

Click the Overclock button in Main Panel, the button will be highlighted and the Overclock Panel will slide out to left as the following figure.


Overclock Panel contains the these features:

a.	"–3MHz button", "-1MHz button", "+1MHz button", and "+3MHz button": provide user the ability to do real-time overclock adjustment.

Warning:

Manually overclock is potentially dangerous, especially when the overclocking percentage is over 110 %. We strongly recommend you verify every speed you overclock by click the Verify button. Or, you can just click Auto overclock button and let [WarpSpeeder™] automatically gets the best result for you.

b.	"Recovery Dialog button": Pop up the following dialog. Let user select a restoring way if system need to do a fail-safe reboot.
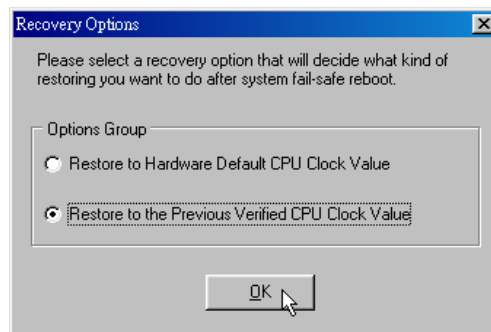
c.   "Auto-overclock button": User can click this button and [WarpSpeeder™] will set the best and stable performance and frequency automatically. [WarpSpeeder™] utility will execute a series of testing until system fail. Then system will do fail-safe reboot by using Watchdog function. After reboot, the [WarpSpeeder™] utility will restore to the hardware default setting or load the verified best and stable frequency according to the Recovery Dialog's setting.

d.   "Verify button": User can click this button and [WarpSpeeder™] will proceed a testing for current frequency. If the testing is ok, then the current frequency will be saved into system registry. If the testing fail, system will do a fail-safe rebooting. After reboot, the [WarpSpeeder™] utility will restore to the hardware default setting or load the verified best and stable frequency according to the Recovery Dialog's setting.

Note:

Because the testing programs, invoked in Auto-overclock and Verify, include DirectDraw, Direct3D and DirectShow tests, the DirectX 8.1 or newer runtime library is required. And please make sure your display card's color depth is High color (16 bit) or True color(24/32 bit) that is required for Direct3D rendering.

5.   Hardware Monitor Panel

Click the Hardware Monitor button in Main Panel, the button will be highlighted and the Hardware Monitor panel will slide out to left as the following figure.

In this panel, you can get the real-time status information of your system. The information will be refreshed every 1 second.

6. About Panel

Click the "about" button in Main Panel, the button will be highlighted and the About Panel will slide out to up as the following figure.

In this panel, you can get model name and detail information in hints of all the chipset that are related to overclocking. You can also get the mainboard's BIOS model and the Version number of [WarpSpeeder™] utility.
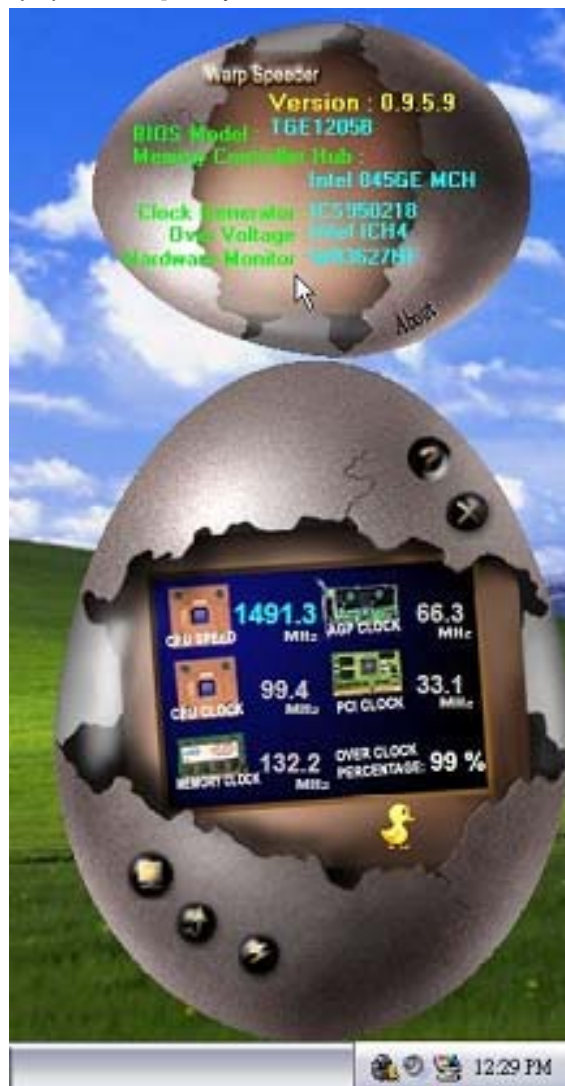
Note:

Because the overclock, overvoltage, and hardware monitor features are controlled by several separate chipset, [WarpSpeeder™] divide these features to separate panels. If one chipset is not on board, the correlative button in Main panel will be disabled, but will not interfere other panels' functions. This property can make [WarpSpeeder™] utility more robust.