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CHAPTER 1: INTRODUCTION

1.1 P4TAW EXTREME FEATURES

A. Hardware

CPU

- Supports single Pentium 4 processor with the 1-MB L2 cache and Celeron D with the 256K L2 cache in the 90 nm processes in an LGA 775 package.
- Intel Platform Compatibility Guide 04B
- Front side bus at the following frequency ranges:
 - 533 MT/s (133 MHz core Clock)
 - 800 MT/s (200 MHz Core Clock)
- Supports Hyper-Threading Technology.

Chipset

- North Bridge: Intel 925X.
- South Bridge: Intel ICH6RW.

Main Memory

- Supports DDR2 400/533/667.
- Unbuffered DIMMs only.
- Supports 256-Mb, 512-Mb, 1-Gb DRAM Densities for x8 and x16 non-ECC DDR2 devices. (For 4 Banks Support, each DDR2 is up to 512-Mb densities; For 8 Bank Support, only for DDR2 1-Gb devices)
- Maximum DRAM space is up to 4GB.
- Minimum memory capacity is 256MB total. Assuming single channel mode and 256Mb density DIMMs used.
- Maximum memory bandwidth:
 - 4.2GB/s in single channel or dual channel asymmetric mode.
 - 8.5GB/s in dual channel interleaved mode assuming DDR2 533 MHz
- ECC memory is not supported.
- Registered DIMMs are not supported.
- Support Intel Performance Acceleration Technology (PAT)

Super I/O

- Chip: ITE IT8712.
- 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

P4TAW Extreme

Slots

- 3 32-bit PCI bus master slots.
- 2 PCI-EXPRESSx1 slots.
 - Bandwidth 250MB/s per direction (Transmit or Receive); 500MB/s Totally
 - PCI Express supports a raw bit-rate of 2.5Gb/s on the data pins.
 - 2X bandwidth over the traditional PCI architecture.
- 1 PCI-ESPRESSx16 slot.
 - Maximum theoretical realized bandwidth of 4GB/s simultaneously per direction, for an aggregate of 8GB/s totally.
- SLR slot:
 - BIOSTAR Home Gate Way Slot used with BIOSTAR SOHO Router Card

On Board IDE

- Supports 1 IDE disk drives.
- Supports PIO Mode 5, Bride Mode and Ultra DMA 33/66/100 Bus Master Mode.

IDE RAID Chip

- Chip: ITE8212
- Supports 4 IDE disk drives.
 - Integrated RAID 0, RAID 1 and RAID 0+1 for RAID1/RAID2 slot.
- Supports PIO Mode 5, Bride Mode and Ultra DMA 33/66/100 Bus Master Mode.

Serial ATA

- Supports 4 Serial ATA (SATA) ports.
 - Intel Advanced Host Controller (AHCI).
 - Integrated RAID 0, RAID 1 and RAID 0+1 capabilities.
- Compliant with SATA 1.0 specification
- Data transfer rates up to 1.5 Gb/s

PCI Express Gigabit LAN

- Chip: BCM5751.
- Connects directly to a host using PCI Express x 1 system interface with 5Gb/s Bandwidth
- Supports 10Mb/s, 100Mb/s and 1Gb/s auto-negotiation.
- Supports ACPI power management

Intel Integrated Wireless Access Point

- Chip: ICH6RW.
- Used with supported wireless cards.

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IEEE 1394A Chip

- Chip: VIA VT6307.
- Support 2 ports with transfer up to 400Mb/s.

On Board High Definition Audio Sound Codec

- Chip: CMI9880/ALC880E
- Compliant with High Definition Audio specification.
- Supports 8 channels Audio Output
 - SNR > 95dB meet the consumer entertainment industry formats.
 - 192KHz with 24bits
 - 5 channel Smart Jack
 - Dolby Digital Interactive Content Encoder (Dolby DDICE)

On Board AC'97 2.3 Codec (Optional)

- Chip: CMI9761A
- Compliant with AC'97 Version 2.3 specification.
- AC'97 interface.
- Supports 6 channels.

On Board Peripherals

a. Rear side

- 1 parallel port. (SPP/EPP/ECP mode)
- 1 RJ-45 LAN jack (optional).
- 1 1394A Firewire port
- 2 serial ports.
- 4 USB2.0 ports.
- 6 Audio ports for 8 channel audio with SPDIF Out in vertical position.
- Supports PS/2 mouse and PS/2 keyboard.

b. Front Side

- 1 floppy port supports 2 FDDs with 360K, 720K, 1.2M, 1.44M and 2.88Mbytes.
- 1 front audio header.
- 1 S/PDIF In header.
- 1 1394A Firewire port.
- 4 USB2.0 ports.

Dimensions

- ATX Form Factor: 24.5 x 29.3cm (W x L)

P4TAW Extreme

B. BIOS & Software

BIOS

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

Software

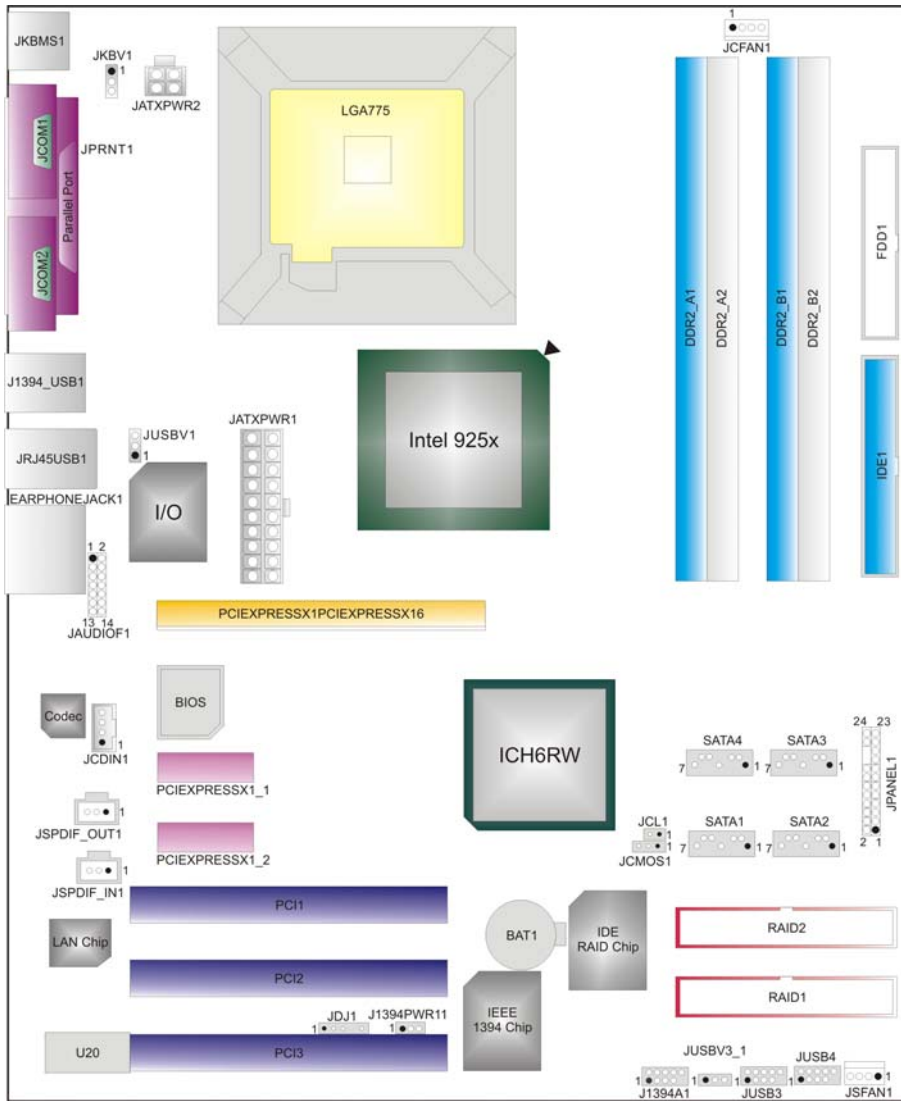
- Supports Warpspeeder™, 9th Touch™, WINFLASHER™ and FLASHER™.
- Offers the highest performance for Windows 98 SE, Windows 2000, Windows Me, Windows XP, SCO UNIX etc.

1.2 PACKAGE CHECKLIST

- FDD Cable X 1
- Fully Setup Driver CD X 1
- HDD Cable X 1
- IEEE 1394 Cable X 1 (optional)
- Rear I/O Panel for ATX Case X 1
- S/PDIF Cable X 1 (optional)
- Serial ATA Cable X 1 (optional)
- Serial ATA Power Switch Cable X 1 (optional)
- User's Manual X 1
- USB 2.0 Cable X1 (optional)

P4TAW Extreme

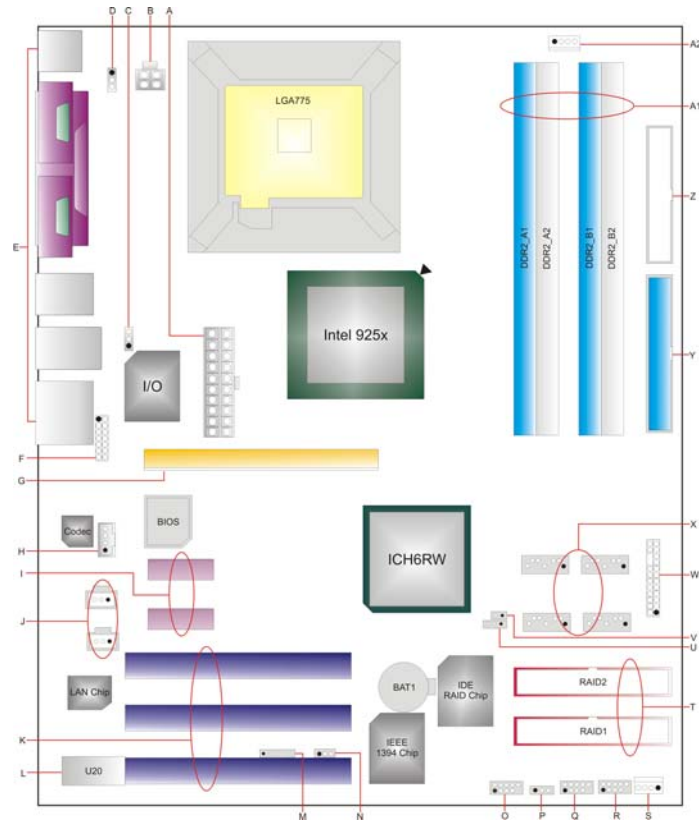
1.3 LAYOUT OF P4TAW EXTREME



Note: ● represents the 1st pin.

P4TAW Extreme

1.4 COMPONENTS OF P4TAW EXTREME



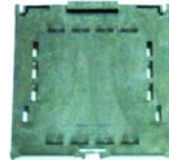
- | | |
|--|--|
| A. JATXPWR1: ATX Power Connector | O. JUSB3: Front USB Header |
| B. JATXPWR2: ATX Power Connector | P. JUSB4: Front USB Header |
| C. JUSBV1: Power Source Selection for USB | Q. JUSBV3_1: Power Source Selection for USB |
| D. JKBV1: Power Source Selection for Keyboard/Mouse | R. J1394A1: Front 1394 Header |
| E. Back Panel Connectors | S. JSFAN1: System Fan Header |
| F. JAUDIOF1: Front Audio Header | T. RAID1-2: Raid Connectors |
| G. PCI-EX16: PCI Express slot | U. JPANEL1: Front Panel Connector |
| H. JCDIN1: CD-ROM Audio-In Header | V. JCMOS1: Clear CMOS Header |
| I. PCI-EX1_1~2: PCI Express slot. | W. SATA1-4: Serial ATA Connectors |
| J. JSPDIF_OUT1/JSPDIF_IN1: Digital Audio Connector | X. JCL1: Case Open Header. |
| K. PCI1~3: Peripheral component interconnect slots. | Y. IDE1: Hard Disk Connector. |
| L. U20: LAN card/Router card slot. | Z. FDD1: Floppy Disk Connector |
| M. JDJ1: Audio DJ Header | A1. DDR2A1-2/DDR2B1-2: DDR2 DIMM Modules |
| N. 1394PWR1: Selection 1394 Power Header | A2. JCFAN1: CPU Fan Connector |

CHAPTER 2: HARDWARE INSTALLATION

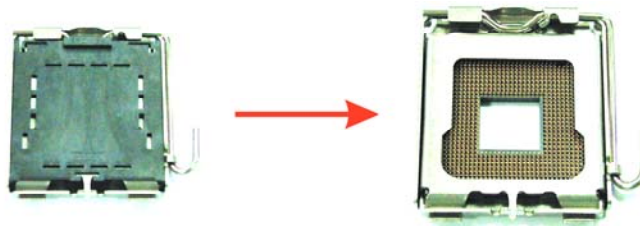
2.1 CENTRAL PROCESSIN UNIT (CPU)

Special Notice:

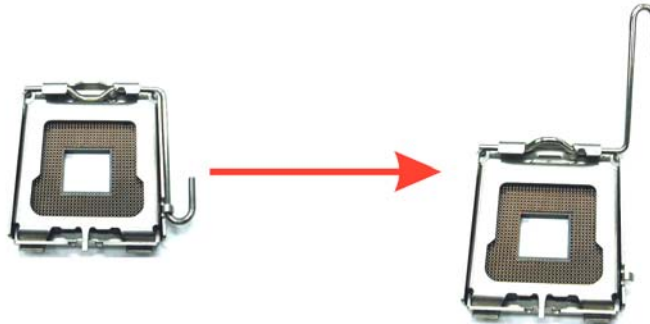
Remove Pin Cap before installation, and make good preservation for future use. When the CPU is removed, cover the Pin Cap on the empty socket to ensure pin legs won't be damaged.



Pin Cap

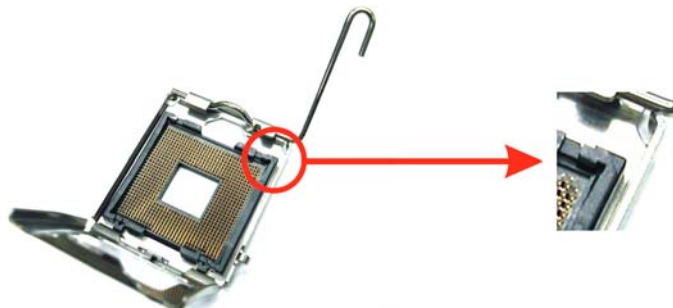


Step 1: Pull the lever sideways away from the socket and then raise the lever up to a 90-degree angle.



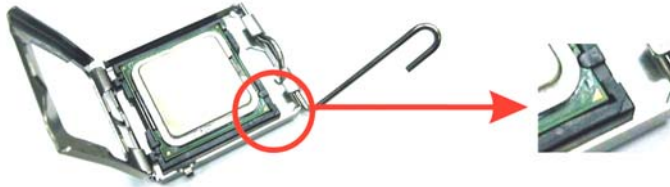
Step 2: Look for the black cut edge on socket, and the white dot on CPU should point wards this black cut edge. The CPU will fit only in the correct orientation.

Step 2-1:



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Step 2-2:

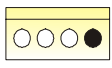


Step 3: Hold the CPU down firmly, and then close the lever to complete the installation.




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.

CPU FAN Header: JCFAN1

 1 JCFAN1	Pin	Assignment
	1	Ground
	2	Power
	3	FAN RPM rate sense
4	Smart Fan Control	

System Fan Header: JSFAN1

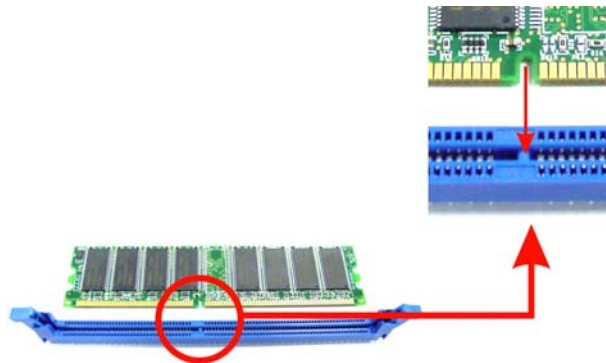
 1 JSFAN1	Pin	Assignment
	1	Ground
	2	Smart Fan Control
3	FAN RPM rate sense	

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.

2.2 MEMORY 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.



Note:

To assure the system safety, if you need to change DDR2 modules, firstly, please unplug the 12-pin power cable with the power connector, and then you can change the modules. Afterwards, plug in the cable the power connector again, and finally you can boot up the system.

2.3 CONNECTORS AND 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

The motherboard has a 32-bit Enhanced PCI IDE Controller that provides PIO Mode 0~5, Bus Master, and Ultra DMA 33/ 66/ 100 functionality. It has two HDD connectors IDE1 (primary) and IDE2 (secondary).

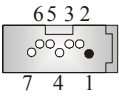
The IDE connectors can connect a master and a slave drive, so you can connect up to four hard disk drives. The first hard drive should always be connected to IDE1.

Peripheral Component Interconnect Slots: PCI 1~3

This motherboard is equipped with 5 standard PCI slots. PCI stands for Peripheral Component Interconnect, and it is a bus standard for expansion cards. This PCI slot is designated as 32 bits.

Serial ATA Connector: SATA1~4

The motherboard has a PCI to SATA Controller with 2 channels SATA interface, it satisfies the SATA 1.0 spec and with transfer rate of 1.5Gb/s.

 SATA1~4	Pin	Assignment	Pin	Assignment
	1	Ground	2	TX+
	3	TX-	4	Ground
	5	RX-	6	RX+
	7	Ground		

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2.4 HEADERS & JUMPERS

2.4.1 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”.

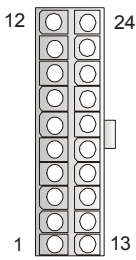
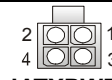


2.4.2 Detail Settings

Power Connectors: JATXPWR1/JATXPWR2



JATXPWR1: This connector allows user to connect 20-pin power connector on the ATX power supply.

JATXPWR2: By connecting this connector, it will provide +12V to CPU power circuit.

 <p>JATXPWR1</p>	Pin	Assignment	Pin	Assignment
	1	+3.3V	13	+3.3V
	2	+3.3V	14	-12V
	3	Ground	15	Ground
	4	+5V	16	PS_ON
	5	Ground	17	Ground
	6	+5V	18	Ground
	7	Ground	19	Ground
	8	PW_OK	20	-5V
	9	Standby Voltage +5V	21	+5V
	10	+12V	22	+5V
	11	+12V	23	+5V
12	2 x 12 Detect	24	Ground	
 <p>JATXPWR2</p>	Pin	Assignment	Pin	Assignment
	1	+12V	3	Ground
	2	+12v	4	Ground

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Power Source Selection for Keyboard/Mouse: JKBV1

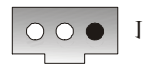
JKBV1	Assignment	Description
 Pin 1-2 close	+5V	+5V for keyboard and mouse
 Pin 2-3 close	+5V Standby Voltage	PS/2 mouse and PS/2 keyboard are powered with +5V standby voltage.

Note:

In order to support this function “Power-on system via keyboard and mouse”, “JKBV1” jumper cap should be placed on Pin 2-3.


Digital Audio Connector: JSPDIF_OUT1 (optional)

This connector allows user to connect the PCI bracket SPDIF output header.



 JSPDIF_OUT1	Pin	Assignment
	1	+5V
	2	SPDIF_OUT
	3	Ground

Digital Audio Connector: JSPDIF_IN1 (optional)

This connector allows user to connect the PCI bracket SPDIF input header.

 JSPDIF_IN1	Pin	Assignment
	1	+5V
	2	SPDIF_IN
	3	Ground

Power Source Selection for USB: JUSBV1/JUSBV3_1

JUSBV1/ JUSBV3_1	Assignment	Description
 Pin 1-2 close	+5V	JUSBV1: +5V for USB at the JUSB1 connector port. JUSBV3_1: +5V for USB at the JUSB 2/3 connector ports.
 Pin 2-3 close	+5V standby Voltage	JUSBV1: JUSB1 port powered with standby voltage of 5V. JUSBV3_1: JUSB2/3 ports powered with standby voltage of 5V.

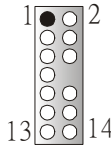
Note:

In order to support this function “Power-o system via USB device,” “JUSBV1/ JUSBV3_1” jumper cap should be placed on Pin 2-3 individually.

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Front Panel Audio Header: JAUDIOF1

This header allows user to connect the front audio out put cable with the PC front panel. It will disable the output on back panel audio connectors.



			
Pin	Assignment	Pin	Assignment
1	Mic in/center	2	Ground
3	Mic power/Bass	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/Rear speaker Right	12	Right line in/Rear speaker Right
13	Left line in/Rear speaker Left	14	Left line in/Rear speaker Left

CD-ROM Audio-in Header: 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..

 <p>JCDIN1</p>	Pin	Assignment
	1	Left channel input
	2	Ground
	3	Ground
	4	Right channel input

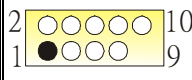
Power Source for 1394: J1394V1

J1394V1	Assignment	Description
 Pin 1-2 close	+3.3V SB	+3.3V SB for 1394 chipset.
 Pin 2-3 close	+3.3V	+3.3V for 1394 chipset. (Default)

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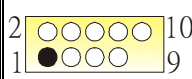
Front 1394 Header: J1394A1

This connector allows user to connect the front 1394 port for digital image devices.

 <p>J1394A1</p>	Pin	Assignment	Pin	Assignment
	1	A+	2	A-
	3	Ground	4	Ground
	5	B+	6	B-
	7	+12v	8	+12V
	9	Key	10	Ground

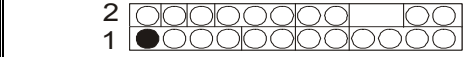
Front USB Header: JUSB3~4

This header allows user to connect additional USB cable on the PC front panel, and also can be connected with internal USB devices, like USB card reader.

 <p>JUSB3~4</p>	Pin	Assignment	Pin	Assignment
	1	+5V (fused)	2	+5V (fused)
	3	USB-	4	USB-
	5	USB+	6	USB+
	7	Ground	8	Ground
	9	Key	10	NC

Front Panel Connector: JPANEL1



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.

 <p>JPANEL1</p>					
Pin	Assignment	Function	Pin	Assignment	Function
1	+5V	Speaker Connector	2	Sleep control	Sleep button
3	N/A		4	Ground	
5	N/A		6	N/A	N/A
7	Speaker		8	Power LED (+)	Power LED
9	HDD LED (+)	10	Power LED (+)		
11	HEE LED (-)	12	Power LED (-)		
13	Ground	Reset button	14	Power button	Power-on button
15	Reset control		16	Ground	
17	N/A	IrDA Connector	18	Key	IrDA Connector
19	N/A		20	Key	
21	+5V		22	Ground	
23	IRTX		24	IRRX	

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Close CMOS Header: JCMOS1

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.


JCMOS1		Assignment
3	 1	Pin 1-2 close Normal O\operation (Default).
3	 1	Pin 2-3 close Clear CMOS data.

※ Clear CMOS Procedures:

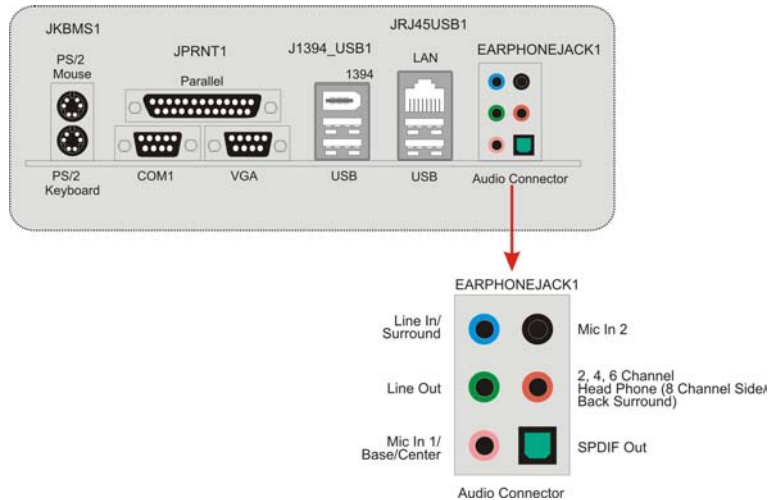
1. Remove AC power line.
2. Set the jumper to “Pin 2-3 close”.
3. Wait for five seconds.
4. Set the jumper to “Pin 1-2 close”.
5. Power on the AC.
6. Reset your desired password or clear the CMOS data.

Case Open Header: 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.

JCI1		Pin	Assignment
2	 1	1	Case open signal
		2	Ground

Back Panel Connectors



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2.5 AWARD BIOS BEEP CODE

Beep	Meaning
One long beep followed by two short beeps	Video card not found or video card memory bad
High-low siren sound	1. CPU overheated 2. 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

2.6 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 CD-ROM 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 CD-ROM. 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 3: WARPSPEEDER™



3.1 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.

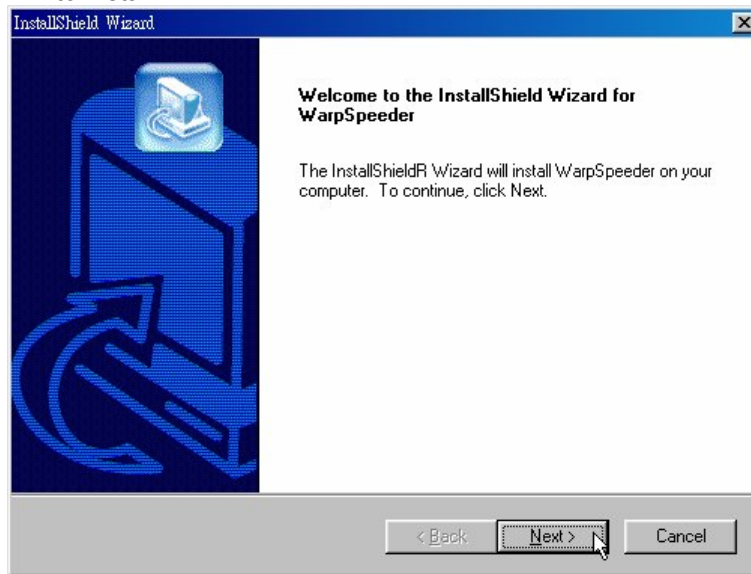
Moreover, to protect users' computer systems if the setting is not appropriate when testing and results in system fail or hang, [WarpSpeeder™] technology assures the system stability by automatically rebooting the computer and then restart to a speed that is either the original system speed or a suitable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

3.2 SYSTEM REQUIREMENT

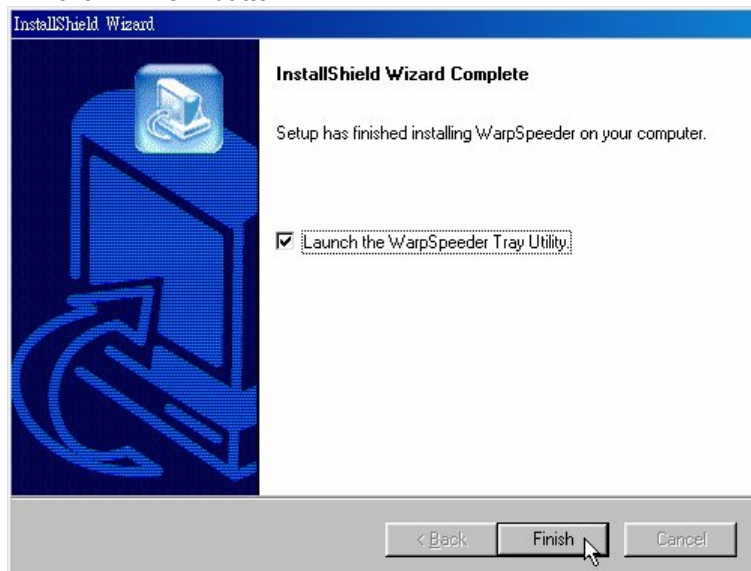
OS Support: Windows 98 SE, Windows Me, Windows 2000, Windows XP
DirectX: DirectX 8.1 or above. (The Windows XP operating system includes DirectX 8.1. If you use Windows XP, you do not need to install DirectX 8.1.)

3.3 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.



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Usage:

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

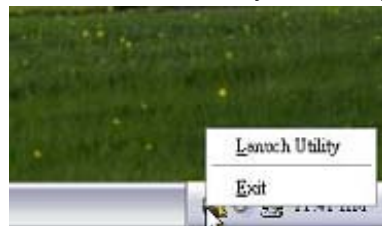
[WarpSpeeder™] includes 1 tray icon and 5 panels:

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.



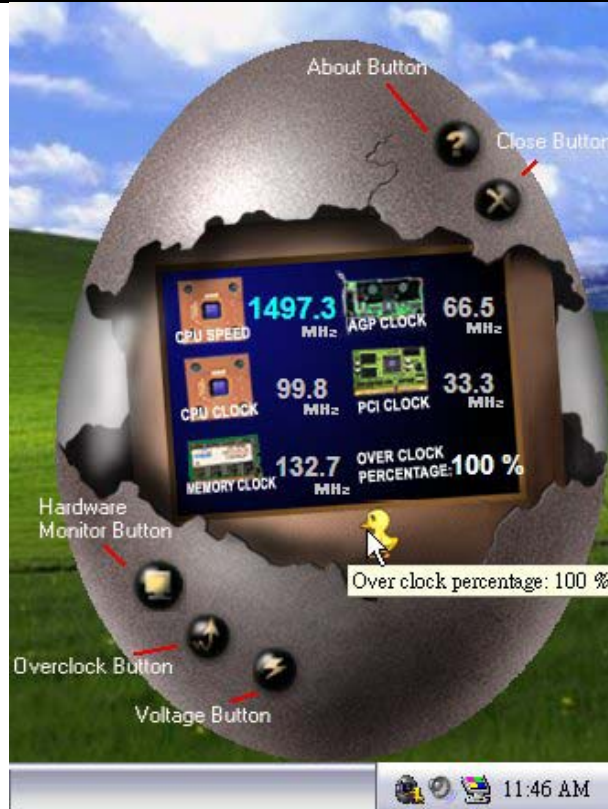
2. Main Panel

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

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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".

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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.

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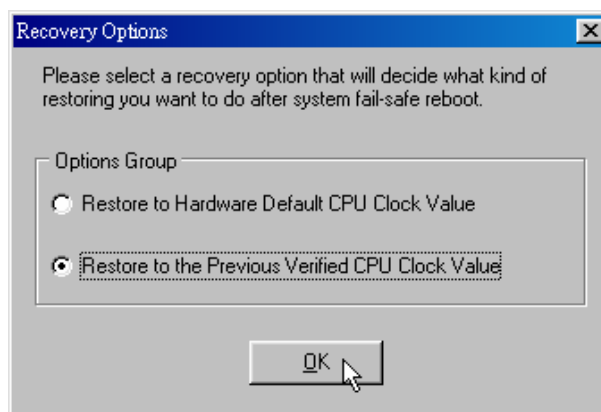
Overclock Panel contains the these features:

- “-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.

- “Recovery Dialog button”: Pop up the following dialog. Let user select a restoring way if system need to do a fail-safe reboot.



- “Auto-overclock button”: User can click this button and [WarpSpeeder™] will set the best and stable performance and frequency automatically. [WarpSpeeder™] utility will

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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.



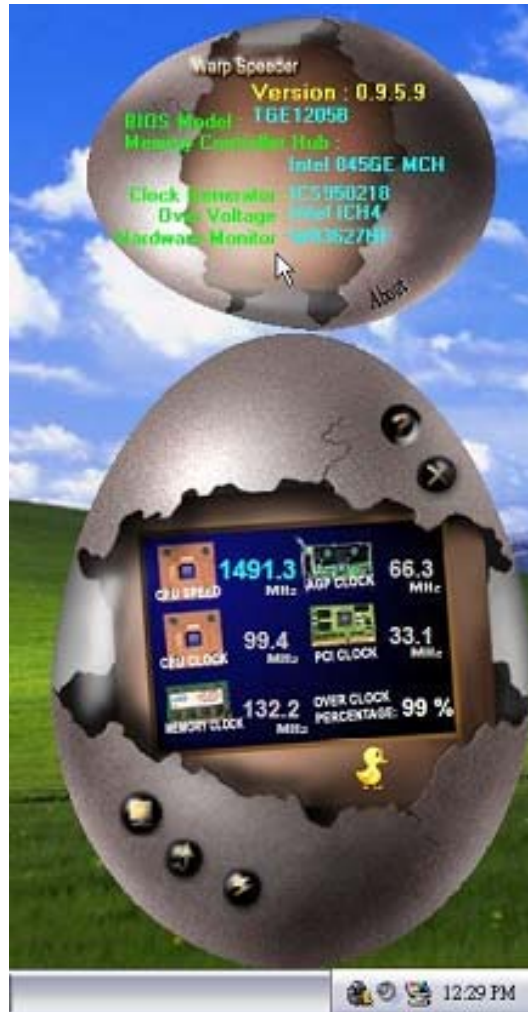
6. About Panel

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

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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.

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07/12/2004