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Chapter 1: Introduction

1.1 I86PE-A7 FEATURES

A. Hardware

CPU

- Provides Socket 775.
- Supports Intel Pentium 4 processor up to 3.6GHz.
- Supports Intel Celeron D processor.
- Supports Hyper-Threading Technology.
- Front side bus at the following frequency ranges:
 - 533MT/s (133 MHz Core Clock)
 - 800MT/s (200 MHz Core Clock)

Chipset

- North Bridge: Intel 865PE.
- South Bridge: Intel ICH5.

Memory

- Supports 1 or 2 64bit DDR data channels with 1 or 2 DIMMs.
- Supports 4 band devices, dual channel DDR 266/333/400MHz.
- Supports 128/256/512MB and 1GB DDR technologies.
- Supports only x8/x16 DDR devices. (Does not support registered DIMMs.)
- Available bandwidth:
 - Single Channel: DDR400 up to 3.2GB/s for single channel
 - Dual Channel: DDR400 up to 6.4GB/s.
- Maximum memory size is up to 4GB, without ECC. (Following table is only for reference.)

DIMM Socket Location	DDR Module	Total Memory Size
DDRA1	64MB/128MB/256MB/512MB/1GB *1	Max is 4GB.
DDRA2	64MB/128MB/256MB/512MB/1GB *1	
DDRB1	64MB/128MB/256MB/512MB/1GB *1	
DDRB2	64MB/128MB/256MB/512MB/1GB *1	

Super I/O

- Chip: ITE IT8712F
- Provides the most commonly used legacy super I/O functionality.

I86PE-A7

- Environment Control initiatives:
 - H/W Monitor,
 - Fan Speed Controller (optional),
 - ITE “Smart Guardian” function.

10/100 LAN

- Chip: RTL8100C
- Supports 10/100Mb/s auto-negotiation operation.
- Half/Full duplex capability.
- Supports ACPI, PCI power management.

Slot

- 5 x 32bit PCI bus master slots.
- 1 x AGP4X/8X slot.

Onboard IDE

- Supports 4 IDE disk drives.
- Supports PIO mode 0~4, Bus Master, and Ultra DMA 33/66/100 function.

Serial ATA

- Integrated in SB ICH5.
- Supports 2 serial ATA (SATA) ports.
 - Data transfer rates up to 150 MB/s.
 - Complaints with SATA Version 1.0 specification.

Onboard AC'97 Sound Codec

- Chip: ALC655
- Support 6 channels.
- Supports S/PDIF-Out/In function.
- Compliant with AC'97 Version 2.3 specification.

Front Side On-board Peripherals

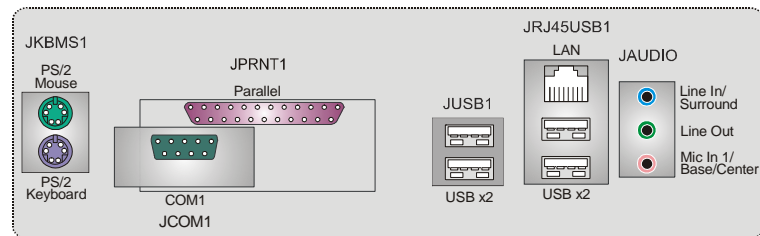
- 1 front panel header supports front panel facilities.
- 1 S/PDIF-Out connector supports digital audio out function (optional).
- 1 S/PDIF-In connector supports digital audio in function (optional).
- 1 CD-in connector supports 1 CD-ROM audio-in device.
- 1 front audio header supports front panel audio function.
- 1 chassis open header supports PC case-opened warning function.
- 1 Floppy port supports 2 FDD with 360K, 720K, 1.2M, 1.44M and 2.88Mbytes.

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- 2 USB headers support 4 USB 2.0 ports.
- 2 IDE connectors support 4 hard disk devices.
- 2 serial ATA connectors support 2 SATA devices.

Rear Side Connectors

- 4 USB 2.0 ports.
- 1 serial port.
- 1 parallel port.
- 1 RJ-45 LAN jack.
- 1 PS/2 Mouse & Keyboard port.
- 1 vertical audio port including 1 line-in connector, 1 line-out connector, and 1 MIC-in connector.



B. BIOS & Software

BIOS

- Award legal BIOS.
- Supports APM1.2, ACPI, and USB functions.

Software

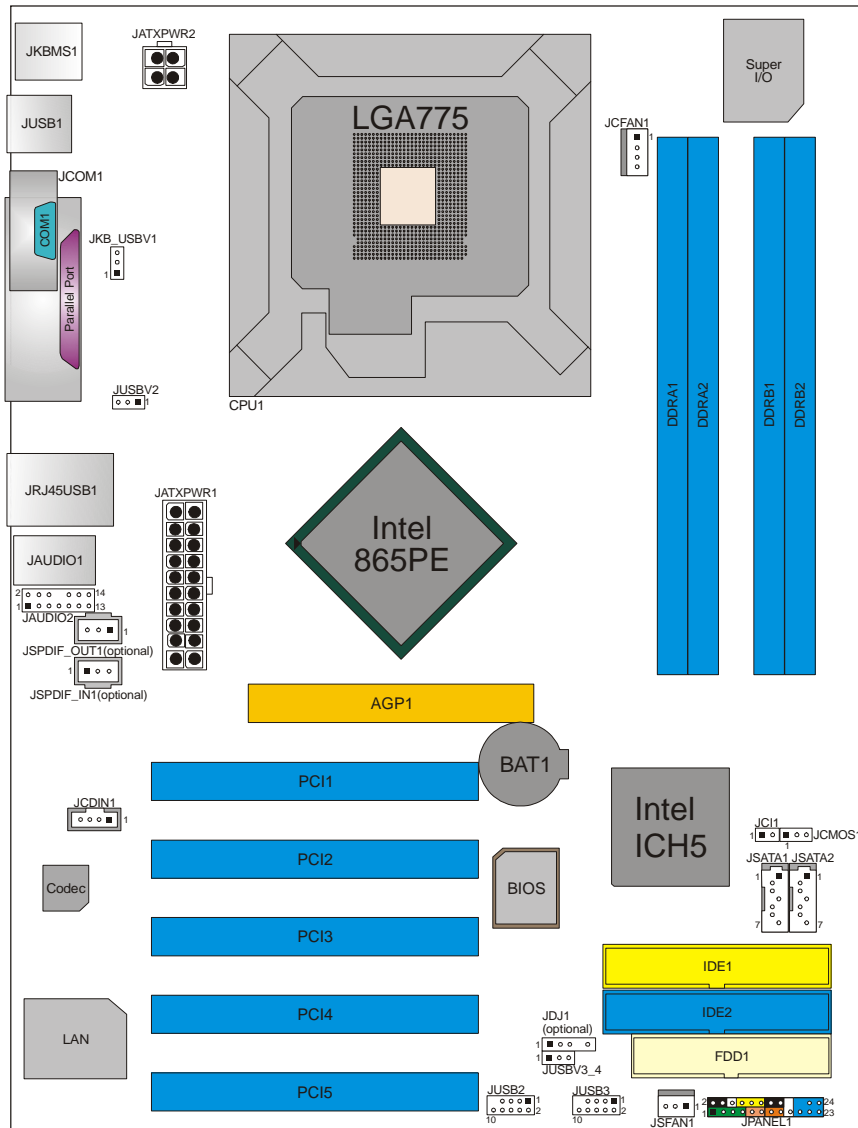
- Supports 9th Touch™, Flasher™, WinFlasher™, and Warpspeeder™.
- Offers the highest performance for Windows 98, Windows NT, Windows 2000, Windows ME, Windows XP, Red-Hat Linux, and UNIX series.


1.2 PACKAGE LIST

- ⊕ FDD cable x1
- ⊕ HDD cable x1
- ⊕ User's Manual x1
- ⊕ Fully Setup Driver CD x1
- ⊕ USB 2.0 cable x1 (optional)
- ⊕ Serial ATA cable x2 (optional)
- ⊕ S/PDIF out cable x1 (optional)
- ⊕ Rear I/O panel for ATX case x1

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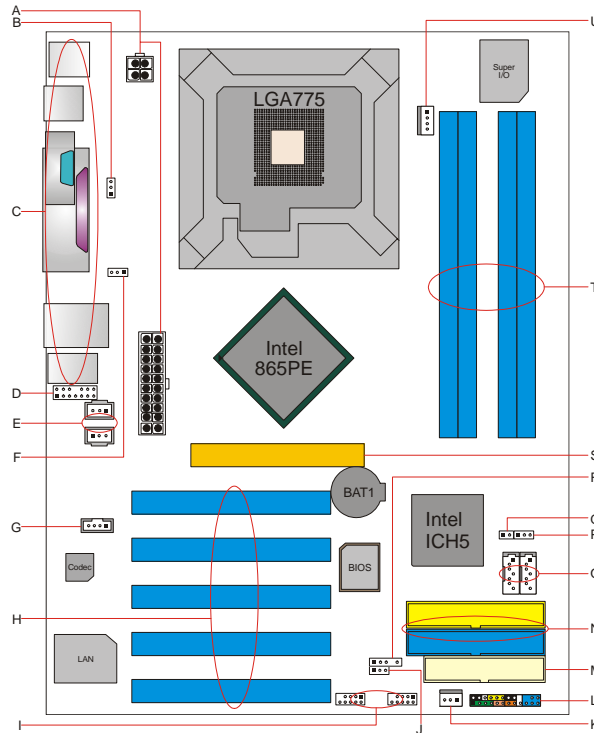
1.3 I86PE-A7 LAYOUT



Note:  represents the 1st pin.

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1.4 I86PE-A7 COMPONENTS



- | | |
|---|---|
| A. JATXPWR1/2: ATX power source headers. | L. JPANEL1: Front panel facilities header. |
| B. JKB_USBV1: Power source header for JKBMS1 & JUSB1. | M. FDD1: Floppy disk connector. |
| C. Rear side connectors (back side). | N. IDE1/2: Hard disk connectors. |
| D. JAUDIO2: Front panel audio-out header. | O. JSATA1/2: On-board SATA connectors. |
| E. JSPDIF_OUT1/JSPDIF_IN1: Digital audio-out/in connectors. (Both are optional.) | P. JCMOS1: Clear CMOS header. |
| F. JUSBV2: Power source header for JRJ45USB1. | Q. JCI1: Chassis open message header. |
| G. JCDIN1: CD-ROM audio-in connector. | R. JDJ1: Audio DJ header (optional). |
| H. PC11~5: Peripheral Component Interconnect slots. | S. AGP1: Accelerated Graphics Port slot. |
| I. JUSB2/3: Front USB ports headers. | T. DDRA1/A2/B1/B2: DDR Memory modules. |
| J. JUSBV3_4: Power source header for JUSB2/3. | U. JCFAN1: CPU fan header. |
| K. JSFAN1: System fan header. | |

Chapter 2: Hardware Installation

2.1 CENTRAL PROCESSING 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.

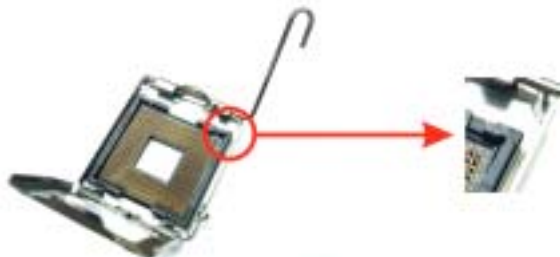


Step 1: Pull the lever sideways away from the socket and then raise the lever up to a 90-degree angle.



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.

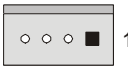


Step 4: Put the CPU Fan on the CPU and buckle it. Connect the CPU FAN power cable to the JCFAN1. This completes the installation.


2.2 FAN HEADERS

These fan headers support cooling-fans built in the computer. The fan wiring and plug may be different according to the fan manufacturer. Connect the fan cable to the connector while matching the black wire to pin#1.

CPU FAN Header: JCFAN1

 JCFAN1	Pin	Assignment
	1	Ground
	2	+12V
	3	FAN RPM rate sense
	4	Smart Fan Control

System Fan Header: JSFAN1

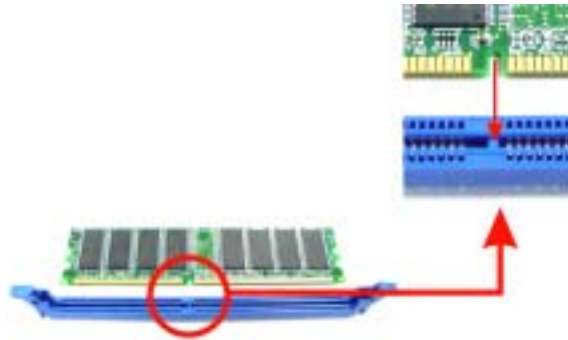
 JSFAN1	Pin	Assignment
	1	Ground
	2	+12V
	3	FAN RPM rate sense

Note:

The JCFAN1 and JSFAN1 support 4-pin and 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 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 DDR modules, firstly, please unplug the 20-pin 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.

2.4 CONNECTORS AND SLOTS

AGP1: Accelerated Graphics Port Slot

Your monitor will attach directly to that video card. This motherboard supports video cards for PCI slots, but it is also equipped with an Accelerated Graphics Port (AGP). An AGP card will take advantage of AGP technology for improved video efficiency and performance, especially with 3D graphics.

PCI1~PCI5: Peripheral Component Interconnect Slots

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.

IDE1/IDE2: Hard Disk Connectors

The motherboard has a 32-bit Enhanced PCI IDE Controller that provides PIO Mode 0~4, Bus Master, and Ultra DMA 33/ 66/ 100 functionality. It has two HDD connectors IDE1 (primary) and IDE2 (secondary).

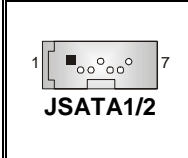
The IDE connectors can connect a master and a slave drive, so you can connect up to four hard disk drives. The first hard drive should always be connected to IDE1.

FDD1: Floppy Disk Connector

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.

JSATA1/JSATA2: Serial ATA Connectors

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.

 JSATA1/2	Pin	Assignment	Pin	Assignment
	1	Ground	2	TX+
	3	TX-	4	Ground
	5	RX-	6	RX+
	7	Ground		

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

JKB_USBV1/JUSBV2/JUSBV3_4: Power Source Headers for USB ports

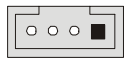
JKB_USBV1/JUSBV2 JUSBV3_4	Assignment	Description
 Pin 1-2 close	+5V	JKB_USBV1: +5V for JKBMS1 and JUSB1. JUSBV2: +5V for JUSBLAN1. JUSBV3_4: +5V for JUSB2/3.
 Pin 2-3 close	+5V Standby Voltage	JKB_USBV1: JKBMS1 and JUSB1 are powered with +5V standby voltage. JUSBV2: JUSBLAN1 is powered by +5V standby voltage. JUSBV3_4: JUSB2/3 are powered by +5V standby voltage.

Note:

In order to support this function “Power-on system via keyboard and mouse”, “JUSBV1/JUSBV2/JUSBV3_4” jumper cap should be placed on Pin 2-3.

JCDIN1: CD-ROM Audio-in Connector


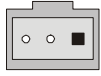
This connector allows user to connect the audio source from the variety devices, like CD-ROM, DVD-ROM, PCI sound card, PCI TV turner card etc..

 JCDIN1	Pin	Assignment
	1	Left channel input
	2	Ground
	3	Ground
	4	Right channel input

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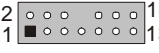
JSPDIF_OUT1 (optional)/JSPDIF_IN1 (optional): Digital Audio out/in Connectors

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

 JSPDIF_OUT1	Pin	Assignment
	1	+5V
	2	SPDIF_OUT
 JSPDIF_IN1	Pin	Assignment
	1	+5V
	2	SPDIF_IN
	3	Ground

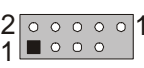
JAUDIO2: Front Panel Audio Header

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.

 JAUDIO2			
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

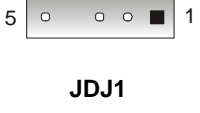
JUSB2/JUSB3: Front USB Ports Headers

This motherboard provides 2 USB 2.0 headers, which 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.

 JUSB2/JUSB3	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

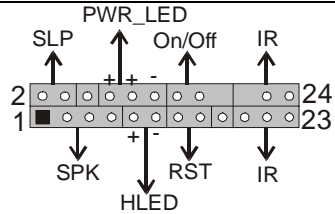
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JDJ1 (optional): AUDIO DJ Header

 JDJ1	Pin	Assignment	Pin	Assignment
	1	SMBDATA	2	SMBCLK
	3	INT_B	4	Key
	5	AXT_PWROK		


JPANEL1: Front Panel Header

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		4	Ground	
5	N/A		6	N/A	N/A
7	Speaker	Hard drive LED	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	

JCI1: Chassis Open Header



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
	1	Case open signal
	2	Ground

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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.

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

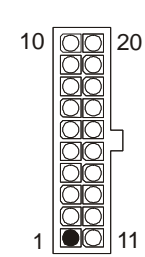
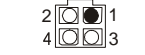
Clear CMOS Procedures:

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.

JATXPWR1/PATXPWR2: Power Connectors

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

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

		Pin	Assignment	Pin	Assignment
 JATXPWR1	10	1	+3.3V	11	+3.3V
		2	+3.3V	12	-12V
		3	Ground	13	Ground
		4	+5V	14	PS_ON
		5	Ground	15	Ground
		6	+5V	16	Ground
		7	Ground	17	Ground
		8	PW_OK	18	-5V
		9	Standby Voltage +5V	19	+5V
		10	+12V	20	+5V
		Pin	Assignment	Pin	Assignment
 JATXPWR2		1	+12V	3	Ground
		2	+12v	4	Ground

Chapter 4: Useful Help

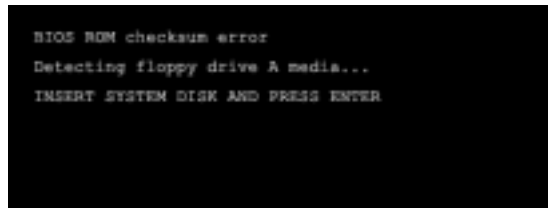
4.1 AWARD BIOS BEEP CODE

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.



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 boot-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 "Close CMOS Header: JCMOS1" section)
2. Wait for seconds.
3. Power on the system again.

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4.3 TROUBLESHOOTING

Probable	Solution
<ol style="list-style-type: none">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.	<ol style="list-style-type: none">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.	<ol style="list-style-type: none">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.	<ol style="list-style-type: none">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.	<ol style="list-style-type: none">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.

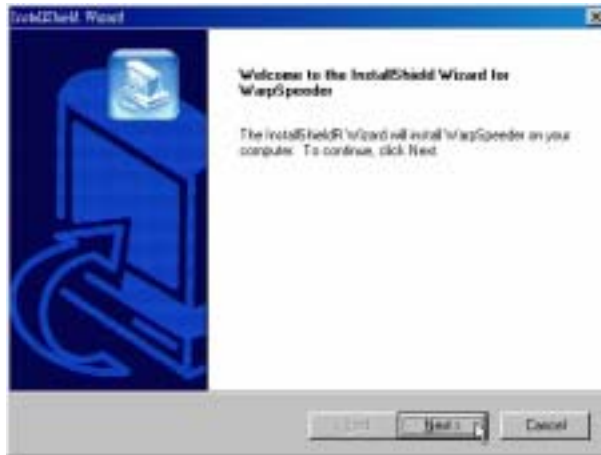
Moreover, to protect users' computer systems if the setting is not appropriate when testing and results in system fail or hang, [WarpSpeeder™] technology assures the system stability by automatically rebooting the computer and then restart to a speed that is either the original system speed or a suitable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

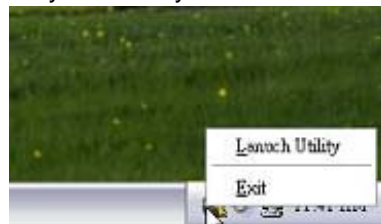
5.4 [WARPSPEEDER™] INCLUDES 1 TRAY ICON AND 5 PANELS

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.



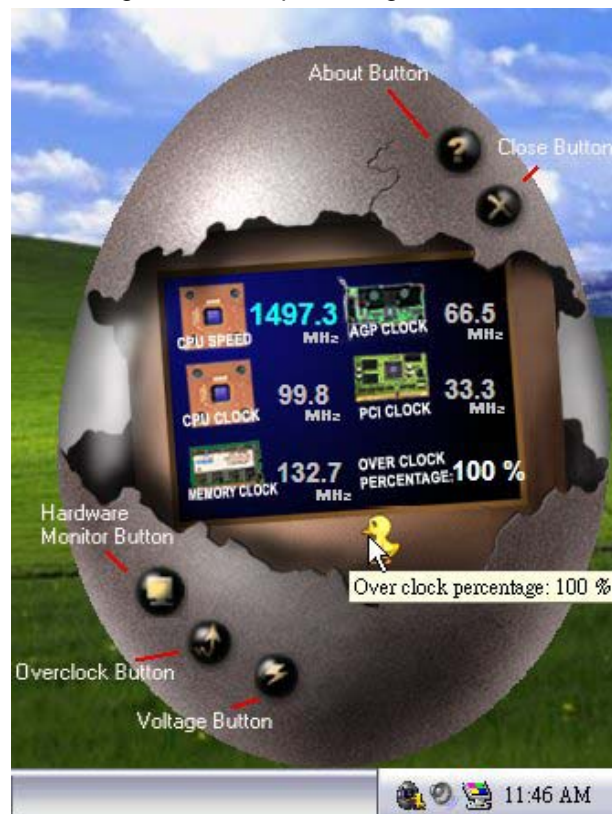
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2. Main Panel

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.



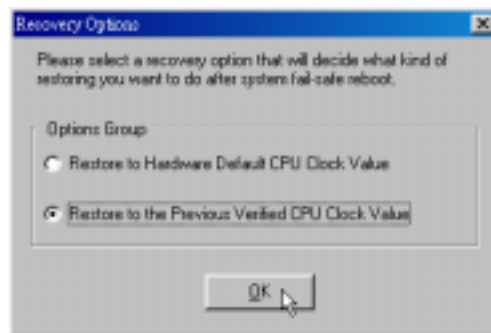
Overclock Panel contains the these features:

- 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.



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- 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.

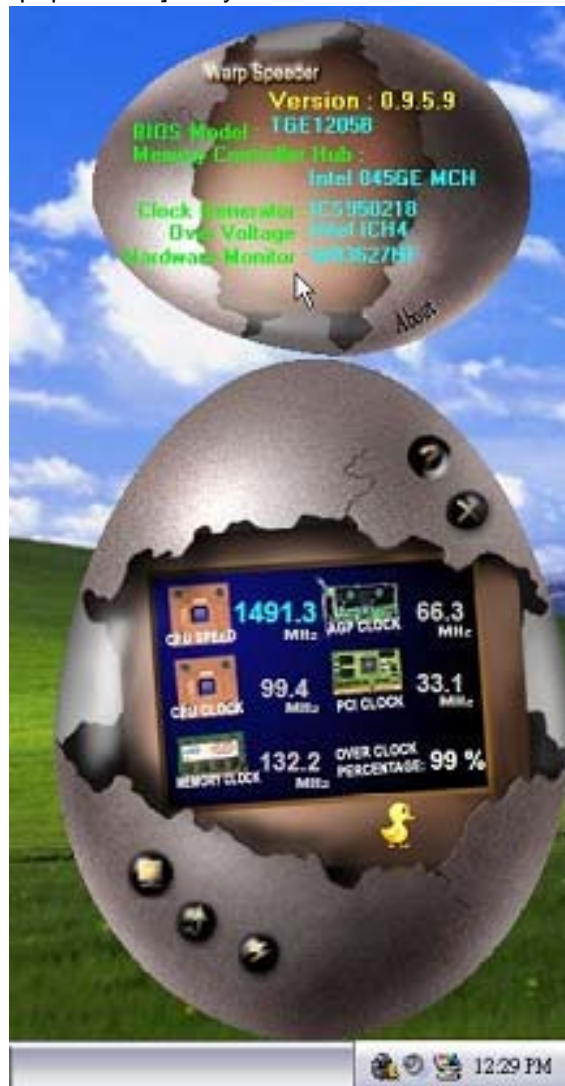


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6. About Panel

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.



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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.

10/08, 2004