Advanced Pentium II Motherboard

IN440ZX

USER'S MANUAL

DECLARATION

DECLARATION

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CE marking is a visible declaration by the manufacturer or his authorized representatives that the electrical equipment to which it relates satisfies all the provisions of the 1994 Regulations.

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FCC stands for **F**ederal **C**ommunications **C**ommission. This product complies with FCC Rules Part 15 and has been tested, and complied with the EMI rules by a certified body. In normal operation, there shall be no harmful interference caused by this device nor shall this devise accept any interference received, including interference that may cause undesired operation of this product.

Year 2000

This product is tested to be qualified to bear the NSTL Year 2000 Compliant logo. Year2000 problem is mainly a problem of computer software (OS), and the hardware issue. With the support of BIOS on motherboard, the Y2K problem can be thoroughly conquered..

EASY INSTALLATION

Easy Installation Steps

The following "Easy Installation" steps are for users accustomed to the assembly of a computer system. For those individuals requiring more specific information please refer to the more detailed descriptions located within the latter chapters of this manual. Note: You must keep your power cable unplugged until the following installation steps are completed.

Getting Start:

Touch a grounded metal surface to release static electricity stored in your body before unpacking your motherboard. For details please refer to **Precaution** section in **Chapter 3.**

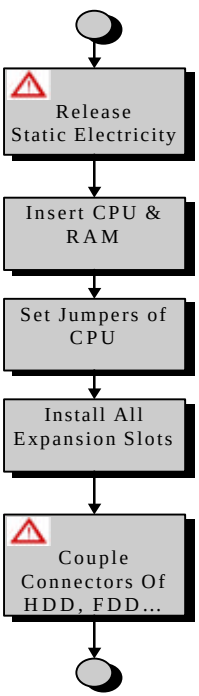
Install the CPU by correctly aligning the CPU with the Socket7 as noted in the motherboard diagram. Once aligned, press down on the CPU gently but firmly and lock it. Next, install the 3.3 volt unbuffered SDRAM into the 168 pin DIMMs. See **Sec. 3.2 & Sec. 3.3.**

Set CPU speed in according to **Sec.3.2**.

After completing the above steps, install any expansion Cards(PCI, ISA) into riser card and have the riser card installed firmly into the slot for riser card on board. See **Sec. 3.4.**

Plug in all cables included in the package except for the power cord. Please see **Sec. 3.5.**

Please recheck all steps to ensure no mistakes have been made and then plug in the power cord and turn on the power to enter the BIOS setup, **Chapter 4.**



EASY INSTALLATION

CONTENTS

CONTENTS

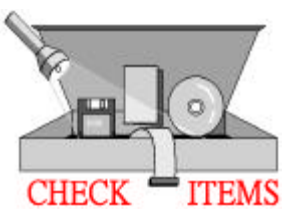
CONTENTS

1. INTRODUCTION

1 INTRODUCTION

How To Use This Manual

This manual provides information necessary for Original Equipment Manufactures (OEMs) and home users to build a PC-AT compatible system using the Pentium II PCI/ISA/AGP motherboard. Just follow the installation procedure presented on the **EASY INSTALLATION Page** and refer to the section number following each step if you require more detailed instructions.



Check Your Device Items

The standard package should contain following items marked with a "✓", If you find any these items missing or damaged. Please contact your retailer.

✓The IN440ZX motherboard
✓Universal Retention Mechanism (Support both Pentium II & Celeron CPU)
✓1 IDE ribbon cable
✓1 floppy ribbon cable
✓1 CD with drivers of Audio, AGP, System hardware Monitor and Bus master.

2. FEATURES

2 FEATURES

Photo Of The Motherboard

3.INSTALLATION

Features Of The Motherboard

The IN440ZX motherboard integrates the Pentium II ® microprocessor, memory, I/O and AGP, and is designed to fit into a Micro ATX form factor chassis. Page 14 illustrates the Layout for the IN440ZX motherboard. Below lists the key features provided by this motherboard:

Processor/Cache:

Processor	Intel "Kaitma", "Deschutes", "Klamath" Pentium II 233 ~ 500 MHz Operation with FSB (Front Side Bus) 100 MHz or Celeron 233~433 MHz (66MHz).
Upgrades	Slot 1
Cache	CPU Cartridge Integrated; Write Back and Write Through, direct mapped organization "BSB" Cache
Size	0KB, 128KB or 512KB

System Memory

Memory Size	8MB Min up to 512MB with Un-buffered SDRAM
Memory Sites	2 DIMM Sockets. SDRAM. Auto-detect w/Table Free Configuration Double Density DIMMs.
DIMM Type	8, 16, 32, 64, 128 and 256MB. 64-bit non-ECC
Memory Speed	SDRAM 66/100 MHz parameter for synchronous memory.

Chipset 82440BX/ZX AGP/PCI/ISA Chipset

ISA/PCI Bus PCI Level 2.1/2.2. 33 MHz Zero Wait State

Graphics Support

AGP	nVIDIA RIVA 128ZX , 66MHz AGP with sidebands and pipelining 64-bit PCI Graphics Accelerator.
Video Memory	SDRAM @ 100MHz (1Mx16)
Memory Capacity	8MB on the motherboard,

Integrated I/O

I/O Controller	Winbond W83977TF (Plug & Play Compliant) Serial Ports One 9 pin connectors for dual asynchronous serial ports. High speed 16C550 compatible serial ports.
Infrared Interface	Infrared port with IrDA and ASKIR
Parallel Port	One 25 pin supporting EPP, ECP and Centronics Interface
Hard Disk Controller	PCI Bus Mastering IDE. Native and Compatible Mode Support. IDE Transfer with Scatter Gather. "Ultra 33" Synchronous DMA. Enhanced IDE PIO mode 4 (16MB/s) Independent IDE timing. FIFOs for PCI Burst Transfers. Swap-Bay Support. Integrated 8x32-bit buffer for IDE PCI Burst Transfers
Hard Disk Connector	2 PCI IDE Connectors for 4 Drives Support
Floppy Controller	720 KB, 1.2, 1.44 and 2.88

Keyboard Port	PS/2 (Integrated in the W83977TF)
Mouse Port	PS/2 (Integrated in the W83977TF)
Real Time Clock	Integrated in the PIIX4E (DS1287 Compatible)

External Communication Ports

Serial Bus	Universal Serial Bus (USB), integrated with Core Logic

Integrated Sound

Sound Chip	Aureal VORTEX 3D PCI Audio with AC97 CODE
CODEC	AC97 CODE
FM Synthesis	Music Synthesiser and MIDI
Sound Effects	A3D audio virtualization

System BIOS

BIOS Type	Winbond based 2Mbit Flash
Hard Disk Driver	IDE, Auto-configuring
Plug&Play Support	Steerable DMA Channels and Interrupts. ISA Plug&Play
Special Features	PC-98 ready. Multi-Boot. PCI Add-In cardauto- config.

Green Features

Power Management	APM 1.2,
Advanced Features	ACPI (Advanced Configuration and Power Interface) compliant hardware for use with **APM & PNP-BIOS APIs**

Jumpers and Front Panel Connectors

Connectors	Reset switch. Suspend/Resume Button. Speaker. HD & PWR LED. Power Button. IR. (Jumpers: CPU Speed Multiplier. Password/CMOS Clear.)

Headers and Rear Panel Connectors

Connectors	Video. Parallel and Serial 1 Ports. Keyboard. Mouse. Line-Out. Mic., Line-In, game/midi USB 1&2
Headers	CPU Fan.

Headers and Connectors

Connectors	None
Headers	Floppy. IDE 1&2. CD-Audio In. Modem Audio. Aux-In. Reset switch. Speaker. Suspend/Resume Button. HDD & Power LED. Chassis Fan.

Mechanical

Board Style	MicroATX Form Factor
Board Size/Type	9.6” x 9.0”, Four Layer Board

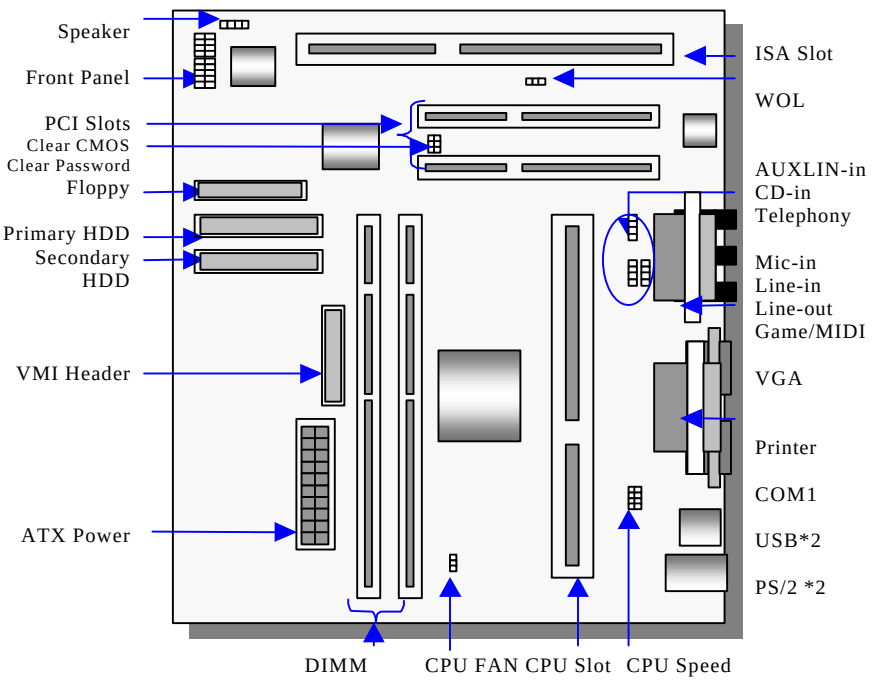
Expansion Slots

Description	Two PCI Expansion connectors and one ISA Expansion connectors.

3.INSTALLATION

3 INSTALLATION

Motherboard Layout & Main Parts



3.INSTALLATION

Significant Parts List

Front Panel Connectors	
Power Switch	Sec. 3.5.5
Power LED	Sec. 3.5.5
Speaker	Sec. 3.5.5
Reset	Sec. 3.5.5
Sleep	Sec. 3.5.5
HDD LED	Sec. 3.5.5
IrDA	Sec. 3.5.5
Back Panel Connectors	
PS/2-style keyboard and mouse connectors	Sec. 3.5.6
USB connectors	Sec. 3.5.6
One serials port	Sec. 3.5.6
One VGA port	
One parallel port	Sec. 3.5.6
One Game Port	Sec. 3.5.6
Line-out	Sec. 3.5.6
Line-in	Sec. 3.5.6
MIC-in	Sec. 3.5.6
Expansion Slots/Sockets	
SEC CPU Slot	Sec. 3.2
DIMM Sockets	Sec. 3.3
ISA/PCI Slots	Sec. 3.4
Power/IDE/FDD Connectors	
IDE connectors	Sec. 3.5.1
Power connector	Sec. 3.5.4
FDD connector	Sec. 3.5.3
Additional Connectors	
Clear Password	Sec. 3.5.7
CPU Fan	Sec. 3.5.7
WOL Connector	Sec. 3.5.7
AUXLIN-IN	Sec. 3.5.7
CD-IN	Sec. 3.5.7
Telephony connector	Sec. 3.5.7
VMI header	Sec. 3.5.7

3.INSTALLATION

Precaution Before Start

Static Electricity Damage:

Static electricity can easily damage your motherboard. Observing a few basic precautions can help safeguard against damage that could result in expensive repairs. Follow the simple measures below to protect your equipment from static electricity damage:

1. Keep the motherboard and other system components in their anti-static packaging until you are ready to install them.
2. Touch a grounded surface before you remove any system component from its protective anti-static packaging. Unpacking and installation should be done on a grounded, anti-static mat. The operator should be wearing an anti-static wristband, grounded at the same points as the anti-static mat.
3. After removing the motherboard from its original packaging, only place it on a grounded, anti-static surface component side up. Immediately inspect the board for damage. Due to shifting during shipping, it is suggested that the installer press down on the entire socket ICs to ensure they are properly seated. Do this only with the board placed on a firm flat surface.
4. During configuration and installation touch a grounded surface frequently to discharge any static electrical charge that may have built up in your body. The best precaution is to wear a grounded wrist strap. When handling the motherboard or an adapter card avoids touching its components. Handle the motherboard and adapter cards either by the edges or by the adapter card case-mounting bracket.

Misplaced Jumper Damage:

There are critical headers used for connectors or power sources. These are clearly marked separately from the jumpers listed in Motherboard Layout. Incorrectly setting jumpers and connectors may lead to damage to your motherboard. Please pay special attention not to connect these headers in wrong directions.

3.INSTALLATION

3.1 Slots And Connectors

This motherboard requires jumper setting for CPU speed. Please refer to Jumper setting List in sec.3.2.2.

In following pages, the triangle ▲ mark stands for pin 1 of connectors.

Slots/Connectors List

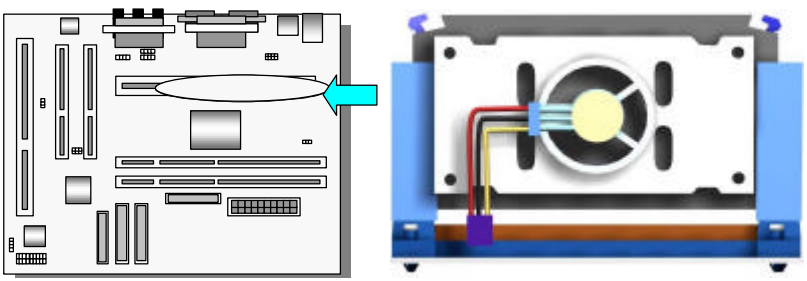
J1: VGA connector
J2: Mouse/Keyboard
J3: USB1/USB2
J4: COM1
J5: Line-in, Line-out and Mic-in
J6: Game / MIDI
J7: Printer
J10: Telephony(Green)
J12: PCI 2
J13: PCI 1
J14: AUXLIN-IN(White)
J15: CD-IN(Black)
J16: WOL(Wake On LAN)
J18: CPU Fan
J20: ATX-Power
J22: Primary IDE
J23: Secondary IDE
J25: Floppy
J26: Speaker
J27: Front Panel Header

JP1: CPU Speed Jumper
JP2: Clear Password

3.INSTALLATION

3.2 CPU (Central Processing Unit)

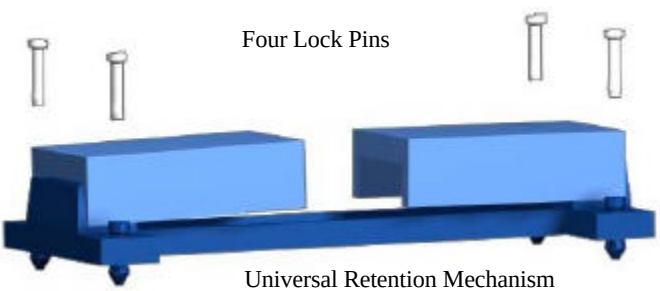
This motherboard provides a Single Edge Contact (SEC) slot and a Bridges on the board for the Pentium II processor packaged in a SEC cartridge. This cartridge includes the processor core, second-level cache, thermal plate and black cover. When mounted in Slot1, the processor is secured by two retention mechanism attached to the motherboard.



3.2.1 Install CPU

Please follow the below steps to install your CPU, and configure the speed in according to Processor Jumper Setting List.

First please ensure the following parts you received with this motherboard. One Pentium II URM (Universal Retention Mechanism) and four Lock Pins. Usually, the URM was set on motherboard already.

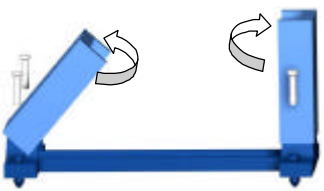


3.INSTALLATION

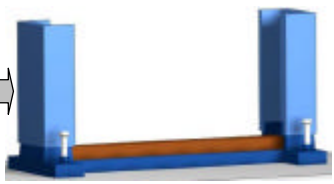
Step 1: Place the Universal Retention Mechanisms over the CPU slot (SEC slot) on motherboard.

Step2: Fix the Retention Mechanism to the motherboard with four Lock Pins. To insert the Lock Pins into holes to lock them tight and firmly. And then unfold the URM.

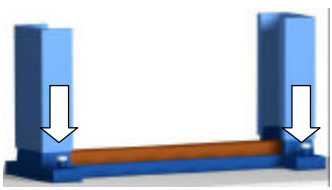
Step 3: Push the SEC Cartridge's two locks inward and insert the CPU into Retention Mechanism. Press the top of CPU gently but firmly until it is fully



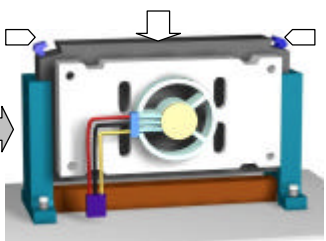
1. Unfold the Retention Mechanism.



2. Place the Retention Mechanism over CPU Slot.



3. Push 4 lock pins into holes to fix Retention Mechanism on motherboard.



4. Insert CPU. Push the two lock pins inward and press CPU down gently.

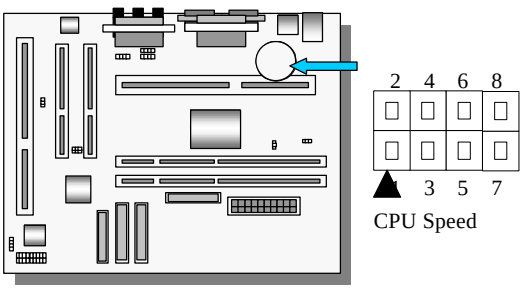
inserted.

Warning : It is strongly recommended that a heatsink and CPU cooling fan be used to prevent the CPU from overheating. Applying a thermal of jelly between the

heatsink/fan will further cool the CPU.

3.2.2 Set CPU Speed

For different CPU speeds, you have to configure the jumper settings for your CPU.



Now refer to the following table to configure your CPU speed.

Setting CPU/BUS Speed

Intel CPU/BUS	JP1			
	Pin 1&2	Pin 3&4	Pin 5&6	Pin 7&8
X3	■ ■	□ □	■ ■	■ ■
X3.5	■ ■	□ □	■ ■	□ □
X4	□ □	■ ■	■ ■	■ ■

3.INSTALLATION

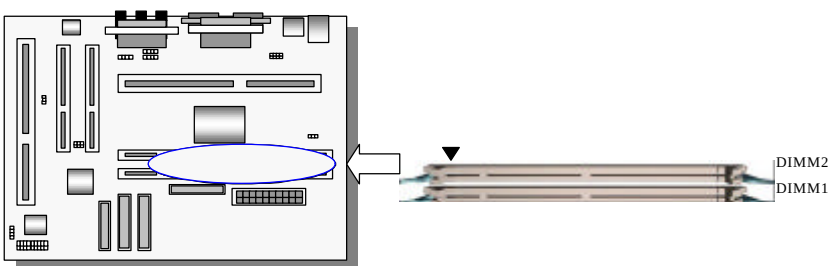
X4.5				
X5				
X5.5				
X6				
X6.5				

3.INSTALLATION

3.3 System Memory (DRAM)

3.3.1 DIMM (Dual Inline Memory Module)

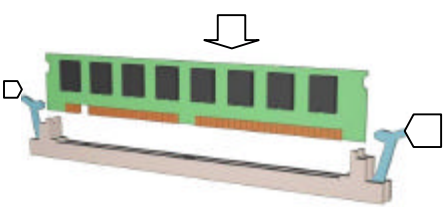
The IN440ZX features two168-pin DIMM sockets. You can configure the system memory size from 8MB to 512MB in a variety of ways by using different combinations of the three 168-pin DIMM. Note that you must use only PC/100-compliant DIMMs if the CPU Host frequency was set in 100 MHz.



3.3.2 Installation Procedure

Step1: Pin 1 of the DIMM must match pin 1 of the DIMM socket.

Step2: Insert the DIMM module into the DIMM socket vertically. After inserting the DIMM module completely into the socket, push up on the socket latches securing the DIMM into place.



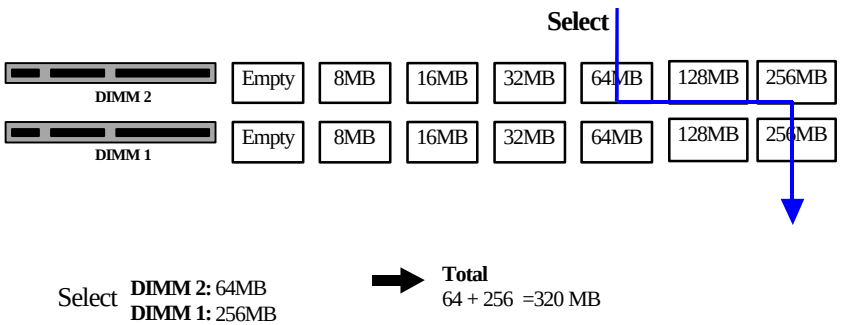
If pin 1 of the DIMM module does not line up with pin 1 of the socket, the DIMM module will not be inserted correctly into the socket.

Be careful not to misfit the DIMM Module into DIMM sockets in wrong direction. This module can be inserted into DIMM socket only one way. Please note the "▲" for pin 1 location. To release the memory module, push both latches down and carefully rock the module forward and backward while slowly lifting it upward.

3.INSTALLATION

3.3.3 DIMM Module Combinations

Each DIMM socket can be inserted with 8MB, 16MB, 32MB, 64MB, 128MB, 256MB DIMM or empty. The total combinations are, 7*7=49 selections. You can refer to following figure to select one way to insert your DIMM, for example:



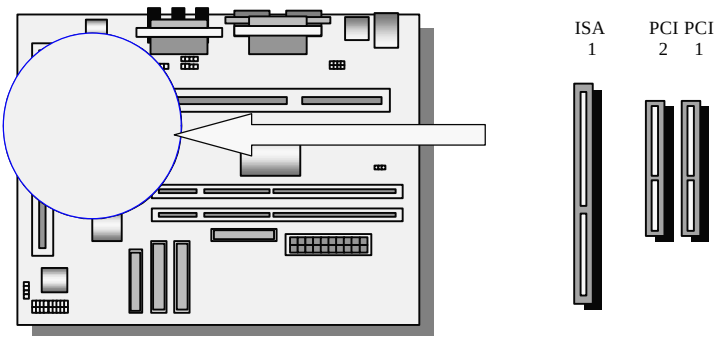
Select **DIMM 2:** 64MB
DIMM 1: 256MB

Total
64 + 256 =320 MB

To select 1 out of 7 items (empty, 8MB, 16MB, 32MB, 64MB, 128MB, 256MB) in DIMM2.
Then, repeat again in DIMM1 to go through your own path.
A total of 49 combinations ensure you can insert your DIMM modules any way you prefer.

3.INSTALLATION

3.4 Expansion Slots



This motherboard contains 3 expansion slots onboard. One 16-bit ISA Bus, Two 32-bit PCI expansion slots as shown above.

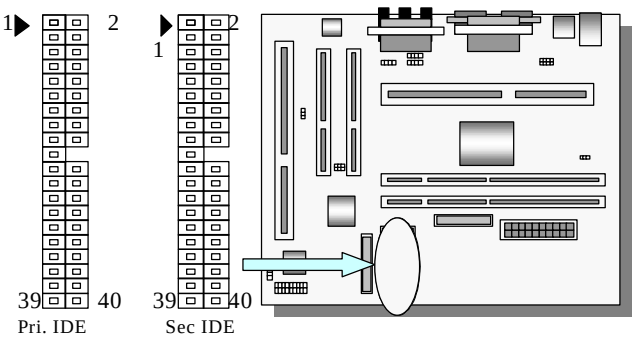
All three PCI expansion slots accept PCI us master cards and are fully supported by the PCI 2.1 specification.

Besides, an embedded nVIDIA RIVA 128ZX chipset supply the AGP function via the VGA port on back panel. The Accelerated Graphics Port (AGP or A.G.P.) is a high performance interconnect targeted at 3D graphical display applications

To install expansion cards, please read the expansion card's documentation for instructions and cautions.

3.5 Connectors

This IN440ZX motherboard contains IDE, floppy, power input, front panel, back panel and additional connectors.



3.5.1 Primary IDE Connector (J22, 39-pin block)

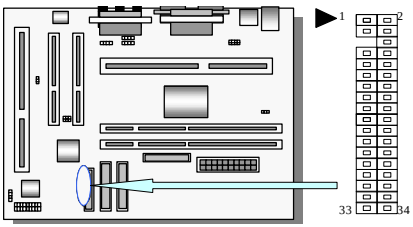
This connector supports two primary channel IDE devices via a ribbon cable. When two IDE devices are installed using the primary IDE connector, make sure that the second IDE device is set to slave mode as indicated in the device's manual.

3.5.2 Secondary IDE Connector (J23, 39-pin block)

This connector supports two secondary channel IDE devices as well as the 120MB Floppy drives via a ribbon cable. When two IDE devices are installed using the secondary IDE connector, make sure that the second IDE device is adjusted to slave mode as instructed in the device's manual.

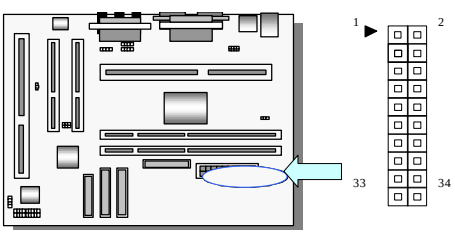
WARNING: When you connect a ribbon cable to these ports, you must orient the cable connector so that the PIN 1 edge of the cable is at the PIN 1 edge of the onboard connector.

3.5.3 Floppy Drive Connector (J25, 33-pin block)



The FDC sub-system can control three types of floppy drives (1.2, 1.44 and 2.88MB) or compatible tape drives. The connection to the floppy drive is via a header (J19). The floppy disk interface includes 48mA drivers and inputs on the drive interface.

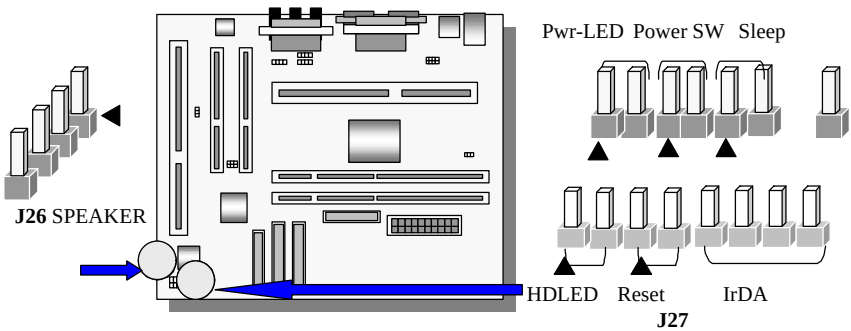
3.5.4 Power Input Connector (J20, 20-pin block)



This connector supports a standard ATX power supply. When connecting, make sure the lock key matches the hook attached on a power supply cable. The power cord should be unplugged when you connect it.

3.5.5 Front Panel connectors

Front Panel includes headers for the following six I/O connectors:
Power Switch, Power LED, Speaker, Reset, Sleep and HDD LED.



Speaker Connector (J26, 4-pin)

It is used to drive a chassis-mounted speaker if desired.

Power LED (J27, 3-pin)

This header can be connected to a LED that will light when the computer is powered on.

Power Switch (J27, 2-pin)

This connector supports the ATX case-mounted Power Switch, which in turn supports System Suspend function. When the BIOS sets the Power Button function to “Delay 4 sec.”, the system can be set to the suspended mode once you push the power switch for no longer then 4 seconds. If the power switch is pushed down for over 4 seconds the system will be totally Power Off. When the BIOS setting sets the Delay 4 second to “Instant-off”, then Power Switch function work as regular power switch.

Sleep Switch (J27, 2-pin)

When the APM (Advanced Power Management) feature is enabled in the system BIOS and the operating system’s APM driver is loaded, the system can enter the

sleep (standby) mode in one of the following ways:

- Optional front panel sleep/resume button
- Prolonged system inactivity using the BIOS inactivity timer feature (Section 4.5)

The 2-pin header supports a front panel sleep/resume switch, which must be a momentary SPST type that is normally open

HDD (IDE) LED Connector (J27, 4-pin)

The IN440ZX supports one straight 4-pin header for connecting to front Panel Hard Disk activity LED indicator.

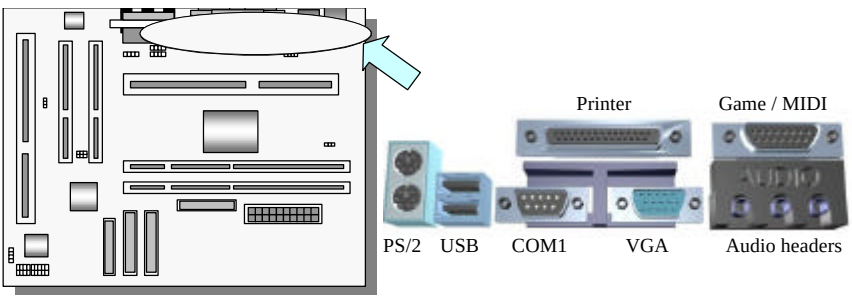
Reset Switch Connector (J27, 2-pin)

This connector supports the front panel case-mounted reset button. It is advised that the reset switch be used for rebooting the system in order to extend the life of the system's power supply.

Infrared (IrDA) connector (J27, 6-pin)

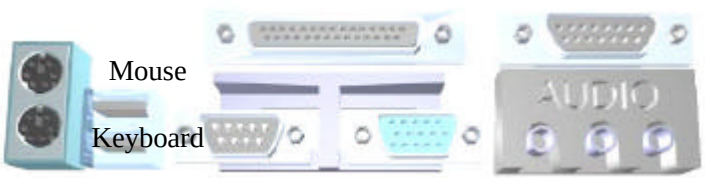
The IN440ZX offers an IrDA infrared header that supports third party infrared modules. The case must reserve space for the IR module if you want to use the IrDA function. This option supports wireless transmission and reception of infrared data. The module mounts in a small opening on the system case that supports this feature. The efficient distance is 100cm and the transfer rate is 115,200 bits/sec.

3.5.6 Back Panel Connectors



PS/2 Keyboard and Mouse Ports (J2)

The motherboard offers 1 PS/2 Keyboard and 1 PS/2 Mouse port.



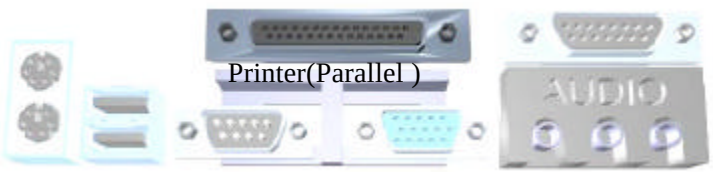
Universal Serial Bus (USB) Ports (J3)

The motherboard has two USB connectors. USB devices provide a more convenient operating environment and improve data transferring capacity. True Plug & Play, this new bus technology will support over 127 different peripherals through a Hub.

3.INSTALLATION

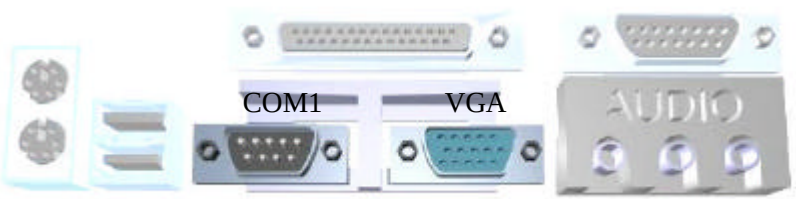
Parallel Port (Printer, J7)

The IN440ZX includes a parallel port (EPP/ECP compatible). The parallel port is capable of being disabled or remapped to either the secondary LPT address or the primary LPT address through BIOS if another parallel port is installed.



Serial Port (COM&VGA, J4&J1)

The motherboard has one serial ports. The electrical characteristics are compliant with the EIA-232-D Serial Communications Specifications. The serial port may be remapped over other installable serial ports or disabled through the BIOS.



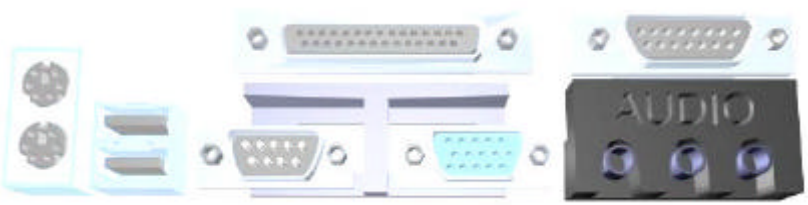
The motherboard integrate the AGP function via a VGA port beside the COM1. The Accelerated Graphics Port (AGP or A.G.P.) is a high performance interconnect targeted at 3D graphical display applications

GAME / MIDI Port (J6)

The IN440ZX integrate a Game/MIDI port. This port can let you pulg a joystick or MIDI device.

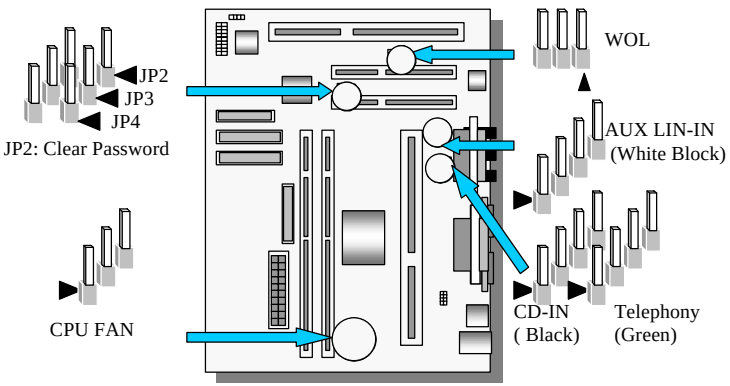
Audio Port (Line-in, Line-out, MIC-in) (J5)

The IN440ZX also provides external sound system through a user accessible stereo jack connector soldered to the PWA.This jack allow the connection of self-amplified speakers, Line-in voice input and MIC-in voice input.



Line-out Line-in Mic-in

3.5.7 Additional Connectors



Clear Password (JP2, 2-pin)

If an unknown password is set in the BIOS, it can be cleared by inserting a jumper into JP2 during boot-up.

CPU Fan (J17, 3-pin)

Your Pentium Cartridge may have an attached heatsink and Fan; this connector is for the CPU Fan.

WOL (Wake On LAN) (J16, 3-pin)

This header is used for remote wakeup of the computer through a network. WOL requires a PCI add-in network interface card (NIC) with remote wakeup capabilities. The remote wakeup header on the NIC must be connected to the onboard Wake on LAN header. For Wake on LAN, the 5-V standby line for the power supply must be capable of delivering 5V±5% at 720mA.

AUXLIN-IN Header (J14, 6-pin White block)

Access to the AUX-IN connector for audio input from AUX devices.

CD-IN Header (J15, 4-pin Black block)

A connector is available for audio input from CD-ROM drives.

Telephony Header (J10, 6-pin Green block)

Access to the telephony connector for audio input and output from the phone connection.

3.INSTALLATION

Ready To Turn On Power

♦ Check Again

1. Is the CPU installed exactly and firmly into socket (Sec. 3.2)?
2. Are all the DRAM modules installed properly (Sec. 3.3)?
3. Did you insert expansion card (VGA, Sound…. etc.) already (Sec. 3.4)?
4. Are you sure that all the connectors (described in Sec 3.5) have been connected to their variable devices (Sec. 3.5)?

♦ Yes, I have checked and assured the above steps!

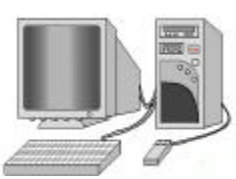
Now get ready to turn on your device by the following steps.

1. Mount your motherboard to the chassis frame and close the case cover.
2. Switch off all power.
3. Connect the power supply cord into inlet of the system case.
4. Connect the power supply cord into an outlet of power supply.
5. Connect Monitor signal cable to system VGA port, and the monitor power cord to power outlet.
6. Now turn on monitor and system power.

After Power on, The power LED on the front panel of the system case will light. For ATX power supplies, the system LED will light when the ATX power switch is pressed.

The system will then do a power-on tests item by item, and additional messages will appear on screen. If the screen blinks or the tests stops more than 30 seconds, the system may have failed the power-on test. If so, please recheck the above steps or call your retailer for assistance.

If the power-on test goes well, hold down <Delete> button on the keyboard to enter BIOS Setup. Next, follow the instructions in the next chapter, **BIOS**



3.INSTALLATION

SETUP.

4 BIOS SETUP

The IN440ZX motherboard uses AWARD BIOS, which is stored in a Flash EEPROM and can be upgraded by a floppy disk-based program. The BIIOS has a built-in Setup Program that allows users to modify the basic system configuration settings. The settings are then stored in a dedicated battery-backed memory, called CMOS RAM that retains the information when the power is turned off. The BIOS provides critical low-level support for the system's central processing, memory and I/O subsystems. The AWARD BIOS has been customized by adding important, nonstandard, features such as virus and password protection, power management, and detailed fine-tuning of the chipset which controls the system. The remainder of this manual is intended to guide you through the process of configuring your system using the BIOS Setup.

4.1 How To Enter BIOS Setup

The AWARD BIOS is immediately activated when you first turn on the computer. The BIOS reads system configuration information in CMOS RAM and begins the process of checking the system and configuring it through the power-on self test (POST). When these preliminaries are finished, the BIOS seek an operation system on the data storage devices (hard drive, floppy drive, etc.). The BIOS launches the operating system and hands over control of system operation to it.

To start Setup, press the <Del> key during boot-up before or while a message similar to this appears briefly at the bottom of the screen during POST (Power On Self Test):

Press DEL if you want to enter SETUP

If the above message disappears before you have responded and you still wish to enter Setup, reboot the system to try again by pressing the "RESET" button on the system case. You may also restart by simultaneously pressing the <Ctrl>, <Alt> and <Delete> keys.

Press **F1** to continue, **DEL** to enter SETUP

4.1.1 Setup Keys

These keys help you navigate in Setup:

<↑> , <↓>	Move to previous or next item
<←> , <→>>	Move to the item in the left or right hand
<Esc>	Main Menu – Quit and not save changes into CMOS Other Pages -- Exit current page and return to Main Menu
<PgUp> / <+>	Increase the numeric value or make changes
<PgDn> / <–>	Decrease the numeric value or make changes
<F1>	General help, only for Status Page Setup Menu and Option Page Setup Menu
<F2>	Change color from total 16 colors. F2 to select Shift-F2 color forward, Shift-F2 to select color backward
<F3>	Calendar, only for Status Page Setup Menu
<F5>	Restore the previous CMOS value from CMOS, only for Option Page Setup Menu
<F7>	Load the Setup default
<F10>	Save all the CMOS changes, only for Main Menu

4.1.2 Getting Help

Press F1 to pop up a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window press Esc or the F1 key again.

4.1.3 In Case of Problems

If after making and saving system changes with Setup, you discover that your computer no longer is able to boot, the Award BIOS supports an override to the CMOS settings that resets your system to its default configuration.

The best advice is to alter only settings that you thoroughly understand. In particular, do
not change settings in the Chipset screen without a good reason. Your system manufacturer for the best performance and reliability has carefully chosen the Chipset defaults. Even a seemingly small change to the Chipset setup may cause the system to become unstable.

4.2 Main Setup Menu

When you enter the Award BIOS CMOS Setup Utility, a Main Menu (Figure 1) appears on the screen. The Main Menu allows you to select from several Setup functions and two exit choices. Use the arrow keys to select among the items and press Enter to accept and enter the sub-menu.

A brief description of each highlighted selection appears at the bottom of the screen.

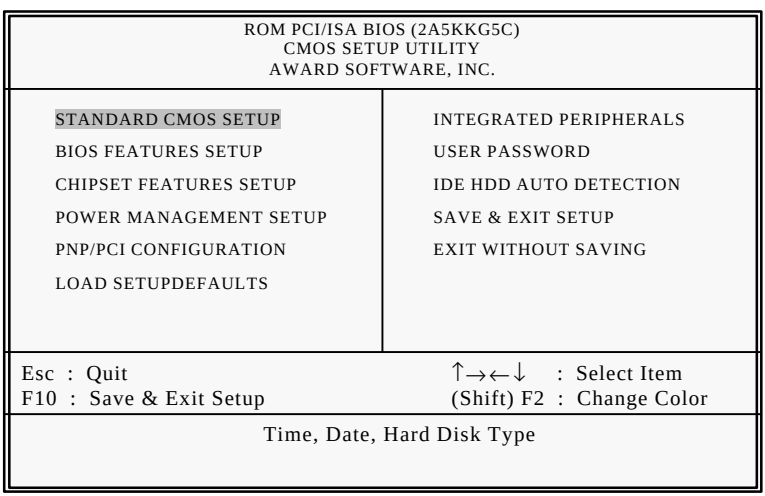


Figure 1: Main Menu

4. BIOS SETUP

Following is a brief summary of each Setup category.

Standard CMOS	Options in the original PC AT-compatible BIOS.
BIOS Features	
Chipset Features	
Power	Advanced Power Management (APM) options.
Configuration	options.
Peripherals	controller in your system.
Password Setting	allow separate user and supervisor passwords, only the password generally allows only power-on access.
Detection	parameters.
Defaults	system operations.
	Save settings in nonvolatile CMOS RAM and exit Setup.
	Abandon all changes and exit Setup.

4.3 Standard CMOS Setup Menu

In the Standard CMOS Menu (Figure2) you can set the system clock and calendar, record disk drive parameters and the video subsystem type, and select the type of errors that stop the BIOS POST.

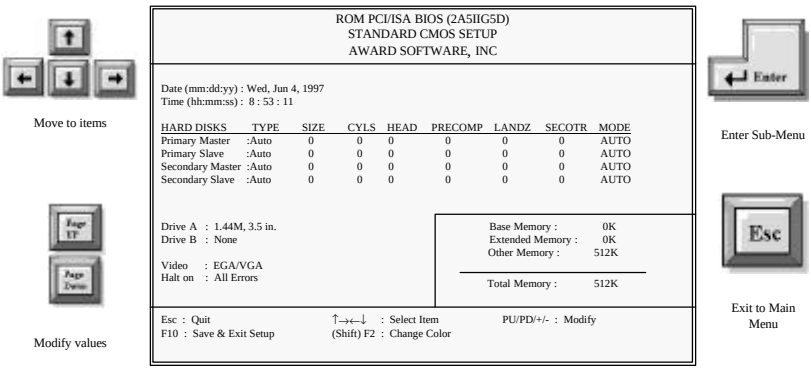


Figure 2: Standard CMOS setup

Date

The BIOS determines the day of the week from the other date information. This field is for information only. Press the left or right arrow key to move to the desired field (date, month, year). Press the PgUp or PgDn key to increment the setting, or type the desired value into the field.

Time

The time format is based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00. Press the left or right arrow key to move to the desired field. Press the PgUp or PgDn key to increment the setting, or type the desired value into the field.

Hard Disks

The BIOS supports up to four IDE drives. This section does not show information about other IDE devices, such as a CD-ROM drive, or about other hard drive types, such as SCSI drives.

4. BIOS SETUP

The BIOS can automatically detect the specifications and optimal operating mode of almost all IDE hard drives. When you select type AUTO for a hard drive, the BIOS

If you do not want to select drive type AUTO, other methods of selecting the drive type are available:

Match the specifications of your installed IDE hard drive(s) with the

2)

3)

Here is a brief explanation of drive specifications:

- Type: The BIOS contains a table of pre-defined drive types. Each defined drive type has a specified number of cylinders, number of heads, write

  specifications do not accommodate any pre-defined type are classified as type USER.

  Size: Disk drive capacity (approximate). Note that this size is usually slightly

-
-
-
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-
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-

  16, and 63.

- Large: For drives that do not support LBA and have more than 1024 cylinders.
- LBA (Logical Block Addressing): During drive accesses, the IDE controller transforms the data address described by sector, head, and cylinder number into a

with greater than 1024 cylinders.

Drive A/B type

Select the correct specifications for the diskette drive(s) installed in the computer.

None	No diskette drive installed
	5-1/4 inch PC-type standard drive; 360 kilobyte capacity
1.2M, 5.25 in	
720K, 3.5 in	3-1/2 inch double-sided drive; 720 kilobyte capacity
	3-1/2 inch double-sided drive; 1.44 megabyte capacity
2.88M, 3.5 in	

Video

Select the type of primary video subsystem in your computer. The BIOS usually detects

but you do not select it in Setup.

EGA/VG	Enhanced Graphics Adapter/Video Graphics Array. For EGA, VGA, SEGA, SVGA or PGA monitor adapters.
	Color Graphics Adapter, power up in 40 column mode.
CGA 80	
MONO	Monochrome

Halt on

During the power-on self-test (POST), the computer stops if the BIOS hardware error. You can tell the BIOS to ignore certain errors during POST and continue the boot-up process. These are the selections:

	POST does not stop for any errors.
All errors	detects any non-fatal error, POST stops and prompts you to take corrective action.
	POST does not stop for a keyboard error, but stops for all other errors.
	POST does not stop for diskette drive errors, but stops for all other errors.
	POST does not stop for a keyboard or disk error, but stops for all other errors.

Memory

You cannot change any values in the Memory fields; they are only for your information. The fields show the total installed random access memory (RAM) and amounts allocated to base memory, extended memory, and other (high) memory. RAM is counted in kilobytes (KB: approximately one thousand bytes) and megabytes (MB: approximately one million bytes).

RAM is the computer's working memory, where the computer stores programs and data currently being used, so they are accessible to the CPU. Modern personal computers may contain up to 64 MB, 128 MB, or more.

Base Memory

Typically 640 KB. Also called conventional memory. The DOS operating system and conventional applications use this area.

Extended Memory

Above the 1-MB boundary. Early IBM personal computers could not use memory above 1 MB, but current PCs and their software can use extended memory.

Other Memory

Between 640 KB and 1 MB; often called High memory. DOS may load terminate-and-stay-resident (TSR) programs, such as device drivers, in this area, to free as much conventional memory as possible for applications. Lines in your CONFIG.SYS file that start with LOADHIGH load programs into high memory.

Total Memory

System total memory is the sum of base memory, extended memory, and other memory.

BIOS Features Setup Menu

BIOS. This section describes all fields offered by Award Software in this screen. Some fields may vary from those in your Setup program. Your system board designer may

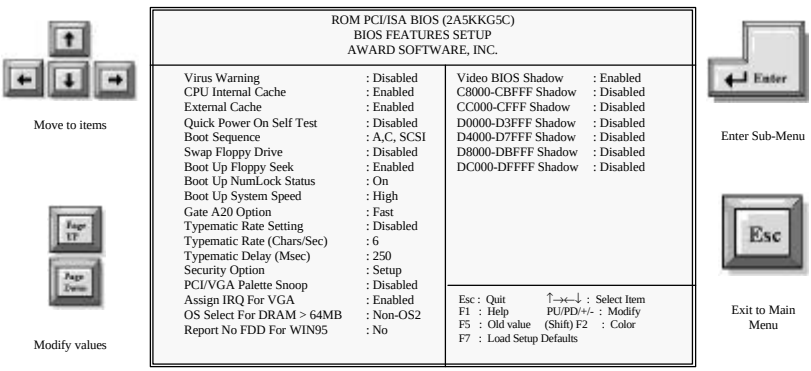

Figure 3: BIOS Features Setup Menu

Virus Warning

When enabled, you receive a warning message if a program (specifically, a virus)

should then run an anti-virus program. Keep in mind that this feature protects only the boot sector, not the entire hard drive.

Many disk diagnostic programs that access the boot sector table can trigger the virus warning message. If you plan to run such a program, we recommend that you first

CPU Internal Cache

Cache memory is additional memory that is much faster than conventional DRAM

speed up the data transfer. This item allows you to enable or disable the inter Cache.

Cache memory is additional memory that is much faster than conventional DRAM

(system memory). When the CPU requests data, the system transfers the requested data from the main DRAM into cache memory, for even faster access by the CPU. The External Cache field may not appear if your system does not have external cache memory.

Quick Power On Self Test

This allows you to enable or disable system self test when power on.

Boot Sequence

The original IBM PCs loaded the DOS operating system from drive A (floppy disk), so IBM PC-compatible systems are designed to search for an operating system first on drive A, and then on drive C (hard disk). However, the BIOS now offers 10 different boot sequence options of three drives each. In addition to the traditional drives A and C, options include IDE hard drives D, E, and F; plus a SCSI hard drive and a CD-ROM drive.

Swap Floppy Drive

This field is effective only in systems with two floppy drives. Selecting Enabled assigns physical drive B to logical drive A, and physical drive A to logical drive B.

Boot Up Floppy Seek

When *Enabled*, the BIOS tests (seeks) floppy drives to determine whether they have 40 or 80 tracks. Only 360-KB floppy drives have 40 tracks; drives with 720 KB, 1.2 MB, and 1.44 MB capacity all have 80 tracks. Because very few modern PCs have 40-track floppy drives, we recommend that you set this field to *Disabled* to save time.

Boot Up NumLock Status

Toggle between *On* or *Off* to control the state of the NumLock key when the system boots. When toggled *On*, the numeric keypad generates numbers instead of controlling cursor operations.

Booy Up System Speed

This item allows you to set the boot speed of your system.

Typematic Rate Setting

When *Disabled*, the following two items (Typematic Rate and Typematic Delay) are

system. When *Enabled*,

Typematic Rate (Chars/Sec)

When the typematic rate setting is enabled, you can select a typematic rate (the rate at

characters per second.

Typematic Delay (Msec)

before key strokes begin to repeat) of 250, 500, 750 or 1000 milliseconds.

If you have set a password, select whether the password is required every time the System boots, or only when you enter Setup.

Some display cards that are not standard VGA such as graphics accelerators or MPEG

it to Enabled, to default setting leave at Disabled.

Assign IRQ

Set this option to Yes to allocate an IRQ to VGA device on the PCI Bus. The setting

OS select for DRAM > 64MB

Select only if you are running OS/2 operating system with greater than 64 MB of RAM on your system.

Shadow

Software that resides in a read-only memory (ROM) chip on a device is called *firmware*. The Award BIOS permits *shadowing* of firmware such as the system BIOS, video BIOS, and similar operating instructions that come with some expansion peripherals, such as, for example, a SCSI adaptor.

Shadowing copies firmware from ROM into system RAM, where the CPU can read it through the 16-bit or 32-bit DRAM bus. Firmware not shadowed must be read by the system through the 8-bit X-bus. Shadowing improves the performance of the system BIOS and similar ROM firmware for expansion peripherals, but it also reduces the amount of high memory (640 KB to 1 MB) available for loading device drivers, etc.

Enable shadowing into each section of memory separately. Many system designers hardwire shadowing of the system BIOS and eliminate a System BIOS Shadow option.

Video BIOS shadows into memory area C0000-C7FFF. The remaining areas shown on the BIOS Features Setup screen may be occupied by other expansion card firmware. If an expansion peripheral in your system contains ROM-based firmware, you need to know the address range the ROM occupies to shadow it into the correct area of RAM.

4.5 Chipset Features Setup Menu

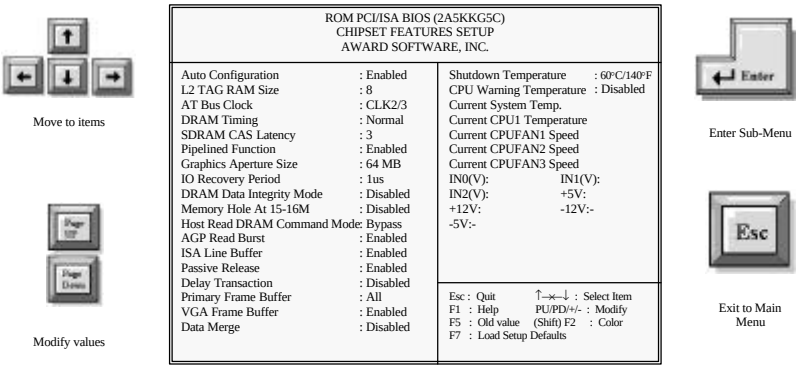

Figure 4: Chipset Features Setup Menu

Auto Configuration

This item allows you select pre-determined optimal values for DRAM, cache, timing according to CPU type & system clock. The Choice: Enabled, Disabled.
Note: When this item is enabled, the pre-defined items will become SHOW-ONLY.

L2 TAG RAM Size

The system uses tag bits to determine the status of data in the L2 cache. Set this field to match the specifications (8 or 10 bits) of the installed tag RAM chip. The Choice: 8,10.

AT Bus Clock

You can set the speed of the AT bus in terms of a fraction of the CPU clock speed (PCLK2), or at the fixed speed of 7.16 MHz.
The Choice: 7.16 MHz, CLK2/2, CLK2/3, CLK2/4, CLK2/5, and CLK2/6

DRAM Timing

The value in this field depends on performance parameters of the installed memory chips (DRAM). Do not change the value from the factory setting unless you install new memory that has a different performance rating than the original DRAMs. The

Choice: Normal, Fast, Slow.

SDRAM CAS Latency

When synchronous DRAM is installed, the number of clock cycles of CAS latency depends on the DRAM timing. Do not reset this field from the default value specified by the system designer. The Choice: 2, 3.

Pipelined Function

When *Enabled*, the controller signals the CPU for a new memory address before all data transfers for the current cycles are complete, resulting in faster performance. The Choice: Enabled, Disabled.

Graphics Aperture Size

Select the size of the Accelerated Graphics Port (AGP aperture. The aperture is a portion of the PCI memory address range dedicated for graphics memory address space. Host cycles that hit the aperture range are forwarded to the AGP without any translation.

DRAM Data Integrity Mode

Select *Parity* or *ECC* (error-correcting code), according to the type of installed DRAM. The Choice: Disabled, ECC, Parity.

Memory Hole At 15M-16M

You can reserve this area of system memory for ISA adapter ROM. When this area is reserved, it cannot be cached. The user information of peripherals that need to use this area of system memory usually discusses their memory requirements.

Host Read DRAM Command Mode

This item allows you to select the type of Host Read DRAM Command Mode. The choice : Syn., Bypass.

ISA Line Buffer

The PCI to ISA Bridge has an 8-byte bi-directional line buffer for ISA or DMA bus master memory reads from or writes to the PCI bus. When *Enabled*, an ISA or DMA bus master can prefetch two doublewords to the line buffer for a read cycle. The choice : Enabled, Disabled

Passive Release

When *Enabled*, CPU to PCI bus accesses is allowed during passive release.

Otherwise, the arbiter only accepts another PCI master access to local DRAM.
The choice : Enabled , Disabled.

Delay Transaction

The chipset has an embedded 32-bit posted write buffer to support delay transactions cycles. Select *Enabled* to support compliance with PCI specification version 2.1.
The choice: Enabled, Disabled

Primary Frame Buffer

Select a size for the PCI frame buffer. The size of the buffer should not impinge on local memory.
The choice : Disabled, 2MB 4MB, 8MB, 16MB.

VGA Frame Buffer

When *Enabled*, a fixed VGA frame buffer from A000h to BFFFh and a CPU-to-PCI write buffer are implemented.
The choice: Enabled , Disabled.

Data Merge

This field controls the word-merge feature for frame buffer cycles. When Enabled, this controller checks the eight CPU Byte Enable signals to determine if data words read from the PCI bus by the CPU can be merged. The choice: Enabled , Disabled.

Shutdown Temperature

When the temperature of CPU is over specified value. The system will send a signal to O/S to shut down the system.

CPU Warning Temperature

This item presents the current hardware situation for the hardware monitoring feature of this motherboard. Here you can Enable or Disabled the function.

4.6 Power Management Setup Menu

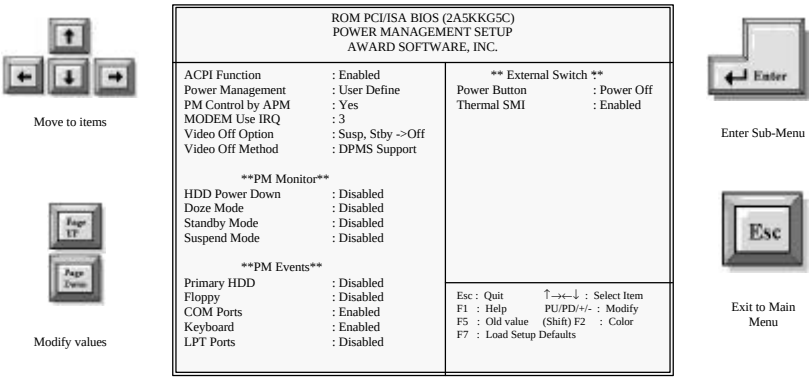

Figure 5: Power Management Setup Menu

ACPI Function

ACPI (Advanced Configuration and Power Interface) evolves the existing motherboard configuration interfaces to support these advanced architectures in a more robust, and potentially more efficient manner.

Power Management

This option allows you to select the type (or degree) of power saving for Doze, Standby, and Suspend modes. See the section *PM Timers* for a brief description of each mode. This table describes each power management mode:

Disable	Global Power Management will be disabled
Max Saving	Maximum power savings. **Only Available for SL CPUs**. Inactivity period is 1 minute in each mode.
User Define	Set each mode individually. Select time-out periods in the *PM Timers* section, following.
Min Saving	Minimum power savings. Inactivity period is 1 hour in each mode (except the hard drive).

PM Control by APM

When enabled, an Advanced Power Management device will be activated to enhance the Max. Power Saving mode and stop the CPU internal clock. If Advance Power Management (APM) is installed on your system, selecting Yes gives better power savings.
If the Max. Power Saving is not enabled, this will be preset to *No*.

Modem Use IRQ

This determines the IRQ in which the MODEM can use.
The choices: 3, 4, 5, 7, 9, 10, 11, NA.

Video Off Option

When enabled, this feature allows the VGA adapter to operate in a power saving mode.

Always On	Monitor will remain on during power saving modes.
Suspend --> Off	Monitor blanked when the systems enters the Suspend mode.
Susp,Stby --> Off	Monitor blanked when the system enters either Suspend or Standby modes.
All Modes --> Off	Monitor blanked when the system enters any power saving mode.

Video Off Method

Determines the manner in which the monitor is blanked.

V/H SYNC+Blank	System turns off vertical and horizontal synchronization ports and writes blanks to the video buffer.
DPMS Support	Select this option if your monitor supports the Display Power Management Signaling (DPMS) standard of the Video Electronics Standards Association (VESA). Use the software supplied for your video subsystem to select video power management values.
Blank Screen	System only writes blanks to the video buffer.

HDD Power Down

When enabled and after the set time of system inactivity, the hard disk drive will be powered down while all other devices remain active.

Doze Mode

When enabled and after the set time of system inactivity, the CPU clock will run at slower speed while all other devices still operate at full speed.

Standby Mode

When enabled and after the set time of system inactivity, the fixed disk drive and the video would be shut off while all other devices still operate at full speed.

Suspend Mode

When enabled and after the set time of system inactivity, all devices except the CPU will be shut off.

Primary HDD / Floppy / COM Ports / Keyboard / LPT Ports

When Enabled, an event occurring on each device listed above restarts the global time for Standby mode.

Power Button

This item allows you to select the function of power button.
The choice: Disabled, Green Mode, Power Off.

Thermal SMI

This item allows you to enable or disable the function of Sleep.
The choice: Enabled, Disabled.

4.7 PCI Configuration Setup Menu

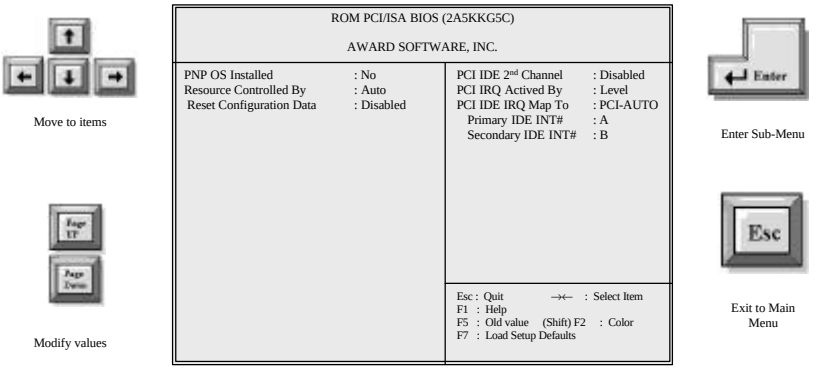

Figure 6: PNP/PCI Configuration Setup Menu

PNP OS Installed

This item allows you to determine install PnP OS or not.
The choice: Yes, No.

Resources Controlled by

The Award Plug and Play BIOS can automatically configure all the boot and Plug and Play-compatible devices. If you select *Auto*, all the interrupt request (IRQ) and DMA assignment fields disappear, as the BIOS automatically assigns them.

Reset Configuration Data

Normally, you leave this field *Disabled*. Select *Enabled* to reset Extended System Configuration Data (ESCD) when you exit Setup if you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the operating system cannot boot.

PCI IDE 2nd Channel

The IDE standard supports two channels (interfaces) with two devices on each channel. Enabled the second channel if your system has two PCI IDE connectors in use, either on the system board or on expansion boards. Disable the second channel if a second IDE connector is not present or not in use.

PCI IRQ Activated By

Leave the IRQ trigger set at Level unless the PCI device assigned to the interrupt specifies Edge-triggered interrupts.

PCI IDE IRQ Map To

This field lets you select PCI IDE IRQ mapping or PC AT (ISA) interrupts. If your system does not have one or two PCI IDE connectors on the system board, select values according to the type of IDE interface(s) installed in your system (PCI or ISA). Standard ISA interrupts for IDE channels are IRQ14 for primary and IRQ15 for secondary.

Primary/Secondary IDE INT#

Each PCI peripheral connection is capable of activating up to four interrupts: INT# A, INT# B, INT# C and INT# D. By default, a PCI connection is assigned INT# A. Assigning INT# B has no meaning unless the peripheral device requires two interrupt services rather than just one. Because the PCI IDE interface in the chipset has two channels, it requires two interrupt services. The primary and secondary IDE INT# fields default to values appropriate for two PCI IDE channels, with the primary PCI IDE channel having a lower interrupt than the secondary.

4.8 Integrated peripherals Menu

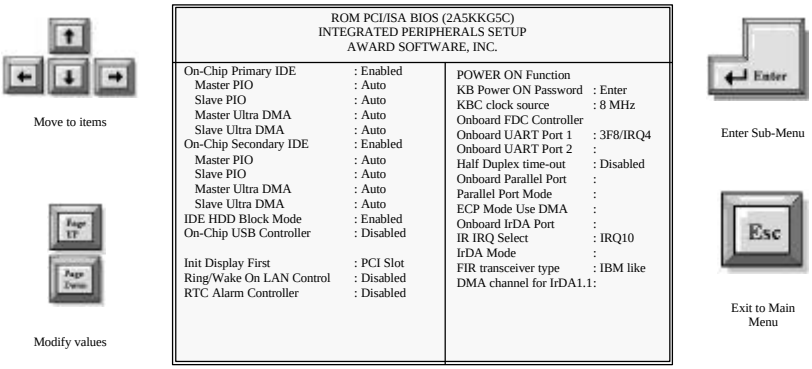

Figure 7: Integrated Peripherals setup Menu

On-chip Primary IDE

The chipset contains a PCI IDE interface with support for two IDE channels. Select Enabled to activate the primary IDE interface. Select Disabled to deactivate this interface. The choice: Enabled, Disabled.

On-Chip Secondary IDE

The chipset contains a PCI IDE interface with support for two IDE channels. Select Enabled to activate the secondary IDE interface. Select Disabled to deactivate this interface. The choice: Enabled, Disabled.

On-Chip Primary/Secondary Master/Slave PIO

The four IDE PIO (Programmed Input/Output) fields let you set a PIO mode (0-4) for each of the four IDE devices that the onboard IDE interface supports. Modes 0 through 4 provide successively increased performance. In Auto mode, the system automatically determines the best mode for each device. The choice: Auto, Mode 0, Mode 1, Mode 2, Mode 3, Mode 4.

On-Chip Primary/Secondary Master/Save UDMA

Ultra DMA/33 implementation is possible only if your IDE hard drive supports it and the operating environment includes a DMA driver (Windows 95 OSR2 or a third-party IDE bus master driver). If your hard drive and your system software both support Ultra

DMA/33, select Auto to enable BIOS support. The Choice: Auto, Mode 0, Mode 1, Mode 2.

IDE HDD Block

Block mode is also called block transfer, multiple commands, or multiple sector read/write. If your IDE hard drive supports block mode (most new drives do), select Enabled for automatic detection of the optimal number of block read/writes per sector the drive can support. The Choice: Enabled, Disable.

On-Chip USB Controller

Select Enabled if your system contains a Universal Serial Bus (USB) controller.
The choice: Enabled, Disabled.

Ring / Wake On LAN Control

An input signal on the serial ring Indicator (RI) line (in other words, an incoming call on the modem) awakens the system from a soft off state.
This option specifies whether the computer responds to an incoming call or not. Wake-On-LAN requires a PCI add-in network interface card with remote wakeup capabilities.

Onboard FDC Controller

Select Enabled if your system has a floppy disk controller (FDC) installed on the system board and you wish to use it. If you install and-in FDC or the system has no floppy drive, select Disabled in this field. The choice: Enabled, Disabled.

Onboard UART Port1 / Port 2

This item allows you to determine access onboard serial port 1/port 2 controller with which I/O address. The choice: 3F8/IRQ4, 2E8/IRQ3, 3E8/IRQ4, 2F8/IRQ3, Disabled, Auto.

Onboard Parallel Port

This item allows you to determine access onboard parallel port controller with which I/O address. The choice: 378H/IRQ7, 278H/IRQ5, 3BC/IRQ7, Disabled.

Parallel Port Mode

Select an operating mode for the onboard parallel (printer) port. Select Normal unless your hardware and software require one of the other modes offered in this field.
The choice: PS/2, EPP1.9, ECP, ECPEPP1.9, SPP, EPP1.7.

ECP Mode Use DMA

Select a DMA channel for the parallel port for use during ECP mode.The choice: 3, 1.

Onboard IrDA Port

IR IRQ Select/ IrDA Mode/ FIR transceiver type/ DMA channel for IrDA1.1

This item allows you to determine which Infra Red (IR) function of onboard I/O chip. The choice: Normal, AS KIR, IrDA and FIR.

4.9 Load Setup Defaults

The chipset defaults are settings which provide for maximum system performance. While Award has designed the custom BIOS to maximize performance, the manufacturer has the right to change these defaults to meet their needs.

4.10 User Password

When you select this function, a message appears at the center of the screen:
ENTER PASSWORD:
Type the password, up to eight characters, and press Enter. Typing a password clears any previously entered password from CMOS memory. Now the message changes:
CONFIRM PASSWORD:
Again, type the password and press Enter.
To abort the process at any time, press Esc.
In the *Security Option* item in the **BIOS Features** Setup screen, select *System* or *Setup*:

System	Enter a password each time the system boots and whenever you enter Setup.
Setup	Enter a password whenever you enter Setup.

NOTE: To clear the password, simply press Enter when asked to enter a password. Then the password function is disabled.

4.11 IDE HDD Auto Detection

BIOS setup will display all possible modes that supported by the HDD including NORMAL, LBA & LARGE. If HDD does not support LBA modes, no ‘LBA’ option will be shown. If no of cylinders is less than or equal to 1024, no ‘LARGE’ option will be show. Users can select a mode which is appropriate for them

4.12 Save & Exit Setup

This feature allows the changes to be made to the CMOS setup to be saved. The system will resume booting after a successful save.

4.13 Exit Without Saving

Abandon all CMOS value changes and exit setup without saving.