



*Socket 370
AGP/PCI/ISA
Motherboard*

SL620

User's Manual



Declaration

Declaration

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Compliance & Certificate

Compliance & Certificate

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This device was produced in our plant with advanced quality system certified by DNV QA Ltd. in according to ISO 9001. This Certificate is valid for:
DESIGN & MANUFACTURE OF MOTHER BOARDS AND PERSONAL COMPUTERS.

CE Declaration:

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.

FCC Compliance:

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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 device accept any interference received, including interference that may cause undesired operation of this product.

Year 2000 Compliance:

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

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 Slot 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. 3.4.

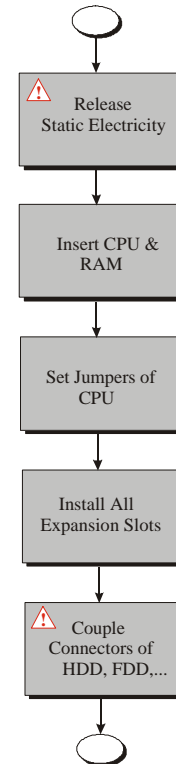
Set CPU speed in according to Sec.3.3.2.

After completing the above steps, install any expansion

Card(EISA) into riser card and have the riser card installed firmly into the slot for riser card on board.

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.



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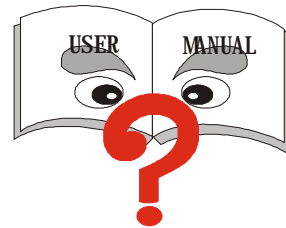
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1. Introduction

1. Introduction

1.1 How To Use This Manual

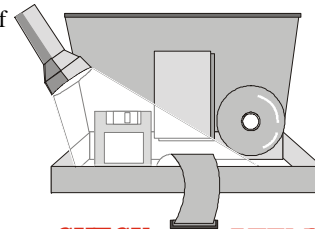
This manual provides information necessary for Original Equipment Manufactures (OEMs) and home users to build a PC-AT compatible system using the AGP/PCI/ISA motherboard. Follow the installation procedure presented on the **Easy Installation Page** and refer to the section number following each step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



1.2 Check Your Device Items

The standard package should contain the following items. If you find any of these items be missing or damaged, please contact your retailer.

- The SL620 motherboard
- 1 IDE ribbon cable
- 1 floppy ribbon cable
- 1 CD with drivers of Audio and SiS AGP Driver
- 1 User's Manual



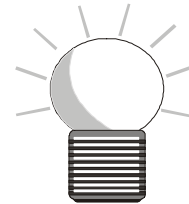
1. Introduction

2. Features

2. Features

2.1 Features Of The Motherboard

This product is based on the "LPX" form factor. It features the advanced Multimedia function and provides support for business PC maker. This motherboard incorporates SIS new Socket 370 AGP/PCI/ISA 100MHz chipset. Providing features such as integrated 3D AGP Graphic controller, Ultra DMA 33/66 IDE Interface, ACPI power management, and PCI 3D sound support.



Processor

- ZIF Socket 370 mechanism
- Support 66/100 MHz FSB

Chipset

- SiS 620/5595 AGP/PCI/ISA Chipset
- Winbond 83877TF Super I/O Controller

System Memory

- Two 168-pin DIMM sockets
- Minimum 8MB up to maximum 256MB
- Support 66MHz / 100MHz SDRAM DIMM module

Graphics Support

- Integrated H/W 3D AGP Graphic controller (2X Mode)
- Share Frame Buffer Architecture

PCI Bus Master IDE Controller

- Two PCI Bus Master IDE Ports (Up to 4 IDE Devices) for Tape Backup machines and CD-ROMs. Either the 5.25-inch or 3.5 inch (1.44MB or 2.88MB) floppy drives can be used without requiring an external card. Additionally, Floppy 3 mode (Japanese standard 3.5 inch disk drive, 1.2MB) and LS-120 floppy disk drives (3.5 inch disk drive: 120MB, 1.44MB, 720K) are also supported
- Support Ultra DMA 33/66 MB/sec (ATA33/ATA66)
- Support PIO Mode 4, run in 17 MB/sec.(Max)

2. Features

Integrated I/O

- 1 Floppy Port (up to 2.88 MB)
- 1 Parallel Port (ECP/EPP)
- 2 Serial Ports (16C550 Fast UART Compatible)
- 1 PS/2 Mouse Connector, 1 PS/2 Keyboard connector
- 2 Standard USB Connector (48MHz)
- 1 VGA port

System BIOS

- 2MB Flash EPROM
- IDE Hard Disk Driver Auto-configuring
- Plug & Play support steerable DMA Channels and Interrupts. ISA Plug & Play, PC98 and ACPI compatible. Multi-Boot. PCI Add-In card Auto-Configure
- Boot-Up from CD-ROM supported

Green Features

- Power Management: APM 2.1
- Additionally, with support for ACPI (Advanced Configuration and Power Interface) feature and On-Now, your system will become more wise in power management

Sound System (Optional)

- ESS SOLO-1 PCI 3D Audio Chip
- 3 Audio Phone Jacks (Line out, Line in, Mic-In)
- 1 MIDI/Game port, 1 CD In, 1 Modem In, 1 AUX In header

Additional features

- Wake-On-LAN header
- Modem Ring-In function
- Front side USB header
- Hardware Monitor Support

Expansion Slots

- 1 EISA expansion slot

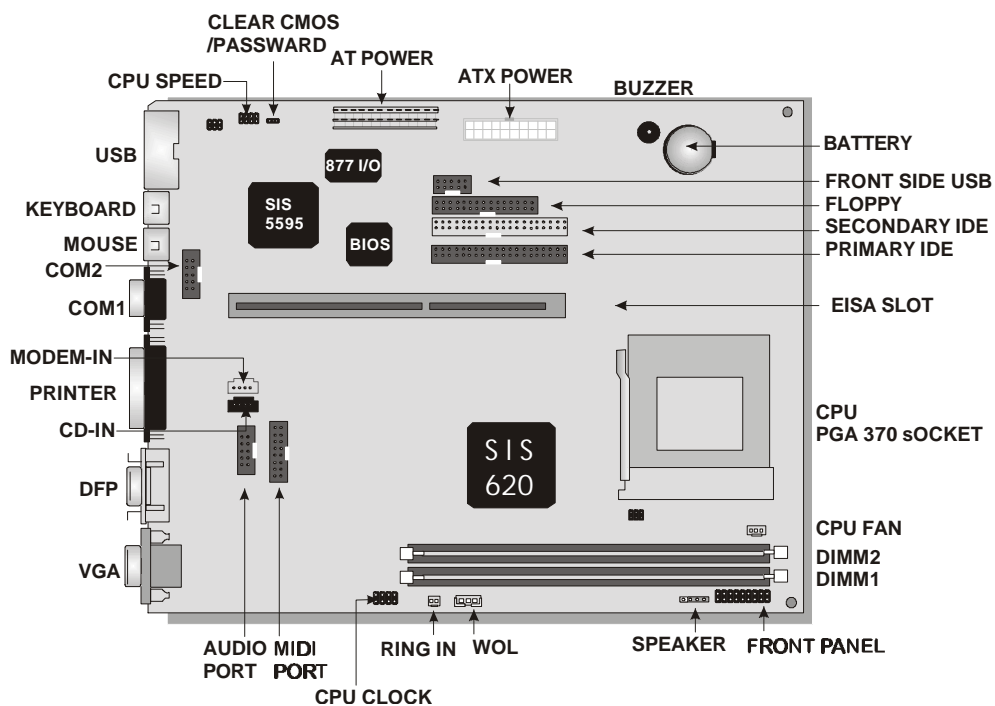
Mechanical

- This motherboard complies with the LPX Form Factor specifications and is a four layers with dimensions of 8.86" x 10"

3. Installation

3. INSTALLATION

3.1 Motherboard Layout & Main Parts



3. Installation

Significant Parts List

Front Panel Connectors

Power Switch	Sec. 3.5.9
Power LED	Sec. 3.5.10
Speaker	Sec. 3.5.11
Reset	Sec. 3.5.6
Sleep	Sec. 3.5.8
HDD LED	Sec. 3.5.7

Back Panel Connectors

PS/2-style keyboard and mouse connectors	Sec. 3.5.13
USB connectors	Sec. 3.5.14
Two serials ports	Sec. 3.5.16
One parallel port	Sec. 3.5.15

Expansion Slots/sockets

SEC CPU Slot	Sec. 3.3
DIMM Sockets	Sec. 3.4.

Power/IDE/FDD Connectors

IDE connectors	Sec. 3.5.1, 3.5.2
Power connector	Sec. 3.5.4
FDD connector	Sec. 3.5.3

Additional Connectors

Clear CMOS	Sec. 3.5.25
Front Side USB	Sec. 3.5.20
USB Select	Sec. 3.5.20
VGA Select	Sec. 3.5.23
Ring-In	Sec. 3.5.22
CPU Fan	Sec. 3.5.25
Modem-IN	Sec. 3.5.27
WOL Connector	Sec. 3.5.21

3. Installation

Precaution Before Start

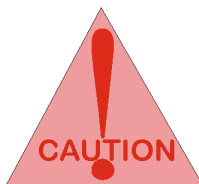
Static Electricity Damage:



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. Avoid touching the components. When handling the motherboard or an adapter card. 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. Incorrect 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

3.2 Slots And Connectors

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



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

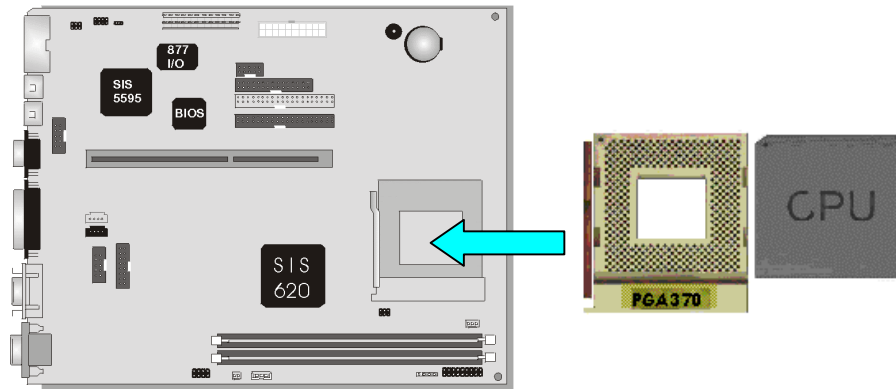
Slots/Connectors List

J12: EISA Slot	J7: Primary IDE Connector
J23: Front Panel	J9: Secondary IDE Connector
DFP1: DFP Connector	J6: Floppy Connector
JP2: Clear Cilius Password	J10: Serial Port (COM 1)
JP1: CPU Speed / Ratio Select	J11: Serial Port (COM 2)
J16: MIDI Port	J14: Parallel Port (LPT 1)
J17: Audio Port	J19: VGA Connector
J13: MODEM-IN	J22: WOL (Wake On LAN)
JP4: Select on Board VGA Enable/Disable	J20: Ring-IN (WOR-Wake On Ring)
JP5: DFP Enable/Disable	J18: CPU FAN
J5: Keyboard	J2: ATX Power Connector
J8: Mouse	J21: Speaker
J4: Front Side USB	J1: AT Power Connect
J3: USB	
JP1, JP2, JP3 Host Frequency select	
JP6-9: CPU Clock Select	

3. Installation

3.3 CPU (Central Processing Unit)

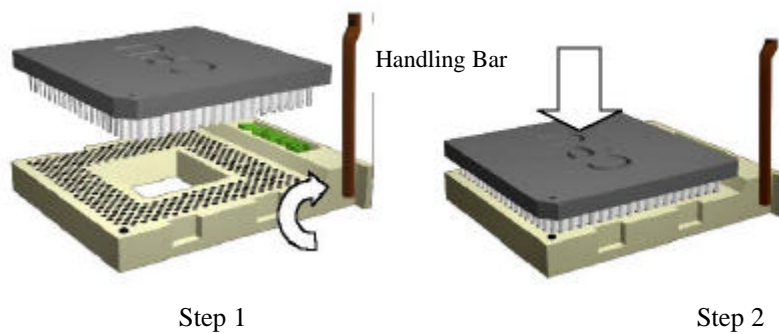
This motherboard support a Socket 370 Intel Celeron PGA family processor.
To complete CPU installation, please install CPU to socket firmly and arrange jumper settings carefully, presented in sec. 3.2.1 and 3.2.2.



3.3.1 Install CPU

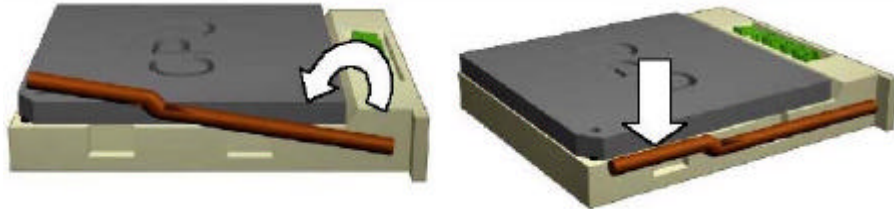
Please follow the below steps to install your CPU, and configure the types and speed in accordingly to the Processor Jumper Setting List.

- Step 1: Pull the handling bar of the socket upward to the other end to loosen the socket's openings.
- Step 2: Place the CPU on the middle of the socket, orienting its beveled corner to line up with the socket's beveled corner. Make sure the pins of the CPU fit evenly to the socket openings.



3. Installation

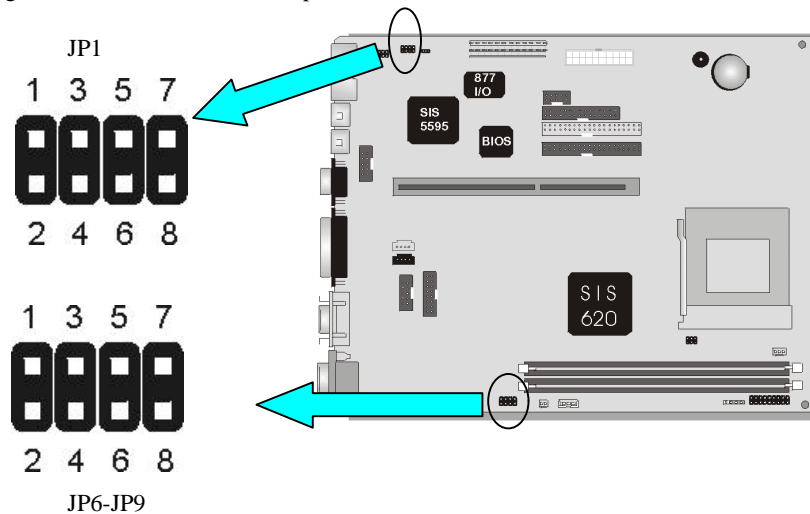
Step 3: Press the handling bar downward to fasten the CPU to the socket.



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 CPU and the heatsink/fan will further cool the CPU.

3.3.2 Set CPU Frequency/Speed

For different CPU speeds, you have to configure the jumper settings for your CPU. Refer to the figures and tables below to complete this installation.



JP1 settings are for CPU Ratio. Refer to Table 1 below for correct configuration. JP6-JP9 settings are for CPU SDRAM and Speed settings. Refer to Table 2 below for correct configuration.

3. Installation

Refer to the following table to configure your CPU settings.

CPU/BUS Ratio	JP1			
X1				
X3.5				
X4				
X4.5				
X5				
X5.5				
X6				
X6.5				
X7				
X7.5				
X8				

Table 1 Setting CPU/BUS Ratio

3. Installation

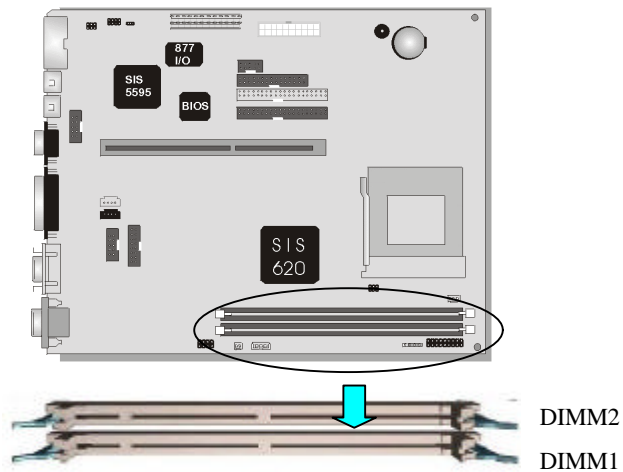
HOST/SDRAM Speed (MHz)	JP6	JP7	JP8	JP9
66/66				
66/100				
100/100				
100/66				

Table 2 Setting CPU Speed and SDRAM

3.4 System Memory (DRAM)

3.4.1 DIMM (Dual Inline Memory Module)

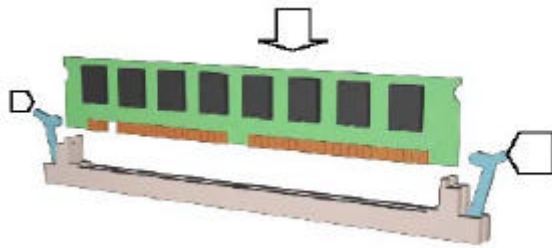
The IN620 features two 168-pin DIMM sockets, share memory module. If you have only one DIMM RAM, note that you must insert it into DIMM 1. You can configure the system memory size from 8MB to 1GB in a variety of ways by using different combinations of the two 168-pin DIMM.



3. Installation

3.4.2 Installation Procedure

- Step1:** Make sure Pin 1 of the DIMM match with 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.



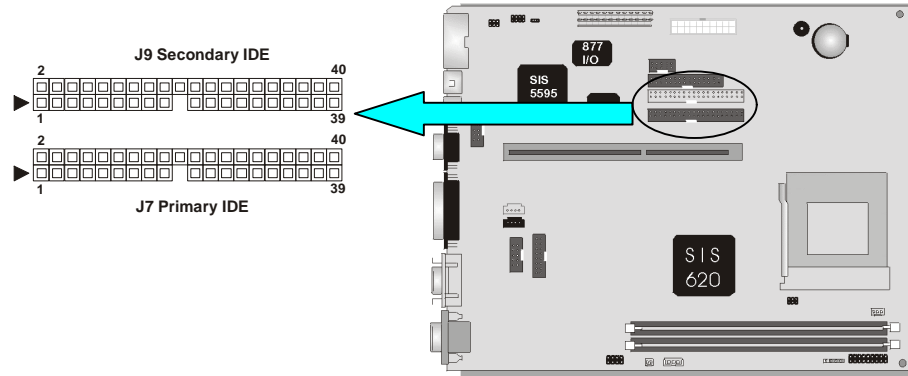
If the pin 1 of the DIMM module does not line up with pin 1 of the socket, the DIMM module will not be inserted correctly into the socket.

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

3. Installation

3.5 Connectors

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



3.5.1 Primary IDE Connector (J7, 39-pin block, Black)

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.

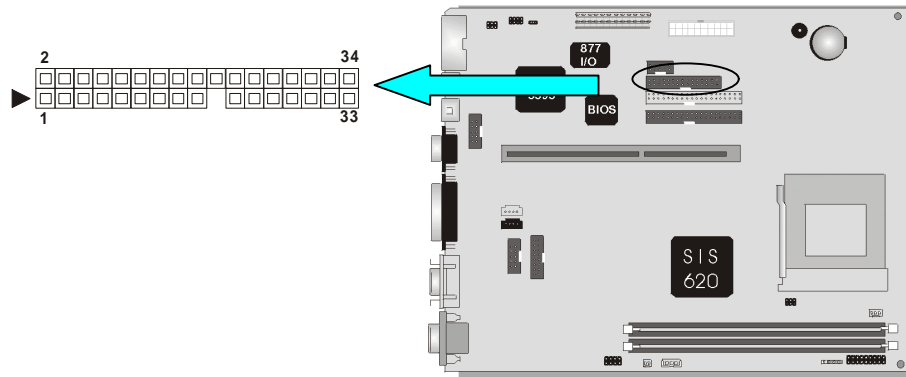
3.5.2 Secondary IDE Connector (J9, 39-pin block, White)

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 indicated 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.

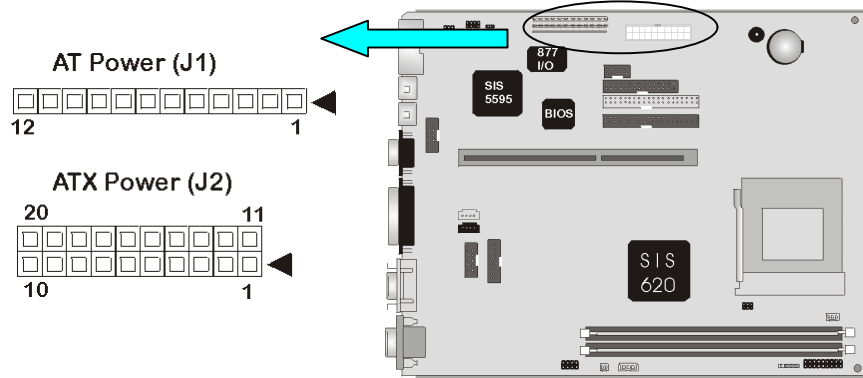
3. Installation

3.5.3 Floppy Drive Connector (J6, 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 (J24). The floppy disk interface includes 48mA drivers and inputs on the drive interface.

3.5.4 Power Input Connector (J1 and J2, 20-pin block)



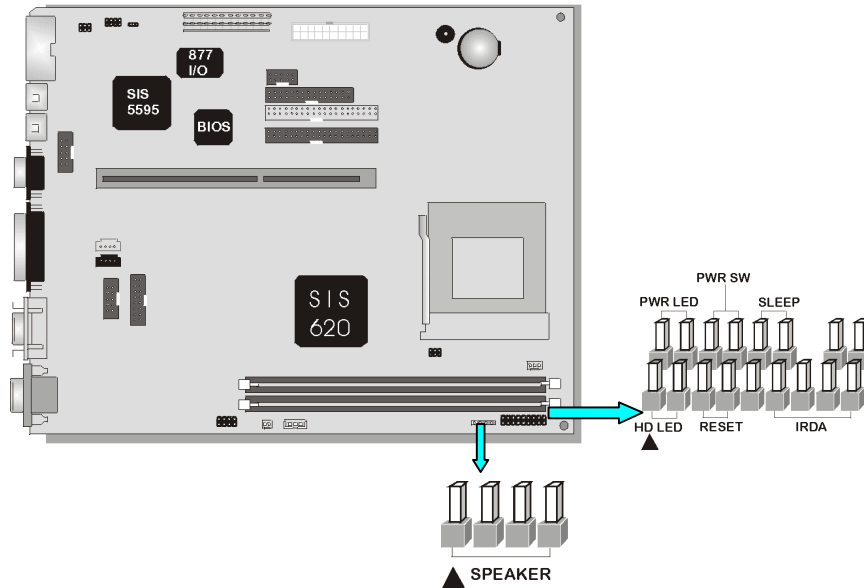
This connector supports one standard AT Power and one standard ATX power supply. When connecting, make sure the lock key matches the hook attached on a power supply cable. The power cord should be unplugged when you connect it.

3. Installation

3.5.5 Front Panel connectors (J23, 15-pin)

Front Panel includes headers for the following six I/O connectors:

Power Switch, Power LED, Speaker, Reset, Sleep and HDD LED.



3.5.6 Reset Switch Connector (J23, 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.

3.5.7 HDD (IDE) LED Connector (J23, 2-pin)

The IN620 supports one straight 4-pin header for connecting to front Panel Hard Disk activity LED indicator.

3.5.8 Sleep Switch (J23, 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 .

3. Installation

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

3.5.9 Power Switch (J23, 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 than 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.

3.5.10 Power LED (J23, 2-pin)

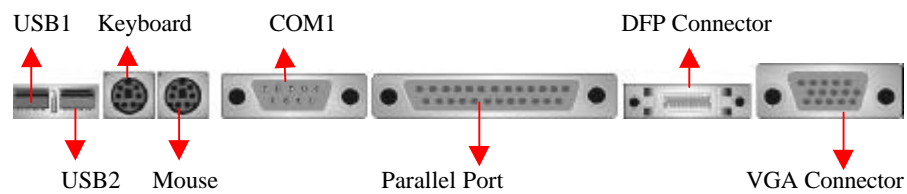
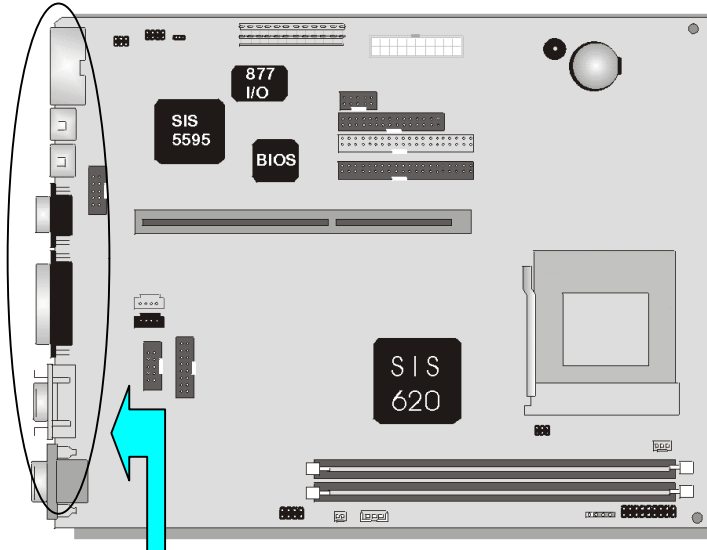
This header can be connected to a 2-color LED that will light yellow or green when the computer is in suspend or normal operation.

3.5.11 Speaker Connector (J21, 4-pin)

It is used to drive a chassis-mounted speaker if desired. Or this header will be removed and replaced with an integrated Buzzer.

3. Installation

3.5.12 Back Panel Connectors



3.5.13 PS/2 Keyboard and Mouse Ports (J5 & J8)

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



3. Installation

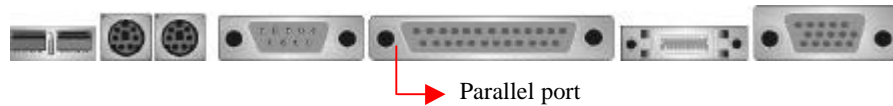
3.5.14 Universal Serial Bus (USB) Ports (J3)

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.



3.5.15 Parallel Port (Printer, J14)

The SL620 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.



3.5.16 Serial Port (COM1, J10/ COM2, J11)

The motherboard has two serial ports (one on rear panel, one on board). The electrical characteristics are compliant with the EIA-232-D Serial Communications Specifications. The serial ports may be remapped over other installable serial ports or disabled through the BIOS.



3.5.17 DFP Connector (DFP)

The DFP Connector is served for connecting Digital Monitor.



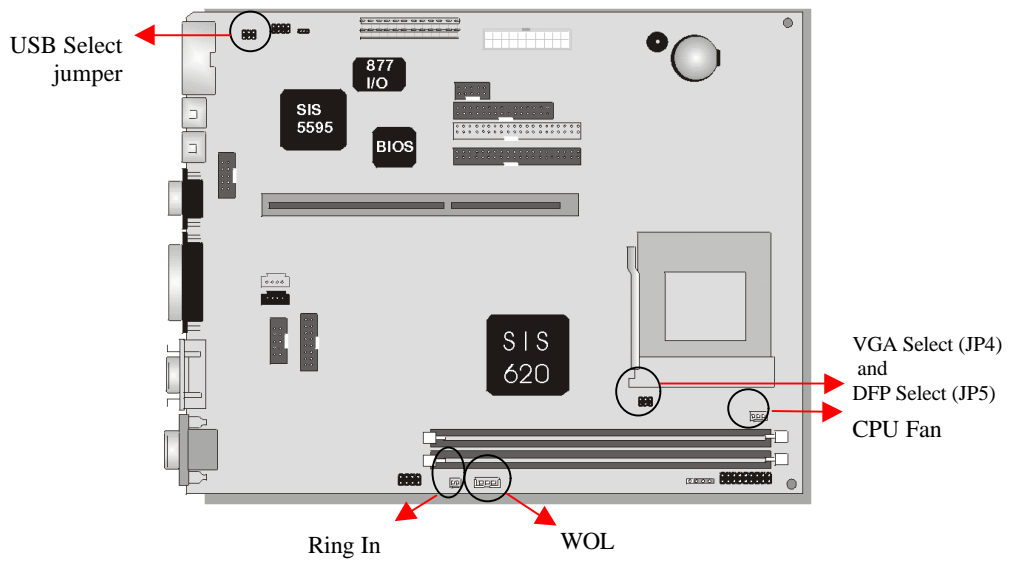
3. Installation

3.5.18 VGA (J19)

The Accelerated Graphics Port (AGP or A.G.P.) is a high performance interconnect targeted at 3D graphical display applications.



3.5.19 Additional Connectors



3.5.20 Front USB Header (JP3, 6-pin)

You can use either this Front USB or Back Panel USB by setting the USB Select jumper. The following table shows the jumper settings.

USB Select Jumper

USB Select	Front USB	Back USB
JP3		

3. Installation

3.5.21 WOL (Wake On LAN) (J22, 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.

3.5.22 Ring In (J20, 2-pin)

This header is used for remote wakeup of the computer through a modem. Ring-In requires an add-in modem card with remote wakeup capabilities. The remote wakeup header on the add-in modem card must be connected to the onboard Ring-In header.

A connector is available for Modem In from PCI/ISA Modem drives.

3.5.23 On Board VGA Select (JP4, 3-pin)

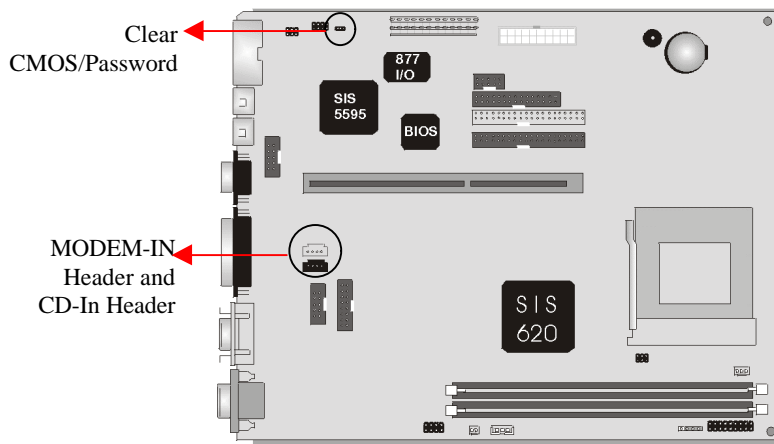
This header is used for selection of onboard VGA port or Add-in VGA card. To use the onboard VGA function, please leave the jumper uncapped.

3.5.24 Digital Flat Panel Support Select (JP5, 3-pin)

This header is used for selecting LCD Panel Support. To activate the LCD Panel function, leave the jumper uncapped.

3.5.25 CPU Fan (J18, 3-pin)

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



3. Installation

3.5.26 Clear CMOS/Password (JP2, 3-pin)

You can insert a cap over this header to clear the CMOS data, password, and reload the default settings.

3.5.27 MODEM-IN Header (J13, 4-pin, Green)

A connector is available for Modem In from PCI/ISA Modem devices such as speakerphones, fax modems, and answering machines..

Ready To Turn On Power

Check Again



1. Is the CPU installed exactly and firmly into the socket (Sec. 3.2)?
2. Are all the DRAM modules installed properly (Sec. 3.3)?
3. Did you insert the expansion card (VGA, Sound..etc.) already (Sec. 3.4)?

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 following the steps below.

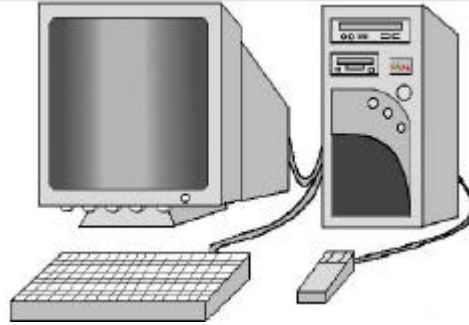
1. Mount your motherboard to the chassis frame and close the case cover.
2. Switch off all power.
3. Connect the power supply cord into inlet of the system case.
4. Connect the power supply cord into an outlet of power supply.
5. Connect Monitor signal cable to the system VGA port and the monitor power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

3. *Installation*

If the power-on test goes well, hold down <F2> button on the keyboard to enter BIOS Setup. Next, follow the instructions in the next chapter, **BIOS SETUP**.



4. BIOS Setup

4. BIOS Setup



The IN620 motherboard uses AWARD BIOS, which is stored in a Flash EEPROM and can be upgraded by a floppy disk-based program. The BIOS 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 CMMOS 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 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 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

The keys below help you navigate in Setup.

<↑> , <↓>	Move to previous or next item
<←> , <→>	Move to the item in the left or right hand

4. BIOS Setup

<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. BCM Advanced Research Inc. or 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.

4. BIOS Setup

Exit Without Save	Abandon all changes and exit Setup.
-------------------	-------------------------------------

4.3 Standard CMOS Setup Menu

In the Standard CMOS Menu (Figure 2) 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.

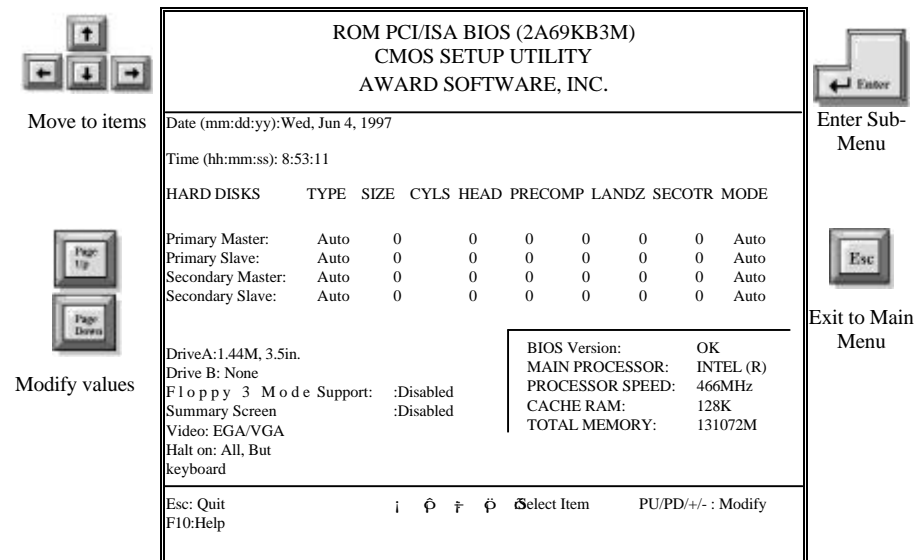


Figure 2: Standard CMOS Setup

4.3.1 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.

4.3.2 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.

4. BIOS Setup

4.3.3 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.

NOTE: We recommend that you select type AUTO for all drives.

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 detects its specifications during POST, every time the system boots.

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

1. Match the specifications of your installed IDE hard drive(s) with the preprogrammed values for drive types 1 through 45.
2. Select USER and enter values into each drive parameter field.
3. Use the IDE HDD AUTO DETECTION function in Setup.

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 precompensation factor, landing zone, and number of sectors. Drives whose 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 greater than the size of a formatted disk given by a disk-checking program.
- **Cyls:** Number of cylinders
- **Head:** Number of heads
- **Precomp:** Write precompensation cylinder
- **Landz:** Landing zone
- **Sector:** Number of sectors
- **Mode:** Auto, Normal, large, or LBA
- **Auto:** The BIOS automatically determines the optimal mode.
- **Normal:** Maximum number of cylinders, heads, and sectors supported are 1024, 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

4. BIOS Setup

- Transforms the data address described by sector, head, and cylinder number
- into a physical block address, significantly improving data transfer rates. For drives with greater than 1024 cylinders.

4.3.4 Drive A/B type

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

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

4.3.5 Floppy 3 Mode Support

This is required to support older Japanese floppy drives. Floppy 3 Mode support will allow reading and writing of 1.2MB (opposed to 1.44MB) in a 3.5 inch diskette. The configuration options are: [Disabled][Drive A][Drive B][Both].

4.3.6 Summary Screen

Video

Select the type of primary video subsystem in your computer. The BIOS usually detects the correct video type automatically. The BIOS supports a secondary video subsystem, but you do not select it in Setup.

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

4. BIOS Setup

Halt On

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

No errors	POST does not stop for any errors.
All errors	If the BIOS detect any non-fatal error, POST stops and prompts you to take corrective action.
All, But Keyboard	POST does not stop for a keyboard error, but stops for all other errors.
All, But Diskette	POST does not stop for diskette drive errors, but stops for all other errors.
All, But Disk/Key	POST does not stop for a keyboard or disk error, but stops for all other errors.

4.4 BIOS Features Setup Menu

This screen (Figure 3) contains industry-standard options additional to the core PC AT 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 omit or modify some fields.

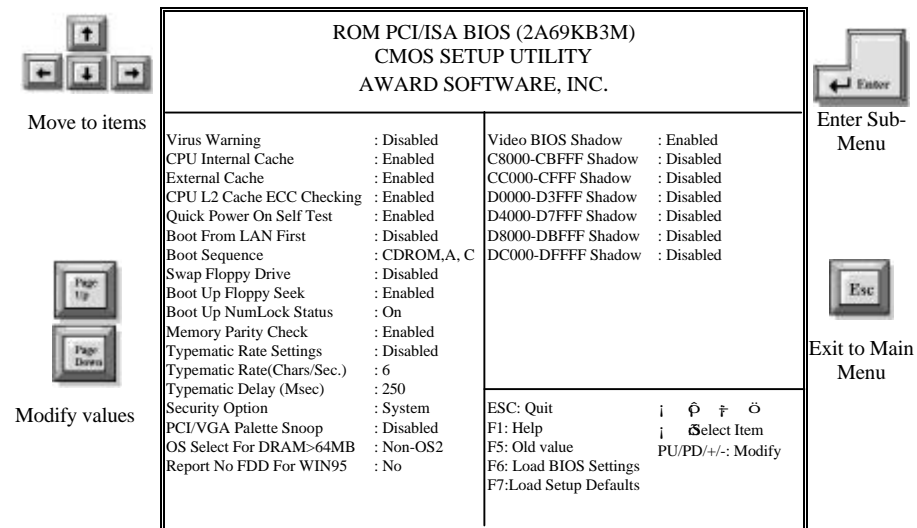


Figure 3: BIOS Features Setup Menu

4. BIOS Setup

4.4.1 Virus Warning

When enabled, you receive a warning message if a program (specifically, a virus) attempts to write to the boot sector or the partition table of the hard disk drive. You should then run an anti-virus program. Keep in mind that this feature protects only the boot sector, not the entire hard drive.

NOTE: 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 disable the virus warning.

4.4.2 CPU Internal Cache

Cache memory is additional memory that is much faster than conventional DRAM (system memory). Some CPU integrate a build-in Cache memory to speed up the data transfer. This item allows you to enable or disable the inter Cache.

4.4.3 External 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.

4.4.4 CPU L2 Cache ECC Checking

Select Enabled to allow CPU L2 Cache ECC Checking function.

4.4.5 Quick Power On Self Test

When enabled, allows the BIOS to bypass the extensive memory test. The options are: Enabled (Default), Disabled.

4.4.6 Boot From Lan First

When the system installs Lan Card with BootROM, the options enable could be boot from Network.

4.4.7 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 sequences options of three drive 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.

4. BIOS Setup

4.4.8 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.

or 80 tracks. Only 360-KB floppy drives have 40 tracks; drives with 720 KN< 1.2MB, and 1.44MB capacity all have 80 tracks. Because very few modern PCs have 40-track

4.4.9 Boot Up Floppy Seek

When *Enabled*, the BIOS tests (seeks) floppy drives to determine whether they have 40 floppy drives, we recommend that you set this field to *Disabled* to save time.

4.4.10 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.

4.4.11 Memory Parity Check

Leave it on default setting.

4.4.12 Typematic Rate Setting

When *Disabled*, the following two items (Typematic Rate and Typematic Delay) are irrelevant. Keystrokes repeat at a rate determined by the keyboard controller in your system. When *Enabled*, you can select a typematic a\rate and typematic delay.

4.4.13 Typematic Rate (Chars/Sec)

When the typematic rate setting is enabled, you can select a typematic rate (the rate at which character repeats when you hold down a key) of 6,8,10,12,15,20,24, or 30 characters per second.

4.4.14 Typematic Delay (Msec)

When the typematic rate setting is enabled, you can select a typematic delay (the delay before keystrokes begin to repeat) of 250, 500, 750 or 1000 milliseconds.

4.4.15 Security Option

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

4.4.16 PCI/VGA Palette Snoop

Some display cards that are not standard VGA such as graphics accelerators or MPEG cards may not show the correct colors, the setting can correct this problem once you set it to Enable, To default setting leave at Disabled.

4. BIOS Setup

4.4.17 OS Select for DRAM

Select OS2 only if you are running OS/2 operating system with greater than 64MB of RAM on your system.

4.4.18 Report No FDD For WIN 95

Leave on default setting.

4.4.19 Video BIOS Shadow

This field allows you to change the video BIOS location from ROM to RAM. Relocating to RAM enhances system performance, as information access is faster than the ROM.

4.4.20 C8000-CBFFF to DC000-DFFFF

These fields are used for shadowing other expansion card ROMs. If you install other expansion cards with ROMs on them, you will need to know which addresses the ROMs use to shadow them specifically. Shadowing a ROM reduces the memory available between 640KB and 102KB by the amount used for this purpose.

4.5 Chipset Features Setup Menu

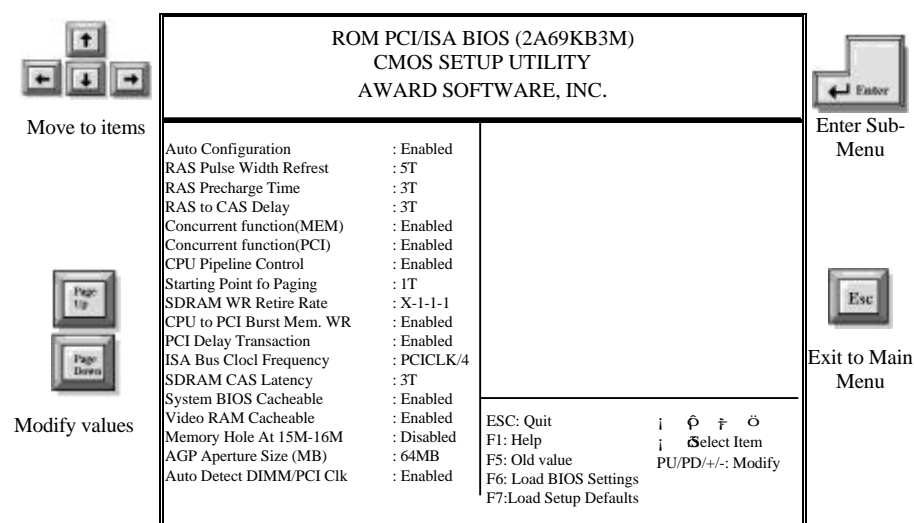


Figure 4: Chipset Features Setup Menu

4. BIOS Setup

4.5.1 Auto Configuration

This item allows you to select pre-determined optimal values for DRAM, cache and 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

4.5.2 RAS Pulse Width Refresh

Leave on default setting.

4.5.3 RAS Precharge Time

This controls the idle clocks after issuing a precharge command to SDRAM. Leave on default setting, which is controlled by SPD.

4.5.4 RAS to CAS Delay

This controls the latency between SDRAM active command and the read/write command. Leave on default setting, which is controlled by SPD.

4.5.5 Concurrent function(MEM)

If each bus master cycle does not take the same path, it allows the multiple bus master cycles to be acted at the same time.

4.5.6 Concurrent function(PCI)

If each bus master cycle does not take the same path, it allows the multiple bus master cycles to be acted at the same time.

4.5.7 CPU Pipeline Control

Enable/disable the CPU pipeline control. The choice: Enabled, Disabled.

4.5.8 Starting Point of Paging

This value controls the start timing of memory paging operations. The choice: 1T, 2T, 4T, 8T.

4.5.9 SDRAM WR Retire Rate

The system designer must select the correct timing for data transfers from the write buffer to memory, according to DRAM specifications. The choice: X-1-1-1, X-2-2-2.

4.5.10 CPU to PCI Burst Mem. WR

Select enabled permits PCI burst memory write cycles, for faster performance. When

4. BIOS Setup

disabled, performance is slightly slower, but more reliable. Choices are Enabled, Disabled.

4.5.11 PCI 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.

4.5.12 ISA Bus Clock Frequency

You can set the speed of the AT bus at one-third or one-fourth of the CPU clock speed. The choice: 7.159MHz, PCICLK/3, PCICLD/4

4.5.13 SDRAM CAS latency

You can select CAS latency time in HCLKs of 2/2 or 3/3. The system board designer should set the values in this field, depending on the DRAM installed. Do not change the values in this field unless you change specifications of the installed DRAM or the installed CPU.

4.5.14 System BIOS Cacheable

Select Enabled allows caching of the system BIOS ROM at F000h-FFFFh, resulting in better system performance. However, if any program writes to this memory area, a system error may result.

4.5.14 Video RAM Cacheable

Select Enabled allows caching of the video RAM, resulting in better system performance. However, if any program writes to this memory area, a system error may result.

4.5.15 Memory Hole at 15M-16M

In order to improve performance, certain space in memory can be reserved for ISA cards. This memory must be mapped into the memory space below 16 MB. You can reserve this area of system memory for ISA adapter ROM. When that 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.

4.5.16 AGP 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. See www.agpforum.org for AGP information.

4. BIOS Setup

4.5.17 Auto Detect DIMM/PCI Clk

When enabled selected, the system will close all the clocks that you had never used.

4.6 Power Management Setup Menu

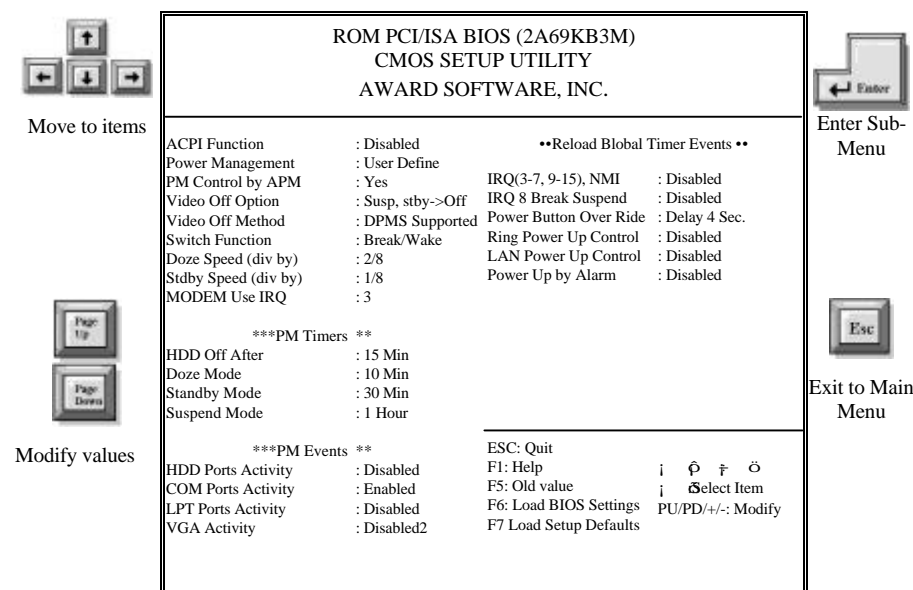


Figure 5: Power Management Setup Menu

4.6.1 ACPI function

The choices are Enabled and Disabled. This item allows you to enable/disable the Advanced Configuration and Power Management(ACPI).

4.6.2 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.

4. BIOS Setup

User Define	Set each mode individually. Select time-out periods in the <i>PM Timers</i> section, following.
Min Saving	Minimum power savings. Inactivity period is 1 hour in each mode (except the hard drive).

4.6.3 PM Control by APM

If Advanced Power Management (APM) is installed on your system, selecting *Yes* gives better power savings.

4.6.4 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 enter 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.

4.6.5 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.

4.6.6 Switch Function

You can choose whether or not to permit your system to enter complete Suspend mode. Suspend mode offers greater power savings, with a correspondingly longer awakening period. The choice: Bread/Wake, Disabled.

4.6.7 Doze Speed (div by)

Defines the continuous idle time before the system entering DOZE mode. The range is from 1 minute t 1 hour. If any item defined is enabled & active, STANDBY timer will be

4. BIOS Setup

reloaded.

4.6.8 Stdby Speed (div by)

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.

4.6.9 MODEM Use IRQ

Name the interrupt request (IRQ) line assigned to the modem (if any) on your system. Activity of the selected IRQ always awakens the system.

4.6.10 HDD Off After

After the selected period of drive inactivity (1 to 15 minutes), the hard disk drive powers down while all other devices remain active.

4.6.11 Doze Mode

Defines the continuous idle time before the system entering DOZE mode. The range is from 1 min to 1 Hr. If any item defined is enabled & active, STANDBY timer will be reloaded

4.6.12 Standby Mode

After the selected period of system inactivity (1 minute to 1 hour), the fixed disk drive and the video shut off while all other devices still operate at full speed.

4.6.13 Suspend Mode

After the selected period of system inactivity (1 minute to 1 hour), all devices except the CPU shut off.

4.6.14 HDD Ports Activity

When *Enabled*, any video activity restarts the global timer for Standby mode.

4.6.15 COM Ports Activity

When *Enabled*, any video activity restarts the global timer for Standby mode.

4.6.16 LPT Ports Activity

When *Enabled*, any video activity restarts the global timer for Standby mode.

4.6.17 VGA Activity

When *Enabled*, any video activity restarts the global timer for Standby mode.

4. BIOS Setup

4.6.18 IRQ [3-7, 9-15]

You can individually Enable or Disable each IRQ to include in the sleep function. IRQ8 (RTC Alarm) is usually set to Disable so that any software alarm clock or event calendar can wake up the system.

4.6.19 Power Button Over Ride

This is to setup the function of Power Button. Your system could be shut down by pressing the button 4 seconds, or immediately.

4.6.20 Ring Power Up control

Allows either settings of Enable or Disable for power up the computer (turns the AXT power supply on) when the modem begins receiving or transmitting data while the computer is off.

4.6.21 LAN Power Up Control

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.

4.6.22 Power Up by Alarm

This allows you to have an unattended or automatic power up of your system. You may configure your system to power at a certain time of the day by selecting Everyday, or on the 1st through the 31st by selecting the RTC Alarm Data.

4.7 PCI Configuration Setup Menu

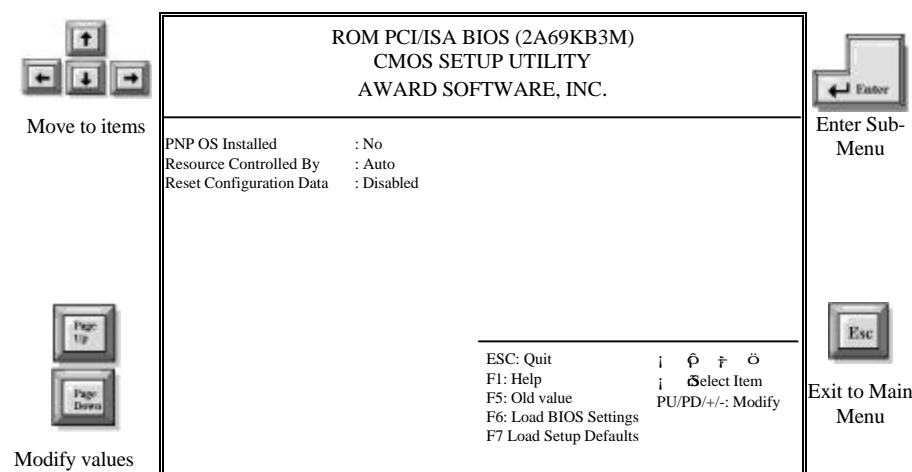


Figure 6: PNP/PCI Configuration Setup Menu

4. BIOS Setup

4.7.1 PNP OS Installed

The default setting is No when a non PNP OS installed or to prevent reassigning of interrupt setting for some of non PNP cards installed. Select Yes if the OS is PNP aware (e.g. Windows 95).

4.7.2 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 assign them.

4.7.3 Reset Configuration Data

Normally, you leave this field Disabled. Select Enabled to reset Extended System

Configuration Date (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.

4.8 Integrated peripherals Menu

ROM PCI/ISA BIOS (2A69KB3M) CMOS SETUP UTILITY AWARD SOFTWARE, INC.	
Internal PCI/IDE : Both	Onboard Serial Port : 3F8/IRQ4
IDE Primary Master PIO : Disabled	Onboard Parallel Port : 378/IRQ7
IDE Primary Slave PIO : Auto	Onboard Parallel Mode : Bi-Dir/EPP
IDE Secondary Master PIO : Auto	Parallel Port EPP Type : EPP 1.9
IDE Secondary Slave PIO : Auto	PS/2 mouse function : Enabled
Primary Master UDMA : Auto	USB Controller : Enabled
Primary Slave UDMA : Auto	USB Keyboard Support : Disabled
Secondary Master UDMA : Auto	Init Display First : AGP
Secondary Slave UDMA : Auto	VGA Shared Memory Size : 8MB
IDE Burst Mode : Enabled	Onboard Audio : Enabled
IDE HDD Block Mode : Enabled	Spred Spectrum : Disabled
Onboard FDD Controller : Enabled	
Delay For HDD (Sees) : 6	
DMI Event Log : Disabled	ESC: Quit i ⌘ ⌥ ⌘
Clear ALL DM Event Log : No	F1: Help j ⌘ Select Item
View DMI Event Log : Enter	F5: Old value PU/PD/+/-: Modify
Mark DMI Events as Read : Enter	
Event Log Capacity : Space Availabe	
Event Log Validity : Valid	

Figure 7: Integrated Peripherals Setup Menu

4.8.1 Internal PCI/IDE

This item specifies the IDE channel used by the onboard IDE controller. The choices are: Disabled, Primary, Secondary and Both.

4. BIOS Setup

4.8.2 IDE 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.

4.8.3 IDE Primary/Secondary Master/Slave UltraDMA

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.

4.8.4 IDE HDD Block Mode

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.

4.8.5 Onboard FDD 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 an add-in FDC or the system has no floppy drive, select disabled in this field.

4.8.6 Delay For HDD (Secs)

Setting Boot from Hard disk wait timing.

4.8.7 DMI Event Log

When any error occurs to the system accessories (such like keyboard, mouse..), it will be automatically record in the BIOS.

4.8.8 Clear All DMI Event Log

This is to clear all the error messages in the BIOS.

4.8.9 View DMI Event Log

This is to check if any device error in the BIOS record.

4.8.10 Mark DMI Events as Read

This is to Mark all the errors in the BIOS for analyze.

4. BIOS Setup

4.8.11 Event Log Capacity

This is to pre-set space in BIOS for error messages loading.

4.8.12 Event Log Validity

This is to confirm the safety of the space for error record.

4.8.13 Onboard Serial Port 1

Select an address and corresponding interrupt for the first and second serial ports.

4.8.14 Onboard Parallel Port

Select a logical LPT port name and matching address for the physical parallel (printer) port.

4.8.15 Onboard Parallel 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.

SPP	Standard parallel port mode (Default)
EPP	Bi-directional mode
ECP	Fast, buffered
ECP+EPP	Bi-directional and buffered

4.8.16 Parallel Port EPP Type

Select EPP port type 1.7 or 1.9. The choices: EPP 1.7, 1.9

4.8.17 PS/2 mouse function

Select Enabled or Disabled to set up your PS/2 mouse.

4.8.18 USB Controller

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

4.8.19 USB Keyboard Support

This is to select if the system is going to support USB keyboard or not.

4.8.20 Init Display First

This item allows you to decide to active whether PCI Slot or AGP first. The choices: PCI Slot, AGP.

4. BIOS Setup

4.8.21 VGA Shared Memory Size

This is to select the size of VGA Memory.

4.8.22 Onboard Video

This is to select onboard video, choices are: Enabled and Disabled.

4.8.23 Spread Spectrum

This feature is used to set the spread Spectrum to be center spread type or down spread type. The options are Enabled, Disabled (Default).

4.9 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.

4.10 Password Setting

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.