

HOT-623
Pentium™ II processor
Based PCI MAIN BOARD
User's Manual



FCC Notice:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy. If not installed and used properly, in strict accordance with the manufacturer's instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures :

Reorient or relocate the receiving antenna.

Increase the separation between the equipment and receiver.

Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

Consult the dealer or an experienced radio/television technician for help and for additional suggestions.

The user may find the following booklet prepared by the Federal Communications Commission helpful "How to Identify and Resolve Radio-TV Interference Problems." This booklet is available from the U.S. Government Printing Office, Washington, DC 20402, Stock 004-000-00345-4

FCC Warning

The user is cautioned that changes or modifications not expressly approved by the manufacturer could void the user's authority to operate this equipment.

Note : In order for an installation of this product to maintain compliance with the limits for a Class B device, shielded cables and power cord must be used.

CE Notice:

Following standards were applied to this product, in order to achieve compliance with the electromagnetic compatibility :

- Immunity in accordance with EN 50082-1: 1992
- Emissions in accordance with EN 55022: 1987 Class B.

NOTICE

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Manual Ver 1.0

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Preface

HOT-623 mainboard is a highly integrated IBM PC/AT compatible system board. The design will accept Intel Pentium II processors which features high-performance pipelined burst secondary cache memory support with size of 512KB or 256KB. The memory subsystem is designed to support up to 1GB of EDO RAM, Standard Fast Page DRAM in standard 72-pin SIMM socket.

HOT-623 provides a new level of I/O integration. Intel's 82440FX PCIset chipset provides increased integration and improved performance over other chipset designs. The 82440FX PCIset chipset provides an integrated Bus Mastering IDE controller with two high performance IDE interfaces for up to four IDE devices.

The onboard Giga I/O controller provides the standard PC I/O functions: floppy interface, two FIFO serial ports, an IrDA device port and a SPP/EPP/ECP capable parallel port.

Up to five PCI local bus slots provide a high bandwidth data path for data-movement intensive functions such as graphics, and up to three ISA slots complete the I/O function.

The HOT-623 provides the foundation for cost effective, high performance, highly expandable platforms, which deliver the latest in Pentium processor and I/O standard.

Chapter 1 Introduction

Specification

CPU Function

- ❑ Pentium II™ processors : 233, 266 and 300 MHz

Chipset

- ❑ Intel PClset 82440FX and 82371SB

Memory

- ❑ Supports four banks of EDO, BEDO and Fast Page Mode DRAM ranging from 8MB to 1GB
- ❑ Supports 4MB, 8MB, 16MB, 32MB, 64MB and 128MB 72-pins SIMMs

Cache Memory

- ❑ 32KB, on-chip, non-blocking L1 caches and a 512KB or 256KB on-board L2 non-blocking cache.

Power Management Function

- ❑ Provides four power management modes : Full on, Doze, Standby, and Suspend
- ❑ Supports Microsoft APM 1.2
- ❑ Provides EPMI (External Power Management Interrupt) pin

Expansions

- ❑ 32-bit PCI bus slot x 5

- 16-bit ISA bus slot x 3
- 2-channel PCI IDE port
 - Support up to 4 IDE devices
 - PIO Mode 4, DMA Mode 2 transfers up to 22 MB/sec
- One floppy port
- One parallel port
 - Supports **SPP** (PS/2 compatible bidirectional Parallel Port), **EPP** (Enhanced Parallel Port), and **ECP** (Extended Capabilities Port) high performance parallel port.
- Two serial ports
 - Supports 16C550 compatible UARTS.
 - Supports IrDA (Infrared) communication.
- One PS/2 mouse port
- Two USB (Universal Serial Bus) ports

System BIOS

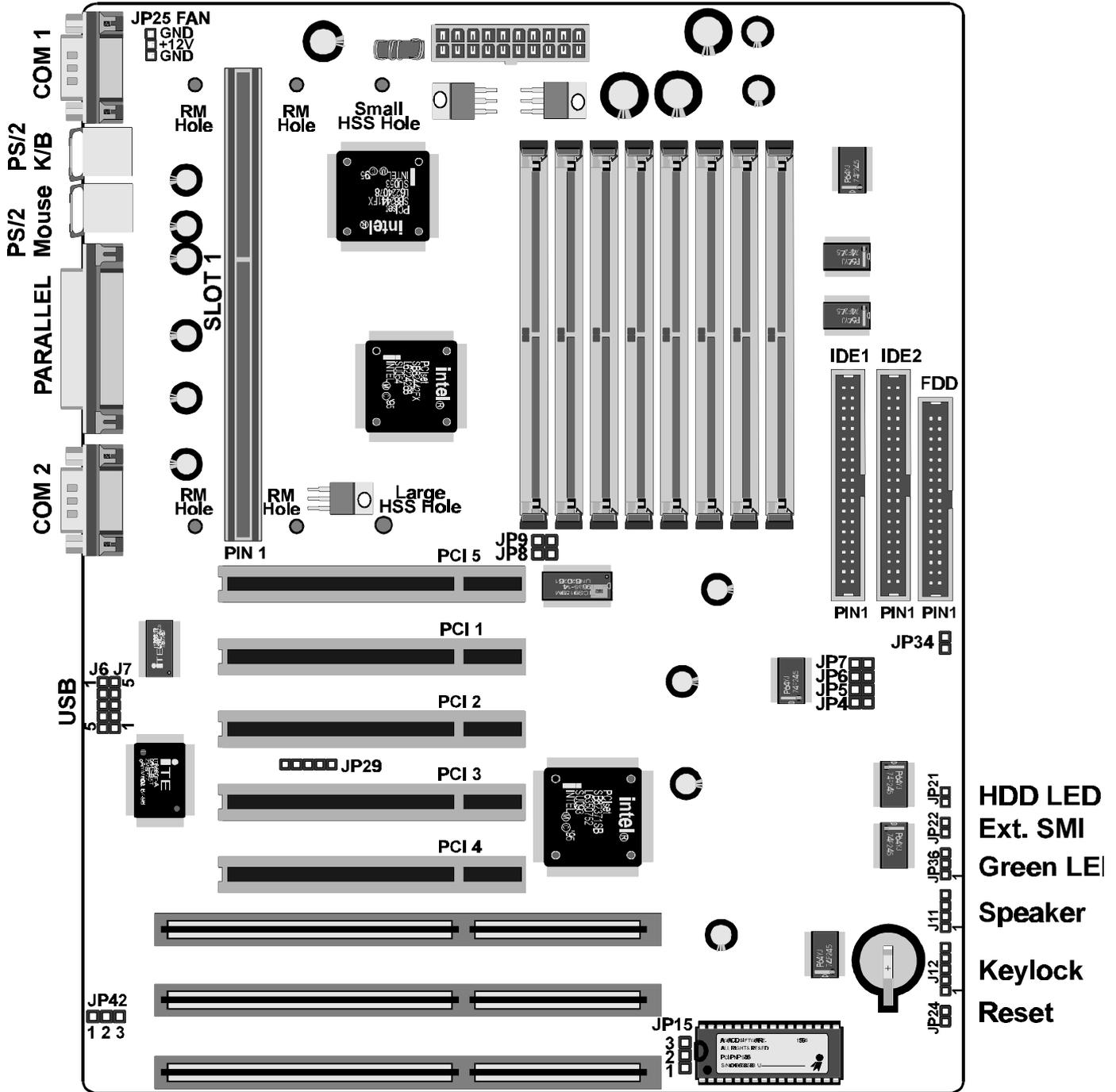
- Award PnP BIOS v4.51PG
 - Bundled with Symbios Login(NCR) SDCM V4.0 SCSI BIOS

Board Design

- ATX Form Dimension 305mm x 240mm

Chapter 2 Hardware Configuration

HOT-623 Layout



The Pentium II Processor

The Pentium II processor is the next member of the P6 processor family. It combines the architectural advances in the Pentium Pro processor with the instruction set extensions of MMX technology. It is fully compatible with the huge base of Intel architecture-based PC software. Additionally, the Pentium II processor delivers new levels of performance for advanced media and communications software including powerful, realistic graphics and imaging capabilities, video conference, and the ability to run full-screen, full-motion video. The combination of these advanced technologies makes the Pentium II processor the ideal choice for executing modern 32-bit compute-intensive and multimedia-enhanced application workloads using advanced 32-bit operating systems.

The Pentium II processor has a separate, 32KB, on-chip, non-blocking L1 cache which runs at the processor frequency and a 512KB or 256KB on-board L2 non-blocking cache runs at half the processor speed.

The Pentium II processor uses Single Edge Contact (S.E.C.) cartridge packaging technology which enables high volume availability, improved handling protection.

Recently released will feature Pentium II processors running at 233 and 266MHz.

Figure 2-0 shows the front, rear and top views of Pentium II processor (without heat sink mounted).

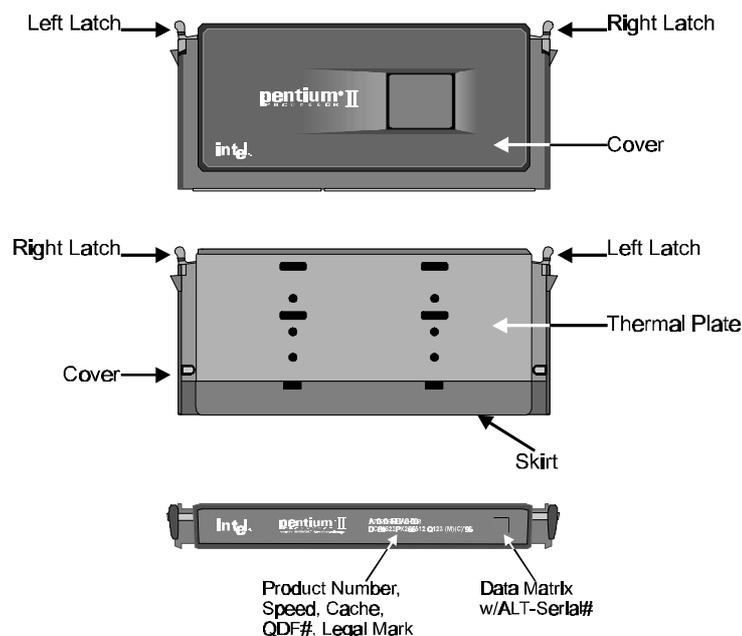


Figure 2-0

What does the RM (Retention Mechanism) consist of

Every HOT-623 mainboard shipped with a Retention Mechanism package which consists of 5 separate pieceparts:

- **Retention Mechanism (RM)**- Plastic Guide with captive nuts that hold the S.E.C. Cartridge in the Slot1 connector. (Refer to Figure 2-1-1)

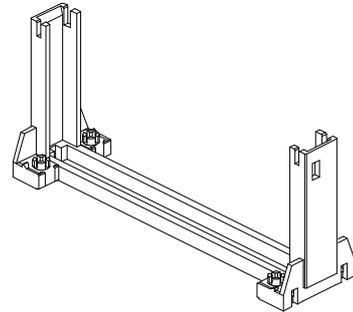


Figure 2-1-1

- **RM Attach Mount (RMAM)**- Bolt/Bridge assemblies inserted up through the bottom of the mainboard. RM secures to RMAM (two RMAM required per RM). (Refer to Figure 2-1-2)

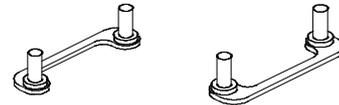


Figure 2-1-2

- **Heat Sink Support Base (HSSBASE)**- Plastic support bar mounted to the mainboard under the ATX heat sink. (Refer to Figure 2-1-3)

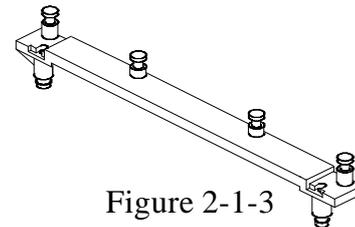


Figure 2-1-3

- **HSS Pin (HSSPIN)**- Plastic pins inserted through the HSSBASE to secure it to the mainboard (two required per Assembly). (Refer to Figure 2-1-4)

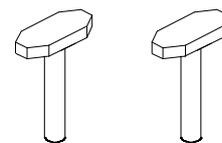


Figure 2-1-4

- **HSS Top Bar (HSSTOP)**- Plastic bar that clips onto the HSSBASE through the fins on the ATX heat sink. (Refer to Figure 2-1-5)

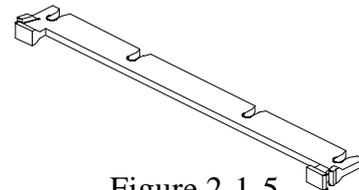


Figure 2-1-5

Install the Retention Mechanism and Heat Sink Support

Place the mainboard on a workbench (not in a chassis). Be sure that the mainboard is bare (that is, no SIMMs, cables, or cards are installed).

Install the Retention Mechanism :

1. Find out the Retention Mechanism (RM) Mounting Holes and "Pin 1" mark of Slot 1 on HOT-623 main board. (Refer to Figure 2-2)

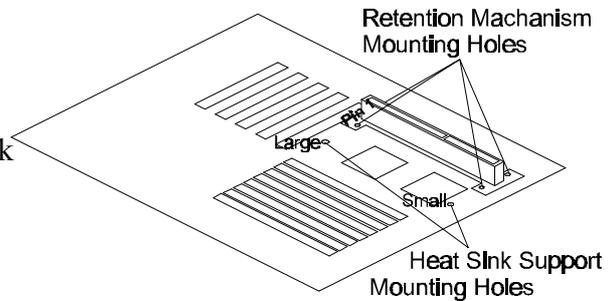


Figure 2-2

2. Install two Retention Mechanism Attach Mounts (RMAM) with Bolt/Bridge assemblies inserted up through the bottom of the mainboard. (Notice the RMAM's bridge orientation as Figure 2-3)

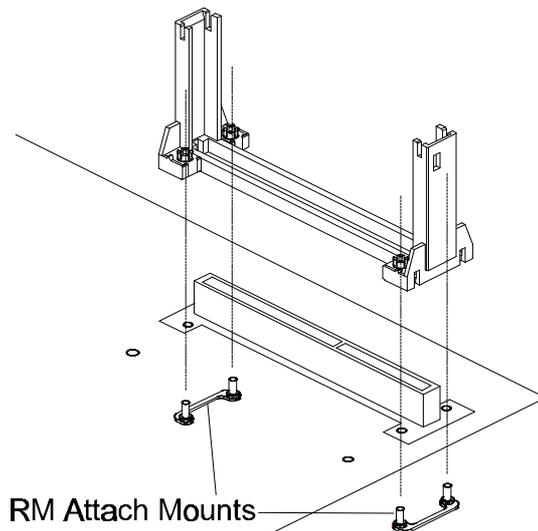


Figure 2-3

3. Insert the Retention Mechanism (RM) around the Slot 1. Be sure the Square Cut Mark of RM (Refer to Figure 2-4) have the same orientation of Slot 1 pin 1. (Refer to Figure 2-3)

4. Screw the four captive nuts (Refer to Figure 2-4) on the RM by a screw drive to secure RM to two RMAMs.

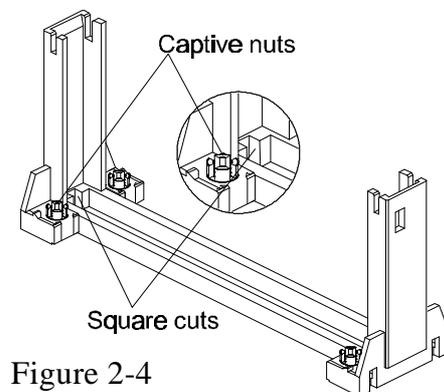


Figure 2-4

Install the Heat Sink Support:

Before you install the Heat Sink Support, please check your Pentium II processor, if you have an Intel boxed processor (Refer to Figure 2-5), you can ignore this section. In Intel boxed processor kit, it will includes it's own Heat Sink Support accessories and install manual, you can Install the Heat Sink Support onto the mainboard by following the Intel processor kit's instructions.

Figure 2-6 shows the OEM type Pentium II processor with active heat sink.

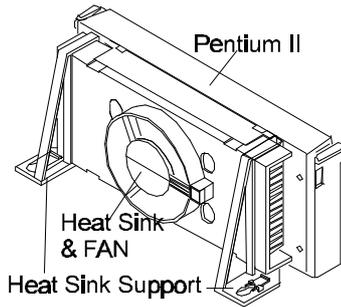


Figure 2-5

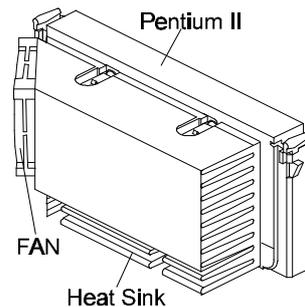


Figure 2-6

1. Finds out the Heat Sink Support (HSS) Mounting Holes on HOT-623 main board. Notice that one hole is larger than the other hole. (Refer to Figure 2-1)

2. There are two plastic pegs on the bottom of Heat Sink Support Base (HSSBASE) bar. Mount the two black plastic pegs onto the mainboard. Notice that one hole and the bar of one peg are larger than the other hole and peg. (Refer to Figure 2-7)

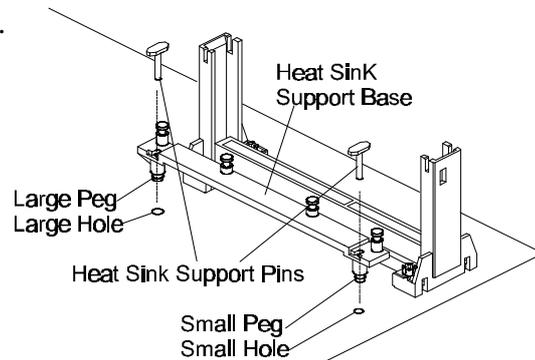


Figure 2-7

3. Insert the Heat Sink Pins (HSSPIN) through the HSSBASE to secure it to the mainboard. (Refer to Figure 2-7)

4. Insert the Pentium II into the RM firmly (Please refer to "Install Pentium II processor" section), Slide the Heat Sink Top Bar (HSSTOP) on the supports forward to clip onto the HSSBASE through the fins of Heat Sink. (Refer to Figure 2-8)

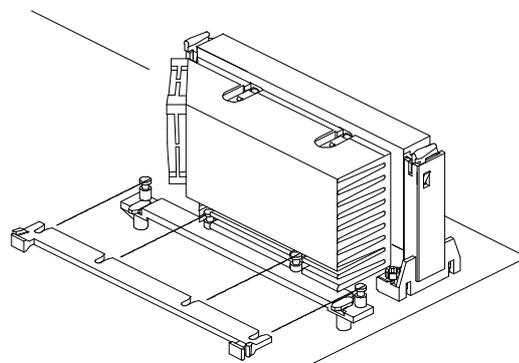


Figure 2-8

Install the Pentium II Processor

Push the latches on the processor toward the center of the processor until they click into place.

Hold the processor so that the fan shroud is facing toward the Heat Sink Support Base bar on the mainboard. Slide the processor into the Retention Mechanism. Ensure that the alignment notch in the processor fits over the plug in Slot 1. Push the processor down firmly, with even pressure on both sides of the top, until it is seated.

Push the latches on the processor outward until they click into place in the Retention Mechanism. The latches must be secured for proper electrical connection of the processor. Slide the Heat Sink Top Bar (HSSTOP) on the supports forward to clip onto the HSSBASE through the fins of Heat Sink. (Also refer to "Install Heat Sink Support" section)

Attach the end of the power cable to the three-pin connector on the mainboard or to the power cord of ATX power supply (depend on power cable type of Fan/Heat Sink).

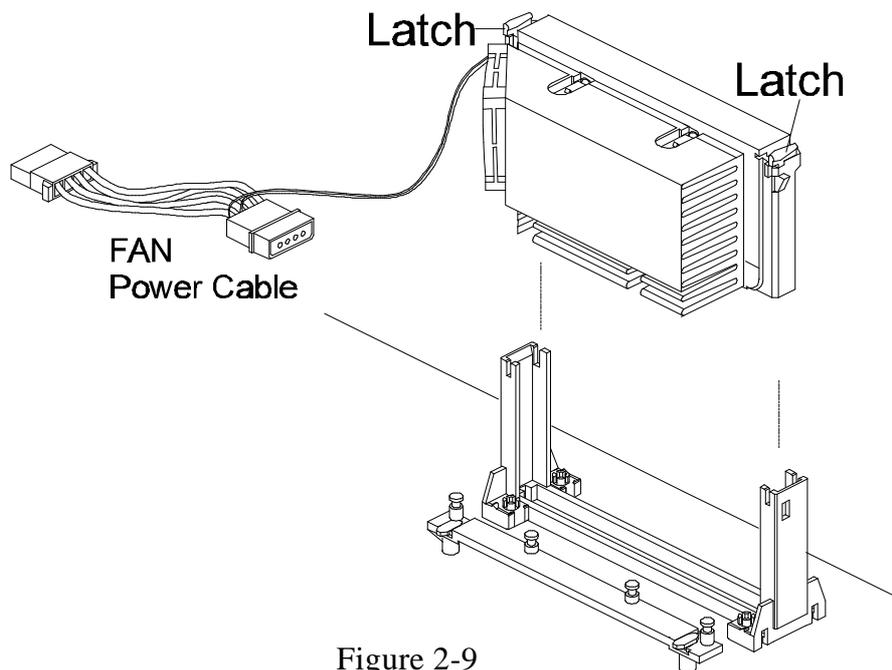


Figure 2-9

Jumpers

Several hardware settings are made through the use of jumper caps to connect jumper pins on the main board. The jumper's pin 1 on main board will be on the top or on the left when holding the main board with the keyboard connector away from yourself.

Jumpers with two pins will be shown as  for Close (On) and  for Open (Off).

To connect the pins, simply place a plastic jumper cap over the two pins.

CPU Clock Speed Selection - JP8,9 and JP4,5,6,7

HOT-623 mainboard features a clock generator to provide adjustable system clock frequency. JP8 and JP9 are 2-pin jumpers which determine the system clock frequency 60 MHz and 66 MHz.

HOT-623 mainboard also provides four 2-pin Jumpers JP4, JP5, JP6 and JP7 to figure the CPU core clock multiplier. By inserting jumper caps on these jumpers, the user can figure the **Host Bus Clock/CPU Core Clock** ratio.

Figure 2-10 shows the position of JP4 ~ JP9 on the mainboard.

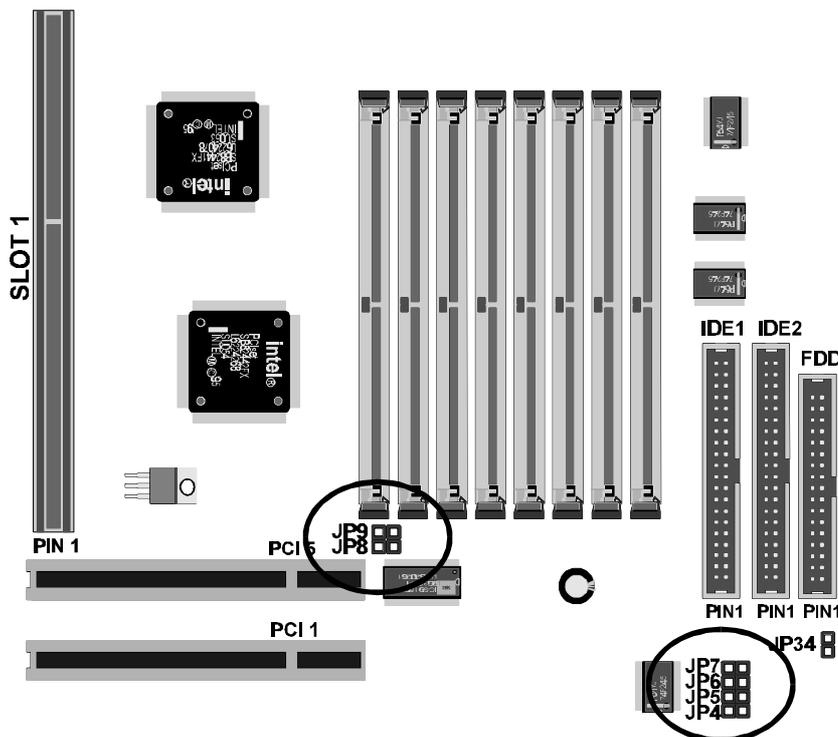


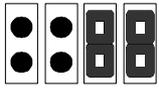
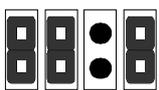
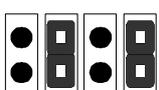
Figure 2-10

CPU Clock Configuration Table shows the Pentium II 233 MHz and 266 MHz quick setting on the mainboard.

System Clock Configuration Table shows all of the system bus clocks that the mainboard can offer.

Multiplier Configuration Table shows all of the multipliers that the mainboard can support.

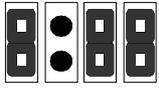
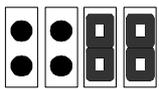
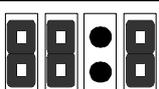
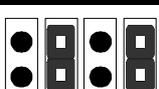
CPU Clock Configuration Table

Processors	JP8, JP9	System Clock / Multiplier	Frequency Multiplier JP4, JP5, JP6, JP7
Pentium II 233 MHz		66 MHz x 3.5	
Pentium II 266 MHz		66 MHz x 4	
Pentium II 300 MHz		66 MHz x 4.5	

System Clock Configuration Table

System Clock	JP8, JP9
50 MHz	
60 MHz	
66 MHz	

Multiplier Configuration Table

Multiplier	JP4, JP5, JP6, JP7
1 : 3	
1 : 3.5	
1 : 4	
1 : 4.5	

Flash EPROM Jumper - JP15

HOT-623 mainboard supports two types of flash EPROM: 5 volt and 12 volt. By setting up jumper JP15, you can update both types of flash EPROM with new system BIOS files as they come available.

JP19 Pin 2-3 Close for 5V,

JP19 Pin 1-2 Close for 12V.

BIOS UPGRADES

Flash memory makes distributing BIOS upgrades easy. A new version of the BIOS can be installed from a diskette.

Please note the following when making the BIOS updates.

** Flash utility can't work under protected/virtual mode. Memory manager like **QEMM.386**, **EMM386** should not be loaded. (or Simply bypass all **config.sys** and **autoexec.bat** on system boot up.

** Flash utility supports both 5V and 12V Flash EPROM.

Clear CMOS - JP42

HOT-623 mainboard supports jumper **JP42** for discharging mainboard's CMOS memory.

This jumper can clear the CMOS data stored in the Giga I/O chip. To clear the CMOS data please follow listed steps:

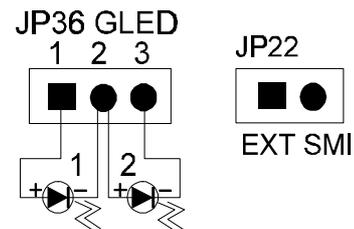
- 1) Turn off the PC,
- 2) Remove the jumper cap from JP42 pin 1-2,
- 3) Insert the jumper cap to JP42 pin 2-3 for a brief while,
- 4) Remove the jumper cap from JP42 pin 2-3,
- 5) Reinsert the jumper cap to JP42 pin 1-2,
- 6) Turn on the PC.

Connectors & Sockets

PIN	Function	PIN	Function
IDE1	Primary IDE Connector	IDE2	Secondary IDE Connector
FDD	Floppy Connector	CN3	COM 1 Connector
CN2	Parallel Port Connector	CN4	COM 2 Connector
KB2	PS/2 Keyboard Connector	PS2	PS/2 Mouse Connector
J12	Power LED and Keylock Connector	JP34	Power Switch
J11	PC Speaker Connector	JP24	Hardware Reset Switch Connector
JP22	External SMI Connector *Note 1	JP36	Green LED Connector *Note 1
J6/J7	Universal Serial Bus (USB) Connectors *Note 2	JP29	Infra-red Communication Port Connector *Note 3
JP25	12V Cooling Fan Connector *Note 4		

Note 1: JP36, JP22 - Green LED and EPMI connector

The main board provides an EPMI connector-JP22, this allows the user to manually place the system into suspend mode. This 2-pin connector connects to the case-mounted suspend switch. If you do not have a switch for the connector, you may use the "Turbo Switch" since it does not have a function.

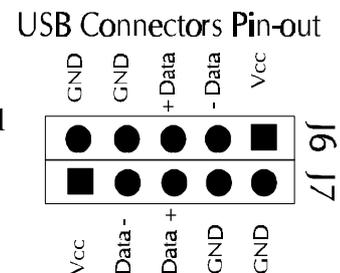


If you want to use this connector, "Power Management" in the Power Management Setup of the BIOS section should not be on the setting of Disabled.

JP36 is a 3-pin Green LED connector, the user can connect LED on pin 1-2(setting 1) or pin 2-3(setting 2). Setting 1 will turn off LED on normal operation and turn on LED on suspend mode. On the contrary, setting 2 will turn on LED on normal operation and turn off LED on suspend mode.

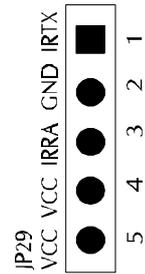
Note 2: J6, J7 - USB connectors

The main board provides two sets USB (Universal Serial Bus) connectors - J6 and J7 for USB devices use.



Note 3: JP29 - Infrared module connector

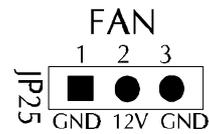
The main board provides a 5-pin infrared connector - JP29 as an optional infrared module for wireless transmitting and receiving.



Note 4: JP25 - 12V cooling fan power connector

The main board provides a on-board 12V cooling fan power connector for cooling fan. Please make sure the red wire connect to +12V and black wire connect to ground (GND).

Caution : Do not short 12V and GND pin on JP25 by a jumper cap or it will cause serve damage to the main board.



Chapter 3 Memory Configuration

The HOT-623 mainboard provides eight 72-pin SIMM sockets that make it possible to install from 8MB up to 1GB (1024MB) of RAM. The SIMM socket support 4MB, 8MB, 16MB, 32MB, 64MB and 128MB 5V single- or double-side FPM (Fast Page Mode), EDO (Extended Data Output) or BEDO (Burst EDO) DRAM modules.

The eight SIMM sockets are arranged in four banks of two sockets each, Each bank provides a 64/72-bit wide data path.

Both SIMMs in a bank must be of the same memory size and type, although the different types of memory may differ between banks. It is possible to have 70 ns fast page DRAM in one bank and 60 ns EDO DRAM in the other.

To support ECC, you must use true (opposed to phantom parity generated by TTL chips) 36-bit parity-type SIMM in paris for all modules.

Install memory in any or all of the banks in any combination as follows:

BANK	Memory Modules	Mudule Quantity
BANK 0	4MB, 8MB, 16MB, 32MB, 64MB, 128MB 72-pin FPM, EDO, BEDO SIMM	x 2
BANK 1	4MB, 8MB, 16MB, 32MB, 64MB, 128MB 72-pin FPM, EDO, BEDO SIMM	x 2
BANK 2	4MB, 8MB, 16MB, 32MB, 64MB, 128MB 72-pin FPM, EDO, BEDO SIMM	x 2
BANK 3	4MB, 8MB, 16MB, 32MB, 64MB, 128MB 72-pin FPM, EDO, BEDO SIMM	x 2

Chapter 4 Award BIOS Setup

HOT-623 BIOS ROM has a built-in Setup program that allows users to modify the basic system configuration. This type of information is stored in battery-backed RAM so that it retains the Setup information when the power is turned off.

Entering Setup

Power on the computer and press immediately will allow you to enter Setup. The other way to enter Setup is to power on the computer, when the below message appear briefly at the bottom of the screen during the POST (Power On Self Test), press key or simultaneously press <Ctrl>,<Alt>, and <Esc> keys.

TO ENTER SETUP BEFORE BOOT PRESS CTRL-ALT-ESC OR DEL KEY

If the message disappears before you respond and you still wish to enter Setup, restart the system to try again by turning it OFF the ON or pressing the "RESET" button on the system case. You may also restart by simultaneously press <Ctrl>,<Alt>, and <Delete> keys. If you do not press the keys at the correct time and the system does not boot, an error message will be displayed and you will again be asked to,

PRESS F1 TO CONTINUE, CTRL-ALT-ESC OR DEL TO ENTER SETUP

The Main Menu

ROM PCI/ISA BIOS (2A69HH2F) CMOS SETUP UTILITY AWARD SOFTWARE, INC.	
STANDARD CMOS SETUP	INTEGRATED PERIPHERALS
BIOS FEATURES SETUP	IDE HDD AUTO DETECTION
CHIPSET FEATURES SETUP	SUPERVISOR PASSWORD
POWER MANAGEMENT SETUP	USER PASSWORD
PNP/PCI CONFIGURATION	SAVE & EXIT SETUP/AT
LOAD BIOS DEFAULTS	EXIT WITHOUT SAVING
LOAD SETUP DEFAULTS	
Esc : Quit	↑ ↓ → ← : Select Item
F10 : Save & Exit Setup	(Shift)F2 : Change Color

Standard CMOS setup

This setup page includes all items in a standard compatible BIOS.

BIOS features setup

This setup page includes all items of Award special enhanced features.

Chipset features setup

This setup page includes all items of chipset features.

Power Management Setup

This setup page includes all items of Power Management features.

PnP/PCI Configuration setup

This item specifies the value (in units of PCI bus blocks) of the latency timer for the PCI bus master and the IRQ level for PCI device. Power-on with BIOS defaults

Load BIOS Defaults

BIOS defaults loads the values required by the System for the maximum performance. However, you can change the parameter through each Setup Menu.

Load Setup Defaults

Setup defaults loads the values required by the system for the O.K. performance. However, you can change the parameter through each Setup Menu.

Integrated Peripherals

This setup page includes all items of peripheral features.

IDE HDD auto detection

Automatically configure IDE hard disk drive parameters.

Supervisor Password

Change, set, or disable supervisor password. It allows you to limit access to the system and Setup, or just to Setup.

User Password

Change, set, or disable user password. It allows you to limit access to the system and Setup, or just to Setup.

Save & Exit setup

Save CMOS value change to CMOS and exit setup

Exit without saving

Abandon all CMOS value changes and exit setup.

Standard CMOS Setup

```
ROM PCI/ISA BIOS (2A69HH2F)
STANDARD CMOS SETUP
AWARD SOFTWARE, INC.

Date (mm:dd:yy) : Wed, Apr 2 1997
Time (hh:mm:ss) : 14 : 39 : 4

HARD DISKS          TYPE  SIZE  CYLS HEAD PRECOMP LANDZ SECTOR  MODE
-----
Primary Master    : Auto   0      0   0     0     0     0   AUTO
Primary Slave     : Auto   0      0   0     0     0     0   AUTO
Secondary Master  : Auto   0      0   0     0     0     0   AUTO
Secondary Slave   : Auto   0      0   0     0     0     0   AUTO

Drive A : 1.44M, 3.5 in.
Drive B : None

Video : EGA/UGA
Halt On : All Errors

Base Memory: 0K
Extended Memory: 0K
Other Memory: 512K
-----
Total Memory: 512K

ESC : Quit          ↑ ↓ → ← : Select Item      PU/PD/+/- : Modify
F1  : Help          (Shift)F2 : Change Color
```

Date

The date format is <day>, <month> <date> <year>. Press <F3> to show the calendar.

Time

The time format is <hour> <minute> <second>. The time is calculated base on the 24-hour military-time clock. For example. 5 p.m. is 17:00:00.

Hard Disks Type

This item identify the types of hard disk drives that has been installed in the computer. There are 46 predefined types and a user definable type.

Press PgUp or PgDn to select a numbered hard disk type or type the number and press <Enter>. Note that the specifications of your drive must match with the drive table. The hard disk will not work properly if you enter improper information for this item. If your hard disk drive type is not matched or listed, you can use Type User to define your own drive type manually.

If you select Type User, related information is asked to be entered to the following items. Enter the information directly from the keyboard and press <Enter>. Those information should be provided in the documentation from your hard disk vendor or the system manufacturer.

The user may also set those items to AUTO to auto configure hard disk

drives parameter when system power-on.

If a hard disk drive has not been installed select NONE and press <Enter>.

Drive A type/Drive B type

This item specifies the types of floppy disk drive A or drive B that has been installed in the system.

Video

This item selects the type of adapter used for the primary system monitor that must match your video display card and monitor. Although secondary monitors are supported, you do not have to select the type in Setup.

Error halt

This item determines if the system will stop, when an error is detected during power up.

Memory

This item is display-only. It is automatically detected by POST (Power On Self Test) of the BIOS.

Base Memory

The POST of the BIOS will determine the amount of base (or conventional) memory installed in the system. The value of the base memory is typically 512K for systems with 512K memory installed on the mainboard, or 640K for systems with 640K or more memory installed on the mainboard.

Extended Memory

The BIOS determines how much extended memory is present during the POST. This is the amount of memory located above 1MB in the CPU's memory address map.

BIOS Features Setup

ROM PCI/ISA BIOS (2A69HH2F)	
BIOS FEATURES SETUP	
AWARD SOFTWARE, INC.	
CPU Internal Cache	: Enabled
External Cache	: Enabled
Quick Power On Self Test	: Enabled
Boot Sequence	: A,C,SCSI
Swap Floppy Drive	: Disabled
Boot Up Floppy Seek	: Enabled
Boot Up NumLock Status	: On
Boot Up System Speed	: High
Gate A20 Option	: Fast
Typematic Rate Setting	: Disabled
Typematic Rate (Chars/Sec)	: 6
Typematic Delay (Msec)	: 250
Security Option	: Setup
PCI/UGA Palette Snoop	: Disabled
OS Select For DRAM > 64MB	: Non-OS2
Video BIOS Shadow	: Enabled
C8000-CBFFF Shadow	: Disabled
CC000-CFFFF Shadow	: Disabled
D0000-D3FFF Shadow	: Disabled
D4000-D7FFF Shadow	: Disabled
D8000-DBFFF Shadow	: Disabled
DC000-DFFFF Shadow	: Disabled
ESC	: Quit
F1	: Help
F5	: Old Values
F6	: Load BIOS Defaults
F7	: Load Setup Defaults
↑↓←→	: Select Item
PU/PD/+/-	: Modify
(Shift)F2	: Color

CPU Internal/External Cache

This item enables CPU internal cache and external cache to speed up memory access.

Quick Power On Self Test

This item speeds up Power On Self Test (POST) after you power on the computer. If it is set to Enabled, BIOS will shorten or skip some check items during POST.

Boot Sequence

This item determines which drive computer searches first for the disk operating system. Default setting is A, C, SCSI.

BIOS also support system boot from CD-ROM drive or SCSI hard disk drive.

Swap Floppy Drive

When this item enables, the BIOS will swap floppy drive assignments so that Drive A: will function as Drive B: and Drive B: as Drive A:.

Boot Up Floppy Seek

During POST, BIOS will determine if the floppy disk drive installed is 40 or 80 tracks.

Boot Up NumLock Status

When this option enables, BIOS turns on *Num Lock* when system is powered on.

Boot Up System Speed

This option sets the speed of the CPU at system boot time. The settings are *High* or *Low*.

Typematic Rate Setting

This determines if the typematic rate is to be used. when disabled, continually holding down a key on your keyboard will generate only one instance. In other words, the BIOS will only report that the key is down. When the typematic rate is enabled, the BIOS will report as before, but it will then wait a moment, and, if the key is still down, it will begin the report that the key has been depressed repeatedly. For example, you would use such a feature to accelerate cursor movements with the arrow keys.

Typematic Rate (Chars/Sec)

When the typematic rate is enabled, this selection allows you select the rate at which the keys are accelerated.

Typematic Delay (Msec)

When the typematic rate is enabled, this selection allows you to select the delay between when the key was first depressed and when the acceleration begins

Security Option

This item allows you to limit access to the System and Setup, or just to Setup. When *System* is selected, the System will not boot and access to Setup will be denied if the correct password is not entered at the prompt.

When *Setup* is selected, the System will boot, but access to Setup will be denied if the correct password is not entered at the prompt.

PCI VGA Palette Snoop

This item must be set to enabled if there is a MPEG ISA card installed in the system, and disabled if there is no MPEG ISA card installed in the system.

OS Select For DRAM > 64MB

This item allows you to access the memory that over 64 MB in OS/2.

Video BIOS Shadow

Determines whether video BIOS will be copied to RAM. However, it is optional depending on chipset design. Video Shadow will increase the video speed.

C8000-CBFFF Shadow/DC000-DFFFF Shadow

These categories determine whether option ROMs will be copied to RAM. An example of such option ROM would be support of on-board SCSI.

Chipset Features Setup

ROM PCI/ISA BIOS (2A69HH2A)	
CHIPSET FEATURES SETUP	
AWARD SOFTWARE, INC.	
Auto Configuration	: Enabled
DRAM Speed Selection	: 70ns
DRAM RAS# Precharge Time	: 4
MA Additional Wait State	: Enabled
RAS# To CAS# Delay	: Disabled
DRAM Read Burst (B/E/F)	: x3/4/4
DRAM Write Burst (B/E/F)	: x4/4/4
ISA Bus Clock	: PCICLK/3
DRAM Refresh Queue	: Enabled
DRAM RAS Only Refresh	: Enabled
DRAM ECC/PARITY Select	: Disabled
Fast Dram Refresh	: Disabled
Read-Around-Write	: Enabled
PCI Burst Write Combine	: Enabled
PCI-To-DRAM Pipeline	: Enabled
CPU-To-PCI Write Post	: Enabled
CPU-To-PCI IDE Posting	: Enabled
System BIOS Cacheable	: Disabled
Video RAM Cacheable	: Disabled
B Bit I/O Recovery Time	: 3
16 Bit I/O Recovery Time	: 2
Memory Hole At 15M-16M	: Disabled
DRAM Fast Leadoff	: Disabled
Passive Release	: Enabled
Delayed Transaction	: Disabled
ESC	: Quit
F1	: Help
F5	: Old Values (Shift)
F6	: Load BIOS Defaults
F7	: Load Setup Defaults
↑↓←→	: Select Item
PU/PD/+/-	: Modify
F2	: Color

Auto Configuration

This item auto configure the following items: DRAM RAS# Precharge time, MA Additional Wait State, RAS# to CAS# Delay, DRAM Read Burst, DRAM Write Burst, and ISA Bus Clock by different system clock.

DRAM Speed Selection

This item set the DRAM Read/Write timings that the system uses. When item of "Auto Configuration" is disabled, this item will not show up.

DRAM RAS# Precharge Time

DRAM must continually be refreshed or it will lose its data. Normally, DRAM is refreshed entirely as the result of a single request. This option allows you to determine the number of CPU clocks allocated for Row Address Strobe to accumulate its charge before the DRAM is refreshed. If insufficient time is allowed, refresh may be incomplete and data lost.

This item sets the DRAM RAS Precharge Timing. The options are 4 and 3 CLKs.

MA Additional Wait State

When enabled, one additional wait state is inserted before the assertion of the first memory address line MA and CAS/RAS assertion during DRAM read or write leadoff cycles.

RAS To CAS# Delay

When DRAM is refreshed, both rows and columns are address separately. This setup item allows you to determine the timing of the transition from Row Address Strobe (RAS) to Column Address Strobe (CAS). The options are *enabled* for 3 and *disabled* for 2 CLKs.

DRAM Read Burst (B/E/F)

This item set the BEDO/EDO/FPM DRAM Read Burst Timing. The timing used depends on the type of DRAM (EDO burst mode or standard fast page mode) on a per-bank basis. The options are *x1/2/3*, *x2/2/3*, *x2/3/4* and *x3/4/4*.

DRAM Write Burst (B/E/F)

This item set the BEDO/EDO/FPM DRAM Write Burst timing for accessing DRAM. The options are *x2/2/3*, *x3/3/3*, *x3/3/4*, *x4/4/4*.

ISA Clock

This item allows the user to set ISA clock that divide from PCI clock by 3 or by 4. For example, if 200MHz Pentium Pro processor is used, PCI clock will be 33MHz, ISA Clock will be 8.25MHz when PCI clock divided by 4, and 11MHz when PCI clock divided by 3.

DRAM Refresh Queue

When enabled, the chipset's internal 4-deep refresh queue is enabled with 4th request being the priority request. All refresh requests are queued. If disabled, the refresh queue is disabled and all refreshes are priority requests.

DRAM RAS Only Refresh

This item allows the user to the RAS only refresh or CAS before RAS refresh.

DRAM ECC/PARITY Select

When using parity DRAM modules, you can select from the options of ECC (Error Checking and Correcting) or Parity to correct 1 bit memory errors that may occur in the memory. When using no parity DRAM modules, this function is not available.

Fast DRAM Refresh

When disabled will execute the normal mode where the refresh rate is every 15ns, when enabled, the fast refresh mode implements a refresh cycle every 32 host cycle.

Read-Around-Write

When enabled will increase the execution efficiency of the processor. It allows the processor to execute read commands out of order if there is independence between these read and other write commands.

PCI Burst Write Combining

When enabled will increase the efficiency of PCI bus by combining several CPU to PCI write cycles into one.

PCI-To-DRAM Pipeline

When enabled will increase the bandwidth of the path between the PCI and the DRAM to enhance the PCI bus efficiency and DRAM accessing

CPU-To-PCI Write Post

When enabled will increase the efficiency of the PCI bus and speed up the execution in the processor.

CPU-To-PCI IDE Posting

When disabled, the CPU to PCI IDE posting cycles are treated as normal I/O write transactions. When enabled will have the I/O write cycles posted.

System BIOS Cacheable

This item allows the user to set whether the system BIOS F000~FFFF areas are cacheable or non-cacheable.

Video RAM Cacheable

This item allows the user to set whether the video BIOS C000~C7FF areas are cacheable or non-cacheable.

8 Bit I/O Recovery Time

The recovery time is the length of time, measured in CPU clocks, which the system will delay after the completion of an input/output request. This delay takes place because the CPU is operating so much after than the input/output bus that the CPU must be delayed to allow for the completion of the I/O.

This item allows you to determine the recovery time allowed for 8 bit I/O. Choices are from NA, 1 to 8 CPU clocks.

16-Bit I/O Recovery Time

This item allows you to determine the recovery time allowed for 16 bit I/O. Choices are from NA, 1 to 4 CPU clocks.

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.

DRAM Fast Leadoff

When enabled, system will reduce the number of CPU clocks allowed before reads and writes to DRAM are performed.

Passive Release

When enabled, the chipset provides a programmable passive release mechanism to meet the required ISA master latencies.

Delayed Transaction

Since the 2.1 revision of the PCI specification requires much tighter controls on target and master latency. PCI cycles to or from ISA typically take longer. When enabled, the chipset provides a programmable delayed completion mechanism to meet the required target latencies.

Power Management Setup

ROM PCI/ISA BIOS (2A69HH2F)	
POWER MANAGEMENT SETUP	
AWARD SOFTWARE, INC.	
Power Management	: Disable
PM Control by APM	: Yes
Video Off Method	: U/H SYNC+Blank
MODEM Use IRQ	: 3
Doze Mode	: Disable
Standby Mode	: Disable
Suspend Mode	: Disable
HDD Power Down	: Disable
** Wake Up Events In Doze & Standby **	
IRQ3 (Wake-Up Event)	: ON
IRQ4 (Wake-Up Event)	: ON
IRQ8 (Wake-Up Event)	: ON
IRQ12 (Wake-Up Event)	: ON
** Power Down & Resume Events **	
IRQ3 (COM 2)	: ON
IRQ4 (COM 1)	: ON
IRQ5 (LPT 2)	: OFF
IRQ6 (Floppy Disk)	: OFF
IRQ7 (LPT 1)	: ON
IRQ8 (RTC Alarm)	: OFF
IRQ9 (IRQ2 Redir)	: OFF
IRQ10 (Reserved)	: OFF
IRQ11 (Reserved)	: OFF
IRQ12 (PS/2 Mouse)	: ON
IRQ13 (Coprocessor)	: ON
IRQ14 (Hard Disk)	: ON
IRQ15 (Reserved)	: ON
ESC	: Quit
F1	: Help
F5	: Old Values (Shift)
F6	: Load BIOS Defaults
F7	: Load Setup Defaults
↑↓←→	: Select Item
PU/PD/+/-	: Modify
F2	: Color

Power Management

This item determines the options of the power management function. *Max Saving* puts the system into power saving mode after a brief period of system inactivity; *Min Saving* is the same as *Max Saving* except the time of the system inactivity period is longer; *Disabled* disables the power saving feature; *User Defined* allows you to set power saving options according to your preference.

PM Control by APM

If this item set to *No*, system BIOS will be ignored and APM calls the power to manage the system.

If this item setup to *Yes*, system BIOS will wait for APM's prompt before it enter any PM mode e.g. *DOZE*, *STANDBY* or *SUSPEND*.

Video Off Method

This item define the video off features - *V/H SYNC+Blank*, *DPMS*, and *Blank Only*. The first option, which is the default setting, blanks the screen and turns off vertical and horizontal scanning; *DPMS* allows the BIOS to control the video display card if it supports the *DPMS* feature; *Blank Screen* only blanks the screen.

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.

HDD Power Down

This item defines the continuous HDD idle time before the HDD enters power saving mode (motor off). The options are from 1 min to 15 min and *Disabled*.

Wake Up Events In Doze & Standby

Wake up events in Doze and Standby are I/O events whose occurrence can awaken the system from power saving mode.

The following is a list of IRQ's, Interrupt **Re**Quests, which can be exempted much as the COM ports above can. When an I/O device wants to gain the attention of the operating system, it signals this by causing an IRQ to occur. When the operating system is ready to respond to the request, it interrupts itself and performs the service.

As above, the choices are *On* and *Off*. *Off* is the default.

When set *On*, activity will awaken the system from Doze and Standby.

- **IRQ3 (COM2)**
- **IRQ4 (COM1)**
- **IRQ8 (RTC Alarm)**
- **IRQ12 (PS/2 Mouse)**

Power Down & Resume Events

Power Down and Resume events are I/O events whose occurrence can prevent the system from entering a power saving mode or can awaken the system from such a mode. In effect, the system remains alert for anything which occurs to a device which is configured as *On*, even when the system is in a power down mode.

The following is a list of IRQ's, Interrupt **Re**quests, which can be exempted much as the COM ports and LPT ports above can. When an I/O device wants to gain the attention of the operating system, it signals this by causing an IRQ to occur. When the operating system is ready to respond to the request, it interrupts itself and performs the service.

As above, the choices are *On* and *Off*. *Off* is the default.

When set *Off*, activity will neither prevent the system from going into a power management mode nor awaken it.

- **IRQ3 (COM2)**
- **IRQ4 (COM1)**
- **IRQ5 (LPT2)**
- **IRQ6 (Floppy Disk)**
- **IRQ7 (LPT1)**
- **IRQ8 (RTC Alarm)**
- **IRQ9 (IRQ2 Redir)**
- **IRQ10 (Reserved)**
- **IRQ11 (Reserved)**
- **IRQ12 (Reserved)**
- **IRQ13 (Coprocessor)**
- **IRQ14 (Hard Disk)**
- **IRQ15 (Reserved)**

PCI Configuration Setup

ROM PCI/ISA BIOS (2A69HH2F) PNP/PCI CONFIGURATION AWARD SOFTWARE, INC.	
PnP OS Installed : No	PCI IRQ Activated By : Level
Resources Controlled By : Manual	PCI IDE IRQ Map To : PCI-AUTO
Reset Configuration Data : Disabled	Primary IDE INT# : A
	Secondary IDE INT# : B
IRQ-3 assigned to : Legacy ISA	
IRQ-4 assigned to : Legacy ISA	
IRQ-5 assigned to : PCI/ISA PnP	
IRQ-7 assigned to : PCI/ISA PnP	
IRQ-9 assigned to : PCI/ISA PnP	
IRQ-10 assigned to : PCI/ISA PnP	
IRQ-11 assigned to : PCI/ISA PnP	
IRQ-12 assigned to : PCI/ISA PnP	
IRQ-14 assigned to : PCI/ISA PnP	
IRQ-15 assigned to : PCI/ISA PnP	
DMA-0 assigned to : PCI/ISA PnP	
DMA-1 assigned to : PCI/ISA PnP	
DMA-3 assigned to : PCI/ISA PnP	
DMA-5 assigned to : PCI/ISA PnP	
DMA-6 assigned to : PCI/ISA PnP	
DMA-7 assigned to : PCI/ISA PnP	
	ESC : Quit ↑↓+* : Select Item
	F1 : Help PU/PD/+/- : Modify
	F5 : Old Values (Shift)F2 : Color
	F6 : Load BIOS Defaults
	F7 : Load Setup Defaults

PNP OS Installed

When this item is set to Yes, it will allow the PnP OS(Windows 95) control the system resources except PCI devices and PnP boot devices.

Default setting is *No*.

Resources Controlled By

The Award Plug and Play BIOS has the capability to automatically configure all of the boot and Plug and Play compatible devices. However, this capability means absolutely nothing unless you are using a Plug and Play operating system as Windows 95.

Reset Configuration Data

This item allows you to determine whether to reset the configuration data or not.

IRQ 3/4/5/7/9/10/11/12/14/15, assigned to

These items allow you to determine the IRQ assigned to the ISA bus and is not available for PCI slot.

Choices are *Legacy ISA* and *PCI/ISA PnP*.

DMA 0/1/3/5/6/7 assigned to

These items allow you to determine the DMA assigned to the ISA bus and is not available for PCI slot.

Choices are *Legacy ISA* and *PCI/ISA PnP*.

PCI IRQ Activated by

This item sets the method by which the PCI bus recognize that an IRQ service is being requested by a device. You should never change the default configuration unless advised otherwise by your System's manufacturer.

Choices are *Level*(default) and *Edge*.

PCI IDE IRQ Map to

This items allows you to configure your system to the type of IDE disk controller in use. By default, Setup assumes that your controller is an ISA device rather than a PCI controller.

If you have equipped your system with a PCI controller, changing this allows you to specify which slot has the controller and which PCI interrupt (A, B, C or D) is associated with the connected hard drives.

Remember that this setting refers to the hard disk drive itself, rather than individual partitions. Since each IDE controller supports two separate hard disk drives, you can select the INT# for each. Again, you will note that the primary has a lower interrupt than the secondary as described in *Slot x Using INT#*" above.

Selecting "*PCI Auto*" allows the system to automatically determine how your IDE disk system is configured.

Integrated Peripherals

ROM PCI/ISA BIOS (2A69HH2F) INTEGRATED PERIPHERALS AWARD SOFTWARE, INC.	
IDE HDD Block Mode	: Enabled
IDE Primary Master PIO	: Auto
IDE Primary Slave PIO	: Auto
IDE Secondary Master PIO	: Auto
IDE Secondary Slave PIO	: Auto
On-Chip Primary PCI IDE	: Enabled
On-Chip Secondary PCI IDE	: Enabled
PCI Slot IDE 2nd Channel	: Disabled
Onboard FDC Controller	: Enabled
Onboard Serial Port 1	: Auto
Onboard Serial Port 2	: Auto
UR2 Mode	: Standard
Onboard Parallel Port	: 378/IRQ7
Parallel Port Mode	: SPP
USB Controller	: Disabled
ESC : Quit ↑↓←→ : Select Item F1 : Help PU/PD/+/- : Modify F5 : Old Values (Shift)F2 : Color F6 : Load BIOS Defaults F7 : Load Setup Defaults	

IDE HDD Block Mode

This item is used to set IDE HDD Block Mode. If your IDE Hard Disk supports block mode, then you can enable this function to speed up the HDD access time. If not, please disable this function to avoid HDD access error.

IDE Primary Master PIO

In this items, there are five modes defined in manual mode and one automatic mode. There are 0, 1, 2, 3, 4, and *AUTO* is the default settings for on board Primary Master PIO timing.

IDE Primary Slave PIO

In this items, there are five modes defined in manual mode and one automatic mode. There are 0, 1, 2, 3, 4, and *AUTO* is the default settings for on board Primary Slave PIO timing.

IDE Secondary Master PIO

In this items, there are five modes defined in manual mode and one automatic mode. There are 0, 1, 2, 3, 4, and *AUTO* is the default settings for on board Secondary Master PIO timing.

IDE Secondary Slave PIO

In this items, there are five modes defined in manual mode and one automatic mode. There are *0*, *1*, *2*, *3*, *4*, and *AUTO* is the default settings for on board Secondary Slave PIO timing.

On-Chip Primary PCI IDE

As stated above, your system includes two built-in IDE controllers, both of which operate on the PCI bus. This setup item allows you either to enable or disable the primary controller. You might choose to disable the controller if you were to add a higher performance or specialized controller.

On-Chip Secondary PCI IDE

As above for the Primary controller, this setup item you either to enable or disable the secondary controller. You might choose to disable the controller if you were to add a higher performance or specialized controller

Onboard FDC Control

This item specifies onboard floppy disk drive controller. This setting allows you to connect your floppy disk drives to the onboard floppy connector. Choose the "*Disabled*" settings if you have a separate control card.

Onboard Serial 1

This item is used to define onboard serial port 1 to *3F8/IRQ4*, *2F8/IRQ3*, *3E8/IRQ4*, *2E8/IRQ3*, *Auto* or *Disabled*.

Onboard Serial 2

This item is used to define onboard serial port 2 to *3F8/IRQ4*, *2F8/IRQ3*, *3E8/IRQ4*, *2E8/IRQ3*, *Auto* or *Disabled*.

UR2 Mode

The main board support IrDA(HPSIR) and Amplitudes Shift Keyed IR(ASKIR) infrared through COM 2 port. This item specifies onboard Infra Red mode to *IrDA 1.0*, *ASKIR*, *MIR 0.57M*, *MIR 1.15M*, *FIR* or *Standard (Disabled)*.

Note : FIR is not available currently.

IR Duplex Mode

This item specifies onboard infrared transfer mode to *full-duplex* or *half-duplex*. This item will not show up when IrDA, ASKIR, or MIR UR2 modes are selected.

Onboard Parallel Port

This item specifies onboard parallel port address to *378H*, *278H*, *3BCH* or *Disabled*.

Parallel Port Mode

This item specifies onboard parallel port mode. The options are *SPP* (Standard Parallel Port), *EPP* (Enhanced Parallel Port), *ECP* (Extended Capabilities Port), and *EPP+ECP*.

ECP Mode Use DMA

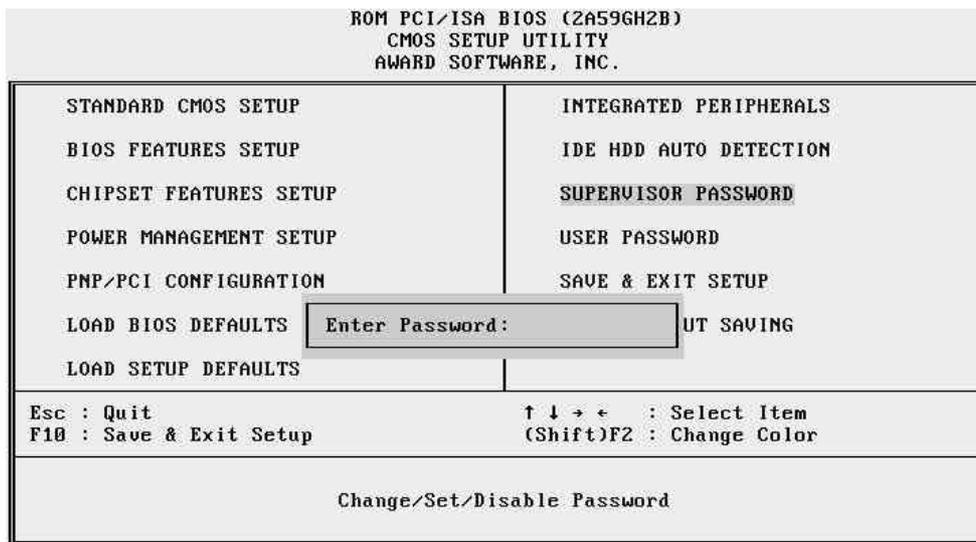
This item specifies *DMA* (Direct Memory Access) channel when ECP device is in use. The options are *DMA 1* and *DMA 3*. This item will not show up when *SPP* and *EPP* printer mode is selected.

USB Controller

This item to set the onboard USB controller enabled or disabled.

Password Setting

This section describes the two access modes that can be set using the options found on the Supervisor Password and User Password.



Supervisor Password and User Password

The options on the Password screen menu make it possible to restrict access to the Setup program by enabling you to set passwords for two different access modes: Supervisor mode and User mode.

In general, Supervisor mode has full access to the Setup options, whereas User mode has restricted access to the options. By setting separate Supervisor and User password, a system supervisor can limit who can change critical Setup values.

Enter Password

Type the password, up to eight characters, and press <Enter>. The password typed now will clear any previously entered password from CMOS memory. You will be asked to confirm the password. Type the password again and press <Enter>. You may also press <Esc> to abort the selection and not enter a password.

To disable password, just press <Enter> when you are prompted to enter password. A message will confirm the password being disabled. Once the password is disabled, the system will boot and you can enter Setup freely.

Password Disable

If you select System at Security Option of BIOS Features Setup Menu, you will be prompted for the password every time the system is rebooted or any time you try to enter Setup. If you select Setup at Security Option of BIOS Features Setup Menu, you will be prompted only when you try to enter Setup.

Warning : Retain a record of your password in a safe place. If you forget the password, the only way to access the system is to clear CMOS memory, please refer to "Clear CMOS" or "Clear Password" section.