HOT-671

Pentium™ II processor
Based AGP 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.

T TABLE OF CONTENTS

P PREFACE

HOT-671 is a highly integrated IBM PC/AT compatible system board designed to meet the industry's most demanding desktop applications.

Based on the Intel 82440EX AGPset chipset, the Intel Pentium™ II processor with MMX technology featured, and 256KB or 512KB Level 2 high-performance pipelined burst secondary 168-pin DIMM socket and supports up to 256MB of EDO RAM and SDRAM.

HOT-671 is equipped with an Accelerated Graphics Port (A.G.P.), a high-performance interconnect for graphic-intensive application, such as 3D applications. The A.G.P. is independent of the PCI bus and is designed to exclusively use with graphical-display devices. The HOT-671 supports 3.3 V A.G.P. devices with data transfer rates up to 133 MHz, allowing data throughput of 500 MB/sec.

The Intel's 82440EX AGPset chipset provides an integrated Bus Mastering IDE controller with two high performance IDE interfaces which allows up to four IDE devices connection and up to 33 MB/sec of data transfer rates.

The on-board I/O controller provides standard PC I/O functions:

floppy drive interface, two FIFO serial ports, an InDA device port and a SPP/EPP/ECP capable parallel port.

HOT-671 is built with three PCI local bus slots providing a high bandwidth data path for data-movement intensive functions such as graphics, and with one ISA slot.

HOT-671 provides the foundation for cost effective, high performance and highly expandable platforms, which delivers the latest in the Intel Pentium™ II processor and new advanced chipset technology.

1 SPECFICATION

The HOT-671 Mainboard is carefully designed for the demanding PC user who wants high performance and many intelligent features in a compact package:

Intel Chipset:

Features Intel's 440EX AGPset with I/O subsystems.

CPU Support:

Intel Pentium® II and Celeron processor 233 ~ 333 MHz.

Versatile Memory Supports:

Equipped with two DIMM sockets support 168-pin 3.3V SDRAM and EDO DRAM memory modules, total memory size up to 256MB.
Configurable support for ECC (Error Checking and Correcting)

PCI and ISA Expansion Slots:

Provides three 32-bit PCI slots and one 16-bit ISA slot.

AGP Slot:

Supports Accelerated Graphics Port cards for high performance, component level interconnect targeted at 3D graphical display applications.

Onboard I/O:

Provides one Floppy port; one optional PS/2 mouse connector; two high-speed UART compatible serial ports and one parallel port with ECP and EPP capabilities. Serial Port 2 can also be directed from COM2 to the Infrared Module for wireless connections.

Onboard PCI Bus Master IDE Controller:

Two Ultra DMA/33 Bus Master IDE Ports supports four IDE devices up to 33 MB/sec IDE transfers and supports Enhanced PIO Modes 3 and 4 and Bus Master IDE DMA Mode 2 devices.

Onboard 20-pin ATX Power Supply:

Provides ATX power connector onboard supports soft-on/off function.

System BIOS:

Provides licensed Award V4.51PG BIOS on Flash EEPROM.
Supports Green PC, DMI and Bundled with NCR SCSI BIOS.

ACPI:

Support ACPI (Advanced Configuration and Power Interface) function. ACPI provide more Energy Saving Features for the future operating system supporting OS Direct Power Management (OSPM) functionality.

On Board Audio Controller:

OPTi 82C933 PnP 3D Audio Chip.
64 Voices Wavetable Synthesizer.
Built-in Qsound Qxpander and OPTiFM Music Synthesizer.
Full-Duplex Record/Playback at up to 48KHz.
Compatible with General MIDI, Microsoft Windows Sound system and Sound Blaster Pro.

Board Size:

ATX form factor 244mm x 170mm.

Advanced Features:

CPU Plug & Play -- HOT-671 featuring CPU Plug & Play function, the user needn't to adjust onboard system clock and CPU multiplier. When the system first power-on, BIOS will set CPU clock speed to 233 MHz automatically. If your CPU speed higher than 233 MHz., one thing you only have to do is entry BIOS to set CPU speed to the higher one.

Low EMI -- Spread Spectrum built in - ±1.5% modulation and automatic clock shut-off of unused PCI/SDRAMS slots to reduce the EMI.

Dual Function Power Button -- The system can be one of two states, one is Suspend mode and the other is the Soft-off mode. Pushing the power button for less than 4 seconds will place the system into Suspend mode. When push the power button for more than 4 seconds, the system enters the Soft-off mode.

Wake-On-LAN -- The system will power-on automatically by activating of LAN.
(This function support Intel LAN card only).

Modem Ring Power-on -- The system will power-on automatically by activating of modem ring.

PS/2 Keyboard & Mouse Power-on -- The system will power-on automatically by stroke keyboard or double click PS/2 mouse.

More Advanced Features (optional):

Voltages Monitoring -- System voltages levels are monitored to ensure stable current to main board components.
System voltages include V_{CORE} and V_{L2} for CPU, and +5V, +12V, -5V, -12V for system.

FAN Status Monitoring -- To prevent CPU overheat, CPU fans is monitored for RPM and failure.
(CPU Cooling FAN with RPM sensor is required)

Power-on from Keyboard/Mouse -- HOT-671 mainboard provides an optional power on function by stroke any key (or hot-key) on keyboard or double click on PS/2 mouse.

ACCESSORIES OF HOT-671

Slot I

PS/2 Keyboard/Mouse Connectors

Factory reserved

USB Connectors

IR Connector

Serial Port Connector(COM2)

Parallel Connector

Serial Port Connector(COM1)

440EX AGPSet

I/O Controller

AGP Slot

Line-In/Line-Out/Mic-In Game/MIDI Connectors

CPU Multiplier Auto/Manual setting - **JP6**

Flash EEPROM Vpp - **JP8**

Programmable Flash EEPROM

CD Audio-In Connectors

FAN Connector

Onboard Sound chip Enabled/Disabled - **SJP1**

CPU FAN Connectors

Two E-IDE Connectors
Floppy Connector
ATX Power Connector

System Clock (**JP2**)

EISCA Cooler Connector

Two DIMM Sockets

HDD POWON

RST

SPEAKER

POWER LED

On board Sound chip

One ISA Slot

Three PCI Slots

Clear CMOS (**JP11**)

7

2 HARDWARE CONFIGURATION

The Pentium™ II & Celeron™ Processor

The Pentium II and Celeron 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. Additional, the Pentium II processor delivers new levels of performance for advance 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 foe executing modem 32-bit compute-intensive and multimedia-enhanced application work loads using advanced 32-bit operating systems.

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

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

The Celeron processor using Single Edge Processor Package. (S.E.P.P.)

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

Figure 2-1 shows the primary and non-primary side of Celeron processor without heat sink mounted and with heat sink mounted.
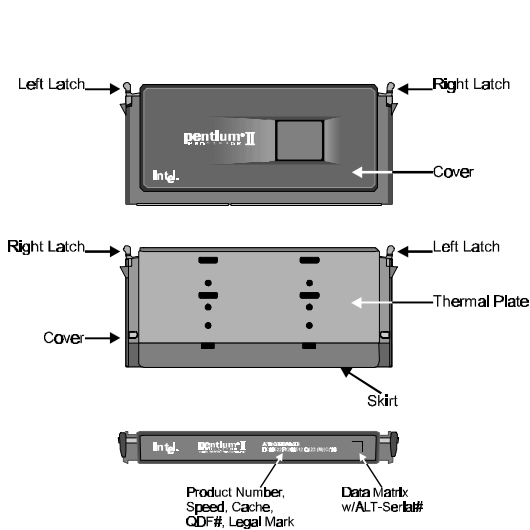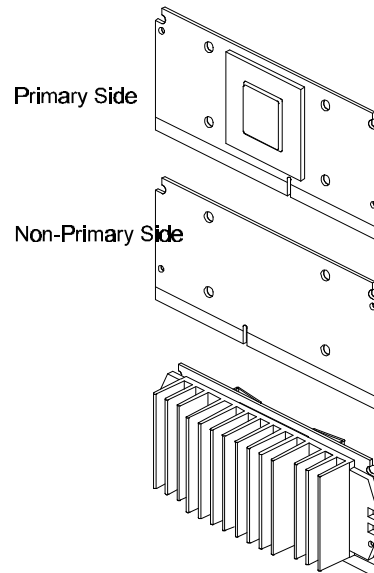

Figure 2-0

Figure 2-1

What does the RM (Retention Mechanism) consist of

Pentium II processor requires the Retention Mechanism (RM) and the Heat Sink Support to hold the base processor in the S.E.C. cartridge.
Following installation procedure will display how to install these mechanism. Please consult to your supplier for the mechanism.
Retention Mechanism package consists of 2 separate parts and the Heat Sink Support consists of 3 separate parts.

❒ 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)
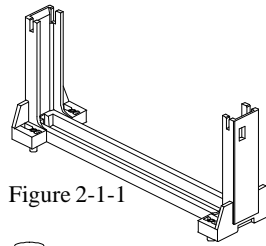
Figure 2-1-1

❒ RM Attach Pin (RMAP) -
Plastic pins inserted through the RM to secure
it to the mainboard (four required per Assembly).
(Refer to Figure 2-1-2)
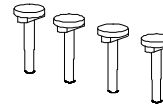
Figure 2-1-2

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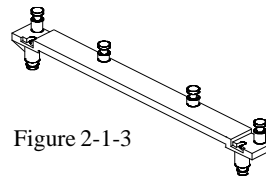
Figure 2-1-3

❒ 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)
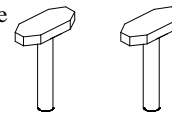
Figure 2-1-4

❒ 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)
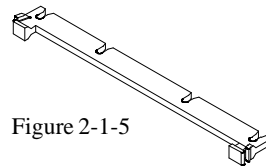
Figure 2-1-5

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. Finds out the Retention Mechanism (RM) Mounting Holes and "Pin 1" mark of Slot 1 on HOT-671 main board.
(Refer to Figure 2-2)

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

3. Insert four RM Attach Pin through the RM to secure it to the mainboard (four required per Assembly). (Refer to Figure 2-3)
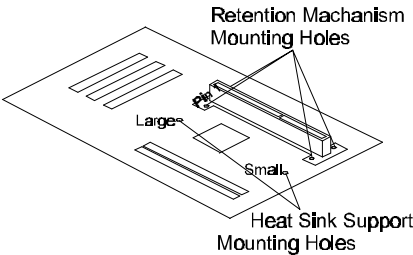
Figure 2-2
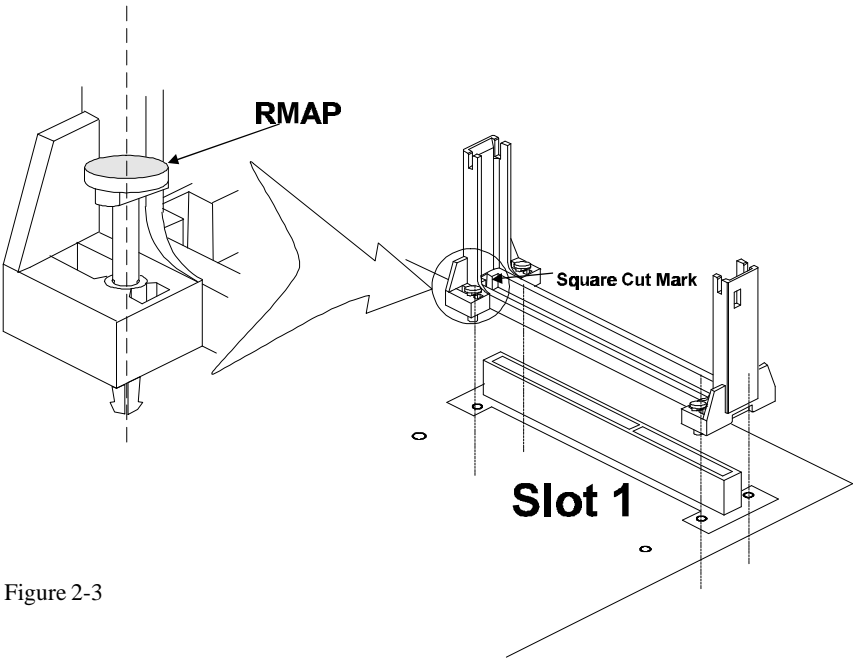
Figure 2-3

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 2-4), 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 2-5 shows the OEM type Pentium II processor with active heat sink.
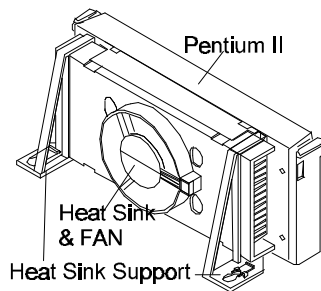
Figure 2-4
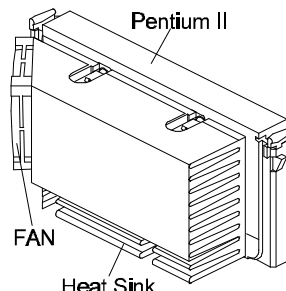
Figure 2-5

1. Finds out the Heat Sink Support (HSS) Mounting Holes on HOT-671 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 2-6)

Figure 2-6

3. Insert the Heat Sink Pins (HSSPIN) through the HSSBASE to secure it to the mainboard. (Refer to Figure 2-6)

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 2-7)
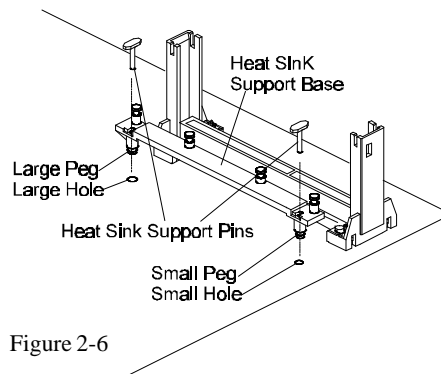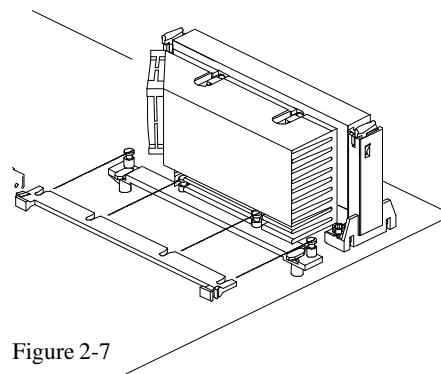
Figure 2-7

Install 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).
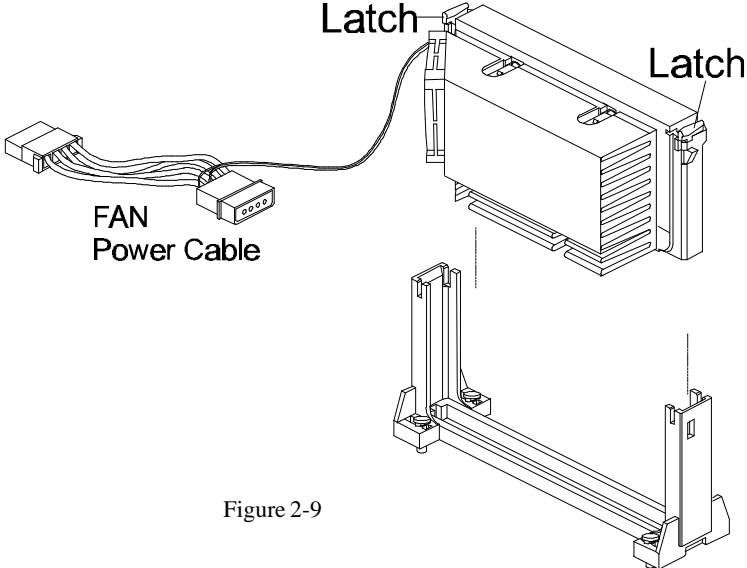
Figure 2-9

Celeron™ Processor S.E.P.P. Only Retention Mechanism Assembly Procedures

These procedures have been included to help assemble the S.E.P.P. (Single Edge Processor Package) only Retention Mechanism.

Please follow them exactly:

Required Components

      SEPP (Figure 1)

      Heatsink (Figure 2)

      Heatsink Retention Clip (Figure 3)

Figure 2

Primary Side

Figure 1

Figure 3

Procedures

Assemble all parts on a static free bench using proper operator grounding and an ESD mat. Carefully insert all four heatsink clip legs into SEPP. (Figure 4)

Non-primary Side

Figure 4

Clip base must be located on the <u>non-primary side</u>.(Figure 5) FYI - The side of the clip plate which touches the substrate is covered with a mylar insulator. This insulator prevents the clip from shorting lines on the substrate.

Non-primary Side

Figure 5

Before you fully engage two legs of the clip into the heatsink (Figure 6), make sure you remove the blue film covering the thermal interface. The blue film protects the thermal interface from damage during shipping.

Primary Side

Grasp the heatsink clip assembly between the clip base and the heatsink. Do not bend or apply pressure directly to SEPP.

Using a nonmetallic stock or screw driver, push the remaining two clip legs into the heatsink.

Figure 6

Caution: Take care not to contact passively or scratch SEPP when using screw driver or bar stock.

Verify that all the feet on the clip are fully engaged and seated on the heatsink. (Figure 7)

Figure 7
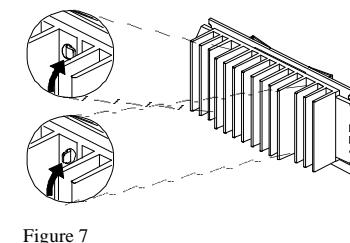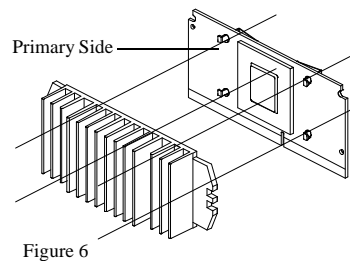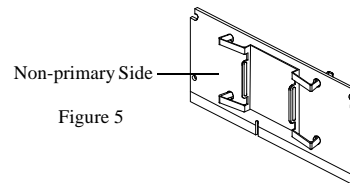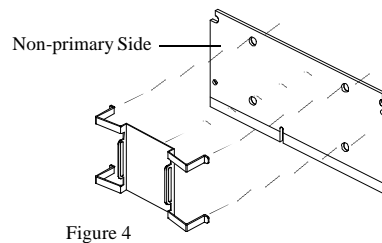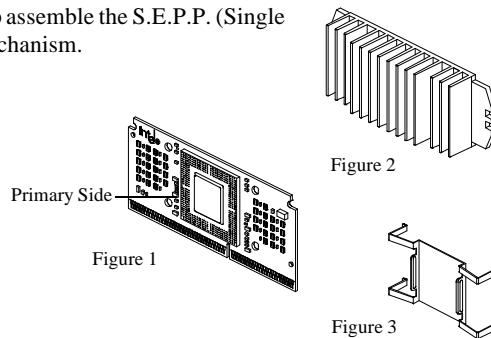
What does the Celeron™ Processor RM consist of

Celeron™ Processor requires the Retention Mechanism (RM) to hold the base processor in the S.E.P.P.
Following installation procedure will display how to install these mechanism. Please consult to your supplier for the mechanism.
Retention Mechanism package consists of 2 sets separate parts.
Each set consists of one RM, two Posts and two lock pins.

☐ Retention Mechanism (RM) -
Two Plastic Guides that hold the
S.E.P.P in the Slot 1 connector.
(Refer to Figure 8)

☐ Post Pins -
Four Post pins are push into the RM's holes
to fix RM on the PCB.

☐ Lock Pins -
Four Lock pins are push into the Post holes
to lock up RM on the PCB.
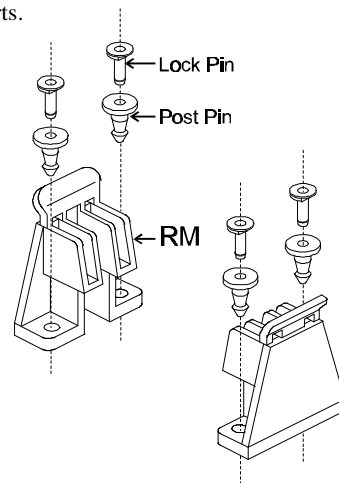
Figure 8

Install the Celeron™ Processor RM

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).

1. Finds out the Retention Mechanism (RM) Mounting Holes of Slot 1 on HOT-671 main board. (Refer to Figure 9)

2. Insert two Retention Mechanism (RM) face to face on opposite side of the Slot 1.(Refer to Figure 9)

3. Insert four Post Pin through the RM to fix it to the mainboard.   (Refer to Figure 9)

4. Insert four Lock Pin through the Post Pin to lock RM to the mainboard.(Refer to Figure 9)
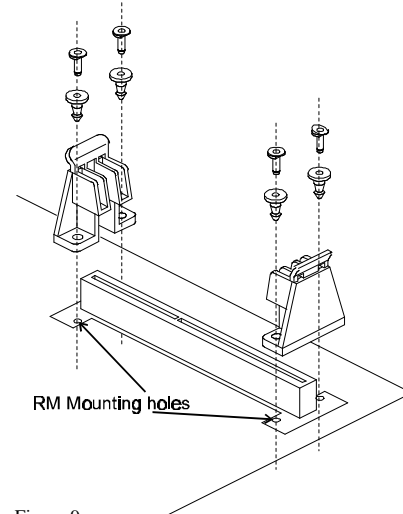
Figure 9

Install Celeron™ Processor

Hold the processor so that the Heatsink is facing toward the DIMM sockets on the mainboard. Slide the processor into the Retention Mechanism. Push the processor down firmly, with even pressure on both sides of the top, until it is seated. (Refer to Figure 10 and Figure 11)
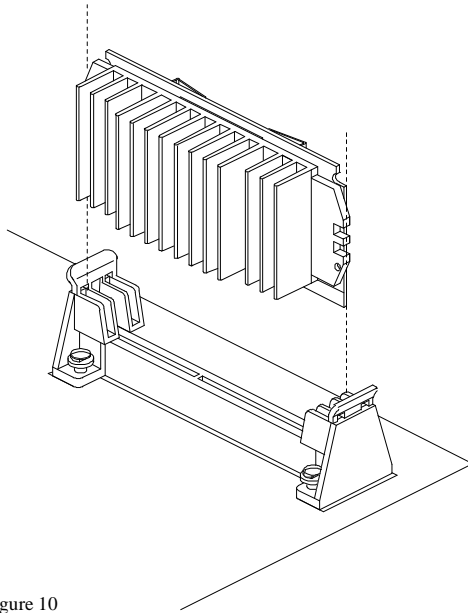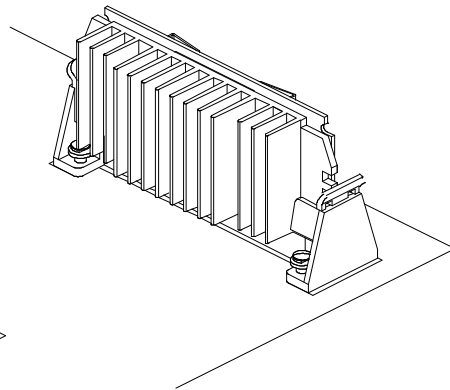
Figure 10   Figure 11

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 a [■■] 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 - JP2 and JP6

HOT-671 featuring CPU Plug & Play function, the user needn't to adjust onboard system clock and CPU multiplier. When the system power-on first time, BIOS will set CPU clock speed to 233 MHz automatically. If your CPU speed higher than 233 MHz., you only have to entry BIOS to set CPU speed to the higher one.

HOT-671 mainboard features a clock generator to provide adjustable system clock frequency. JP2 is a 6-pin jumpers which determine the system clock frequency 50 MHz to 83 MHz. CPU Plug & Play function is supported by 66MHz.

HOT-671 mainboard provides Jumper group of JP6 to figure the CPU core clock multiplier. By inserting mini jumpers on MANUAL group, the user can figure the Host Bus Clock/CPU Core Clock ratio (multiplier) manually. CPU Plug & Play function is supported when an Jumper Pack inserted on AUTO group.

Listed diagrams on right side show the sample position on jumper group of JP6:

1) Setting CPU Clock from BIOS
   - jumper pack on AUTO.
     (Factory default)
2) Adjust multiplier manually from hardware
   - jumper pack on MANUAL, multiplier set to 5X manually.
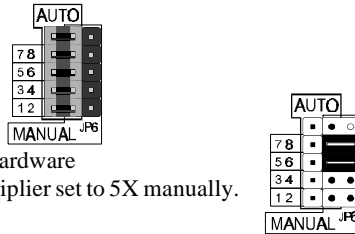
Figure 2-10 shows the position of JP2 and JP6 on the mainboard.
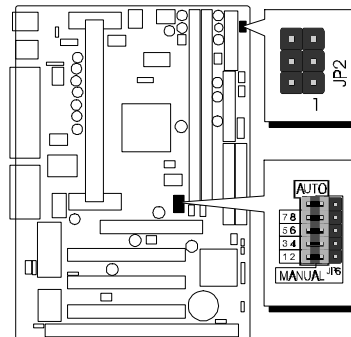
Figure 2-10

CPU Clock Configuration Table shows the Pentium II/Celeron Processor 233MHz, 266MHz, 300MHz and 333MHz quick setting on the mainboard.

System Clock Table (Table 2-2) shows all of the system bus clocks that the mainboard can offer.

Multiplier Table (Table 2-3) shows all of the multipliers that the mainboard can support.

CPU Configuration Table

Pentium II Processor	System Clock	Multiplier
233 MHz	66 MHz	3.5 x
266 MHz	66 MHz	4 x
300 MHz	66 MHz	4.5 x
333 MHz	66 MHz	5 x

Table 2-1

System Clock Configuration Table
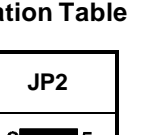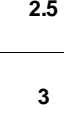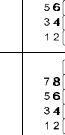
System Clock	PCI Bus Clock	JP2
50 MHz	25 MHz	
60 MHz	30 MHz	
66 MHz Support CPU Plug & Play	33 MHz	
75 MHz	37.5 MHz	
83 MHz	41.5 MHz	

Table 2-2

Multiplier Table
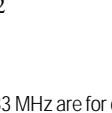
Multiplier	JP6	Multiplier	JP6
Setting By BIOS		3.5	
		4	
2		4.5	
2.5		5	
3			

Table 2-3

NOTE: 75 & 83 MHz are for over-clock usage, it is not a recommended general practice.

Clear CMOS - JP11

HOT-671 mainboard supports jumper **JP11** 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 mini jumper from JP11 pin 1-2,
3) Insert mini jumper to JP11 pin 2-3 for a brief while,
4) Remove mini jumper from JP11 in 2-3,
5) Reinsert mini jumper to JP11 pin 1-2,
6) Turn on the PC.

Flash EEPROM Vpp - JP8

HOT-671 mainboard supports two types of Flash EEPROM: 5 volt and 12 volt. By setting up jumper JP8, the main board can use both 5V or 12V flash EEPROM with new system BIOS files as they come available.

JP8 Pin 2-3 Close
for 5V Flash EEPROM

JP8 Pin 1-2 Close
for 12V Flash EEPROM
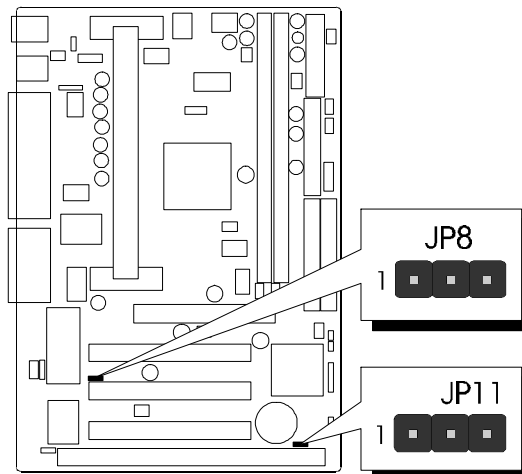
Figure 2-11

Keyboard & PS/2 Mouse Power-On Setting (option) - JP1, JP4

HOT-671 mainboard provides an optional power-on function by stroke any key (or hot-key) on keyboard or double click on PS/2 mouse.

Note: Power-on by serial mouse is not supported

JP1 and JP4 are the jumpers used to set the functions of keyboard & PS/2 mouse power-on Enabled or Disabled.

When you enabled K/B & PS/2 Mouse Power-ON function, you also have to set the proper item on **POWER ON function** category of **Integrated Peripherals** of BIOS setup.

K/B & PS/2 Mouse Power-On JP4			
Keyboard & PS/2 Mouse Power-On Disabled	JP1 / 4 5 6 / 1 2 3	PS/2 Mouse Power-On Enabled	JP1 / 4 5 6 / 1 2 3
Keyboard & PS/2 Mouse Power-On Enabled	JP1 / 4 5 6 / 1 2 3	Keyboard Power-On Enabled	JP1 / 4 5 6 / 1 2 3

Table 2-4

Connectors

Front Panel Connectors

Hardware Reset Connector - J16

Attach 2-pin hardware reset switch to it. Closing the reset switch restarts the system.

Speaker Connector - JP9

PC speaker connector may attach a 4-pin PC speaker cable from the case to this connector.

HD LED Connector - S3

Attach a 2-pin IDE drive LED cable to this connector. The LED lights when an IDE device is active.
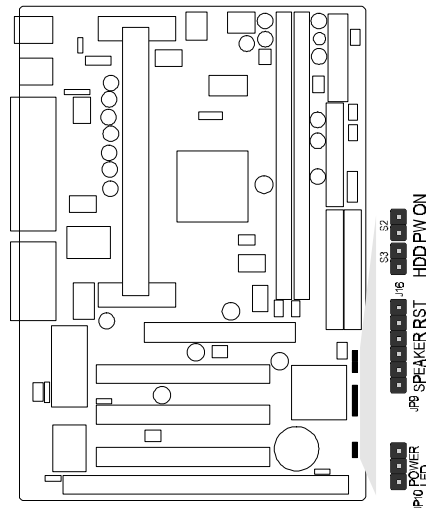
Figure 2-12

Back Panel Connectors
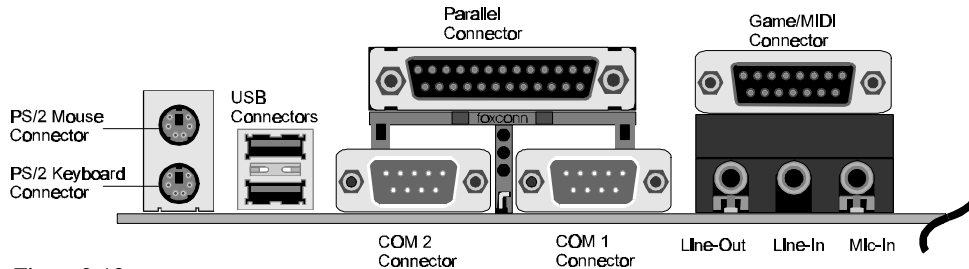
Figure 2-13

COM1/COM2 Connectors

Attach COM1/COM2 device cables to these connectors.

PS/2 Keyboard & PS/2 Mouse Connector

Two 6-pin female PS/2 keyboard & Mouse Connectors is located at the rear of the main board. PS/2 Mouse on top of connector and PS/2 Keyboard on the bottom of connector. Plug the PS/2 keyboard and mouse jack into this connector.

Parallel Port Connector

A 25-pin female connector is located at the rear of the main board. Plug the parallel port device cable into this connector.

USB1/USB2 Port Connectors

Two female connectors are located at the rear of the board. Plug the USB devices jack into this connector.

Other Connectors

ATX Power Supply Connector - J4

It is a twenty-pin male header connector. Plug the connector from the power directly onto the board connector while making sure the pin 1 is in its position. The main board requires a power supply with at least 200 watts and power good signal.

IR Connector - J3

Infrared device connector may attach a 5-pin infrared device cable to this connector for enabling the infrared transfer function. This mainboard meets the specification of ASKIR and HPSIR. Figure 2-15 shows J3's pin assignment.

Figure 2-14

J3
VCC VCC IRRA GND IRTX
1   2   3   4   5
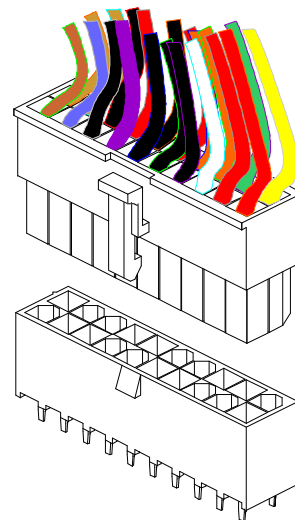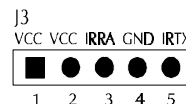
Figure 2-15

CPU, Chassis & AGP cooling Fan connectors - JP3, JP5, J13 & J18

The main board provides three onboard 12V cooling fan power connectors for CPU (JP3 & JP5), Chassis (J13) and AGP device (J18) cooling fan. Depending on the fan maker, the wiring and plug may be different. The red wire should be connected to +12V and black wire should be connected to ground (GND)

Wake-On-LAN Connector - J14

Attach a 3-pin connector from the LAN card which supports the Wake-On-LAN (WOL) function. This function lets users wake up the connected system through the LAN card.

Enhanced IDE and Floppy connectors

The main board shipped with one 40-pin ribbon cable for IDE H.D.D , one 34-pin ribbon cable for F.D.D. Ribbon cables should always be connected with the red stripe on the Pin 1 side of the connector.
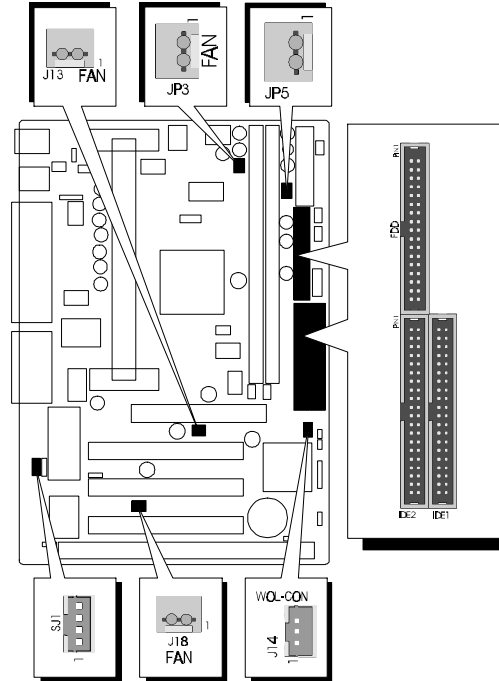
Figure 2-16

CD Audio Connectors

SJ1: 1 = Ground

    2 = Left Channel

    3 = Ground

    4 = Right Channel

SJ2: 1 = Left Channel

    2 = Ground

    3 = Ground

    4 = Right Channel
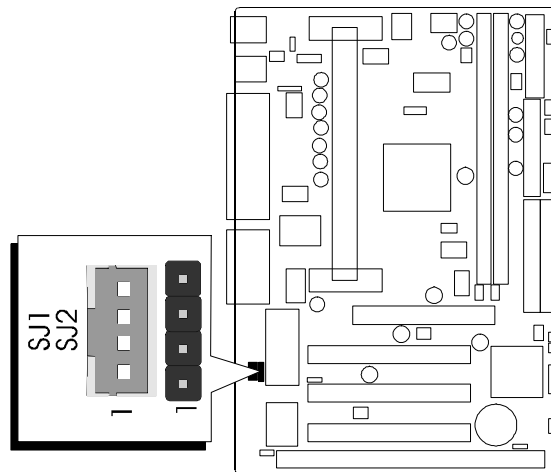
Figure 2-17

3 MEMORY CONFIGURATION

The HOT-671 mainboard provides two 168-pin DIMM sockets that make it possible to install from 8MB up to 256MB of SDRAM and EDO DRAM. The DIMM socket support 8MB, 16MB, 32MB, 64MB and 128MB 3.3V single- or double-side SDRAM and EDO DIMM.

The two DIMM sockets are arranged in two banks of one socket each, Each bank provides a 64/72-bit wide data path.

HOT-671 provides optional data integrity features including EC (Error Checking) or ECC (Error Checking and Correcting) in the memory array. EC mode provides single and multiple bit error detection. In ECC mode, during reads from the DRAM, the HOT-671 provides error checking and correction of the data.

To support ECC, you must use true (opposed to phantom parity generated by TTL chips) 72-bit parity-type DIMM for all modules.

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

DIMM Socket	Memory Modules	Mudule Quantity
DIMM 0	8MB, 16MB, 32MB, 64MB, 128MB, 256MB 168-pin 3.3V SDRAM or EDO DIMM	x 1
DIMM 1	8MB, 16MB, 32MB, 64MB, 128MB, 256MB 168-pin 3.3V SDRAM or EDO DIMM	x 1

Table 3-1

4 FLASH UTILITY

This chapter briefly discusses Award Flash utility in order to guide you through updating your old BIOS. The file name we use to program here is test.bin, and the file name to save old BIOS is 671.BIN. Please note that those file names are not absolute. They are only examples to let you have a more clear understanding of the updating process.

How to Begin

1. Please type "awdflash" and press the ENTER key to begin the updating process.

2. Once you enter, you will see a main menu displaying:

3. Move the cursor to "File Name to Program: "

4. Type the program name "test.bin", and then press the ENTER key.

5. At the bottom of the menu, you will be requested to answer:

   "Do You Want to Save BIOS (Y/N)? "

```
              FLASH   MEMORY   WRITER v5.5
      Copyright (C) 1996-1997, Award Software, Inc.

       For 0-i440LX-MS135-2A69JH2DC  DATE: 04/20/19
           Flash Type - WINBOND 29EE011 /5V

   File Name to Program : test.bin

   Error Message:  Do You Want To Save Bios (Y/N)
```

The following manual is intended to guide you through the process of both "No" and "Yes" cases respectively.

If "No"

If you do not wish to save the old BIOS:

1. Please type "N", and then press the ENTER key.

2. Then you will be requested to answer:

   "Are You Sure to Program? "

3. Answer "N" if you do not want to program, and then it will exit.

If "Yes"

To save the old BIOS:

1. Please respond "Y", and then press the ENTER key.

2. Move the cursor to "File Name to Save: "

3. Type file name "671.BIN", and then press the ENTER key. (Your old BIOS will be saved in the file name you create. In this case, the old BIOS is saved in the file name, 671.BIN).

4. Then you will be requested to answer:

   "Are You Sure to Program (Y/N)? "

```
        FLASH   MEMORY   WRITER  v5.5
 Copyright (C) 1996-1997, Award Software, Inc.

  For 0-i440LX-MS135-2A69JH2DC  DATE: 04/20/19
      Flash Type - WINBOND 29EE011 /5V

File Name to Program : test.bin

File Name to Save    : 671.bin




 _____
 Error Message:
```

5. Type "Y" to begin programming, and press the ENTER key.

6. When the programming is finished, the showing message will appear:

7. Once you see the showing message "Power Off or Reset System", please restart your system.

8. When you power on the computer again, you will find your old BIOS has already been successfully updated.

To view a complete usage of FLASH utility, please type "awdflash /?" and press the ENTER key.

Notes About Award Flash Utility

Please note that Award Flash Utility cannot run under **EMM386** or **QEMM**. Thus, when executing the command "awdflash", an error message will appear:

   "Error Message: Fail — Due to EMM386 or QEMM !"

5 BIOS SETUP

The 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 <Del> 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 <Del> key or simultaneously press <Ctrl>,<Alt>, and <Esc> keys.

"Press DEL to enter SETUP"

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, DEL To Enter Setup"

The Main Menu

```
                    ROM PCI/ISA BIOS (2A69JH2D)
                        CMOS SETUP UTILITY
                       AWARD SOFTWARE, INC.

   STANDARD CMOS SETUP            INTEGRATED PERIPHERALS

   BIOS FEATURES SETUP            SUPERVISOR PASSWORD

   CHIPSET FEATURES SETUP         USER PASSWORD

   POWER MANAGEMENT SETUP         IDE HDD AUTO DETECTION

   PNP/PCI CONFIGURATION          SAVE & EXIT SETUP

   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.

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.

IDE HDD auto detection

Automatically configure IDE hard disk drive parameters.

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 (2A69JH2D)
                      STANDARD CMOS SETUP
                      AWARD SOFTWARE, INC.

   Date (mm:dd:yy) : Sat, May  2 1998
   Time (hh:mm:ss) : 11 : 13 : 41

   HARD DISKS          TYPE    SIZE   CYLS HEAD PRECOMP LANDZ SECTOR   MODE

   Primary Master  : Auto      0       0    0    0      0     0     0  AUTO
   Primary Slave   : Auto      0       0    0    0      0     0     0  AUTO
   Secondary Master : Auto     0       0    0    0      0     0     0  AUTO
   Secondary Slave : Auto      0       0    0    0      0     0     0  AUTO

   Drive A : 1.44M, 3.5 in.
   Drive B : None                      ┌─────────────────────────────┐
                                       │   Base Memory:        0K     │
   Video   : EGA/VGA                   │ Extended Memory:      0K     │
   Halt On : All Errors                │     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 matches 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 (2A69JH2D)
                  BIOS FEATURES SETUP
                 AWARD SOFTWARE, INC.

Virus Warning           : Disabled    Video  BIOS Shadow  : Enabled
CPU Internal Cache      : Enabled     C8000-CBFFF Shadow  : Disabled
External Cache          : Enabled     CC000-CFFFF Shadow  : Disabled
Quick Power On Self Test : Enabled    D0000-D3FFF Shadow  : Disabled
Boot Sequence           : A,C,SCSI    D4000-D7FFF Shadow  : Disabled
Swap Floppy Drive       : Disabled    D8000-DBFFF Shadow  : Disabled
Boot Up Floppy Seek     : Enabled     DC000-DFFFF Shadow  : Disabled
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/VGA Palette Snoop    : Disabled
OS Select For DRAM > 64MB : Non-OS2   ESC : Quit        ↑↓→← : Select Item
                                      F1  : Help        PU/PD/+/- : Modify
                                      F5  : Old Values  (Shift)F2 : Color
                                      F6  : Load BIOS  Defaults
                                      F7  : Load Setup Defaults
```

Virus Warning

When this item is enabled, the Award BIOS will monitor the boot sector and partition table of the hard disk drive for any attempt at modification. If an attempt it made, the BIOS will halt the system and the following error message will appear. Afterwards, if necessary, you will be able to run an anti-virus program to locate and remove the problem before any damage is done.

```
                    !WARNING!
          Disk boot sector is to be modified
       Type "Y" to accept write or "N" to abort write
                 Award Software, Inc.
```

CPU Internal Cache

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

External Cache

This item enables CPU secondary 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 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*.

Gate A20 Option

This entry allows you to select how the gate A20 is handled. The gate A20 is a device used to address memory above 1 MByte. Initially, the gate A20 was handled via a pin on the keyboard. Today, while keyboards still provide this support, it is more common, and much faster, set to Fast for the system chipset to provide support for gate A20.

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 SCSI Add-on card.

Chipset Features Setup

```
                    ROM PCI/ISA BIOS (2A69JH2D)
                        CHIPSET FEATURES SETUP
                         AWARD SOFTWARE, INC.

 Auto Configuration      : Enabled     SDRAM CAS latency Time   : 3
 DRAM Speed Selection    : 60ns        Auto Detect DIMM/PCI Clk : Disabled
 MA Wait State           : Fast        Spread Spectrum          : Disabled
 EDO RAS# To CAS# Delay  : 3           CPU Speed (w/ HCLK = 66MHz): 266 MHz
 EDO RAS# Precharge Time : 4
 EDO DRAM Read Burst     : x222
 EDO DRAM Write Burst    : x222
 DRAM Data Integrity Mode : Non-ECC
 CPU-To-PCI IDE Posting  : Enabled
 System BIOS Cacheable   : Disabled
 Video  BIOS Cacheable   : Enabled
 Video RAM Cacheable     : Enabled
 8 Bit I/O Recovery Time : 3
 16 Bit I/O Recovery Time : 2
 Memory Hole At 15M-16M  : Disabled    ESC : Quit        ↑↓→← : Select Item
 Passive Release         : Enabled     F1  : Help        PU/PD/+/- : Modify
 Delayed Transaction     : Disabled    F5  : Old Values  (Shift)F2 : Color
 AGP Aperture Size (MB)  : 64          F6  : Load BIOS  Defaults
 SDRAM RAS-to-CAS Delay  : Slow        F7  : Load Setup Defaults
 SDRAM RAS Precharge Time : Slow
```

Auto Configuration

The default setting of the optimal timings for items 3 through 7 for 60ns EDO DRAM modules.

DRAM Speed Selection

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

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.

EDO RAS To CAS# Delay

When EDO 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 *3* and *2*.

EDO 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.

33

EDO DRAM Read Burst

This item set the EDO 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 *222* and *333*.

EDO DRAM Write Burst

This item set the EDO DRAM Write Burst timing for accessing DRAM. The options are *222* and *333*.

DRAM Data Integrity Mode

This item allows the user to set DRAM data integrity mode to ***Non-ECC*** or ***ECC***. Non-ECC has byte-wide write capability but no provision for protecting data integrity in the DRAM array. ECC allows a detection of single-bit and multiple-bit errors and recovery of single-bit errors.

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 BIOS Cacheable

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

Video RAM Cacheable

This is a new cache technology for the video memory of the processor. It can greatly improve the display speed by caching the display data. You must leave this on the default setting of ***Disabled*** if your display card cannot support this feature or else your system may not boot.

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.

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.

AGP Aperture Size (MB)

This item allows the user to set memory-mapped, graphics data structures can reside in Graphics Aperture.

SDRAM RAS-to-CAS Delay

When SDRAM 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 *Slow* for 3 and *Fast* for 2 CLKs.

SDRAM RAS Precharge Time

SDRAM 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. The options are *Slow* for 3 and *Fast* for 2 CLKs.

SDRAM CAS Latency Time

This item defines the CAS Latency timing parameter of the SDRAM expressed in 66MHz clocks. The options are *2* and *3* CLKs.

Auto Detect DIMM/PCI Clock

Enabling this item allows system auto detect and close clock signal to empty DIMM/PCI slot to reduce EMI.

Spread Spectrum

This item allows the user to enable Spread Spectrum Modulated to reduce the EMI.

CPU Speed (w / HCLK - 66MHz) : 233 MHz

The mainboard support CPU clock speed setting by BIOS. When system clock jumper JP39 is set to **66 MHz** and CPU multiplier jumper JP37 is set to **AUTO** position.

HOT-671 support Pentium II speed from 233 MHz to 333 MHz.

Power Management Setup

```
                  ROM PCI/ISA BIOS (2A69JH2D)
                     POWER MANAGEMENT SETUP
                      AWARD SOFTWARE, INC.

Power Management    : Disable      ** Reload Global Timer Events **
PM Control by APM   : Yes          IRQ[3-7,9-15],NMI   : Enabled
Video Off After     : Standby      Primary IDE 0       : Disabled
MODEM Use IRQ       : 3            Primary IDE 1       : Disabled
Doze Mode           : Disable      Secondary IDE 0     : Disabled
Standby Mode        : Disable      Secondary IDE 1     : Disabled
Suspend Mode        : Disable      Floppy Disk         : Disabled
HDD Power Down      : Disable      Serial Port         : Enabled
Suspend Mode Option : PowerOn Suspend  Parallel Port   : Disabled
Throttle Duty Cycle : 62.5%        Resume by LAN       : Enabled
VGA Active Monitor  : Disabled
Soft-Off by PWR-BTTN : Instant-Off
Resume by Ring      : Enabled
IRQ 8 Break Suspend : Disabled
                                   ESC : Quit        ↑↓→← : Select Item
                                   F1  : Help        PU/PD/+/- : Modify
                                   F5  : Old Values  (Shift)F2 : Color
                                   F6  : Load BIOS  Defaults
                                   F7  : Load Setup Defaults
```

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 After

This item define when to activate the video off feature for monitor power management. The settings are N/A, Doze, Standby and Suspend.

MODEM Use IRQ

This item determines the IRQ in which the MODEM can use.
The choice: 1, 3, 4, 5, 7, 9, 10, 11, N/A.

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*.

Throttle Duty Cycle

This item determines the duty cycle for the clock control thermal throttling mode. The duty cycle indicates the percentage of time while in the thermal throttle mode. The settings between 12.5% and 87.5%.

VGA Active Monitor

If this item is set to Enabled, the VGA activity event will be monitored to reload global timer.

Soft-Off by PWR-BTTN

(This feature is available for ATX power only)
The setting of **Instant-Off** allows the ATX switch to function as a normal system power off button when pressed for less than 4 seconds. The setting of **Delay 4 Sec.** allows the button to have a dual function where to press the button for less than 4 seconds will place the system in suspend mode, and pressing the button for more than 4 seconds will shut place the system off.

Resume by Ring

This item determine the system will resume by activating of modem ring.

IRQ 8 Break Suspend

You can turn On or Off monitoring of IRQ8 (the Real Time Clock) so it does not awaken the system from Suspend mode.

** Reload Global Timer Events **

If any of these items is set to Disabled, that system activity event will not be monitored to reload global timer.

If these items is set to Enabled, that system activity event will be monitored to reload global timer.
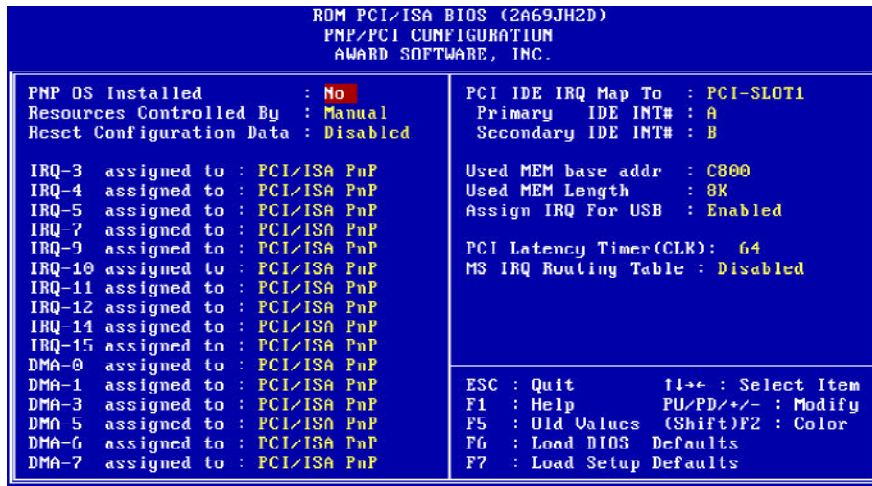
These items include IRQ[3-7, 9-15], NMI, Primary IDE0/1, Secondary IDE 0/1, Floppy Disk, Serial Port and Parallel Port.

Resume by LAN (Wake-ON-LAN)

This item determine the system will resume by activity of LAN. If enabled this feature system will power-on itself from power off when the activity of LAN.
Note : HOT-671 support Wake-ON-LAN function with Intel LAN card only.

PCI Configuration Setup

```
                    ROM PCI/ISA BIOS (2A69JH2D)
                       PNP/PCI CONFIGURATION
                       AWARD SOFTWARE, INC.

 PNP OS Installed      : No         PCI IDE IRQ Map To  : PCI-SLOT1
 Resources Controlled By : Manual     Primary   IDE INT# : A
 Reset Configuration Data : Disabled   Secondary IDE INT# : B

 IRQ-3  assigned to : PCI/ISA PnP    Used MEM base addr  : C800
 IRQ-4  assigned to : PCI/ISA PnP    Used MEM Length     : 8K
 IRQ-5  assigned to : PCI/ISA PnP    Assign IRQ For USB  : Enabled
 IRQ-7  assigned to : PCI/ISA PnP
 IRQ-9  assigned to : PCI/ISA PnP    PCI Latency Timer(CLK):  64
 IRQ-10 assigned to : PCI/ISA PnP    MS IRQ Routing Table : Disabled
 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    ESC : Quit          ↑↓→← : Select Item
 DMA-3  assigned to : PCI/ISA PnP    F1  : Help          PU/PD/+/- : Modify
 DMA-5  assigned to : PCI/ISA PnP    F5  : Old Values   (Shift)F2 : Color
 DMA-6  assigned to : PCI/ISA PnP    F6  : Load BIOS  Defaults
 DMA-7  assigned to : PCI/ISA PnP    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 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.

Used MEM base addr

This item is used to select a base address for the memory area used by any peripheral that requires high memory.
The choices are *C800, CC00, D000, D400, D800, DC00* and *N/A*.

Used MEM Length

This item is used to select a length for the memory area specified in the previous field. this field does not appear if no base address is specified.
The choices are *8K, 16K, 32K* and *64K*.

Assign IRQ for USB

This item allows the user to assign IRQ to on-board USB controller or not.
Since on-board controller is enabled always, if none of IRQ is assigned to it, there will be a question mark report on system device under windows 95.

PCI Latency Timer

The number of clocks programed in the PCI Latency Timer represents the guaranteed time slice allocated to the 440EX, after which it must complete the current data transfer phase and surrender the bus as soon as its bus grant is removed.

The PCI Latency Timer is used to guarantee to the PCI agents a minimum amount of the system resource.

The default setting is 64 PCI clocks.

MS IRQ Routing Table

This item allows the user to set BIOS IRQ Routing Table Enabled or Disabled.

Integrated Peripherals

```
                    ROM PCI/ISA BIOS (2A69JH2D)
                       INTEGRATED PERIPHERALS
                         AWARD SOFTWARE, INC.

  IDE HDD Block Mode        : Enabled      Parallel Port Mode      : SPP
  IDE Primary Master PIO    : Auto         ECP Mode Use DMA        : 3
  IDE Primary Slave  PIO    : Auto         KBC clock source        : 12 MHz
  IDE Secondary Master PIO  : Auto
  IDE Secondary Slave  PIO  : Auto
  IDE Primary Master UDMA   : Auto
  IDE Primary Slave  UDMA   : Auto
  IDE Secondary Master UDMA : Auto
  IDE Secondary Slave  UDMA : Auto
  On-Chip Primary   PCI IDE : Enabled
  On-Chip Secondary PCI IDE : Enabled
  USB Keyboard Support      : Disabled
  Init AGP Display First    : Enabled

  Onboard FDC Controller    : Enabled
  Onboard UART Port 1       : 3F8/IRQ4     ESC : Quit        ↑↓→← : Select Item
  Onboard UART Port 2       : 2F8/IRQ3     F1  : Help        PU/PD/+/- : Modify
  UART2 Mode                :              F5  : Old Values  (Shift)F2 : Color
  Half Duplex time-out      : Enabled      F6  : Load BIOS  Defaults
  Onboard Parallel Port     : 378/IRQ7     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.

40

IDE Primary Master UDMA

On this mainboard, Intel PIIX4 improves IDE transfer rate using Bus Master UltraDMA/ 33 IDE which can handle data transfer up to 33MB/sec. The options are *Disabled, Enabled and Auto, Auto* is the default settings for on board Primary Master *UltraDMA33* . **Note : Your hard drive must also support UDMA for this feature to work.**

IDE Primary Slave UDMA

On this mainboard, Intel PIIX4 improves IDE transfer rate using Bus Master UltraDMA/ 33 IDE which can handle data transfer up to 33MB/sec. The options are *Disabled, Enabled and Auto, Auto* is the default settings for on board Primary Slave *UltraDMA33* . **Note : Your hard drive must also support UDMA for this feature to work.**

IDE Secondary Master UDMA

On this mainboard, Intel PIIX4 improves IDE transfer rate using Bus Master UltraDMA/ 33 IDE which can handle data transfer up to 33MB/sec. The options are *Disabled, Enabled and Auto, Auto* is the default settings for on board Secondary Master *UltraDMA33* . **Note : Your hard drive must also support UDMA for this feature to work.**

IDE Secondary Slave UDMA

On this mainboard, Intel PIIX4 improves IDE transfer rate using Bus Master UltraDMA/ 33 IDE which can handle data transfer up to 33MB/sec. The options are *Disabled, Enabled and Auto, Auto* is the default settings for on board Secondary Slave *UltraDMA33* . **Note : Your hard drive must also support UDMA for this feature to work.**

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

USB Keyboard Support

This item is used to defined USB Keyboard is *Enabled* or *Disabled* .

Onboard FDC Controller

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 UART 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 UART Serial 2

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

UART2 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.

Onboard Parallel Port

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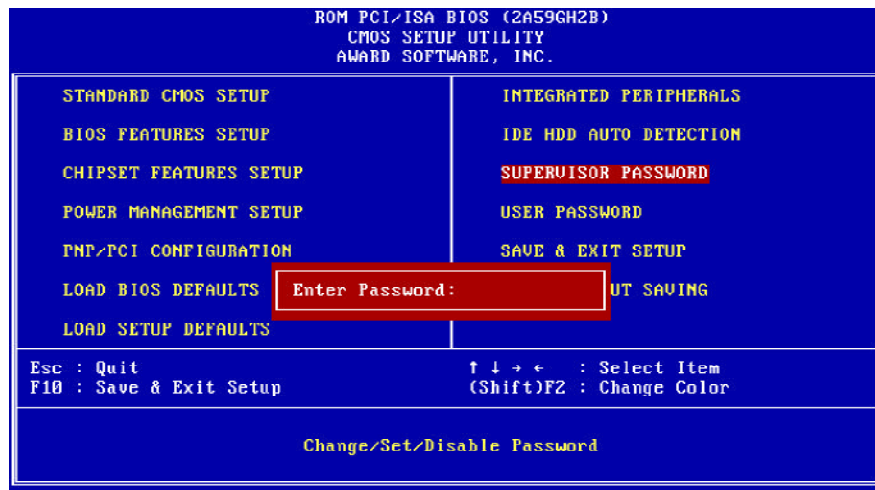
Parallel Port Mode

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.

Password Setting

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

```
ROM PCI/ISA BIOS (2A59GH2B)
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

LOAD BIOS DEFAULTS    Enter Password:          UT SAVING

LOAD SETUP DEFAULTS

Esc : Quit                    ↑ ↓ → ←   : Select Item
F10 : Save & Exit Setup       (Shift)F2 : Change Color

Change/Set/Disable 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 page 18 "Clear CMOS".

6 ON BOARD SOUND CHIP SETTING

Introduction

On-board sound chip is a 16-bit stereo 64 Voices Wavetable sound chip which based on the OPTi 82C933 Plug-and-Play 3D Integrated audio controller chip. The 82C933 is compatible with all major PC sound standards, including Sound Blastertm Pro, Ad Libtm, General MIDI and Windows Sound Systemtm. The 82C933 provides an integrated sound solution for business audio, educational and entertainment sound, and other multimedia applications.

The 82C933 sound chip will let you run thousands of Sound Blaster and Sound Blaster Pro compatible games and applications, including a rapidly growing number of Windows business applications that are compatible with the Windows Sound System.

The 82C933 sound chip also has multiple input and output ports for recording and playback of stereo sound.

Features

Here is a brief overview of OPTi 82C933 main features:

The 82C933 a full-featured sound card that includes the following:

* **ISA Plug and Play (PnP)**___Supports the Plug and Play Specification 1.0a which allows the system to automatically detect and configure devices that conform to the standard. This eliminates the user having to know and configure the correct IRQ, DMA and I/O channel settings.

* **3D Sound Enhancement**___Supports 3D spatial enhancement and effects tuning

* **Wave Audio**___Maximum recording and playback sampling rate of up to 48 KHz stereo.

* **Sixteen-bit digital-to-analog and analog-to-digital con-verter**___16-bit and 8-bit digitizing in stereo and mono mode.

* **Twenty-two Voice FM Music Synthesizer**___Yamaha OPL3 FM Synthesizer technology. Play up to 22 instruments simultaneously to deliver a high quality of rich and crisp music.

* **Digital/Analog Mixer**___Mix analog stereo from CD-audio, Line-In, FM music and digitized voice sources. Digital stereo mixing from Microphone, Line-in, CD-audio and Line-out Master volume control.

* **Built-in Stereo Power Amplifier**___2-watt per channel stereo power amplifier.

* **MIDI Interface/Joystick Port**___Built-in integrated MIDI MPU-401 interface with FIFO, IBM PC joystick/game port.

* **Interfaces**___Wavetable synthesizer interface, Speakers Out, Line In, and Microphone In.

* **Bundled Software**___

 Willow Pond MediaRack (support mulit-language)

 Invision Cyberkeyboard

 Midisoft Internet Media Player (15-day trial version)

 NetSpeak WebPhone (30-day full version)

 50 Popular MIDI Files

System Requirements

The 82C933 is design and manufactured for IBM PC compatible computers, software, and related computer components :

. Enough RAM to accommodate the system, plus the waveset chosen (4MB wavesets included)

. VGA or SVGA graphics adapter, monitor and mouse.

. AT leaset 12MB of free on hard disk space for installing all 82C933 software and samples.

. MS Windows 95, Windows 95 OSR2, Windows NT 3.51/4.0, Windows 3.x , DOS 6.x or OS/2 Warp3.0 / Merlin 4.0.

. External speakers, microphone or headphones (optional)

Connecting Audio Devices to 671
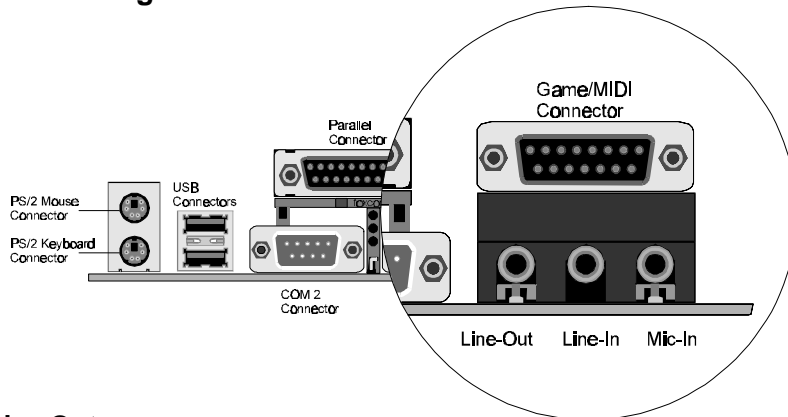
Line Out

LINE-OUT is a stereo output through which the combined signal of all internal and external audio sources on the board is output. It can be connected to 1/8-inch TRS stereo headphones or to amplified speakers.

Line Input

LINE-IN is a stereo line-level input that accepts a 1/8-inch TRS stereo plug. It can be used as a source for digital sound recording, a source to be mixed with the output, or both.

Mic Input

MIC-IN is a 1/8-inch jack that provides a mono input. It can use a dynamic mono or stereo microphone with a resistance of not more than 600 ohms.

Joystick / MIDI

The Joystick/MIDI port is a 15-pin female connector . This port can be connected to any IBM PC compatible joystick with a 15-pin D-sub connector. Disable the joystick port on the sound card (using the **SNDINIT.EXE** program) if you already have a game port or game card.

MIDI Instrument Connection

You need a MIDI adapter to connect a MIDI instrument to the sound card. The MIDI adapter can be connected to the Joystick/MIDI port. You will also need MIDI sequencing software to run MIDI instruments with your computer.

CD Audio-In Connection - SJ1 & SJ2

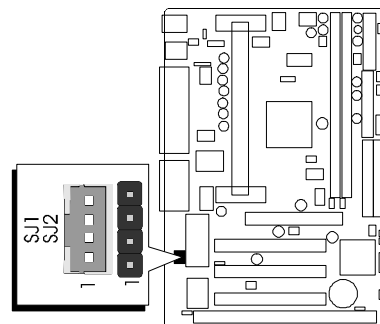SJ1 and SJ2 are used to connect CD Audio output from CD-ROM drive.

SJ1 pin assignment
1 : Ground
2 : Right channel
3 : Gound
4 : Left channel
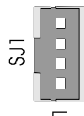
SJ2 pin assignment
1 : Right Channel
2 : Gound
3 : Gound
4 : Left Channel

Windows 95 Software Installation

Windows 95 Driver Installation

The first time you run Windows 95 follow this procedure:

1. Log on to Windows 95.

2. Windows 95 Plug-and-Play capabilities will detect **"OPTi Audio 16"** and search for the drivers for the new hardware.

3. Insert the HOT-671 Installation CD into your CD-ROM drive and click *Next* to continue.

   Windows 95 will search all the available drives for an appropriate device driver.

   Direct the Installation to :

   D:\Opti933\Win95\English (or German, French, Chinese,. .) for Windows 95 Driver or *D:\Opti933\Cybersyn* for CyberSynth Software Wavetable Windows 95 Driver..

4. System will now install the 82C933 driver. After driver installation, system will prompt you to restart the computer.

   Note: Depending upon the original Windows 95 installation choices, you may be asked to insert the original Windows 95 CD-ROM in the system during the installation process to install all the appropriate files.

Using Software Wavetable

To use the software wavetable, you can either use Windows 95 MediaPlayer or HOT-671 bundled MediaRack. For the utilization of audio tuning functions, we recommend MediaRack.

To play MIDI file by software wavetable in MediaPlayer, you need to select *"Device"*, then *"Properties"*. Select *"CyberSynth"* to switch the MIDI device to OPTi-CyberSynth Software Wavetable. You cannot change device selection while you are playing a MIDI file in MediaPlayer.

In MediaRack, you can switch different output MIDI devices while playing a MIDI file. Click the *"MIDI"* in the tool bar, then *"Select Output"* to switch between different MIDI devices. Due to the nature of software wavetable, you will feel sound volume decrease after you change the output to the software wavetable. You can increase sound volume by adjusting the Master Volume slide bar.

You can adjust the Chorus and Reverb sound effect for MIDI output in CyberSynth Software Wavetable. Go to *Control Panel*, and double click the *"CyberSound Settings"* icon to launch the effect control desk.

47
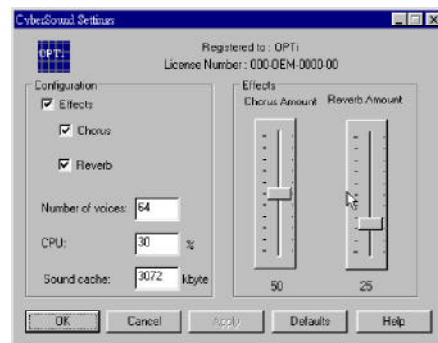
The default Number of Voices is 64. You may modify the number from 24 up to 64 voices. Minimum 24 voices are required by General MIDI (GM).

Windows 95 Driver Uninstall

To remove the *82C933* driver from your Windows 95 computer:

1. Click on the *Start* button.

2. Select *Settings*.

3. Select *Control Panel*.

4. From the *Control Panel*, double-click the *Add/Remove Programs* icon.

5. The following screen will be displayed. Highlight "OPTi 933 Audio Drivers" and click on the *Add/Remove* button

6. Confirm that you want to remove the drivers by clicking on *Yes*.

7. After the drivers have been removed you will need to shutdown the system and disable the on board 82C933 chip. If you restart without removing the card, Windows 95 will detect and ask for the drivers again. Select *Yes* (or press *Y*) to shut down the computer.

Installing Real Mode DOS Driver under Windows 95

After you have successfully installed the drivers for Windows 95 and the system has booted correctly, you can install the drivers for audio applications that run in DOS mode. To do this,

1. Insert the HOT-671 Installation CD into your the CD-ROM drive.

2. From the Windows 95 desktop select *Start* then *Run*.

3. Type *D:\Opti933\Dos_win\English\Setup* and press *Enter,* program will copy the installation files to your hard drive.

4. After the install files are copied, the installation program will restart system.

Windows 3.x/DOS Software Installation

The 82C933 sound chip installation program will install all of the software drivers and applications needed to achieve both Sound Blaster Pro and Windows Sound System compatible operation.

Device Driver Installation

The following steps will guide you through the full software installation and configuration for the on board 82C933 sound chip. We recommend that you read through them now, and become familiar with them before installing the software.

1. Turn the computer on and start Windows 3.x.

2. Insert the HOT-671 Installation CD into your CD-ROM drive.

3. Select *File* and *Run*.

4. Type **D:\Opti933\Dos\Install** and click *OK*, program will copy the installation files to your hard drive.

5. After the install files are copied, the installation program will restart system.

Windows 3.x Applications

After the installation is complete and you will see a new program group on your desktop.

Audio Mixer

The Audio Mixer lets you adjust the volume settings for each of the individual audio sources that the HOT-671 supports.

Advanced

Click the Advanced button on *Volume Control Mixer* to show the *3D Sound On/Off* button. This button toggles the 3D sound feature on and off.

Read Me File

This will display an ASCII text file that contains all of the latest information on the device drivers. If you did not read this file during the installation procedure, please take a moment to do so now in case there is pertinent information.

933 Uninstall

Double-clicking on this icon will remove the audio device drivers from Windows. Once the drivers are removed you will need to reboot so the changes can take effect.

Windows NT3.51/ 4.0 Software Installation

To install the software for the 82C933 sound chip in Windows NT 3.51/4.0 follow this procedure:

The installation process assumes that Windows NT has been installed. Refer to documents for Windows NT installation.

1. Enabling on board OPTi 82C933 sound chip.

2. Logged on Windows NT in Administrator mode. Windows NT audio driver can't be in stalled or modified unless Windows NT is started in Administrator mode.

3. **For Windows NT 3.51:**

   1) Start Windows NT in Administrator mode.

   2) Choose *Drivers* icon from Control Panel.

   3) Click the *Add* button in Drivers dialog box.

   4) Select *"Unlisted or Updated Driver"* and click the OK button.

   5) Insert the HOT-671 Installation CD into your CD-ROM drive and browse path to

   D:\Opti933\WinNT\English (or German, French,Chinese,. .).

   6) Click the *OK* button in the *"Add Unlisted or Updated Driver"* box

   For Windows NT 4.0

   1) Start Windows NT in Administrator mode.

   2) Choose *Multimedia* from Control Panel.

   3) Click on *Devices* tab.

   4) Click the *Add* Button.

   5) Select *"Unlisted or Updated Driver"* and click the *OK* button.

   6) Insert the HOT-671 Installation CD into your CD-ROM drive and browse path to

   D:\Opti933\WinNT\English (or German, French,Chinese,. .).

   7) Click the *OK* button in the *"Add Unlisted or Updated Driver"* box

4. A setup dialog box will appear.

   Configure the Audio, MPU-401, Gameport, CD-ROM, and advanced options. Choose the

   CD-ROM Interface Settings for selecting to disable the on-board IDE CD-ROM interface. **Please note on baord 82C933 has no extra IDE CD-ROM support**. Choose the *OK* button to accept the settings.

5. Choose the *Restart Now* button to have the new driver and any changed driver settings to

   take effect when Windows NT restart.

OS/2 Warp 3.0/Merlin 4.0 Software Installation

The 82C933 driver supports both OS/2 Warp 3.0 and OS/2 Merlin 4.0. Before you install 82C933 Driver make sure that you have installed OS/2 WARP Version 3.0 Revision 8.162 or later.

1. Ensure that your 82C933 sound chip has been enabled and power on your system and wait for the OS/2 Desktop to appear.

2. From your OS/2 Desktop, open (double click) the OS/2 System folder and then open the Command Prompts folder.

3. Open either the OS/2 Window icon or the OS/2 Full Screen icon to start an OS/2 command prompt session.

4. Insert the HOT-671 Installation CD into your CD-ROM drive.

5. Type *"D:\Opti933\OS2\Minstall"* and ENTER.

6. MINSTALL will display 3 options to install - OPTi WAVE OS/2 Driver, OPTi OPL3 Driver and OPTi WIN-OS/2 Audio Driver. Select the options and click "OK". Follows the instruction to complete the installation.

7. Type *EXIT* and *ENTER* to return to OS/2 Desktop.

8. Reboot OS/2.

Installing and Viewing HOT-671 Utilities on CD

Installing HOT-671 Utilities on CD

1. Insert the HOT-671 Installation CD into your CD-ROM drive.

2. Select *Start / File* and *Run*.

3. Type *D:\INST.EXE* and click *OK*.

Viewing HOT-671 Utilities on CD

The following description simply overview these useful utilities bundled on CD.

MediaRack (Directory path: \Opti933\Utility\Mrack\English(Eruope))

Media Rack gives you control over your PC audio functions through a user interface as simple to use as home stereo system. It is available in Windows 3.x, Windows 95 and Windows NT4.0 environment and support multi-language.

WebPhone
(Directory path: \Opti933\Utility\Webphone\Webphn32(Webphn16))

WebPhone is a professional, feature rich audio and video communication system, which requires some preparation on your part in order to use it properly and to take advantage of all the functions that it has to offer. Please take the time now to read through these release notes (wpnotes.wri) and read the How to Guide (wphowto.wri) or run the User Manual (wpman.exe)

to learn how to operate your WebPhone (webphone.exe) before attempting to use it or if you require help. It is available in Windows 3.x, Windows 95 and Windows NT4.0 environment.

Internet Media Player
(Directory path: \Opti933\Utility\Implayer)

Internet Media Player include NetShow
Player and Microsoft NetShow RealPlayer.

Use NetShow Player to play Active Stream-
ing format (.asf) files and live ASF streams.

NetShow Player can receive ASF informa-
tion delivered via unicast or multicast.

Using the NetShow RealPlayer, you can
listen and view thousands of hours of live
and prerecorded clips, including sporting
events, live radio stations, news, music, and
lectures. It is available in Windows 95 and
Windows NT4.0 environment.
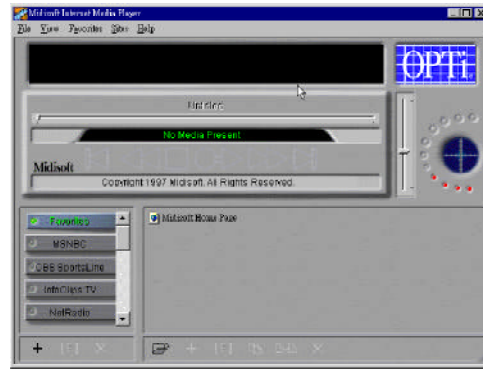
CyberKeyboard
(Directory path:
\Opti933\Utility\Cyberkbd)

The source of sound in your computer is
CyberSynth, a powerful software synthesizer that is
used as the sound source for many music, game, and
multimedia software applications.

CyberSynth reproduces a wide variety of instrument
sounds from the most commonly used instrument
categories, such as pianos, organs, brass, strings,
woodwinds, drums, sound effects, and more.
CyberSynth Keyboard allows you to access these sounds using your mouse. It available in
Windows 95 and Windows NT4.0 environment.