HOT-673

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.

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P PREFACE

HOT-673 is a highly integrated IBM PC/ATX compatible system board designed to meet the industry's most demanding desktop applications.

Based on the Intel 82443LX 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 384MB of EDO RAM and SDRAM.

HOT-673 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-673 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 82443LX 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 IrDA device port and a SPP/EPP/ECP capable parallel port.

HOT-673 is built with two PCI local bus slots providing a high bandwidth data path for data-movement intensive functions such as graphics, and with two ISA slots.

HOT-673 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 INTRODUCTION

The HOT-673 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 443LX AGPset with I/O subsystems.

CPU Support:

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

Versatile Memory Supports:

Equipped with three DIMM sockets support 168-pin 3.3V SDRAM and EDO DRAM memory modules, total memory size up to 384MB.
Configurable support for ECC (Error Checking and Correcting)

PCI and ISA Expansion Slots:

Provides two 32-bit PCI slots and two 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 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:

Creative ES1371 AC97 digital controller
Advanced 64 polyphonic wavetable synthesis with additional DOS support
Full-Duples Record/Playback at up to 48KHz
Supports Microsoft DirectSound 3D
Digital effects engine for reverb, chorus, tone control

Board Size:

MicroATX form factor 244mm x 170mm.

Advanced Features:

CPU Plug & Play -- HOT-673 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 - $\pm 1.5\%$ 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)

ACCESSORIES OF HOT-673

Slot 1
PS/2 Keyboard/Mouse Connectors
K/B & PS/2 Mouse Power-On setting - **JP2**
USB Connectors
IR Connectors
Serial Port Connector (COM2)
Parallel Connector
440LX AGPSet
Serial Port Connector (COM1)
I/O Controller
On board Sound chip
Line-In/Line-Out/Mic-In Game/MIDI Connectors
AGP Slot
CD Audio-In Connectors
Programmable Flash EEPROM
FAN Connector
Flash EEPROM Vpp - **JP7**
CPU Multiplier Auto/Manual setting - **JP10**

CPU FAN Connectors
System Clock - **JP1**
ATX Power Connector
Three DIMM Sockets

Two ISA Slots
Two PCI Slots
Clear CMOS - **JP8**

2 HARDWARE CONFIGURATION

The Pentium™ II 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 Cartridge (S.E.C.C.) and S.E.C.C.2 packaging technology which enables high volume availability, improved handling protection.

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

Figure 2-1 shows the front, rear and top views of Pentium™ II processor (without heat sink mounted).

Figure 2-2 shows the S.E.C.C.2 package of Pentium™ II processor.

Figure 2-3 shows the primary and non-primary side of Celeron™ processor without heat sink mounted and with heat sink mounted.
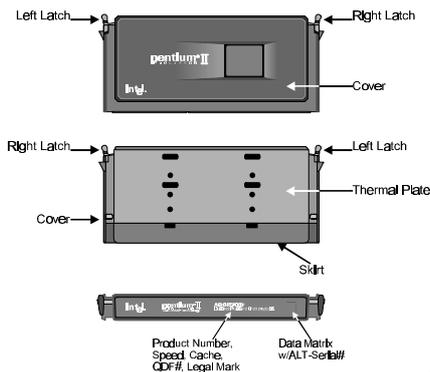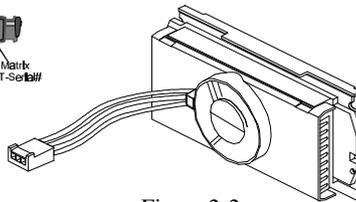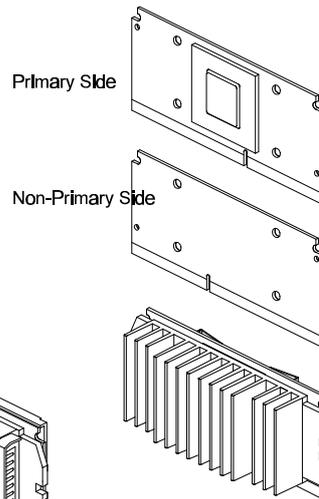

Figure 2-1

Figure 2-2

Figure 2-3

What does the URM (Universal Retention Mechanism) consist of

Pentium II processor requires the Retention Mechanism (RM) and optional Heat Sink Support (HSS) to hold the base processor in the S.E.C. cartridge.(or SECC 2)

Following installation procedure will display how to install these mechanism. Retention Mechanism package consists of 2 separate parts and optional Heat Sink Support consists of 3 separate parts.

Normally, depend on the type of heat sink, Heat Sink Support is not always available. For some heat sink attached on pentium II processor might not fit to install the Heat Sink Support. The introduction of Heat Sink Support installation on this manual only for your reference.

❒ Universal Retention Mechanism (URM) - Plastic Guide with captive nuts that hold the S.E.C. Cartridge in the Slot1 connector. (Refer to Figure 2-4)
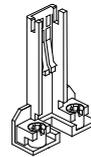
Figure 2-4

❒ URM Attach Mount (URMAM) - Bolt/Bridge assemblies inserted up through the bottom of the mainboard. Then secures the URM to URMAM (two URMAM required per URM). (Refer to Figure 2-5)
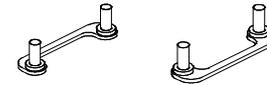
Figure 2-5

Install the Universal Retention Mechanism

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

Install the Retention Mechanism :

1. Finds out the Universal Retention Mechanism (URM) Mounting Holes of Slot1 on HOT-673 main board. (Refer to Figure 2-6)
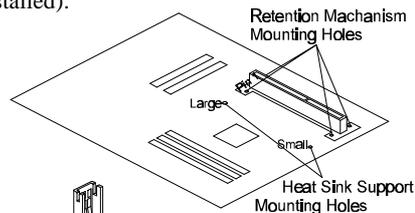
2. Install two Universal Retention Mechanism Attach Mounts (URMAM) with Bolt/Bridge assemblies inserted up through the bottom of the mainboard. (Notice the URMAM's bridge orientation as Figure 2-7)
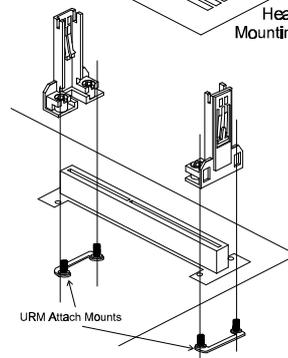
Figure 2-6

Figure 2-7

Install the Heat Sink Support: (optional)

If your Heat Sink comes with the Heat Sink suport then install it according to the instruction comes with your Heat Sink.

Figure 2-8 and Figure 2-9 shows some Heat Sink examples.
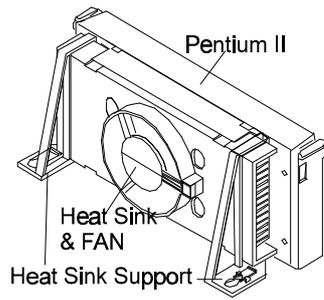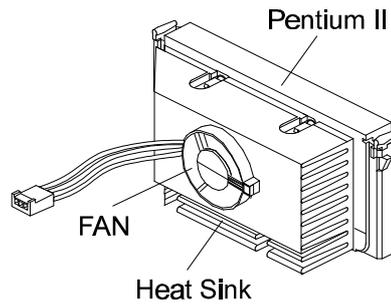
Figure 2-8	Figure 2-9

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 Universal 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 Universal Retention Mechanism. The latches must be secured for proper electrical connection of the processor.

Attach the end of the power cable to the three-pin connector on the mainboard or to the CPU fan connector on the HOT-673.
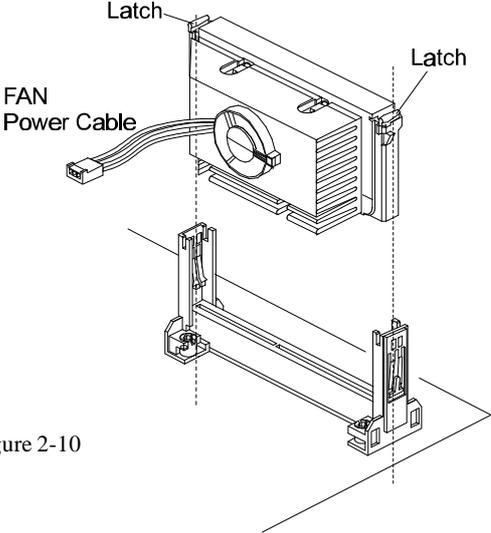
Figure 2-10
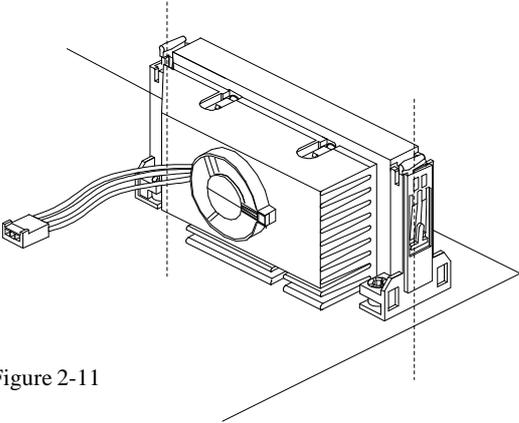
Figure 2-11

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 2-12)

Heatsink (Figure 2-13)

Heatsink Retention Clip (Figure 2-14)

Primary Side

Figure 2-13

Figure 2-12

Figure 2-14

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 2-15)

Clip base must be located on the non-primary side.(Figure 2-16) 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 2-15

Before you fully engage two legs of the clip into the heatsink (Figure 2-17), make sure you remove the blue film covering the thermal interface. The blue film protects the thermal interface from damage during shipping.

Non-primary Side

Figure 2-16

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

Primary Side

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

Figure 2-17

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 2-18)
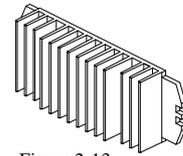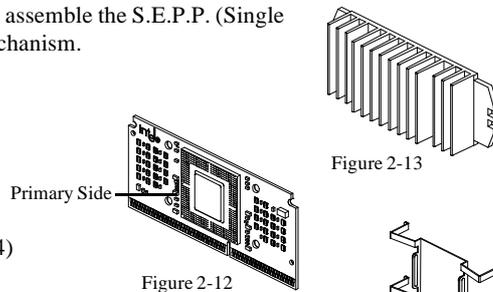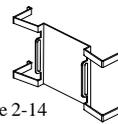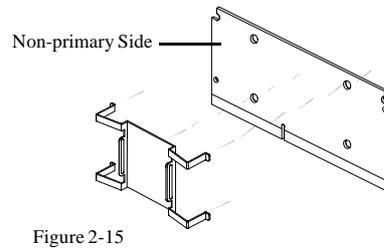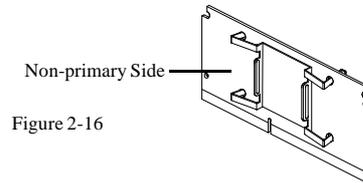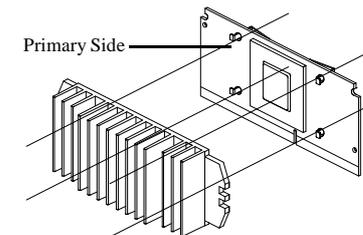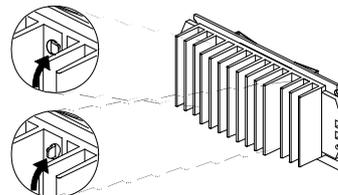
Figure 2-18

Install Celeron™ Processor

Hold the processor unit so that the Heat sink faces toward the DIMM sockets on the mainboard. Insert the processor into the Universal Retention Mechanism. Press the processor down firmly with even pressure on both sides of the top until it is seated.
(Refer to Figure 2-19 and Figure 2-20)
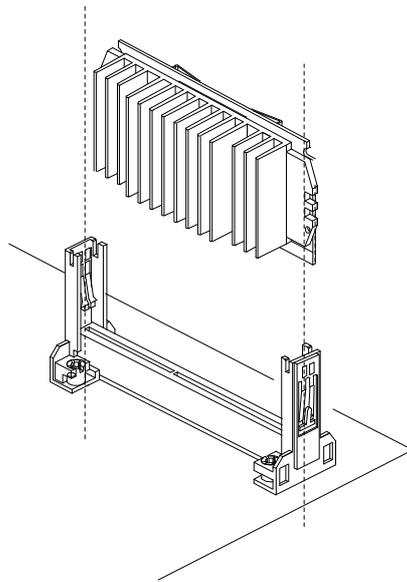
Figure 2-19
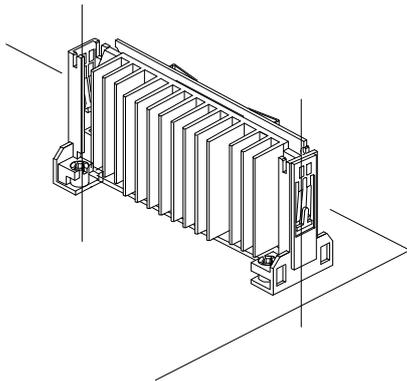
Figure 2-20

Install S.E.C.C.2™ Processor

Hold the processor unit so that the Heat sink faces toward the DIMM sockets on the mainboard. Insert the processor into the Universal Retention Mechanism. Press the processor down firmly with even pressure on both sides of the top until it is seated.
(Refer to Figure 2-21 and Figure 2-22)

FAN
Power Cable
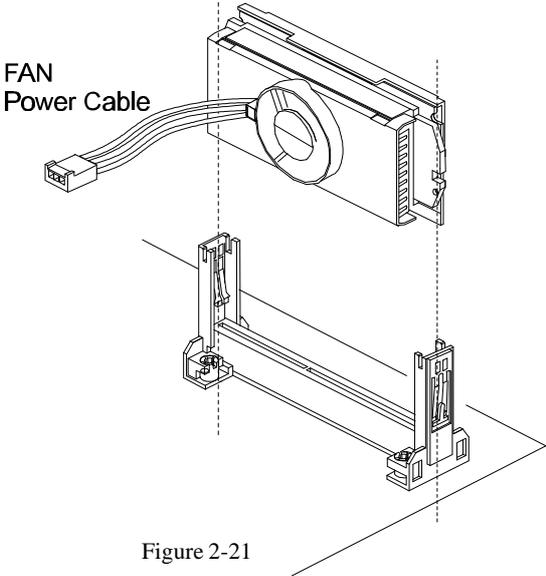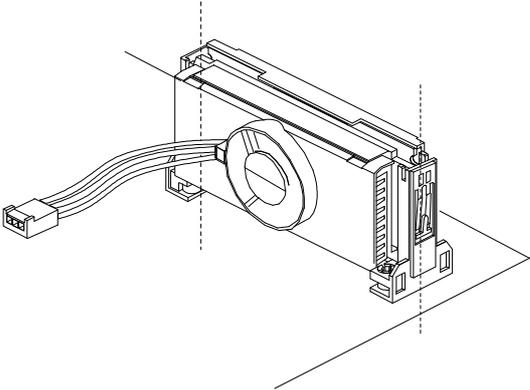
Figure 2-21

Figure 2-22

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 - JP1 and JP10

HOT-673 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-673 mainboard features a clock generator to provide adjustable system clock frequency. JP1 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-673 mainboard provides Jumper group of JP10 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 JP10:

1) Setting CPU Clock from BIOS
    - jumper pack on AUTO.
    (Factory default)
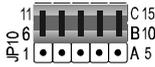
2) Adjust multiplier manually from hardware
    - jumper pack on MANUAL, multiplier set to 5X manually.
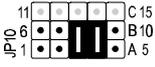
Figure 2-23 shows the position of JP1 and JP10 on the mainboard.

Figure 2-23
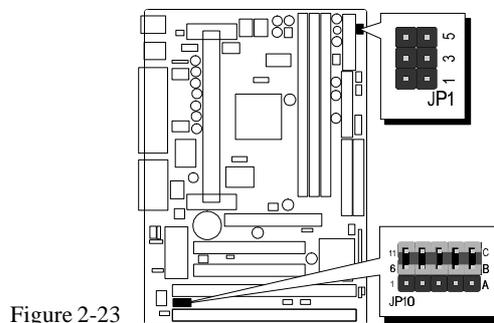
CPU Clock Configuration Table shows the Pentium II/Celeron Processor 233MHz, 266MHz, 300MHz and 333MHz quick setting on the mainboard.

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

Multiplier Table

Multiplier	JP10	Multiplier	JP10
Setting By BIOS		3.5	
		4	
2		4.5	
2.5		5	
3			

Table 2-3

System Clock Configuration Table

System Clock	PCI Bus Clock	JP1
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

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

Clear CMOS - JP8

HOT-673 mainboard supports jumper **JP8** 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 JP8 pin 1-2,
3) Insert mini jumper to JP8 pin 2-3 for a brief while,
4) Remove mini jumper from JP8 in 2-3,
5) Reinsert mini jumper to JP8 pin 1-2,
6) Turn on the PC.

Flash EEPROM Vpp - JP7

HOT-673 mainboard supports two types of Flash EEPROM: 5 volt and 12 volt. By setting up jumper JP7, the main board can use both 5V or 12V flash EEPROM with new system BIOS files as they come available.

JP7 JP7 Pin 1-2 Close for 5V Flash EEPROM

JP7 JP7 Pin 2-3 Close for 12V Flash EEPROM
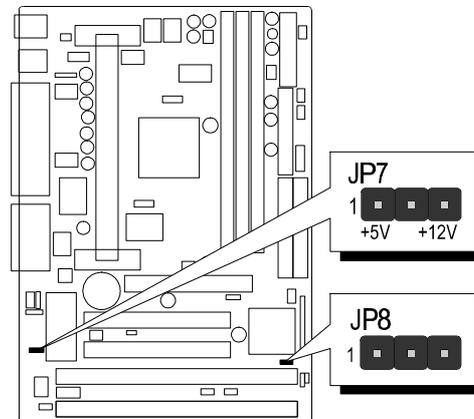
Figure 2-24

Keyboard & PS/2 Mouse Power-On Setting (option) - JP2

HOT-673 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

JP2 is the jumper 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 JP2			
Keyboard & PS/2 Mouse Power-On Disabled		PS/2 Mouse Power-On Enabled	
Keyboard & PS/2 Mouse Power-On Enabled			
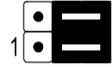
Table 2-4

On Board Audio Controller Setting - JP12

HOT-673 mainboard provides on-board PnP 64 voices wavetable sound chip which based on Creative ES1371 AC97 PnP 3D integrated audio controller chip. Jumper JP12 is used to enabled or disabled it.

On-board Audio Controller Enabled

On-board Audio Controller Disabled
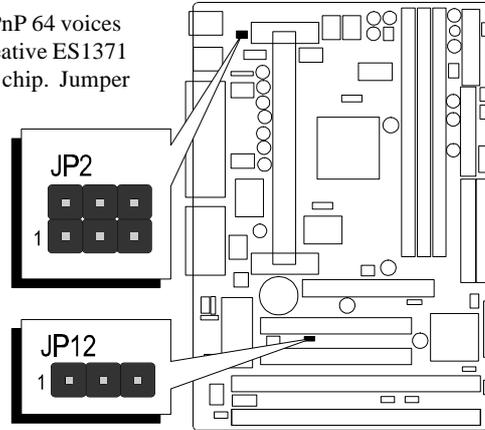
Figure 2-25

Connectors

Front Panel Connectors

ATX Power On/Off Switch Connector - S2

Attach a 2-pin momentary type switch to this connector for turning on or off your ATX power supply.

HDD LED Connector - S3

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

Hardware Reset Connector - J15

Attach 2-pin hardware reset switch to it. Closing the reset switch restarts the system.
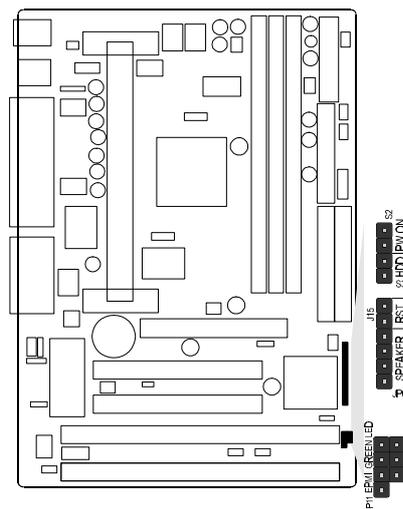
Figure 2-26

Speaker Connector - JP6

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

EPMI Connector - JP11(1-2)

Hardware System Management Interface connector may attach a 2-pin momentary switch to it. When push it will force system get into power saving mode, and the system will resume when switch is pushed again.

GLED Connector - JP11(3-4)

Attach a 2-pin Green LED cable to it. The Green LED lights when the system get intopower saving mode.

Back Panel Connectors
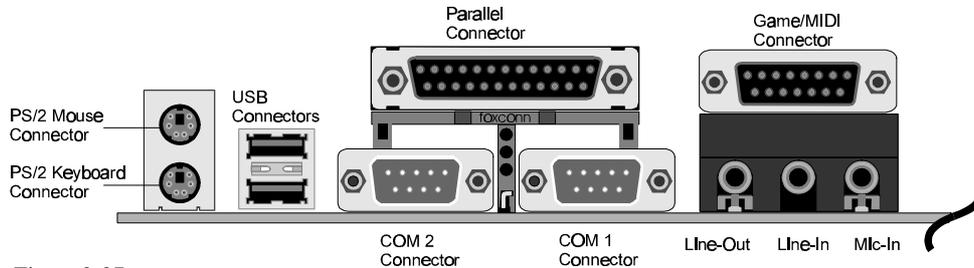
Figure 2-27

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 the plug of the power supply will only insert in one orientation. Fine the proper orientation and push down firmly making sure that the pins are aligned.

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 2-29 shows J3's pin assignment.

Figure 2-28
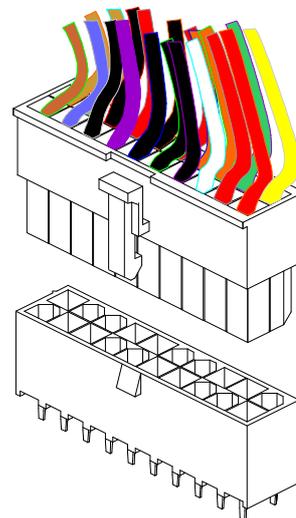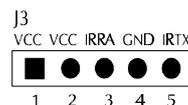
J3
VCC VCC IRRA GND IRTX
1   2   3   4   5   Figure 2-29

CPU, Chassis & AGP cooling Fan connectors - JP3, JP4, J10 & J14

The main board provides three onboard 12V cooling fan power connectors for CPU (JP3 & JP4), Chassis (J14) and AGP device (J10) 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 - J12

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.
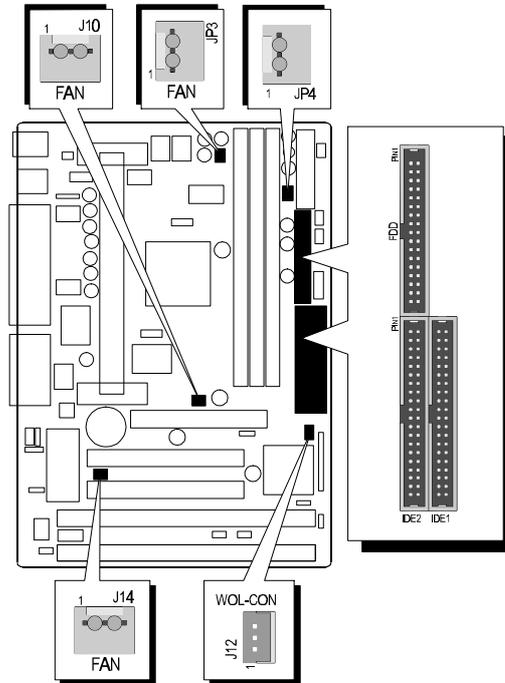
Figure 2-30

CD Audio Connectors

SJ1: 1 = Ground

    2 = Right Channel (CD_In)

    3 = Ground

    4 = Left Channel (CD_In)

SJ2: 1 = Left Channel (CD_In)

    2 = Ground

    3 = Ground

    4 = Right Channel (CD_In)

SJ3: 1 = Left Channel (AUX)

    2 = Ground

    3 = Ground

    4 = Right Channel (AUX)
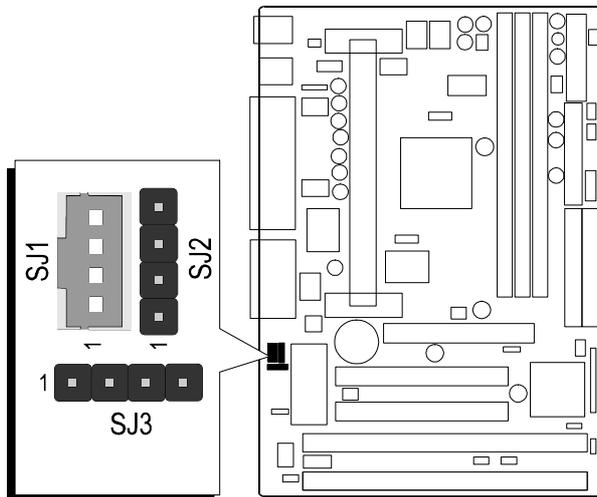
Figure 2-31

3 MEMORY CONFIGURATION

The HOT-673 mainboard provides three 168-pin DIMM sockets that make it possible to install from 8MB up to 128MB 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 three DIMM sockets are arranged in three banks of one socket each, Each bank provides a 64/72-bit wide data path.

HOT-673 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-673 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 168-pin 3.3V SDRAM or EDO DIMM	x 1
DIMM 1	8MB, 16MB, 32MB, 64MB, 128MB 168-pin 3.3V SDRAM or EDO DIMM	x 1
DIMM 3	8MB, 16MB, 32MB, 64MB, 128MB 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 673.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 8 i440LX M5135 2A69JH2DC  DATE: 01/20/19
    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 "673.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, 673.OLD).

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 8 i440LX M5135 2A69JH2DC  DATE: 01/20/19
          Flash Type - WINBOND 29EE011 /5V

      File Name to Program : test.bin

      File Name to Save    : 673.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 (2A69JH2E)
                         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 (2A69JH2E)
                         STANDARD CMOS SETUP
                        AWARD SOFTWARE, INC.

  Date (mm:dd:yy) : Mon, Sep 21 1998
  Time (hh:mm:ss) : 12 :  4 : 40

  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                       Base Memory:      0K
                                   Extended Memory:      0K
  Video   : EGA/VGA                   Other Memory:    512K
  Halt On : All Errors
                                      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 (2A69JH2E)
                        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
CPU L2 Cache ECC Checking : Enabled    D0000-D3FFF Shadow   : Disabled
Quick Power On Self Test : Enabled     D4000-D7FFF Shadow   : Disabled
Boot Sequence            : A,C,SCSI    D8000-DBFFF Shadow   : Disabled
Swap Floppy Drive        : Disabled    DC000-DFFFF Shadow   : Disabled
Boot Up Floppy Seek      : Enabled
Boot Up NumLock Status   : On
Gate A20 Option          : Normal
Typematic Rate Setting   : Disabled
Typematic Rate (Chars/Sec) : 6
Typematic Delay (Msec)   : 250
Security Option          : Setup
PCI/VGA Palette Snoop    : Disabled    ESC : Quit         ↑↓→← : Select Item
OS Select For DRAM > 64MB : Non-OS2    F1  : Help         PU/PD/+/- : Modify
Report No FDD For WIN 95 : No          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.

CPU L2 Cache ECC Checking

This item enable CPU L2 cache ECC mode.

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.

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.

Report No FDD For WIN 95

This item enable for report No FDD for WIN95 if No FDD install.

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.

Chipset Features Setup

```
                    ROM PCI/ISA BIOS (2A69JH2E)
                       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 Host Clock           : 66MHz
  EDO RAS# Precharge Time : 4        CPU Clock Ratio          : 4
  EDO DRAM Read Burst    : x222      CPU Speed                : 266MHz
  EDO DRAM Write Burst   : x222
  DRAM Data Integrity Mode : Non-ECC
  CPU-To-PCI IDE Posting : Disabled
  System BIOS Cacheable  : Disabled
  Video  BIOS Cacheable  : Disabled
  Video RAM Cacheable    : Disabled
  8 Bit I/O Recovery Time : 3
  16 Bit I/O Recovery Time : 2
  Memory Hole At 15M-16M : Disabled
  Passive Release        : Disabled   ESC : Quit         ↑↓→← : Select Item
  Delayed Transaction    : Disabled   F1  : Help       PU/PD/+/- : Modify
  AGP Aperture Size (MB) : 64         F5  : Old Values  (Shift)F2 : Color
  SDRAM RAS-to-CAS Delay : Slow       F6  : Load BIOS  Defaults
  SDRAM RAS Precharge Time : Slow     F7  : Load Setup Defaults
```

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 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.

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 Host Clock : 66MHz

This item allows the user to adjust CPU Host Bus Clock from BIOS when JP1 is set to Auto.

CPU Clock Ratio : 4

This item allows the user to adjust CPU Host Clock/Internal Clock ration when JP10 is set Auto.

CPU Speed : 266 MHz

This item is show only. When CPU Host Clock and CPU Clock Ratio is set, the result will be display on this item.

Power Management Setup

```
                    ROM PCI/ISA BIOS (2A69JH2E)
                     POWER MANAGEMENT SETUP
                      AWARD SOFTWARE, INC.

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

ACPI Function

This item determine to support ACPI function or not.

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.

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

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.

Resume by Alarm

This item determine the system will resume by activity of R.T.C. If enabled this feature and enter resume date and time. When date and time expire, system will power-on itself from power off.

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-673 support Wake-ON-LAN function with Intel LAN card only.

PCI Configuration Setup

```
                    ROM PCI/ISA BIOS (2A69JH2E)
                      PNP/PCI CONFIGURATION
                       AWARD SOFTWARE, INC.

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


                                   Assign IRQ For USB  : Enabled

                                   PCI Latency Timer(CLK):  64
                                   MS IRQ Routing Table : Disabled



                                  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.

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 control-
ler.

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.*

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 440LX, 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 (2A69JH2E)
                       INTEGRATED PERIPHERALS
                        AWARD SOFTWARE, INC.

 IDE HDD Block Mode       : Disabled  Onboard Serial Port 2   :
 IDE Primary Master PIO   : Auto      UART Mode Select        :
 IDE Primary Slave  PIO   : Auto      RxD , TxD Active        : Hi,Lo
 IDE Secondary Master PIO : Auto      IR Transmittiion delay  : Enabled
 IDE Secondary Slave  PIO : Auto      Onboard Parallel Port   :
 IDE Primary Master UDMA  : Disabled  Parallel Port Mode      :
 IDE Primary Slave  UDMA  : Disabled  ECP Mode Use DMA        : 3
 IDE Secondary Master UDMA: Disabled  EPP Mode Select         : EPP1.9
 IDE Secondary Slave  UDMA: Disabled
 On-Chip Primary   PCI IDE: Enabled
 On-Chip Secondary PCI IDE: Enabled
 USB Keyboard Support     : Disabled
 Init Display First       : PCI Slot

 POWER ON Function        :
 KB Power ON Password     : Enter     ESC : Quit        ↑↓→← : Select Item
 Hot Key Power ON         : Ctrl-F1   F1  : Help        PU/PD/+/- : Modify
 KBC input clock          : 8 MHz     F5  : Old Values  (Shift)F2 : Color
 Onboard FDC Controller   : Enabled   F6  : Load BIOS  Defaults
 Onboard Serial Port 1    : Auto      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.

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*.

Init Display First

This item is used to determine initial device when system power on. The options are *PCI* and *AGP*.

POWER ON Function

This item is used to defined Keyboard & PS/2 mouse power-on function enabled or disabled. The options are **Button Only**, **HOT-Key** and **PS/2 Mouse**.
Button Only - Only soft-on/off button on the front panel is available.

Hot Key Power ON

Power-on by soft-on/off button and keyboard are available. The user may set power-on hot-key from <Ctrl><F1> to <Ctrl><F12>.

KBC input clock

This item to set the input clock to onboard keyboard controller. The options are 8MHz and 12MHz.

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 Serial Port 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 Port 2

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

UART Mode Select

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.

RxD , TxD Active

This item specifies the Active level for RxD & TxD signal.

IR Transmittion delay

This item enable/disable the delay of the IR state change from Rx to Tx mode or Tx to Rx mode.

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 17 "Clear CMOS".

6 ON BOARD AUDIO CONTROLLER

Introduction

CREATIVE ES1371 Sound Blaster AudioPCI™ 64V
The On-board audio controller is the new Creative AC97 digital controller which provides the next generation of audio performance to the PC market. The ES1371 is available in a 5.0 V PCI bus compatible device that enables the Creative/ENSONIQ Wavetable synthesis PCI solution.

The ES1371 chip includes a complete audio recording and playback system. The ES1371 interfaces to the PCI bus and to AC97, an industry standard CODEC/mixer. This solution is sound Blaster PCI compatible utilizing a patented method of Sound Blaster emulation from Ensoniq. In addition, it is compliant to AC97 interface, Microsoft PC97 and PC98, and Multimedia PC Level II and III specifications.

The ES1371 provides 64 voices polyphony for wavetable audio, sound effects such as reverb, chorus, bass, and treble. As a result, the produced music is more complete and closer to the actual sound. What's more, the ES1371 supports the 3D Positional Audio algorithm from Ensoniq. This 3D Positional Audio implementation also supports the Aureal A3D API for 3D Positional Audio. This allows applications written to this API to run on the ES1371.

The ES1371 support Microsoft DirectSound, DirectSound 3D and DirectMusic. All of these implementations are accelerated through the drivers from Ensoniq. This provides better overall performance for the system and the audio quality.

What is AudioPCI™ ?
AudioPCI™ technology is a combination of hardware and software that provides the highest quality in PC sound and the greatest compatibility with current standards.

Why PCI?
The PCI bus is far superior to the ISA bus. It is capable of transferring data on a wider 32-bit bandwidth bus. This allows much more data to pass from the PCI bus to the host processor. The ISA bus is only capable of 16-bit bandwidth transfers. Using the PCI bus will allow a 4 to 20 times increase in speed over much slower DMA transfers on the ISA bus. This drastically reduces the overhead on the host CPU. This tremendous processing power opens up new possibilities for sound cards. Real-time software based sound fields are now possible without bogging down the host CPU.

General Specifications

Wavetable Synthesis

- ❑ Creative synthesis engine
- ❑ Digital effects engine for reverb and chorus
- ❑ 64-voice polyphony and multi-timbral capability
- ❑ 16 MIDI channels, 128 GM and GS compatible instruments and 10 drum kits
- ❑ MT-32 compatible instrument set
- ❑ 2MB, 4MB and 8MB sample sets included

3D Audio Technology

- ❑ Support for Microsoft DirectSound
- ❑ Localized 3D Sound technology expands the spaciousness of sounds in the traditional two speaker system
- ❑ Multi-Algorithm reverb and chorus

Memory Subsystem

- ❑ Utilizes system RAM for wavetable samples
- ❑ User-configurable for 2MB, 4MB or 8MB

CD-Quality, 16-Bit Stereo Digital Audio

- ❑ 8-bit and 16-bit , mono and stereo recording and playback
- ❑ User-selectable sample rates from 5 kHz to 48 kHz
- ❑ Full Duplex support enables simultaneous record and playback for internet communications software

MIDI Interface / Joystick Port

- ❑ Built-in 15-pin MIDI interface (cable available separately)
- ❑ Compatible with Sound Blaster and MPU-401 UART modes
- ❑ IBM-compatible 15-pin joystick port with analog support

Compatible with the Following Standards

- ❑ General MIDI
- ❑ Plug and Play
- ❑ Sound Blaster PCI

AudioPCI Mixer

- ❑ 6 Channel Mixer control for access to CD/Auxiliary, Microphone/Line, Music Synthesizer and Digital Audio
- ❑ Spatial audio control for Digital Audio and Music Synthesizer
- ❑ Reverb and Chorus control for Music Synthesizer

Connecting Audio Devices to 673
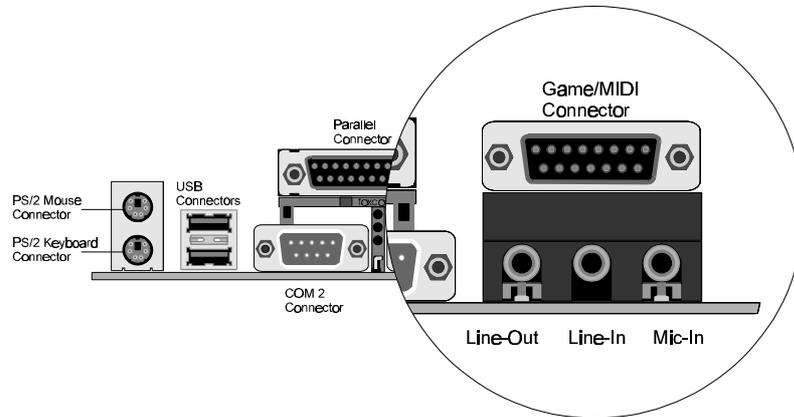
Line Out

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.

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 & SJ3

SJ1, SJ2 and SJ3 are used to connect CD Audio output from CD-ROM drive.

SJ1 pin assignment

1 : Ground
2 : Right channel *(CD_In)*
3 : Gound
4 : Left channel *(CD_In)*

CD_In
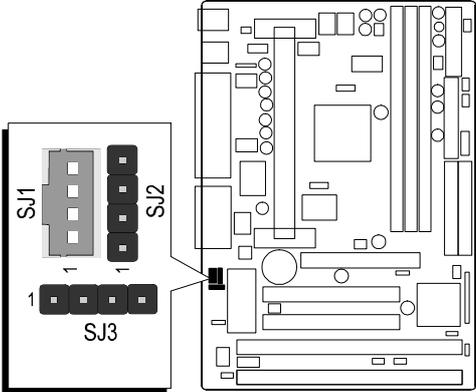
SJ1

1
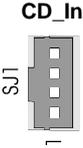
SJ2 pin assignment

1 : Left Channel *(CD_In)*
2 : Gound
3 : Gound
4 : Right Channel *(CD_In)*

CD_In

SJ2

1

SJ3 pin assignment

1 : Left Channel *(AUX)*
2 : Gound
3 : Gound
4 : Right Channel *(AUX)*

AUX In

1

SJ3

Auto-installing Applications and Drivers (for Windows 95/98 and Windows NT4.0)

1. Insert the installation CD into the CD-ROM drive.

2. If AutoRun is enabled on your system, the "Shuttle Mainboard Software Setup" will appear on your screen. Otherwise, double-click the My Computer icon on your Windows Desktop, then Right-click on your CD-ROM drive icon and click on AutoRun.EXE program.

3. Select the "Install Sound Device Software" button after Sound Baster AudioPCI 64V screen is appeared, click on the "Install" button.

4. Follow the instructions on screen to complete the installation.

5. Restart your system when prompted.

Uninstalling Software in Windows 95/98 and Windows NT4.0

    1. Click the Start menu, point to Settings and click Control Panel.

    2. Double-click the Add/Remove Programs icon.

    3. On the Install/Unistall tabbed page, select Sound Blaster AudioPCI 64V.

    4. Click the Add/Remove button, and then click the Yes button when prompted to remove the software.