HOT-679V

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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Pentium™ II Processor is a registered trademark of Intel Corporation

PC/AT is a registered trademark of International Business Machine Corporation.

PS/2 is a registered trademark of IBM Corporation.

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P PREFACE

HOT-679V is a highly integrated IBM PC/ATX compatible system board designed to meet the industry's most demanding desktop applications.

Based on the VIA VT82C692 chipset which support up to 500MHz Pentium™ II processor with MMX technology.

HOT-679V 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-679V supports 3.3 V A.G.P. devices with data transfer rates up to 133 MHz, allowing data throughput of 500 MB/sec.

The VIA's VT82C692 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-679V 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-679V 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-679V Mainboard is carefully designed for the demanding PC user who wants high performance and many intelligent features in a compact package:

Chipset:

Features VIA Apollo Pro with I/O subsystems.

CPU Support:

Intel Pentium II™ processor 233/66 ~ 400/66 MHz and 350/100 ~ 500/100 MHz.
Celeron™ processor 266/66 ~ 400/66 MHz.

Versatile Memory Supports:

Supports three banks of normal or PC/100 SDRAM maximum memory size up to 768MB.
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.

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 Graphics Accelerator:

Intel740 AGP accelerator chip.
Onboard 4MB high speed 64-bit SGRAM.

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 199mm.

Advanced Features:

CPU Plug & Play -- HOT-679V 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 or 350 MHz (depend on CPU external frequency) automatically. If your CPU speed higher than 233 MHz or 350 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 - ±0.5% or ±0.3% 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.

Voltages Monitoring -- System voltages levels are monitored to ensure stable current to main board components.
System voltages include V_{CORE} and V_{TT} 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-679V

PS/2 Keyboard/Mouse Connectors

Slot 1

USB Connectors

VIA Apollo Pro

On board Sound chip

Serial Port Connector (COM1)

Parallel Connector

System Clock - **JP2**

VGA Connector

Three DIMM Sockets

Factory Reserved - **J10**

i740 Chipset

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

CD Audio-In Connectors

Serial Port Connector (COM2)

I/O Controller

Sound Enable/Disable - **JP6**

Programmable Flash EEPROM

CPU FAN Connectors

K/B & PS/2 Mouse Power-On setting - **JP1**

Two E-IDE Connectors

Floppy Connector

ATX Power Connector

FAN Connectors

FAN Connector

IR Connectors

One ISA Slot

Three PCI Slots

Clear CMOS - **JP8**

CPU Multiplier Auto/Manual setting - **JP9**

RST PW LED EPMI GREEN LED

1 JP10

SPEAKER IDE LED PW ON

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.
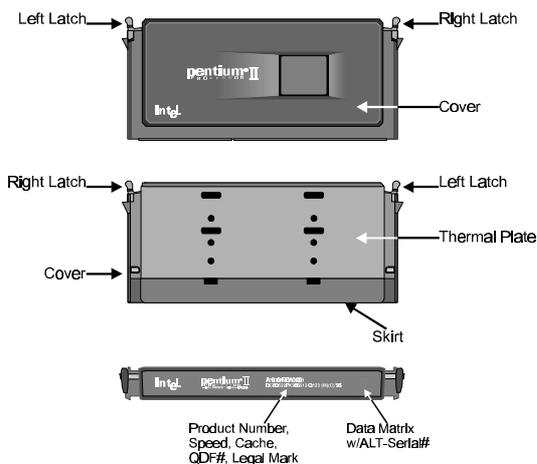
Figure 2-1
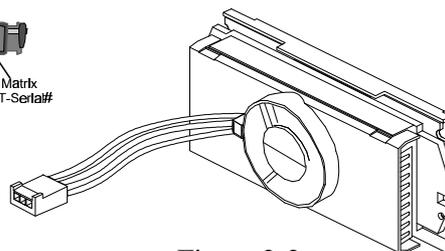
Figure 2-2
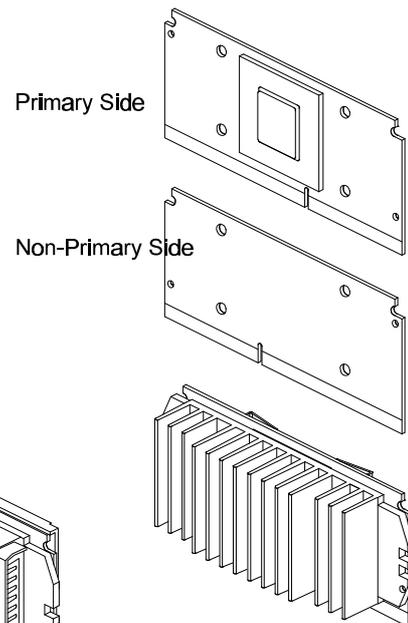
Figure 2-3

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)
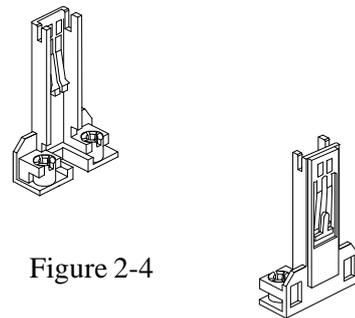
Figure 2-4

❐ 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)
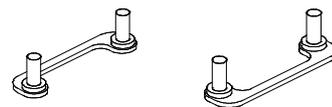
Figure 2-5

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-679V main board.
   (Refer to Figure 2-6)

Retention Machanism
Mounting Holes

Large

Small

Heat Sink Support
Mounting Holes

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)

URM Attach Mounts
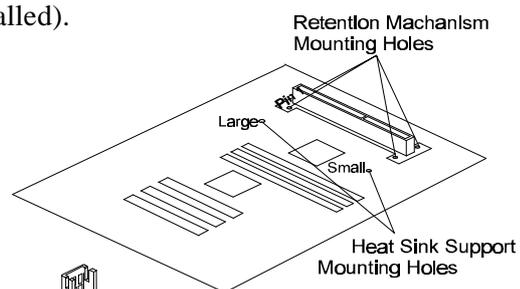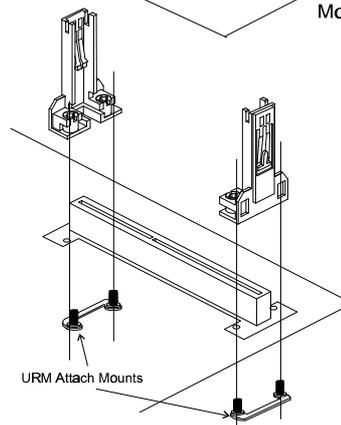
Figure 2-7

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.
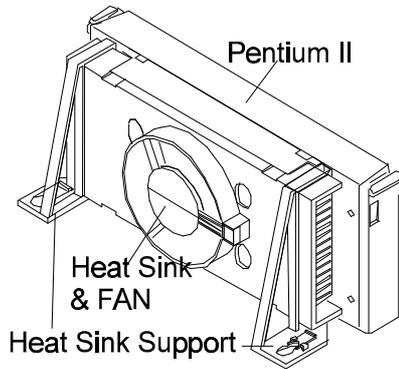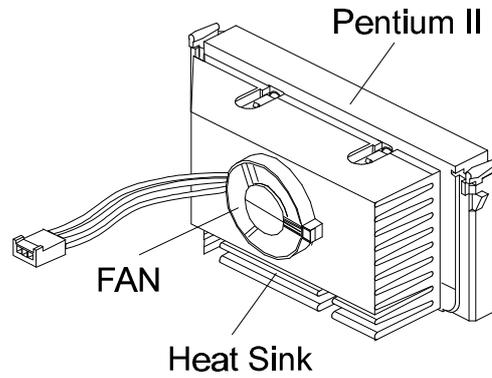
Figure 2-8   Figure 2-9

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-661V.
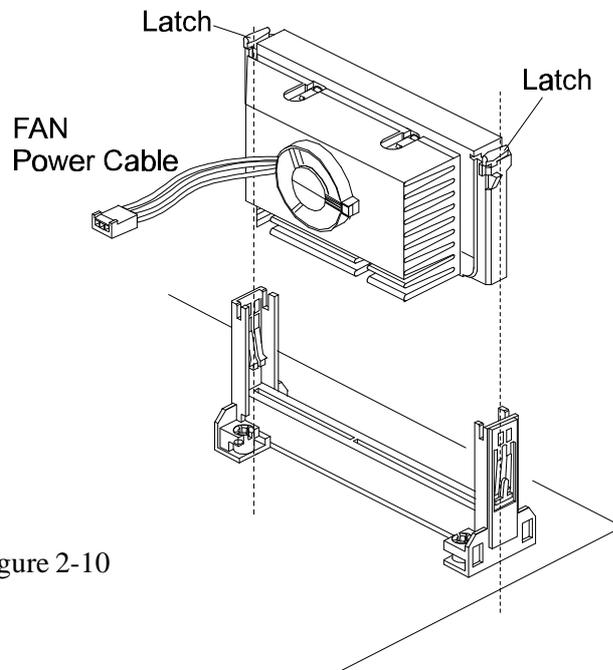
Figure 2-10
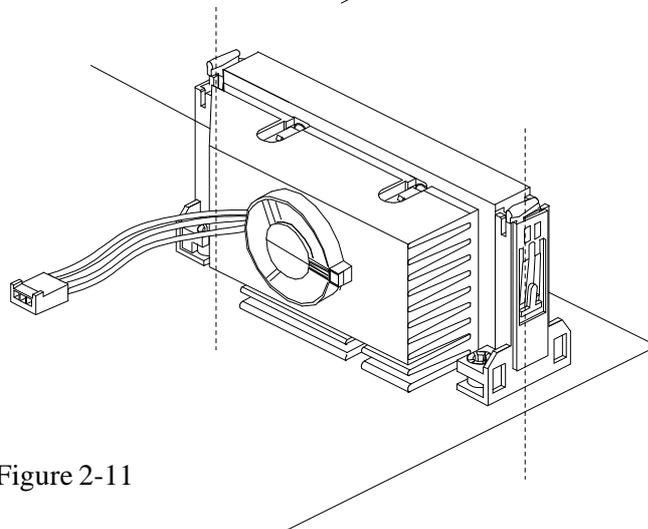
Figure 2-11

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
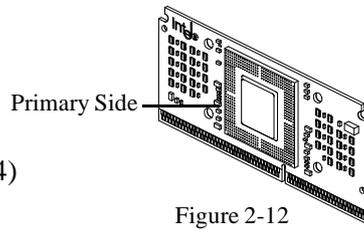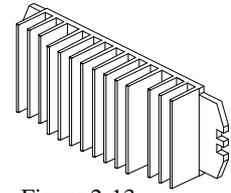
Figure 2-13

Figure 2-12
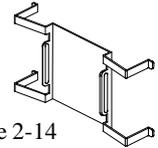
Figure 2-14

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)
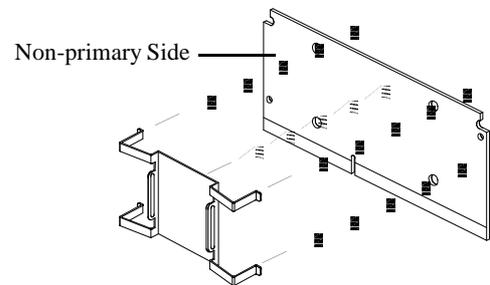
Non-primary Side

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.
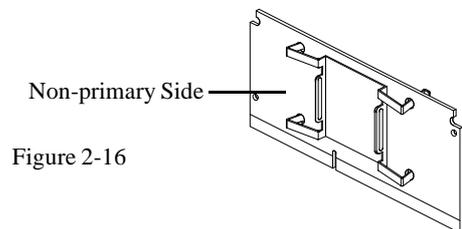
Figure 2-15

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
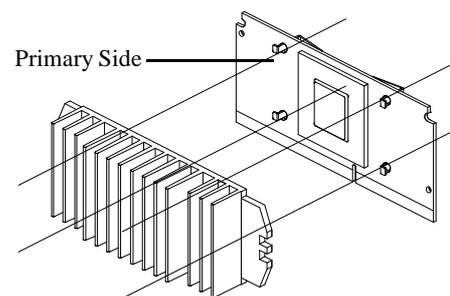
Figure 2-16

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.
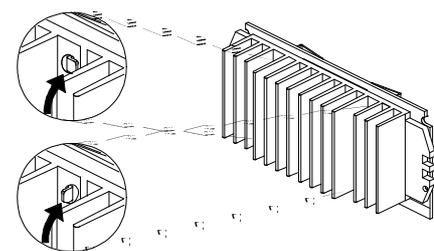
Verify that all the feet on the clip are fully engaged and seated on the heatsink. (Figure 2-18)

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)
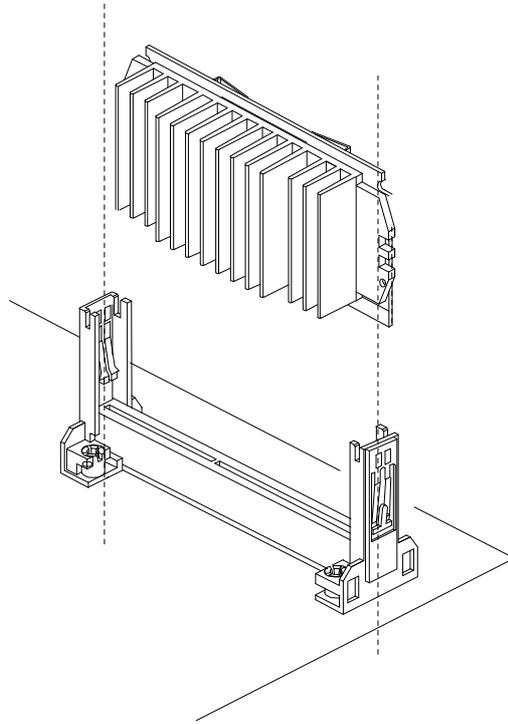
Figure 2-19
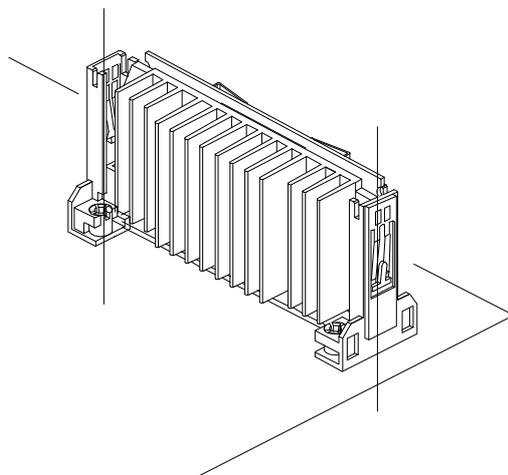
Figure 2-20

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
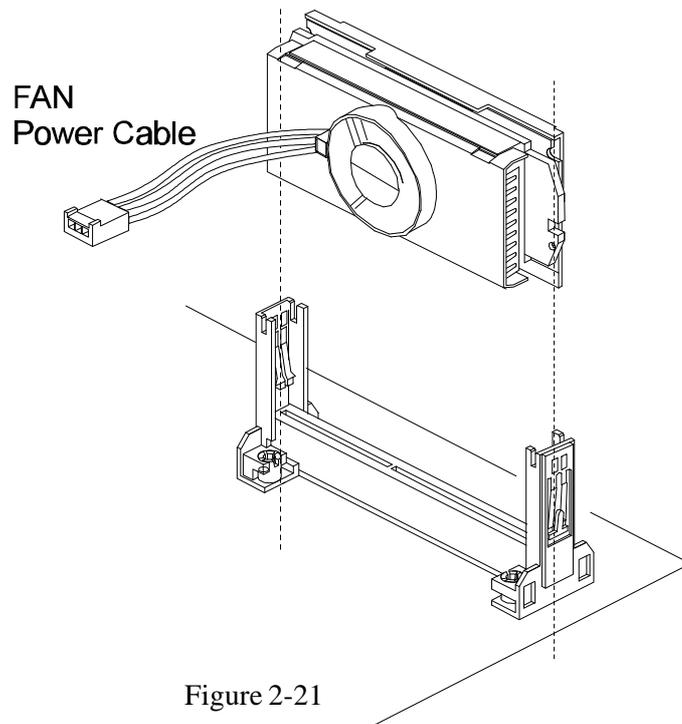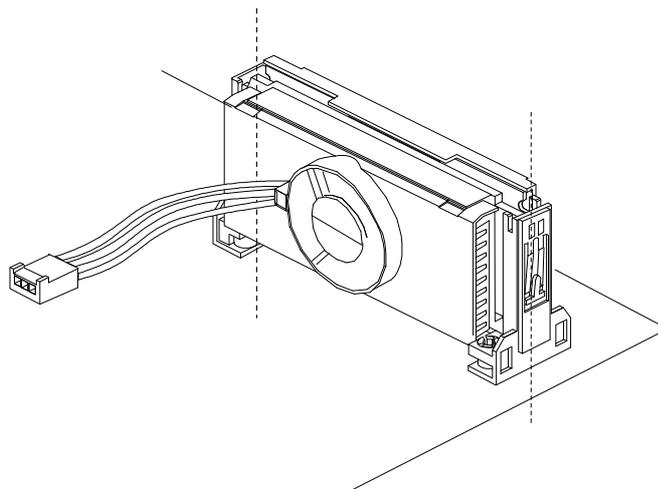
Figure 2-21

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 - JP2 and JP9

HOT-679V 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** or **350 MHz** (depend on CPU external frequency) automatically . If your CPU speed higher than 350 MHz, you only have to entry BIOS to set CPU speed to the higher one.

HOT-679V mainboard features a clock generator to provide adjustable system clock frequency. JP2 is a 6-pin jumpers which determine the system clock frequency 66 MHz to 133 MHz. CPU Plug & Play function is supported by **66MHz / 100MHz.**

HOT-679V mainboard provides Jumper group of JP9 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 JP9:

1) Setting CPU Clock from BIOS
   - jumper pack on Row B-C group.
   (Factory default)

2) Adjust multiplier manually from hardware
   - removeing jumper pack from Row B-C group and inserting mini jumpers on Row A-B group, multiplier set to 5X manually.
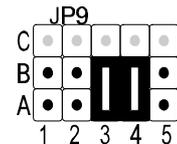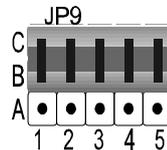
Figure 2-23 shows the position of JP2 and JP9 on the mainboard.
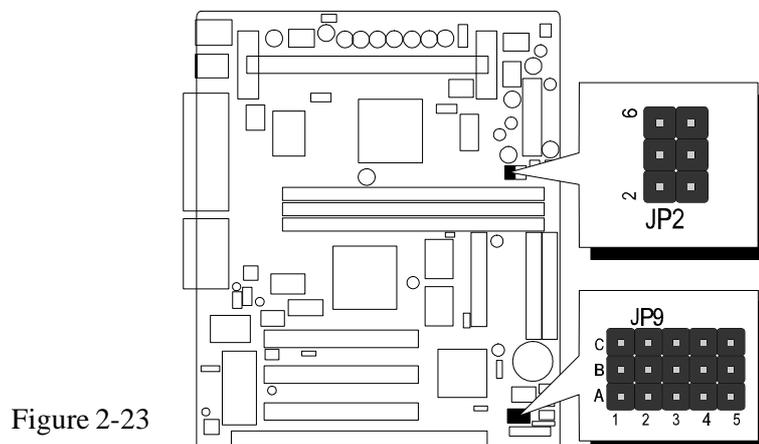
Figure 2-23

CPU Clock Configuration Table (Table 2-1) shows the Pentium II / Celeron 233MHz ~ 400MHz and Pentium II 350MHz ~ 500MHz quick setting on the mainboard.

Table 2-2 shows the adjustable CPU Host Clock on jumper JP2.

Table 2-3 shows the adjustable CPU Clock Ratio on jumper group JP9.

CPU Configuration Table

Pentium II Processor	System Clock	Multiplier
350 MHz	100 MHz	3.5
400 MHz	100 MHz	4
450 MHz	100 MHz	4.5
500 MHz	100 MHz	5

Table 2-1

Pentium II /Celeron Processor	System Clock	Multiplier
233 MHz	66 MHz	3.5
266 MHz	66 MHz	4
300 MHz	66 MHz	4.5
333 MHz	66 MHz	5
366 MHz	66 MHz	5.5
400 MHz	66 MHz	6

CPU Host Clock Configuration Table

CPU Host Clock	JP2 66MHz based processor	JP2 100MHz based processor
66 MHz		
75 MHz		
83 MHz		
100 MHz (Default)	N/A	
103 MHz	N/A	
112 MHz	N/A	
124 MHz	N/A	
133 MHz	N/A	

Table 2-2

HOT-679V mainboard provides a Jumper group JP9 to set CPU Speed configure by BIOS or by hardware jumper.

By inserting jumper pack on Row B-C group, the user can Soft-Configure the **CPU Host Clock** and **CPU Clock Ratio** from BIOS.

By removeing jumper pack from Row B-C group and inserting mini jumpers on Row A-B group properly, the user can configure the CPU Clock Ration (multiplier) manually.

CPU Clock Ratio Table

CPU Clock Ratio	JP9	CPU Clock Ratio	JP9
BIOS Setup 2x ~ 5x (Default)		**5.5 x (366 / 66)**	
		6 x (400 / 66)	
3.5 x (233 / 66) (350 / 100)		**6.5 x (433 / 66)**	
4 x (266 / 66) (400 / 100)		**7 x (466 / 66)**	
4.5 x (300 / 66) (450 / 100)		**7.5 x**	
5 x (333 / 66) (500 / 100)		**8 x**	
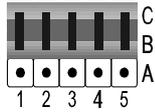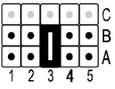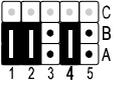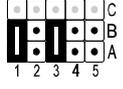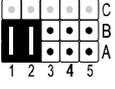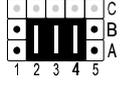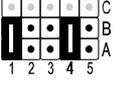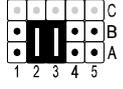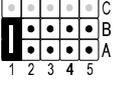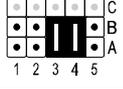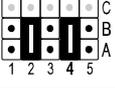
Table 2-3

Special Tip for User's Reference Only

HOT-679V mainboard provides a special **Jumper J10** to overspeed your 66 MHz based Pentium II processor to 100 MHz.

Normally, CPU Host Clock 100 ~ 133 MHz are not available for 66 MHz based processor no matter Soft-Configure or Hard-Configure.

But, when pull out mini jumper from J10 (let it open), the user can Hard-Configure your 66 MHz based processor to 100 MHz based. For example, overspeed your 266 MHz (66 MHz x 4) Celeron to 300 MHz (100 x 3) or more.
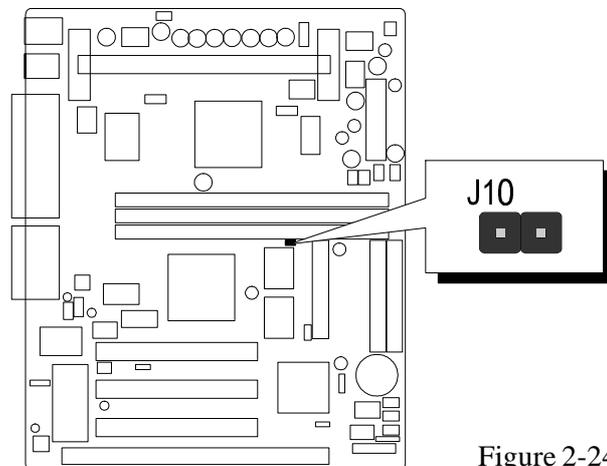
Figure 2-24

Clear CMOS - JP8

HOT-679V 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.
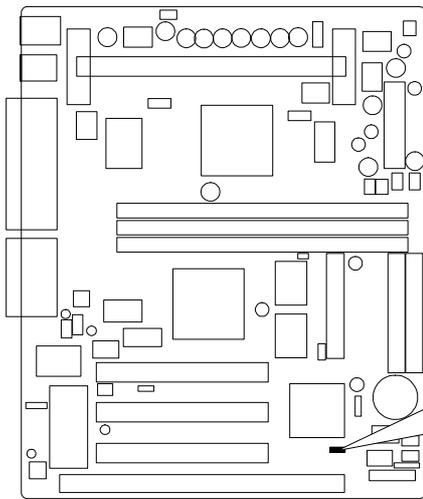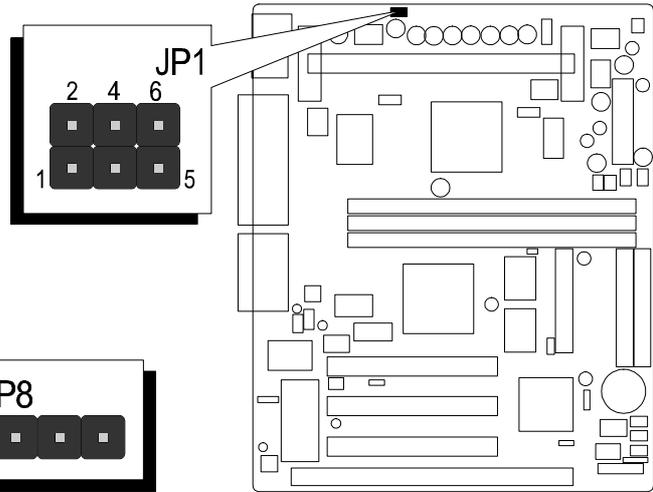
Figure 2-25   Figure 2-26

Keyboard & PS/2 Mouse Power-On Setting - JP1

HOT-679V 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 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 JP1			
Keyboard & PS/2 Mouse Power-On Disabled	1	PS/2 Mouse Power-On Enabled	1
Keyboard & PS/2 Mouse Power-On Enabled	1		
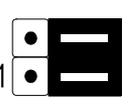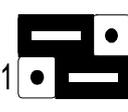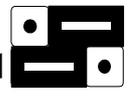
Table 2-4

On Board Audio Controller Setting - JP6

HOT-679V mainboard provides on-board PnP 64 voices wavetable sound chip which based on Creative ES1371 AC97 PnP 3D integrated audio controller chip. Jumper JP6 is used to enabled or disabled it.

JP6 On-board Audio Controller Enabled

JP6 On-board Audio Controller Disabled
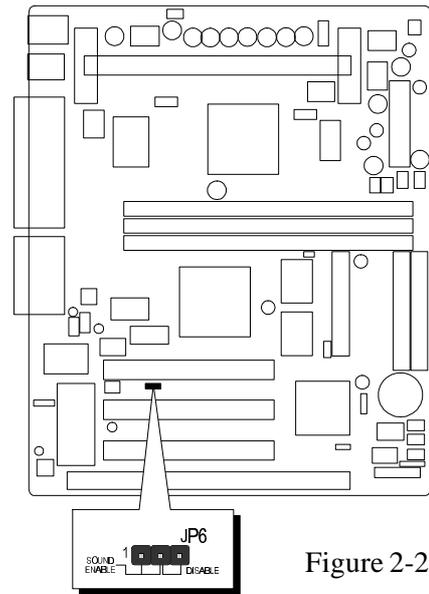
Connectors

Front Panel Connectors (JP10)

Speaker Connector - SPEAKER

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

HDD LED Connector - IDE LED

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

ATX Power On/Off Switch Connector - PW ON

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

Hardware Reset Connector - RST

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

PW-LED Connector - PW LED

Power LED connector is a 3-pin connector for attached to the case's Power LED.

EPMI Connector - EPMI

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 - GREEN LED

Attach a 2-pin Green LED cable to it. The Green LED lights when the system get intopower saving mode.
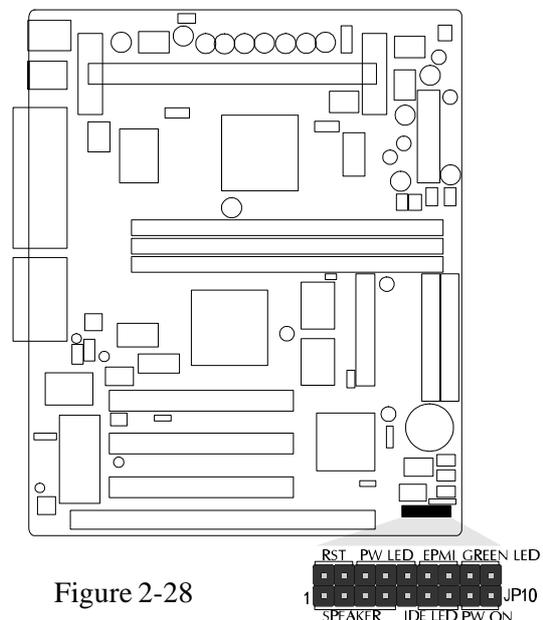
Figure 2-27

Figure 2-28

Back Panel Connectors
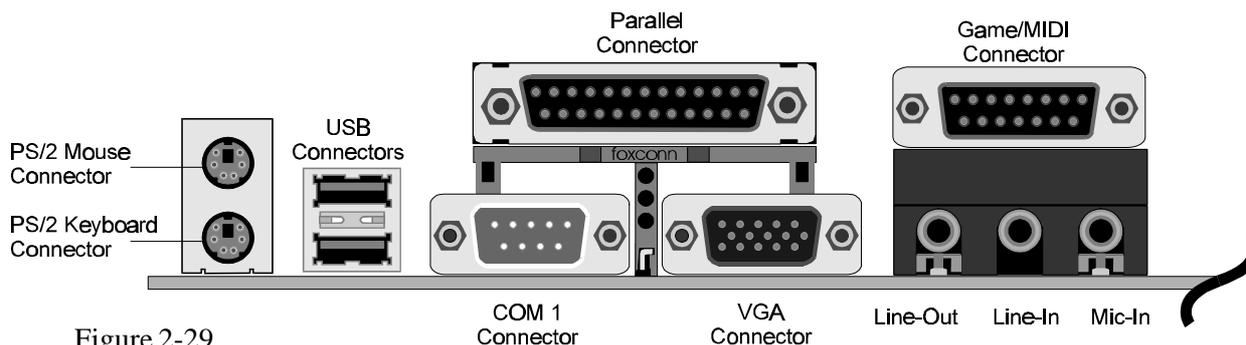
Figure 2-29

VGA Connectors

Attach 15-pin VGA cable to this connector.

COM1 Connectors

Attach COM1 device cable to this connector.

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 - J8

It is a 20-pin male header connector is connected to the ATX power supply. The plug of the power supply will only insert in one orientation because of the different hole shade and size. Find the proper orientation and push down firmly making sure that the pins are aligned.
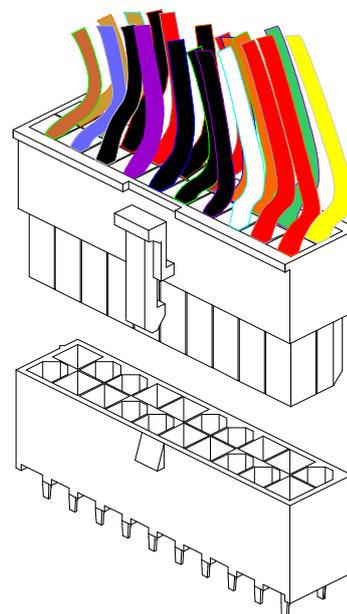
Figure 2-30

IR Connector - J18

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 2-31 shows J18's pin assignment.

J18
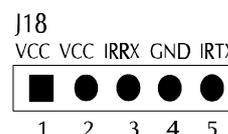
Figure 2-31

CPU, Chassis & AGP cooling Fan connectors - JP3, JP5 & J1

The main board provides three onboard 12V cooling fan power connectors. 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, Floppy and COM2 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 and one 10-pin ribbon cable for COM2. Ribbon cables should always be connected with the red stripe on the Pin 1 side of the connector.
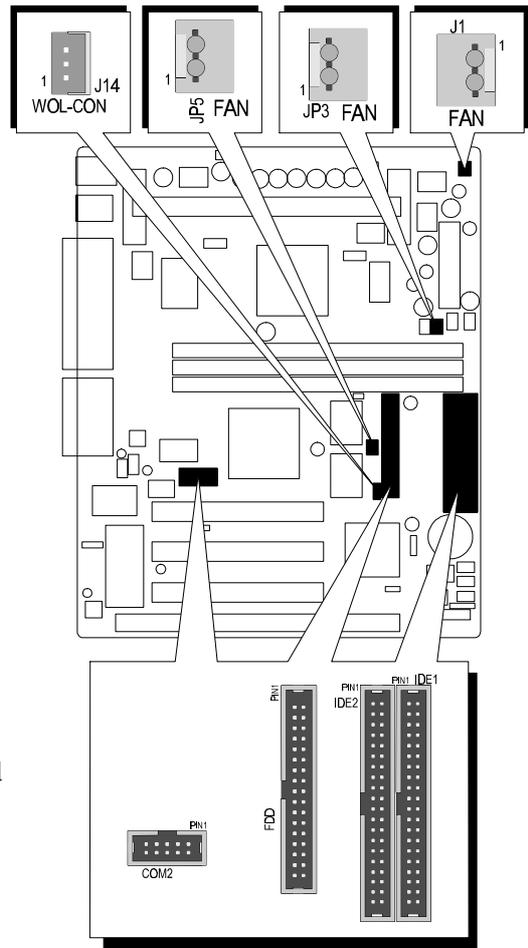
Figure 2-32

CD Audio Connectors

SJ1: 1 = Left Channel

    2 = Ground

    3 = Ground

    4 = Right Channel

SJ2: 1 = LAUX

    2 = Ground

    3 = Ground

    4 = RAUX

SJ3: 1 = Ground

    2 = Right Channel

    3 = Ground

    4 = Left Channel
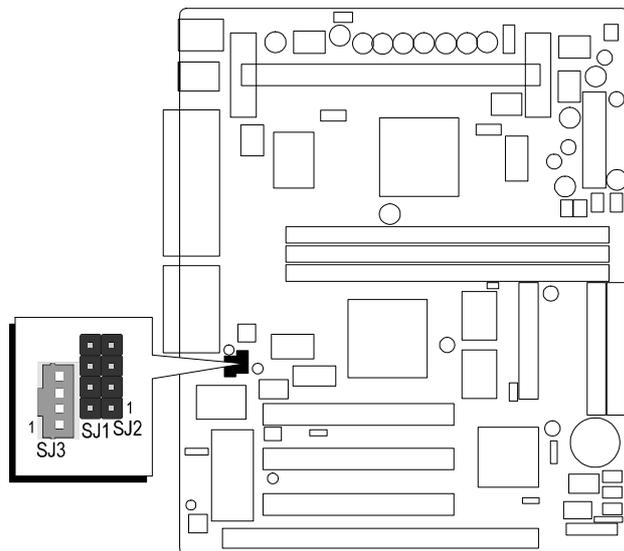
Figure 2-33

3 MEMORY CONFIGURATION

The HOT-679V mainboard provides three 168-pin DIMM sockets that make it possible to install from 8MB up to 256MB of SDRAM. The DIMM socket support 8MB, 16MB, 32MB, 64MB, 128MB and 256MB 3.3V single- or double- side SDRAM 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-679V 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-679V 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 DIMM	x 1
DIMM 1	8MB, 16MB, 32MB, 64MB, 128MB, 256MB 168-pin 3.3V SDRAM DIMM	x 1
DIMM 3	8MB, 16MB, 32MB, 64MB, 128MB, 256MB 168-pin 3.3V SDRAM 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 679V.OLD.   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-i440BX-M5135-2A69JH2DC   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 "TEST.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, 679V.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-i440BX-M5135-2A69JH2DC  DATE: 04/20/19
      Flash Type - WINBOND 29EE011 /5V

File Name to Program : test.bin

File Name to Save    : 679v.old




─────────────────────────────────────────────
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 (2A6LGH2A)
                        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 (2A6LGHZ9)
                       STANDARD CMOS SETUP
                      AWARD SOFTWARE, INC.

    Date (mm:dd:yy) : Fri, Oct  9 1998
    Time (hh:mm:ss) : 10 : 47 : 24

    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 (2A6LGH2A)
                         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
 IDE HDD Block Mode        : Enabled
 Gate A20 Option           : Fast
 Memory Parity/ECC Check   : Disabled
 Typematic Rate Setting    : Disabled
 Typematic Rate (Chars/Sec): 6
 Typematic Delay (Msec)    : 250        ESC : Quit        ↑↓→← : Select Item
 Security Option           : Setup      F1  : Help        PU/PD/+/- : Modify
 PCI/VGA Palette Snoop     : Disabled   F5  : Old Values  (Shift)F2 : Color
 OS Select For DRAM > 64MB : Non-OS2    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 secondaryl cache to speed up memory access.

CPU L2 Cache ECC Checking

When you select Enabled, memory checking is enable when the external cache contains ECC SRAMs.

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.

IDE HDD Block Mode

This allows your hard disk controller to use the fast block mode to transfer data to and from your hard disk drive (HDD).

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.

Memory Parity / ECC Check

This item allows you to set memory error checking, Enabled or Disabled.

Typematic Rate Setting

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

Typematic Rate (Chars/Sec)

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

Typematic Delay (Msec)

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

Security Option

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

PCI / VGA Palette Snoop

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

OS Select For DRAM > 64MB

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

Video BIOS Shadow

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

C8000-CBFFF Shadow / DC000-DFFFF Shadow

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

Chipset Features Setup

```
                 ROM PCI/ISA BIOS (2A6LGH2A)
                    CHIPSET FEATURES SETUP
                    AWARD SOFTWARE, INC.

Bank 0/1 DRAM Timing  : SDRAM 10ns   CPU Warning Temperature  : Disabled
Bank 2/3 DRAM Timing  : SDRAM 10ns   Current System Temp.     : XX°C/XX°F
Bank 4/5 DRAM Timing  : SDRAM 10ns   Current CPU Temperature  : XX°C/XX°F
SDRAM  Cycle Length   : 3            Current AGP Temperature  : XX°C/XX°F
DRAM Clock            : Host CLK     Current CPUFAN1 Speed    : XXXXRPM
Memory Hole           : Disabled     Current CPUFAN2 Speed    : XXXXRPM
Read Around write     : Disabled     Current CPUFAN3 Speed    : XXXXRPM
Concurrent PCI/Host   : Disabled     IN0(V) : XX.XV    IN1(V) : XX.XV
System BIOS Cacheable : Disabled     IN2(V) : XX.XV    + 5 V  : XX.XV
Video RAM Cacheable   : Disabled     +12 V  : XX.XV    -12 V  :-XX.XV
AGP Aperture Size     : 64M          - 5 V  :-XX.XV
AGP-2X Mode           : Enabled      Shutdown Temperature     : 60°C/140°F
UnChip USB            : Disabled

Auto Detect DIMM/PCI Clk : Enabled
Spread Spectrum          : Disabled  ESC : Quit        ↑↓→← : Select Item
CPU Host Clock (CPU/PCI) : XXXMHz    F1  : Help        PU/PD/+/- : Modify
CPU Clock Ratio          : xX.X      F5  : Old Values  (Shift)F2 : Color
CPU Speed                : XXXMHz    F6  : Load BIOS  Defaults
                                     F7  : Load Setup Defaults
```

Bank x/x DRAM Timing

This value in this field is set by the system board manufacturer, depending on whether the board has paged DRAMS or EDO DRAMS.
The choice: 70ns, 60ns.

SDRAM Cycle Length

This field allows you to set the SDRAM latency timer.
The Choice: 2, 3.

DRAM Clock

This item set the DRAM Read/Write timings that the system uses.

Memory Hole

In order to improve performance, some space in memory can be reserved for ISA cards.

Read Around write

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.

Concurrent PCI / Host

This item disable CPU bus will be occupied during the entire PCI operation period.

System BIOS Cacheable

Selecting Enabled allows caching of the system BIOS ROM at F0000h - FFFFFh, resulting in better system performance. However, if any program writes to this memory area, a system error may result.

Video RAM Cacheable

When enabled. The Video RAM cache will cause access to video RAM addressed at C0000H to C7FFFH to be cached, if the cache controller is also enabled.

AGP Aperture Size (MB)

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

AGP-2X Mode

This item allows you to enable/disable AGP-2X function. See www.apgforum.org for AGP information.

OnChip USB

Select Enabled if your system contains a Universal Serial Bus (USB) controller and you have a USB peripheral.

Auto Detect DIMM/PCI Clk

Enabling this item allosw 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

This item allows the user to adjust CPU Host Bus Clock from BIOS when JP9 is set to Auto.

The user may adjust CPU Host Clock from 60 MHz to 83 MHz when 66 MHz based Pentium II or Celeron processor is used, or from 100 MHz to 133 MHz when 100 MHz based Pentium II processor is used.

This item will not show up when JP9 is set to Manual.

CPU Clock Ratio

This item allows the user to adjust CPU Host Clock/Internal Clock ration when JP9 is set to Auto.
The user may adjust CPU Clock Ratio from 2x to 5x.

This item will not show up when JP9 is set to Manual.

CPU Speed

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

CPU Warning Temperature (optional)

Since the mainboard support CPU temperature monitoring and overhear alert. This item allows the user to set the threshold of CPU warning temperature. When CPU temperature over the threshold, system will slow down clock to prevent CPU damage.

Current System Temperature (optional)

Since the mainboard support System and CPU temperature monitoring and overheat alert. This item indicate the current main board temperature.

Current CPU Temperature (optional)

Since the mainboard support System and CPU temperature monitoring and overheat alert. This item indicate the current Processor temperature.

Current AGP Temperature (optional)

Since the mainboard support System and AGP temperature monitoring and overheat alert. This item indicate the current Processor temperature.

Current CPUFAN1/2/3 Speed(optional)

The mainboard can detect three fans rotation speed for CPU cooler and system.

IN0(V) ~ IN2(V), +5V ~ -5V (optional)

The mainboard support CPU and mainboard voltages monitoring. The onboard hardware monitor is able to detect the voltages output of the voltage regulators and power supply.

Power Management Setup

```
                    ROM PCI/ISA BIOS (2A6LGH2A)
                       POWER MANAGEMENT SETUP
                        AWARD SOFTWARE, INC.

  Power Management    : User Define    Primary INTR      : ON
  PM Control by APM   : Yes            IRQ3  (COM 2)     : Primary
  Video Off After     : Suspend        IRQ4  (COM 1)     : Primary
  Video Off Method    : V/H SYNC+Blank IRQ5  (LPT 2)     : Primary
  MODEM Use IRQ       : 3              IRQ6  (Floppy Disk): Primary
  Soft-Off by PWRBTN  : Instant-Off    IRQ7  (LPT 1)     : Primary
  CPU Fan In Suspend  : Off            IRQ8  (RTC Alarm) : Disabled
  HDD Power Down      : Disable        IRQ9  (IRQ2 Redir) : Secondary
  Doze Mode           : Disable        IRQ10 (Reserved)  : Secondary
  Suspend Mode        : Disable        IRQ11 (Reserved)  : Secondary
         ** PM Events **               IRQ12 (PS/2 Mouse) : Primary
  VGA                 : OFF            IRQ13 (Coprocessor): Primary
  LPT & COM           : LPT/COM        IRQ14 (Hard Disk) : Primary
  HDD & FDD           : ON             IRQ15 (Reserved)  : Disabled
  DMA/master          : OFF
  Wake Up On LAN      : Disabled       ESC : Quit        ↑↓→← : Select Item
  Modem Ring Resume   : Disabled       F1  : Help        PU/PD/+/- : Modify
  RTC Alarm Resume    : Disabled       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

As the system moves from lesser to greater power-saving modes, select the mode in
which you want the monitor to blank.

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.

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.

Soft-Off by PWRBTN

When Enabled, turning the system off with the on/off button places the system in a very low-power-usage state, with only enough circuitry receiving power to detect power button activity or Resume by Ring activity.

CPU Fan In Suspend

When Off, the CPU fan turns off during Suspend mode.

HDD Power Down

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

Doze Mode

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

Suspend Mode

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

** PM Events **

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

VGA

When set to *On*, any event occurring at a VGA port will awaken a system which has been powered down.

LPT & COM

When set to *LPT/COM* (default), any event occurring at a COM (Serial)/LPT port will awaken a system which has been powered down.

HDD & FDD

When set to *On* (default), any event occurring at a hard or floppy drive port will awaken a system which has been powered down.

DMA / master

When set to *On* , any event occurring to the DMA controller will awaken a system which has been powered down.

Wake Up 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.

Modem Ring Resume

When set to Enagled, any event occurring Modem Ring/activity of LAN will awaken a system which has been powered down.

RTC Alarm Resume

When set to Enabled RTC Alarm Resume, you could set the date (of month) and timer (hh:mm:ss), any event occurring at RTC will awaken system which has been powered down.

Primary INTR

When set to *On* (default), any event occurring at will awaken a system which has been powered down.

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

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

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

- IRQ3 (COM 2)	- IRQ4 (COM 1)
- IRQ5 (LPT 2)	- IRQ6 (Floppy Disk)
- IRQ7 (LPT 1)	- IRQ8 (RTC Alarm)
- IRQ9 (IRQ2 Redir)	- IRQ10 (Reserved)
- IRQ11 (Reserved)	- IRQ12 (PS/2 Mouse)
- IRQ13 (Coprocessor)	- IRQ14 (Hard Disk)
- IRQ15 (Reserved)	

PCI Configuration Setup

```
                    ROM PCI/ISA BIOS (2A6LGH2A)
                       PNP/PCI CONFIGURATION
                       AWARD SOFTWARE, INC.

  PNP OS Installed        : No      CPU to PCI Write Buffer: Enabled
  Resources Controlled By : Manual  PCI Dynamic Bursting    : Enabled
  Reset Configuration Data : Disabled PCI Master 0 WS Write   : Enabled
                                     PCI Delay Transaction   : Enabled
  IRQ-3  assigned to : PCI/ISA PnP  PCI#2 Access #1 Retry   : Disabled
  IRQ-4  assigned to : PCI/ISA PnP  AGP Master 1 WS Write   : Enabled
  IRQ-5  assigned to : PCI/ISA PnP  AGP Master 1 WS Read    : Disabled
  IRQ-7  assigned to : PCI/ISA PnP  PCI Latency Timer(CLK)  :  64
  IRQ-9  assigned to : PCI/ISA PnP  PCI IRQ Actived By  : Level
  IRQ-10 assigned to : PCI/ISA PnP  Assign IRQ For USB  : Enabled
  IRQ-11 assigned to : PCI/ISA PnP  Assign IRQ For VGA  : Enabled
  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*.

CPU to PCI Write Buffer

When enabled, up to four Dwords of data can be written to the PCI bus without interrupting the CPU. When disabled, a write buffer is not used and the CPU read cycle will not be completed until the PCI bus signals that it is ready to receive the data.

PCI Dynamic Bursting

When Enabled, data transfers on the PCI bus, where possible, make use of the high-performance PCI burst protocol, in which greater amounts of data are transferred at a single command.
The choice : Enabled, Disabled.

PCI Master 0 WS Write

When Enabled, writes to the PCI bus are command with zero wait states.
The choice : Enabled, Disabled.

PCI Delay Transaction

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

PCI #2 Access #1 Retry

This item allows you enable/disable the PCI #2 Access #1 Retry.
The choice : Enabled, Disabled.

AGP Master 1 WS Write

This implements a single delay when sriting to the AGP Bus. By default, two-wait states are used by the system, allowing for greater stability.
The choice : Enabled, Disabled.

AGP Master 1 WS Read

This implements a single delay when reading from the AGP Bus. By default, two-wait states are used by the system, allowing for greater stability.
The choice : Enabled, Disabled.

PCI Latency Timer (CLK)

The number of clocks programed in the PCI Latency Timer represents the guaranteed time slice allocated to the chips, 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.

PCI IRQ Activated by

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

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.

Assign IRQ For VGA

This item allows the user to set VGA IRQ Routing table Enabled or Disabled.

Integrated Peripherals

```
              ROM PCI/ISA BIOS (2A6LGH2A)
                 INTEGRATED PERIPHERALS
                  AWARD SOFTWARE, INC.
┌────────────────────────────────────┬──────────────────────────────────┐
│ OnChip IDE Channel0 : Enabled      │ UART Mode Select      : Half     │
│ OnChip IDE Channel1 : Enabled      │ RxD , TxD Active      : Hi,Lo    │
│ IDE Prefetch Mode   : Enabled      │ IR Transmittiion delay: Enabled  │
│ Primary Master   PIO: Auto         │ Onboard Parallel Port : 378/IRQ7 │
│ Primary Slave    PIO: Auto         │ Parallel Port Mode    : SPP      │
│ Secondary Master PIO: Auto         │ ECP Mode Use DMA      : 3        │
│ Secondary Slave  PIO: Auto         │ EPP Mode Select       : EPP1.7   │
│ Primary Master  UDMA: Auto         │                                  │
│ Primary Slave   UDMA: Auto         │                                  │
│ Secondary MasterUDMA: Auto         │                                  │
│ Secondary Slave UDMA: Auto         │                                  │
│ Init Display First  : PCI Slot     │                                  │
│                                    │                                  │
│ POWER ON Function   : BUTTON ONLY  │                                  │
│ KB Power ON Password : Enter       ├──────────────────────────────────┤
│ Hot Key Power ON     : Ctrl-F1     │ ESC : Quit        ↑↓→← : Select Item │
│ KBC input clock      : 8 MHz       │ F1  : Help        PU/PD/+/- : Modify │
│ Unboard FDC Controller: Enabled    │ F5  : Old Values  (Shift)F2 : Color  │
│ Onboard Serial Port 1 : Auto       │ F6  : Load BIOS  Defaults        │
│ Onboard Serial Port 2 : Standard   │ F7  : Load Setup Defaults        │
└────────────────────────────────────┴──────────────────────────────────┘
```

OnChip IDE Channel0

This item is used to defined on chip Primary PCI IDE controller is Enable or Disable setting.

OnChip IDE Channel1

This item is used to defined on chip secondary PCI IDE controller is Enable or Disable setting.

IDE Prefetch Mode

Enable prefetching for IDE drive interfaces that support its faster drive accesses. If you are getting disk drive errors, change the setting to omit the drive interface where the errors occur. Depending on the configuration of your IDE subsystem, this field may not appear, and it does not appear when the Internal PCI/IDE field, above, is Disabled.

The choice : Enabled, Disabled.

Primary Master / 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 Master/ Slave PIO timing.

Secondary Master / 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 Master/ Slave PIO timing.

Primary Master / Slave UDMA

On this mainboard, VIA Chipset 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 / Slave *UltraDMA33*.
Note : Your hard drive must also support UDMA for this feature to work.

Secondary Master / Slave UDMA

On this mainboard, VIA Chipset 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/Slave *UltraDMA33*.
Note : Your hard drive must also support UDMA for this feature to work.

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**, **Keyboard 98, Password, HOT-Key, Mouse Left** and **Mouse Right**.

Note:1. When item of PS/2 Mouse or HOT-Key is selected, please also adjust jumper JP1 to the proper position.
2. USB keyboard, USB Mouse and Serial Mouse are not supported to this function.

KB Power ON Password

This item set the keyboard power-on password. When using keyboard to power on, just Enter the password.

Hot Key Power ON

Power-on by soft-on/off button and keyboard are available.

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 second serial port on your system may offer a variety of infrared port modes.

RxD, TxD Active

Consult your IR peripheral documentation to select the correct setting of the TxD and RxD signals.

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.

EPP Mode Select

This item select the EPP mode, EPP 1.9 or EPP 1.7.

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 (2A59GHZB)
                       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 rompted 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 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 679V
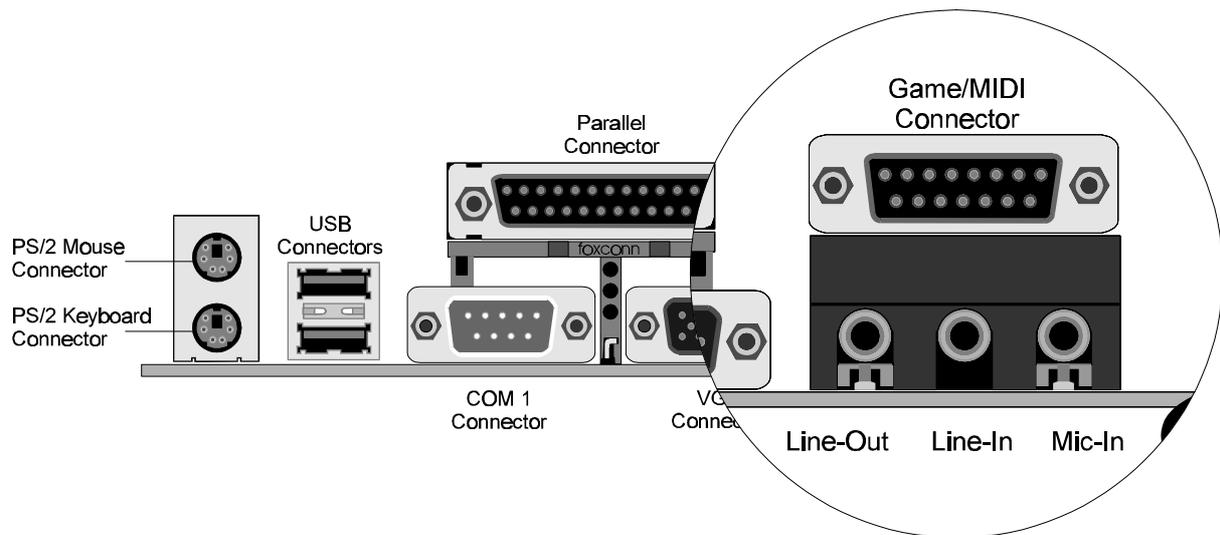
Line Out

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

CD_In

1 : Left channel
2 : Gound
3 : Gound
4 : Right channel

SJ1

SJ2 pin assignment

AUX In

1 : LAUX
2 : Gound
3 : Gound
4 : RAUX

SJ2

SJ3 pin assignment

CD_In

1 : Gound
2 : Right Channel
3 : Gound
4 : Left Channel

SJ3

SJ3   SJ1 SJ2
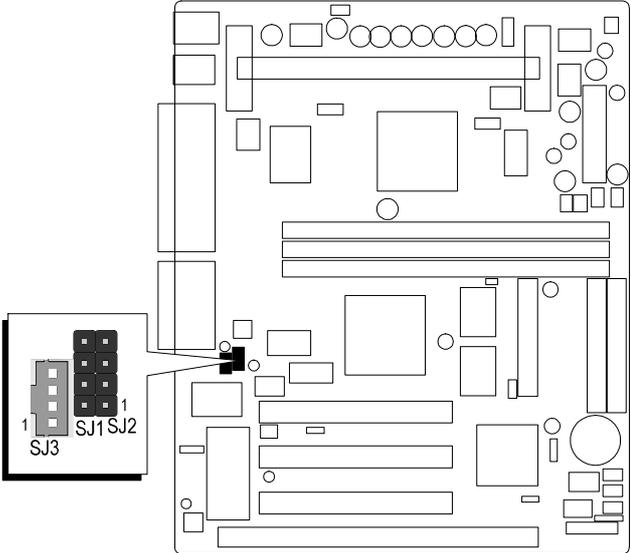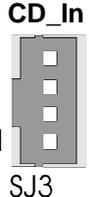
Auto-installing Applications and Drivers (for Windows 95/98 and Windows NT4.0)

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.